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Overview

The Department of Pathology at Stanford University Medical Center seeks to train outstanding academically-oriented candidates for leadership positions in pathology.

We offer residency training in Anatomic Pathology (AP), Clinical Pathology (CP), and combined AP and CP (AP/CP). The overall goal of our program is to provide in-depth, flexible training in all aspects of pathology, leading to board certification in AP, CP or AP/CP.

We also offer accredited clinical fellowships in Blood Banking / Transfusion Medicine, Cytopathology, Dermatopathology, Hematopathology, Neuropathology, and Molecular Genetic Pathology as well as up to 6 positions each year for advanced training in Surgical Pathology (Fellowship in Surgical Pathology) and 1 position each year in Women’s Health (Fellowship in Gyn/Breast Pathology). Combined AP/Hematopathology and AP/Neuropathology are also offered, but must be discussed with the Associate Program Directors and appropriate fellowship directors prior to pursuing these training avenues. Advanced training in Surgical Pathology is not accredited as a “fellowship” but may be used by AP only residents to satisfy the requirement for a third year of AP training.

Trainee Selection

All eligible applicants will be considered for training in the Pathology Department at Stanford. Applicants must have one of the following qualifications to be eligible for consideration:

- Graduates of medical schools in the United States and Canada accredited by the Liaison Committee on Medical Education (LCME)
- Graduates of colleges of osteopathic medicine in the United States accredited by the American Osteopathic Association (AOA)
- Graduates of medical schools outside the United States and Canada who have received a currently valid certificate from the Educational Commission for Foreign Medical Graduates or have a full and unrestricted license to practice medicine in a U.S. licensing jurisdiction.
- Graduates of medical schools outside the United States who have completed a Fifth Pathway program provided by an LCME-accredited medical school.

The Pathology Department selects trainees on the basis of their preparedness, ability, aptitude, academic credentials, communication skills, and fit.

All trainee applications are reviewed by the Selection Subcommittee of the Residency & Fellowship Committee (RFC), which selects those applicants to
invite for interviews. Faculty, clinician educators and current residents and fellows interview selected candidates. All teaching faculty and trainees prepare written evaluations of each applicant they meet with.

**Pathology Residency Positions (AP or CP or AP/CP combined training)**
The Pathology Department participates in the National Resident Matching Program (NRMP). The final decision regarding the ranking of candidates is made by the Residency Program Director in consultation with the faculty.

**Cytopathology Fellowship**
Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only or combined AP/CP) or **have met the full training requirements** for certification by the American Board of Pathology (AP only). The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Dermatopathology Fellowship**
Candidates who qualify based on the above criteria must also **be certified** or **have met the full training requirements** for certification by the American Board of Pathology (AP only or combined AP/CP) or Dermatology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Gyn/Breast Pathology Fellowship**
Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or **have met the full training requirements** for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Hematopathology Fellowship**
Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only, CP only or combined AP/CP) or **have met the full training requirements** for certification by the American Board of Pathology in AP, CP or AP/CP. The program may guarantee a position for Hematopathology Fellowship training at the time of entry into the residency program (with approval from the Director of the Hematopathology Fellowship). This training consists of 36 months of AP (the AP only program) followed by 12 months of hematology/hematopathology (the Hematopathology Fellowship). The 12 months of hematology/hematopathology training concentrates on clinical hematology and diagnostic hematopathology. The promise of a Hematopathology Fellowship position is contingent on maintaining a good standing in the AP training program. The three years of AP training may include a year of Surgical Pathology training, if desired by the candidate and approved by the faculty, but such a year is not guaranteed or required. Candidates who wish to be board certified in hematopathology must first become certified in AP before being eligible for certification in hematopathology. Time-wise this means that becoming board
certified in AP and hematopathology will require 4 years - 3 years for AP and 1 year for hematopathology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Molecular Genetic Pathology Fellowship**
Candidates who qualify based on the above criteria must also be certified in Pathology (AP only, CP only or combined AP/CP) or Medical Genetics (American Board of Medical Genetics) or have met the full training requirements for certification by the American Board of Pathology in AP, CP or AP/CP. The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Neuropathology Fellowship**
Candidates who qualify based on the above criteria must also be certified in Pathology (AP only or combined AP/CP) or have met the full training requirements for certification by the American Board of Pathology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

**Combined Anatomic Pathology & Neuropathology training**
The program guarantees a position in the neuropathology fellowship program at the time they enter the residency program (assuming the trainee is in good standing). The combined AP/NP training consists of 24 months of AP (the first 24-month structured portion of the AP only program) and 24 months of neuropathology. The combined AP/NP training consists of 24 months of AP (similar to the AP only program) and 24 months of neuropathology. The current composition of the 48 months of required combined AP/NP training is as follows:

- Twenty four months of AP similarly scheduled as the AP only training.
- The first 12 months of NP training concentrates on general diagnostic surgical and autopsy neuropathology. The second 12 months offers the opportunity for the trainee to develop a research project and/or develop additional expertise in diagnostic NP, depending upon the ultimate career objectives of the trainee.
- Candidates who wish to be certified in NP must first become certified in AP which will require 2 years training for residents who ultimately seek certification in AP and NP. Time-wise this means that becoming certified in AP and NP will require 4 years - 2 years for AP and 2 years for NP.

**Surgical Pathology Fellowship**
Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or have met the full training requirements for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.
Transfusion Medicine/Blood Banking Fellowship

Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or have met the full training requirements for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.

Anatomic Pathology (AP) Training

Residents complete 24 months of structured training followed by 12 months of flexible training. The details of the current program of rotations are given below.

Structured Training in Anatomic Pathology (24 months)

- 4 months of autopsy experience, divided equally between Stanford Hospital and the Veterans Affairs Palo Alto Health Care System (VAPAHCS)
- 11 months of surgical pathology experience (9 months at Stanford Hospital and 2 months at the VAPAHCS)
- 9 months of anatomic pathology specialty training to be distributed as follows: dermatopathology, forensic pathology, immunodiagnosis, hematopathology, neuropathology (1 month each), one additional month of dermatopathology/neuropathology; two months of either hematopathology, cytopathology, or neuropathology (selected by resident) or other subspecialty area (on approval of AP Program Director); and one month unassigned (to be spent in any area on approval of a faculty mentor).

Flexible Training in Anatomic Pathology (12 months)

The third year of required training may be customized by the resident to meet her/his individual needs. Residents may apply for our Surgical Pathology Fellowship or do an alternative year of AP training designed in conjunction with the faculty in accord with the trainee's career plans. A wide variety of research opportunities also exists.

Clinical Pathology (CP) Training

Residents complete 24 months of structured training followed by 12 months of flexible training. The details of the current program of rotations are given below.

Structured Training in Clinical Pathology (24 months)

- 12 months of training in the four major established areas of laboratory medicine: chemistry/immunology, hematology/coagulation, microbiology/virology, and transfusion medicine. These are divided into introductory rotations of two months, followed by one-month return visits after all of the areas have been experienced, allowing the resident to integrate experience gained in various sections and function with a graduated level of responsibility.
• 2 months of training in laboratory genetics (biochemical genetics, molecular genetics and cytogenetics)
• 1 month of training in pediatric laboratory medicine
• 1 month of training in coagulation, red blood cell special studies and histocompatibility
• 2 months of training in general laboratory medicine at the Veterans Affairs Palo Alto Health Care System (VAPAHCS)
• 6 months of structured training in pathology and laboratory medicine or research to be determined by the resident, in consultation with Clinical Pathology faculty

Flexible Training in Clinical Pathology (12 months)
The third year of required training may be customized by the resident to meet his/her individual needs. A wide variety of patient care projects and/or research opportunities (clinical, translational or basic) exist.

Combined AP/CP Training

The combined program consists of 24 months of structured training in AP and 18 months of structured training in CP. This is followed by 6 months of flexible training which should be used to integrate aspects of AP and CP.

Structured Training in Anatomic Pathology (24 months)
Note: This is identical to the 24 structured months for AP only residents.

Structured Training in Clinical Pathology (18 months)
Note: This is identical to the 18 assigned structured months for CP only residents.

Flexible (Integrated) Training in Pathology (6 months)
The remainder of the fourth and final year of required training may be customized by the resident to meet her/his individual needs but she/he will be encouraged to synthesize and integrate ALL areas of diagnostic pathology during this period.

Combined AP/CP training at Stanford may be summarized as:

• Years 1 & 2: a solid grounding in Anatomic Pathology
• Year 3: an introduction to the core areas of Clinical Pathology
• Year 4: two periods of integration
  • Integration of Clinical Pathology
    The laboratory medicine rotations that complete the residents' 18 months of structured CP training are designed to allow the resident during which the resident to see familiar diagnostic and management problems in
different ways. These include genetic and molecular approaches (during the two-month rotation in Genetics), coagulation, special red blood cell studies, and histocompatibility, the perspective of a community hospital (during the two-month rotation at the Veterans Affairs Palo Alto Health Care System) and the special viewpoint of the pediatric patient (during the one-month rotation in pediatric laboratory medicine).

- Integration of all of Pathology
  The final six months of the four years of combined AP/CP training should be customized by residents to allow them to connect all areas of Pathology into one integrated knowledge base. We strongly recommend that this be solidified by doing an additional year of anatomic pathology (either a subspecialty fellowship or the Surgical Pathology fellowship).

Advanced Training in AP (12 months)

The American Board of Pathology has eliminated the “credentialing year” requirement for board certification in AP, CP or AP/CP for residents beginning training in 2002-2003. **We offer a fifth year of experience in AP for all combined AP/CP residents who wish (and qualified) to take advantage of this opportunity.**

This advanced training is provided because the faculty believes that more than 2 years of training in AP is required for the practice of surgical pathology. AP/CP residents interested in this option will function as **staff physicians** in surgical pathology, gross examination and frozen section, dermatopathology, cytopathology, cardiac pathology and renal pathology as well as review of consult cases submitted to senior faculty. This experience will be similar to that of a third-year AP resident but with more extensive supervised sign-out responsibilities.

The resident may also design an alternative year of AP experience in conjunction with the faculty in accord with her or his career plans, and with the program director and the Chair’s approval.

This “extra” year of AP training has previously been used by AP/CP residents to satisfy the credentialing year requirement. Even though the American Board of Pathology has decided to eliminate the credentialing year requirement, **Stanford will continue to offer this advanced AP experience to all AP/CP residents in good standing, even though it is no longer required for board certification.** This year will be offered after (and consecutive to) completion of the requirements for AP/CP board certification (i.e. when the residents are “board-eligible”).
General Information
GENERAL INFORMATION

Stanford pathology residents and fellows play a central role in the Department’s goal to provide quality service to patients. Clinical duties vary depending on the service being covered. In general pathology trainees take on graduated responsibility, functioning as liaisons between the clinical teams and the pathology laboratory. For a detailed description of resident and fellow duties on each of the services, refer to the appropriate section in this handbook.

Regular Work Hours & Availability

In general the work week is Monday through Friday and the day begins with a teaching conference at 8:00 AM and ends at around 6:00 PM. The days and times vary with the service but the total time commitment (including on-call coverage) should not be more than 80 hours per week, averaged over a four-week period. Trainees must have at least one full 24 hour period free of patient care responsibilities each seven days (averaged over four weeks) and must have a minimum rest period of 10 hours between duty periods.

If the trainee knows that he/she will be late or is ill and must stay home, he/she should notify the attending on service directly as soon as possible. If that person cannot be reached, the trainee should inform the attending through one of the chief residents or through one of the senior residents or fellows on their service. If covering frozen sections, it is also important to contact the administrative staff to let them know you are unavailable for frozen section coverage, e.g. receptionists in surgical pathology, secretary in neuropathology.

Each trainee will be issued a radio-pager (beeper) by the Graduate Medical Education (GME) office. Trainees are expected to be available by page during regular work hours. You can get replacement batteries from Pager Administration (basement Room HC009, accessed by escalator next to the Gift Shop) or from Security after hours (basement, approximately below the ATMs near the Emergency Room).

According to Pager Administration, the range of standard house staff pagers is 50 miles in ideal conditions. In practice, you may find that the range is closer to 15-20 miles. If you are unsure of pager coverage, call 650-723-8222 and page yourself from your location. If you do not receive the page, call Hospital Paging at 650-723-6661 and leave a telephone number where you can be reached. If you cannot be reached by paging or by phone, you must arrange coverage with another resident who can be reached and notify the service involved.
Night and/or Weekend On-Call Duty

On-call duty time must be counted toward the weekly duty hour limit.

Anatomic Pathology
First- and second-year AP residents on autopsy and neuropathology will share after hours and weekend call with other residents or fellows on those services.

Two AP residents on Stanford surgical pathology will share weekend call on a rotational basis. Call commences at around 8:00 AM on Saturday and continues until the cases are grossed-in, no later than 6:00 PM Sunday.

Surgical pathology fellows and cytology fellows take evening and weekend frozen-section call. Call commences at 6:00 PM on Monday and continues until 7:30 AM the following Monday.

Clinical Pathology
CP residents take evening and weekend call for all areas of the clinical laboratory (not surgical pathology). Call commences at 5:00 PM and continues through 8:00 AM the following day.

Cytopathology Fellows
Fellows share frozen section call on a weekly basis with surgical pathology fellows.

Dermatopathology Fellows
There is no call duty.

Gyn/Breast Fellows
Fellows share frozen section call on a weekly basis with surgical pathology fellows.

Hematopathology Fellows
Fellows rotating on Hematology cover this service during regular work hours as well as during evening and weekend periods (using their own beeper) while they are on the rotation. Faculty or CP residents will cover one weekend day each week to afford the fellow a 24-hour period free of clinical responsibilities.

Molecular Pathology Fellows
There is no call duty.

Neuropathology Fellows
There is night and weekend on-call duty.

Transfusion Medicine/BB Fellows
There is night and weekend on-call duty.
ANATOMIC PATHOLOGY CALL GUIDELINES

FROZEN SECTION/ ULTRA PROCESSING ON-CALL PROCEDURE

The designated on-call surgical pathology fellow is responsible for initial intake of all after hour requests for frozen section or ultra processing of specimens for surgical pathology. Responsibility for initial intake of all neuropathology frozen section calls resides with the designated on-call neuropathology fellow and/or neuropathology resident (unless there is no AP resident on rotation in neuropathology, in which case the responsibility is shared by the neuropathology fellow and/or the surgical pathology fellow on-call). All requests for frozen section or ultra processing are relayed to the respective on-call faculty for surgical pathology or neuropathology, immediately after the call is received by the resident or fellow. The relative indications, contraindications, appropriate course of action, and time-line, if a frozen section or ultra is to be performed are discussed with the faculty on-call. The only exceptions to this are requests for assessment of specimens for possible transplant (i.e., requests for liver fat content or number of sclerotic glomeruli). In these latter instances, the on-call fellow may make an initial, preliminary assessment which is then reviewed by on-call faculty on the following working day.

STAT GMS ON-CALL PROCEDURE

The designated on-call surgical pathology fellow is responsible for initial intake of all after hour requests for STAT GMS stains. The fellow is responsible for contacting the appropriate technician and screening the specimen once it has been processed. All positive STAT GMS stains are to be called to the designated faculty on-call prior to reporting the positive result to the requesting clinician. All negative STAT GMS stains are to be formally re-screened by the cytotechnologist(s) on the following work day. In the event that an initially negative STAT GMS is flagged as a possible positive on re-screen, the on-call fellow and the cytopathologist on service are immediately contacted to re-evaluate the specimen. If the GMS is considered to be positive on re-evaluation by the cytopathologist and fellow on-call, the requesting physician is notified.

*The on-call schedule is made up on a monthly basis and is available through the hospital operator and posted in the Laboratory of Surgical Pathology. All housestaff and faculty on-call are to be contacted by personal pager and/or personal cell phone. In the event that the on-call faculty can not be reached by pager or cell phone, the co-director or co-associate director of surgical pathology on-call is to be contacted, except for neuropathology cases, in which case the director of neuropathology is to be contacted (or his designee, when he is not available).
Chemistry

Analyte out of range

a. Critical Value (see panic/critical value list)
   i. Value should be confirmed and the value called to the ordering physician by the technologist per the new critical value (CV) policy.

   ii. If the on-call resident is called about a very unusual case and the clinician can not be contacted, the resident should investigate the problem and discuss the case with the medical director on call.
      1. Customer service (650-723-6111) may have additional contact information for physicians.
      2. The technologists are asked to call the resident/medical director with any issue they are uncomfortable with so please consider call questions carefully before dismissing a CV call; however,…
      3. The technologist calling the resident should be expected to discuss all difficult cases with the supervisor or lead on their shift and contact customer service and the pre-analytical staff for help when necessary before contacting the resident.

b. Absurd Value (patient would likely not be alive if the value was true)
   i. Result should be verified
   ii. Review patient’s history and other labs
   iii. Specimen processing and instrumentation should be reviewed for possible sources of artifact.
      1. Sample questions to consider:
         a. Does it look like an instrument/reagent problem? (is there a trend in abnormal results over the last shift, is there more than one patient with this problem, how do the controls look, is it the same analyte)
         b. Is it a patient problem? (patient with similar problem in past, other labs show abnormal findings)
      2. Common analytes with problems
         a. Elevated K+ in hemolyzed samples
         b. Very low glucose levels old specimens in mint top tube
   iv. Call medical director to review cases as necessary, when in doubt call- it is expected.
Hematology

1. Critical values where clinician cannot be reached-- follow description given for chem above

2. Peripheral blood smear review
   a. Presence of intracellular organisms (ICO)
      i. Check to see if there is a concurrent micro specimen for Gram stain and culture
      ii. Look into the processing of the specimen, to assess possibility of contamination- e.g. what other specimens are being stained on the stainer? Is this the only patient with ICO?
      iii. Gram staining and other stains can be initiated, in discussion with the medical director or on call and the clinical team.
   
   b. Blasts
      i. Confirm morphology and percent, obtain help from the current heme resident/fellow if available (they may know the case) and a senior technologist
      ii. New patient? If patient is not in CC or misys search Powerpath (name search) they may be an outside consult case with a known diagnosis by flow in PP who is being sent to Stanford for treatment so they may not be in CC or misys yet.
      iii. Relapse? When was the last PB with blasts reviewed? Is the patient on chemo, thought to be in remission? Could it be G-CSF effect (look up patient’s history)
      iv. Discuss cases with on call medical director and clinical team.
   
   c. MAP changes
      i. Confirm finding and quantitation (e.g. 2+, 3+)
      ii. Look at other labs, (e.g. platelet count; D-dimers; other coagulation labs including fibrinogen level; and blood culture or gram stain)
      iii. Look up patient’s history and discuss case with MD on call and team
Body Fluids

1. Presence of intracellular organisms
   a. Check to see if there is a concurrent micro specimen
   b. Confirm finding
   c. Other stains (Gram stain, etc.) can be initiated, in discussion with medical director and clinical team

2. Blasts in CSF
   a. It is best to confirm morphology of cells with medical director unless case is very straight forward (e.g. history of blasts in CSF)
   b. Consider peripheral blood contamination of CSF specimen in patient with blasts in the PB smear.

3. Tumor cells (other than blasts) in all body fluids
   a. Rarely a medical emergency. Use your clinical judgment, look up history.
   b. If you do not come in to confirm morphology ask the technologist to type in "atypical pending."

Microbiology & Virology

1. Gram stains
   a. Get expert help before reporting a gram stain result on your own, call the medical director- you don’t want the clinical team to base treatment on only your morphologic evaluation

2. Stat HIV tests- only the medical director can interpret stat HIV test results, so call the medical director- Ellen Jo Baron or associate medical director, Niaz Banaei.
MedHub is a web-based system designed to track and document a variety of critical program and resident activities relating to institutional reimbursement, performance evaluation, procedures tracking, and program accreditation. Individual user names and passwords are sent via email to all House Staff from MedHub Support. Questions or problems with MedHub should be directed to the Program Coordinator. All House Staff are required to log onto MedHub to: document duty hours & procedures, complete faculty & rotation evaluations, view the Master Rotation Schedule & Program Conferences, and address alerts in a timely manner.

**Duty Hours Reporting**

**ALL** house staff (residents and clinical fellows) are expected to document their duty hours in MedHub weekly; access is provided on a two-week rolling basis after which lockout occurs. As noted in the GME House Staff Policies and Procedures “**All residents and fellows must accurately report their work hours on a weekly basis using the MedHub system. Failure to do so may result in disciplinary action, including termination from the residency program.**” Access to incomplete duty hours of previous (locked-out) pay periods can be requested from the Program Coordinator, Dianna Jouan.

**Procedures Tracking**

House Staff are expected to document applicable required procedures (i.e. autopsies, bone marrow specimens, fine needle aspirations, etc.) in the ACGME Resident Case Log System [https://www.acgme.org/residentdatacollection/](https://www.acgme.org/residentdatacollection/). House Staff can also access the Case Log System via MedHub by clicking on the Procedures tab. Individual user names and passwords for the Case Log System are sent via email by the Program Coordinator. Accurate data of procedures performed during training is required by the American Board of Pathology; therefore everyone is highly encouraged to enter them in the system.
Residents are expected to attend 70% of the Anatomic Pathology Didactic Series when on AP as well as 70% of the Laboratory Medicine Lecture Series and Clinical Pathology Case Presentations when on CP.

**Anatomic Pathology**
- **Anatomic Pathology Didactic Series** – various topics and formats (including review of current cases) presented by faculty, residents and fellows; three times per week (Wednesday, Thursday and Friday, 8:00-9:00 AM) – expected for AP residents as well as Surgical Pathology and Gyn/Breast Pathology fellows.
- **Dermatopathology Conference** - didactic review of key concepts in dermatopathology; monthly (Wednesday, Noon-1:00 PM) – expected for AP residents rotating at Stanford.

**Clinical Pathology**
- **Blood Bank/Transfusion Medicine/Coagulation Conference** – problem case review presented by residents for discussion with faculty; weekly (Monday, 1:00-2:00 PM) – expected for CP residents rotating at Stanford.
- **Core Lab Lecture Series** – Monthly presentation by faculty and fellows (first Thursday 4:00 – 5:30pm).
- **Clinical Pathology Call Conference and Case Presentations** – Review of calls over the past week and case discussion with faculty; weekly (Friday, Noon-1:00 PM) – expected for CP residents.
- **Laboratory Medicine Lecture Series** – various topics presented by faculty; weekly (Thursday, Noon-1:00 PM) – expected for CP residents.

**Interdisciplinary**
- **Current Concepts** – detailed review of major topics in pathology in a journal club format (using a recent relevant report), presented by faculty, residents & fellows; weekly (Tuesday, 8:00-9:00 AM) - 70% attendance mandatory.
- **Journal Club Conference** – journal club targeted to review key developments in the AP and CP literature in a journal club discussion format with faculty; monthly (Wednesday, Noon-1:00 PM) – 70% attendance mandatory.
- **Laboratory Management Conference** – review of administrative problems and issues related to informatics; monthly (Tuesday, Noon-1:00 PM) – 70% attendance mandatory.
• **Pathology Grand Rounds** – detailed review of major topics in pathology by an invited faculty member from outside Stanford; bi-monthly (Tuesday, Noon-1:00 PM - takes the place of *Current Concepts* that week) – 70% attendance mandatory.

**Other Conferences**

In addition to these conferences, residents & fellows on specific rotations may need to participate in other departmental and interdepartmental conferences. All residents are invited to attend any and all of these as interest and time permits. These include (but are not limited to):

• **Anatomic Pathology Case Presentations** – interesting (and formal) case presentations by residents and fellows; weekly (Wednesday, 5:30-6:30 PM)

• **Anatomic Pathology Quality Assurance** – administrative review of department’s performance; monthly (Tuesday, Noon-1:00 PM) – expected for all residents rotating at Stanford

• **Autopsy Conference** – current cases presented by the residents to the autopsy faculty; on the weekday after the case has been performed; daily (Monday - Friday, 9:30-10:00 AM) - expected for residents on Autopsy rotation

• **Clinical Pathology Quality Assurance** – administrative review of department’s performance; monthly (Monday, 2:00-3:00 PM)

• **Consult Cases in Surgical Pathology** – review of interesting cases with Dr. Richard Kempson; weekly (Monday, 8:00-9:00 AM)

• **Coagulation Case Studies** – small group review of coagulation case studies; weekly (Wednesday, 3:00-4:00 PM) – expected of Coagulation/RBC special studies resident and Hematopathology fellows

• **Genetics Conferences** - Pediatric Genetics Grand Rounds; weekly (Friday, 9:30-10:30 AM), Genetics Journal Club; weekly (Tuesday, 4:00-5:00 PM) and Genetics Conference; monthly (Wednesday, 1:00-2:00 PM) - expected for residents on Genetics rotation

• **Gross Conference** – review of gross prosection specimens at Stanford Surgical Pathology; daily (Monday – Friday, 1:00-1:30 PM) – expected for residents rotating on Stanford Surgical Pathology
• **Hematology Scope Review** - informal review of week’s problem peripheral and hematopathology cases; every Thursday, 1:00 – 2:00pm - expected for residents on Hematology rotation & Hematopathology fellows

• **Infectious Disease Grand Rounds** - presentation of recent ID clinical cases and discussion; weekly (Thursday, 4:30-5:30 PM) - expected for residents on Microbiology/Virology rotation

• **Neuropathology Journal Club** - recent papers of relevance presented briefly & informally by faculty, residents & fellows; weekly (Tuesday, Noon-1:00 PM)

• **Veterans Administration Palo Alto Health Care System Anatomic Pathology Conference** - review of recent surgical pathology and autopsy cases; weekly (Tuesday for Surgical Pathology & Thursday for Autopsy, 1:00-2:00 PM) - expected for residents rotating at VAPAHCS.

• **Adult Hematology/Hematopathology Conference** – review of interesting cases presented jointly by Hematology and Hematopathology fellows on a monthly basis; first Wednesday of the month (12:00 – 1:00pm) in Cancer Center, second floor conference room.

• **Veterans Administration Palo Alto Health Care System Anatomic Pathology Conference** - review of recent literature in surgical pathology; twice a month (Tuesday, Noon-1:00 PM) - expected for residents rotating at VAPAHCS.

• **Pediatric Conferences** - Pediatric Genetics Grand Rounds; weekly (Friday, 9:30-10:30 AM), Perinatal Conference; weekly (Friday, Noon-1:00 PM) and Pediatric Tumor Board; weekly (Tuesday, 5:00-6:00 PM) - suggested for residents on Pediatric Laboratory Medicine rotation

• **Southbay Pathology Slide Conference** – review and discussion of cases to be presented at the monthly Southbay Pathology Society, monthly (Monday, Noon-1:00) – expected for AP residents rotating at Stanford

• **Surgical Pathology Subspecialty Conference** – surgical pathology and cytopathology microscopic slide review of cases presented by faculty/fellows; two to three times per month (Tuesday, Noon-1:00 PM) – expected for AP residents rotating at Stanford

• **Hematopathology Subspecialty Conference** – hematopathology microscopic slide review of cases presented by faculty; monthly (Wednesday, Noon-1:00 PM) – expected for AP residents rotating at Stanford
- **Transfusion Medicine/Coagulation Conference** – review of transfusion medicine policies and unusual transfusion medicine and coagulation cases; weekly (Monday, 1:00-2:00 PM) – expected for all CP residents

Some notes about presentation at conferences:

**Audiovisual Support**

Room L201, where most presentations occur, is equipped with a slide projector for 35 mm slides, an overhead LCD projector with computer access (including internet access) for computer-based (PowerPoint) presentations, and a light microscope with connections to the overhead LCD projector for slide conferences. There is a department-owned PC laptop computer attached to the presentation podium.

The Department of Pathology supports a Photo Laboratory (Room L206) for audiovisual needs of the department. Digital and conventional microscopes are enabled for photography. Digital files can be downloaded to CD-ROM and conventional 35 mm photographs can be processed for presentations. In order to access the Photo Lab after hours, your bar-coded ID badge needs to be approved for access (see Karen Kunkel in the main pathology office).

**Current Concepts**

Current Concepts serves to provide a regular review of the scientific basis of Pathology for all members of the department. It also helps Pathology residents read and understand scientific reports of basic, translational and clinicopathologic research. In this sense, it functions as our department’s regular “journal club”. Trainees will be contacted by the resident coordinators regarding the scheduling of these presentations.

To prepare a journal club, identify a recent research paper that is interesting and relevant to some aspect of pathology (including basic, translational and clinicopathologic issues and problems). Provide a PDF (or URL link) of the primary reference to the resident coordinator(s) so that it can be distributed to everyone a week before the seminar. Prepare a brief introduction; this should only provide a context for the findings of the research paper to be presented and need not be a comprehensive review of the topic. Then present the key findings of the paper, and critically discuss the data (not every figure and table; focus on the key findings). This discussion should include the implications of the findings, the strength of the approach, and what else may need to be done in future investigations of this topic. The presentation should be approximately 30-35 minutes to allow time for questions and discussion.

**CP Case Presentations**

All residents on CP rotations are expected to present on a rotating basis a brief (15-minute) description of an issue, finding or problem encountered during the week at the regular Friday lunchtime conference. This should not be a definitive review of the subject; rather, the problem or issue should be briefly presented and, after discussion, the resolution or diagnosis provided.
The most current information may be viewed (and the monthly schedule printed) from the Conferences tab in MedHub https://stanford.medhub.com

**Vacation**

Residents and fellows have three weeks of vacation per year. In addition, there is one week leave allowed for academic pursuits such as attending meetings, etc.

Vacation or leave plans for residents must be completed as promptly as possible and submitted to the chief resident. Fellow vacation should be approved by the corresponding fellowship director and the dates relayed to the chief resident. Note: All absences must also be requested through Medhub and approved through the Medhub system by the Program Coordinator.

No more than 2 consecutive vacation weeks should be taken. It is recommended that vacation weeks be spread among the rotations as much as possible (e.g. if 2 consecutive weeks are taken, select the last week of one rotation and the first week of the next rotation if at all possible).

**What do I need to do before going on vacation?**

Step 1: Identify services affected by your absence
Step 2: Check with other residents (and faculty) assigned to those services
Step 3: Try to arrange coverage
Hint: Ask for coverage; don’t tell someone to cover. (An attitude of entitlement does not inspire others to help you out.)
Step 4: NOTIFY THE CHIEF RESIDENT AND THE PROGRAM COORDINATOR

**Pathology Travel Policy for Conferences and Meetings**

The Department of Pathology will reimburse residents and/or clinical fellows for travel-related expenses associated with a lecture or poster presented at an appropriate conference or meeting. The resident or clinical fellow must be on an active contract with Stanford University Medical Center and the presentation must be supported in advance by a Department of Pathology faculty member.

Requests for reimbursement of these travel-related expenses are processed by the Program Coordinator and must include all of the following items:

- A confirmation letter or email from the sponsoring-faculty member(s) which indicates their approval of the reimbursement request.
- A copy of the conference/meeting registration and schedule materials.
- The title, date and time of the lecture or poster presentation.
- Original receipts for each travel-related expense submitted within 30 days of traveling.

Allow a minimum of six weeks for the request to be approved and processed by the university financial offices. Failure to provide the required items listed above
could delay the processing of your reimbursement. Requests from meetings already attended will only be considered until the end of the relevant training year (June 30).

**Reimbursements and Extra Funds**

$8400 Housing Allowance from the Pathology Department. Half is given in September and second half in February (this benefit does not apply to Post-Sophomore Fellows).  
$1000 Mileage, Cell Phone, Gas Fund from GME in July  
$3000 Housing Allowance for only **NEW** residents and fellows in ACGME accredited programs in August  
$2000 Educational Benefit in January to **ALL** Residents and Fellows in ACGME accredited programs  
*All Fellows, including Post-Sophomore Fellows, will receive an additional $1000 for educational expenses with receipts to be submitted to Dianna Jouan for reimbursement.

**Protocol for Residency Schedule Changes**

Chief Residents are responsible for managing the rotation and call schedules under the direction of the Residency Associate Program Directors, taking into account the needs of each service area. All schedule changes will be handled in the following manner to ensure the needs of each service area and the program requirements are met. The following “**Schedule Change – Routing Slip**” will be used to guarantee all affected parties receive timely notification of adjustments to the Master Rotation Schedule maintained in MedHub

1. Residents will contact the Chief Residents to request a modification in the Master (MedHub) Schedule. Chief Residents generate the **Routing Slip** for approvals.  
2. First-level approval of the request will be made by the appropriate Associate Program Director; Dr. Neeraja Kambham for Anatomical Pathology rotations and Dr. Iris Schrijver for Clinical Pathology rotations.  
3. Second-level approval of the request will be made by the appropriate rotation Service Director(s).  
4. Upon receipt of both first and second level approvals, the Chief Residents adjust vacation and call schedules; verifying coverage arrangements when required. Chief Residents will forward approved Routing Slips to the Program Coordinator.  
5. Upon receipt of approved Routing Slips, the Program Coordinator will modify the Master (MedHub) Schedule. The Program Coordinator will distribute copies of approved routing slips and revised rotation schedules to all affected parties.
## Residency Schedule Change – Routing Slip

<table>
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<tr>
<th>Resident Name:</th>
<th>Date(s):</th>
<th>Service Area(s):</th>
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<tr>
<td>Chief Resident(s) Name:</td>
<td>Schedule type:</td>
<td>Coverage Arrangement(s):</td>
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<td></td>
<td>[ ] Rotation</td>
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### FIRST-LEVEL APPROVAL

- [ ] Dr. Kambham (AP)
- [ ] Dr. Schrijver (CP)

| Signature & Date reviewed: | [ ] Approved | [ ] Denied |

### SECOND-LEVEL APPROVAL

| Service Director(s): | Signature & Date reviewed: | [ ] Approved | [ ] Denied |

**Distribution by Residency Coordinator**

- [ ] MedHub schedule revised: Copy: Service Director(s)
- [ ] Copy: Chief Resident(s)
Observing Hospital Holidays

Each year Stanford University Medical Center sets a number of paid major holidays, such as New Year's Day and Thanksgiving Day, for regular staff members, but these cannot be assumed to be holidays for pathology residents and clinical pathology fellows. As with other residency programs at Stanford, receiving such days off is not guaranteed and is based on clinical staffing needs of the hospital and department.

Unassigned Rotations

Unassigned time should be used thoughtfully to enhance the curriculum, explore areas of particular interest in greater depth, or allow the resident to bring a research project to completion. These rotations must be planned in advance and a brief description of the activity submitted to the Chief Resident and Program Coordinator at the beginning of the academic year. Unfortunately, beginning in 2004-2005, it is not possible to spend any of this time outside of Stanford. (The medical center will not support your salary during such time away and there is no departmental funding available for these purposes.)

Moonlighting

All pathology residents and clinical fellows engaged in moonlighting must be licensed for unsupervised medical practice in the State of California or the state where the moonlighting occurs. It is the responsibility of the institution hiring the resident to moonlight to determine whether such licensure is in place, adequate liability coverage is provided, and whether the resident has the appropriate training and skills to carry out assigned duties. In addition, the Program Directors must acknowledge in writing that he is aware that the resident is moonlighting, and this information should be part of the resident’s folder.

Time spent moonlighting must be counted toward the weekly duty hour limit.

Supervision and Evaluation

Mentors

All residents and fellows are assigned a faculty member to be their mentor, but all trainees may change mentors at any time during the training period. The mentor should be used as a resource for problems and questions about the training program, advice about career plans, decisions about resident projects and the use of unassigned time, and other matters. The mentor is also the primary person with whom the trainee’s progress through the training program is followed.
All residents & fellows should meet with their mentor at least biannually (December and June).

**Individual Evaluations by Faculty**
Stanford Pathology residents and clinical fellows rotate through a variety of different experiences during both Anatomic and Clinical Pathology training. To ensure progress in the acquisition of the core competencies required to become a pathologist, the faculty evaluates trainees throughout their program.

Each faculty member who interacts with a trainee is required to submit a formal evaluation in MedHub.

**Core Competencies**
These evaluations cover the following Core Competencies identified by the Accreditation Council for Graduate Medical Education (ACGME):

- **Patient Care**
  Residents must assume responsibility for providing appropriate and effective care to the patients served by our department’s clinical areas. They must develop and demonstrate the ability to gather essential and accurate information about patients, make informed recommendations regarding differential diagnosis, and ensure that examination of specimens, resolution of problems, and the reporting of results occur in a timely manner.

  New trainees will need to document that they are able to retrieve relevant patient care information from the medical center’s Hospital Information System (HIS) by the end of their first rotation.

- **Practice-Based Improvement**
  Trainees must develop an analytical approach to problem-solving. They must demonstrate that they can apply information learned from previous cases to new ones. They must regularly attend and contribute to departmental conferences. They should be open to constructive criticism and be able to identify areas of diagnostic Pathology and/or laboratory medicine in which they need to improve.

- **Communication**
  Trainees must describe pathologic findings accurately, clearly and concisely. They must ensure that critical results are communicated promptly and acted on appropriately. They must provide effective and helpful consultation to other physicians and healthcare professionals and maintain good relationships with their colleagues, faculty and other members of the department.
• **Professionalism**  
Trainees must demonstrate behavior that reflects a commitment to integrity and ethical practice. They must be available during assigned coverage and punctual for appointments. They must demonstrate respect and sensitivity to diversity in patients and professional colleagues and cooperate with technical and administrative staff. They must adhere to principles of patient confidentiality and scientific integrity.

• **Medical Knowledge**  
Trainees must establish a command of the basic and clinical science that underlies diagnostic pathology and/or laboratory medicine. They must demonstrate the ability to access and critically evaluate current medical knowledge and/or scientific evidence relevant to their practice. They must also read scientific literature pertinent to assigned cases and use this information to enhance their ability to make a diagnosis or solve a problem.

• **Healthcare Delivery**  
Trainees must appreciate their role in the overall care of patients. They must demonstrate an understanding of the medical center’s administrative organization and be facile in the use of its information systems. They must participate in interdisciplinary conferences and appreciate the role of diagnostic pathology and/or laboratory medicine in the prevention, diagnosis, and management of specific diseases. Trainees must also participate significantly in the department’s quality assurance program.

Each month, the trainee should receive feedback from one of the faculty with whom she or he has worked. This individual should show the trainee any evaluations filled out by other faculty on service that month. If this does not happen or if the trainee has any concerns about the feedback received, alert one of the associate program directors (either Dr. Kambham for AP or Dr. Schrijver for CP) ASAP. The evaluations should be signed by the resident and the responsible faculty member at the time of the evaluation and returned to the Program Coordinator within 10 days of the end of the rotation.

**Semi-Annual Evaluation by Mentor**

Every six months, the trainee should meet with her/his mentor. During this meeting, any issues raised should be addressed. The mentor should record details and/or conclusions of this discussion in the trainee’s Progress File, which both the mentor and trainee must sign, documenting that the evaluation and counseling session was held. If the trainee indicates any disagreement, he or she may write a rebuttal, which will become part of the trainee’s permanent Progress File.
Annual Meeting with the Residency Program Director and Chair

In the first three months of the program, each trainee will meet with the Program Director, Dr. Connolly. In addition, each trainee will meet with the Chair, Dr. Galli, at the end of the academic year. These meetings will assist in reviewing the resident’s progress, discussing academic issues and plans, reviewing the resident’s performance and deciding on activities and goals for the coming year.

Promotion and Dismissal

All residents and, if appropriate to the training program, clinical fellows will be offered reappointment to succeeding levels in their selected track, subject to continuing satisfactory performance and conduct.

In the unusual event that an unsatisfactory evaluation might result in a decision adversely affecting the trainee (such as probation or termination), the case will be discussed by the Associate Program Directors and a recommendation made to the Program Director. The Program Director will notify the trainee in writing of his decision at least six months in advance before the next re-appointment period. In all such cases, the trainee has the right to meet with the Program Director and/or the Resident/Fellow Committee.

Evaluation of Training Program & Faculty

All trainees are requested to evaluate rotations that they have had during the past six months as well as the performance of individual faculty members that they have worked with. These evaluations are anonymous and are done in MedHub. Scores from all of the individual evaluations will be averaged and any specific comments made will be transcribed to a summary sheet.

California Medical Licensure

All Stanford residents and fellows MUST procure a California medical license. You must have one year of ACGME-approved postgraduate training before you are eligible for licensure and you must receive your license by the beginning of your third year of training. If you do not have your California medical license by the beginning of your third year, you will have to refrain from all medical duties (and the hospital will not pay you).

NOTE: Timelines in this section are for Pathology residents who have just graduated from a U.S. (or Canadian) medical school and are in their first-year of training at Stanford. If you have previous ACGME-approved training (or are a graduate of a foreign medical school), please consult the Program Coordinator.
1. Register participation in our residency program
This is accomplished by submitting Form L3 - Postgraduate Training Registration Form to the Medical Board of California. The hospital's GME office includes this as part of your orientation.

2. Begin work on your application
The application form consists of four parts:
- Form L1A-D (Application for Physician's and Surgeon's License)
- Form L2 (Certificate of Medical Education)
- Form L3A (Certificate of Completion of ACGME/RCPSC Postgraduate Training)
- Form L4 (Eligibility for Reduced Initial License Fee)

You should download copies of Form L1A-D and Form L2 from the Medical Board of California website (http://www.medbd.ca.gov) and complete them. If you need assistance, consult the Program Coordinator. Forms L3A and L4 will be prepared by the hospital's GME office when you have completed Forms L1A-D and L2.

3. Begin to assemble the required documentation
You will need to send original transcripts from both undergraduate and medical school; a copy of your medical school diploma which has been "certified" by the school (do not plan to send your original); and fingerprints.

4. Plan to complete Step 3 of the U.S. Medical Licensing Exam
You should plan to take this exam as soon as possible. For more information, visit the USMLE website (http://www.usmle.org/default.asp). We recommend that you schedule the exam no later than March of your first year and that you choose a month in which your Pathology rotation affords you more flexibility. Do not cram for the exam. If you wish to take a review course, we recommend the Kaplan course (www.kaplanmedical.com). Notify the Program Coordinator when you will be taking the exam (and what the results are as soon you receive them). You do not need your USMLE scores to apply for a California medical license (but you will need them for the license to be issued).

5. Satisfy the General Medicine Training requirement
Pathology residents must have four months (512 hours) of training that involves direct patient care. At Stanford, several rotations offer opportunities to participate in direct patient care (and meet these requirements). But, it is your responsibility to periodically consult with one of the program directors (either Dr. Longacre for AP or Dr. Schrijver for CP) to insure that you are meeting this requirement.

6. Submit your application to the GME office
As soon as your application is complete (whether you have taken USMLE Step 3 or not), send it to the GME office with a check (payable to Medical Board of
California) to cover the application fee. If you do this, the GME office automatically prepares Forms L3A and L4 and mails your application to Sacramento via Federal Express (to arrive on July 1). If you get it to the GME office before March 1, they will reimburse the application fee to you.

7. Send the licensing fee to the Medical Board of California
As a trainee, you are eligible for a reduced initial licensing fee. You need to send this check directly to the Medical Board. Note: If you receive your license before September 1, the GME office will reimburse this licensing fee to you.

8. Notify the Program Coordinator.
When you have received your license, make a photocopy and send it to the Program Coordinator.

RISE Examination

Each year in March, the Pathology Resident In-Service Examination (RISE) takes place in order to help the residents, their mentors, and the program directors assess resident progress in the training program. The exam is mandatory and the scores will be made available to the program directors and the residents' mentors; they will not be released to the chair of the department. The ACGME requires objective assessments of resident progress during training; for this reason, the individual scores of the In-Service Examination are utilized to evaluate resident competency along with other methods of evaluation. All residents are released from their clinical responsibilities on the morning of the examination.

How to convey suggestions and concerns about the residency program

Our department continuously strives to find ways to improve our program (following the principle: “All human activities can be improved.”). To do that best, we wish to hear suggestions from as many people as possible. If at any time, you have concerns or suggestions, there are multiple ways in which to bring them up:

1: Talk to your chief residents! They are YOUR representatives. Use them as the first step for voicing your opinions, ideas or concerns about the program. Anything you discuss with them can be brought up ANONYMously, either at the Residency and Fellowship Committee (RFC) or at the annual Residents’ Retreat (see 2 & 3, below).

2: Residency and Fellowship Committee (RFC). A meeting of the RFC is held approximately once a month. The goal of the RFC is to monitor, assess and attempt to improve our residency and clinical fellowship programs. As an important part of that process, the RFC can consider, and decide to take action regarding, ANY issues/topics that have been raised for discussion. The Program
Director/Department Chair, Associate Directors of AP and CP, and chief residents, as well as elected representatives of the residents and certain members of the faculty, are regular members of the RFC. Other faculty/residents can be invited to attend as appropriate for the topics being discussed. Any resident or faculty member of the RFC can place a topic on the agenda for discussion.

3: Resident Retreat. An annual one day retreat, where all aspects of the residency program can be discussed by the residents (no attendings or fellows attend these retreats, unless they are invited by the residents to be present for certain parts of the discussion). The residents then write a report of these deliberations, which is formally presented by the chief residents at a meeting (or meetings) of the RFC. Many of the suggestions derived from these retreats have been implemented by the program, in the originally suggested or modified form, after discussion at the RFC and, in some cases, at faculty meetings.

4: Faculty Mentors. You are assigned a faculty mentor when you start the residency and will meet with him or her at least twice a year. Please note that residents can change mentors at any time for any reason (e.g., a change in your long-term career interests). Please contact the faculty who you are interested in establishing a mentorship.

5: Associate Program Directors of AP or CP. You will meet with one of them once a year, depending on whether you are doing AP or CP during that year.

6: Program Director. You will meet with him once a year, and, during that meeting, he will ask for your thoughts about the program, including opportunities for improving it.

7: Resident Buddy (starting July 2009). You are assigned to another resident when you start the residency and will meet with him/her at least once at the beginning of the year and as many times as you wish thereafter. If you wish, you can bring up topics with her/him before discussing them with the chief residents.

8: Medhub Evaluations. Each month, you will be completing evaluations on your rotation for that month, as well as on the attendings you worked with during that period.

9: Program Evaluation. Before the Resident Retreat, you will have the opportunity to evaluate all rotations (AP or CP) ANONYMOUSLY. The evaluations will be used to decide upon topics for discussion at the Resident Retreat.
Resident Retreat

Each year in January, the department hosts an off-site retreat for the residents on a Saturday to discuss the residency training program. Many of the changes that have been implemented in the residency training program in recent years are a direct result of discussions and recommendations that were formulated during this annual retreat. Residents are strongly encouraged to take advantage of this opportunity. The retreat is coordinated by the Chief Residents in AP and CP, who then present the findings at the following monthly RFC meeting.

Pathology Society Memberships and Post-Graduate Courses

The Department of Pathology sponsors resident membership in the United States and Canadian Academy of Pathology (USCAP) and the American Society for Investigative Pathology (ASIP) for all trainees who are interested. Contact the Program Coordinator for membership enrollment information. Please submit any membership dues to Dianna Jouan for direct payment to USCAP.

The Bay Area hosts several high quality post-graduate pathology courses that residents and fellows are strongly encouraged to attend. The South Bay Pathology Society hosts an annual meeting in the middle of May on a Saturday in the Bay Area. Registration fees are paid by the Department of Pathology for residents and fellows, provided they register in advance with the Program Coordinator. The California Society of Pathologists hosts a course in December that usually takes place in San Francisco. Attendance is free for trainees. Finally, the South Bay Pathology Society hosts a monthly meeting on the evening of the first Monday of each month and residents may attend this meeting on a rotational basis. Sign up is limited and posted at the Hot Seat station in Surgical Pathology. Residents are urged to take advantage of these educational opportunities.

Grant Applications

Trainees who are interested in submitting development grant applications should contact Ms. Patty Winningham, Post doc and Graduate Student Manager for the Department of Pathology, so that she may guide you with the application process. Obtaining approvals from various departments can take some time therefore you should contact her at least one month prior to the application deadline.

Ms. Patty Winningham
Tel: (650) 498-6134/ FAX: (650) 725-6902
E-mail: pattyw@stanford.edu
RESPONSIBILITIES OF CHIEF RESIDENT(S)

AP CHIEF RESIDENT – DESCRIPTION OF DUTIES
(Updated March 2010)

The AP chief resident is the main liaison between faculty and residents and is, as such, in a leadership role to optimize service work, facilitate program improvements where necessary, help ensure the residents’ education, well being and professional development, represent our residents within the department and in other areas of the hospital. The chief resident works closely with the Pathology program director, with the associate program director for AP, with the residency coordinator, and with faculty, fellows and residents. The AP chief resident coordinates with the CP chief resident as appropriate.

AP chief duties include, but are not limited to, the following examples:

- Transition with out-going chief residents. This transition should include attendance at RFC meetings prior to the full assumption of chief resident duties at the next academic year, and identification of all on-going “action items” in AP discussed in the resident retreat and/or RFC.

- Send welcome email to incoming residents. This email should provide information for orientation, resident “buddy” (selected by the AP chief resident(s)), and solicit requests for preferences for vacation time.

- Work with the residency coordinator to ensure a smooth transition at the beginning of the year, so that AP residents have badges, computer access, name plates for desks when in H2110, parking, etc.

- Work with the residency coordinator to organize departmental orientation for new residents/fellows, including scheduling key contributors (residency coordinator, residency co-directors, lab safety, etc). Ensure all incoming residents/fellows are notified. Attend welcome dinner for incoming residents/fellows.

- Create the academic rotation schedule
  - Distribute residents fairly and evenly
  - Keep in mind the number of fellows (including post-sophomore fellows) on a service and fellow vacations
  - Ensure coverage for services that require it
  - Work with the AP program director to finalize the schedule. Schedule must also be approved by all AP service chiefs (Dr. Berry, Dr. Kong, Dr. Longacre, Dr. Natkunam, Dr. O’Hara, Dr. Regula, Dr. Rouse, Dr. Sundram, Dr. Vogel)
  - Coordinate this schedule with the AP/CP4 resident requests for AP rotations
o Avoid scheduling more than one person/month for forensics
o Try to avoid scheduling off-site rotations (VA, forensics) after Stanford autopsy
o Schedule monthly autopsy and neuropathology on-call coverage

- Create the monthly surgical pathology rotation schedule for the residents/post-sophomore fellows, keeping in mind the distribution of golden and gross weekends. Identify case cap for each visiting medical student/resident/post-sophomore fellow directly on the rotation schedule. See resident handbook or AP program director for case cap levels
  o Send schedule to Dr. Kong, no later than by the 15th of the month (6/15 for July schedule)
  o Work with PAs to organize a frozen section room orientation for the first year residents during their first month on the surgical pathology rotation

- Check FISHBOWL prior to onset of new academic year and monthly thereafter to stay abreast of rotating medical students. Orient all new visiting medical students on AP service. Ensure they have ID badge, PowerPath access, all required access codes, safety training, etc. Coordinate with residency coordinator farewell lunch for exiting medical students with other residents on service

- Create the vacation schedules so as not to impair service coverage
  o Be aware of national conferences (USCAP, CAP, etc)

- Ensure that residents know where to have their “base” and to assign lockers at Stanford. Collect locker keys from AP residents leaving the AP program and re-distribute to incoming AP residents.

- Regularly check in with the AP residents (especially first years) to check how things are going in the various rotations and address any issues that arise.

- Assign desks for residents in H2110 when on rotations that require their presence.

- Monitor surgical pathology rotations and send feedback to AP program director when problems arise. Remind resident to go to noon microscope conferences (as well as other required conferences). Provide feedback to AP program director if residents are being kept in sign-out past noon (and thus cannot attend the noon conference) or past 1:00 PM (and thus cannot complete their reports to meet turn-around-time)

- Work with the resident coordinator assistant to put journal club and resident lectures on the monthly conference schedule.
• Meet with the AP program director monthly (at a minimum) or as often as needed to communicate issues and facilitate prompt resolution

• Lead the quarterly “Jeopardy” AP conferences
  o Ensure residents sign in
  o Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  o Start and end the meeting on time

• Coordinate the monthly AP Journal club
  o Make a schedule that includes all residents (evenly) and fellows
  o Send out an announcement to residents and AP faculty with location, time, speakers, topics and attached papers no later than the Friday before the journal club.
  o Work with resident coordinator to set up lunches
  o Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  o Start and end the meeting on time

• Attend the monthly RFC meeting
  o The Chief is expected to attend each of these meetings. Should the Chief be away, then a substitute resident should attend and the AP program director needs to be informed beforehand.
  o Communicate with residents regarding RFC topics before and after the meeting
  o Help set the RFC agenda
  o Communicate with the AP program director regarding issues and potential solutions before each RFC meeting

• Work with the residency coordinator or Grand Rounds faculty to coordinate the AP noon slide sessions for Grand Rounds lecturers and other guest lecturers
  o Ensure the slides are out by the Hot Seat for review prior to conference
  o Ensure residents are aware that there are slides at the Hot Seat for review prior to conference
  o Ensure the audiovisual is set up in the plasma room prior to conference
  o Greet the guest speaker and introduce her/him to the residents, if this has not already been done by a member of the faculty
  o Ensure the guest lecturer feels welcome (cup of water if needed, etc)
  o Ensure all slides are gathered and returned to the guest lecturer

• Work with the residency coordinator to organize the resident retreat
o Set the retreat agenda
o Distribute and summarize rotation evaluations for retreat discussion
o Report the retreat conclusions to the AP program director, RFC, and residents
o Report plan to address issues identified in the resident retreat to the residents following the RFC meeting

- Schedule periodic informal/social meetings and more formal resident forums (one in September and one in May following the retreat) with residents to maintain morale, encourage team effort, etc.

- Work with the residency coordinator and AP program director to disseminate information to residents regarding the training program. Update AP rotation descriptions on Stanford Pathology webpage and Wiki

- Work with the residency coordinator during interview season
  o Ensure that the AP program is well presented to our interviewees (Hillview tours, making yourself available for more interviews, lunches, etc.)

- Attend all chief resident meetings held by GME Office

- Help plan first year awards for the end of year dinner with the AP program director

- Be involved in the Department of Pathology research retreat and encourage and coordinate resident participation

- Opportunity to work with faculty on teaching assignments

**CP CHIEF RESIDENT – DESCRIPTION OF DUTIES**

(Updated March 2010)

The CP chief resident is the main liaison between faculty and residents and is, as such, in a leadership role to optimize service work, facilitate program improvements where necessary, help ensure the residents’ education, well being and professional development, and represent our residents within the department and in other areas of the hospital. The chief resident works closely with the Pathology program director, with the associate program director for CP, with the residency coordinator, and with faculty, fellows and residents. The CP chief resident coordinates with the AP chief resident as appropriate.

CP chief duties include, but are not limited to, the following examples:

- Work with the residency coordinator to ensure a smooth transition at the
beginning of the year, so that CP residents have badges, computer access, parking, etc.

- Schedule and lead CP orientation for new residents

- Create the rotation schedule
  - Distribute residents fairly and evenly without fixed pairing
  - Keep in mind the number of fellows on a service
  - Ensure resident coverage for services that require it
  - Work with the CP program director to finalize the schedule

- Create the vacation schedules for CP residents

- Ensure that residents know where to have their “base” and to assign lockers at Hillview

- Create the CP call schedules
  - Schedule and lead the introductory “boot camp” orientation to CP call

- Create the monthly hemepath coverage schedule

- Regularly check in with the CP residents (especially first years) to check how things are going in the various rotations and address any issues that come up.

- Meet with the CP program director monthly or as often as needed to communicate issues and facilitate prompt resolution

- Lead the weekly CP call conference on Fridays
  - Make a schedule that includes all residents (evenly) and fellows
  - Ensure residents sign in
  - Work with resident coordinator to set up lunches and reserve rooms
  - Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  - Start and end the meeting on time
  - Introduce speakers and topics and actively lead discussions

- Lead the monthly CP Journal club
  - Make a schedule that includes all residents (evenly) and fellows
  - Send out an announcement to residents and CP faculty with location, time, speakers, topics and attached papers no later than the Friday before the journal club.
  - Ensure residents sign in
  - Work with resident coordinator to set up lunches and reserve rooms
  - Make sure that the audiovisual is set up on both sides well in
• Attend the monthly RFC meeting
  o The Chief is expected to attend each of these meetings. Should the Chief be away, then a substitute resident should attend and the CP program director needs to be informed beforehand.
  o Communicate with residents regarding RFC topics before and after the meeting
  o Help set the RFC agenda
  o Communicate with the CP program director regarding issues and potential solutions before each RFC meeting

• Organize the Transfusion Service conference on Mondays
  o Make the annual schedule
  o Reserve rooms at both Hillview and hospital for the year
  o Ensure residents sign in
  o Work with faculty to have teaching sessions scheduled for the year
  o Work with admin to send faculty speakers reminders one week in advance
  o Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  o Start and end the meeting on time

• Make the annual schedule for the CP lecture series by faculty on Thursdays
  o Make the annual schedule
  o Ensure residents sign in
  o Work with resident coordinator to set up lunches
  o Work with admin to have flyers posted
  o Work with admin to send faculty speakers reminders one week in advance
  o Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  o Start and end the meeting on time
  o Introduce speakers and topics and actively lead discussions

• Work with the residency coordinator to organize the resident retreat
  o Set the retreat agenda
  o Distribute and summarize rotation evaluations for retreat discussion
  o Report the retreat conclusions to the CP program director, RFC, and residents

• Work with the residency coordinator during interview season
  o Ensure that the CP program is well presented to our interviewees
(Hillview tours, making yourself available for more interviews, lunches, etc.)

- Be involved in the Pathology research retreat and encourage and coordinate resident participation

- Opportunity to work with faculty on teaching assignments
INTRODUCTION AND GENERAL INFORMATION

As a pathologist-in-training, you need and are required to practice routine safety measures in order to protect yourself from sharp injuries and infectious processes, as well as toxic chemicals. Below you will find a brief summary of exposure hazards and the steps necessary in protecting yourself and others. Remember, safety begins and ends with you.

GENERAL PHONE NUMBERS:

1.) Employee Health (located on the basement floor at the central escalators): 723-5922  Hours: Monday through Friday: 7:30 AM – 3:00 PM
2.) Fire-Police-Medical emergency, including Hazardous Materials incident: 211 (dial directly from any hospital phone)
3.) Needlestick and Exposure Hotline: 8-4000
4.) Environmental Health and Safety Department 3-8143
5.) http://somsafety.stanford.edu

PERSONAL PROTECTIVE EQUIPMENT

Your main health hazard as a pathologist is exposure to infectious materials. Along with good sharps practice, you must wear protective barrier equipment (PPE) appropriate to the physical hazard in each training location. Appropriate barrier protection works against all infectious agents and also against accidental chemical exposure (eg- formalin splash).

You should always WEAR eyewear and double-gloves when dealing with any tissue, fixed or unfixed. A mask must be worn whenever there is a risk of splashing blood or bodily fluids in the face or when tissue particles might be aerosolized (e.g. with a bone saw). Scrubs, cloth gown, apron, bonnet and shoe covers should be added when there is a risk of splashing blood or body fluids. Appropriate PPE is provided at each training site, but you are personally responsible for gowning correctly. Both latex and nitrile gloves are available. There is absolutely NO EXCUSE for not wearing eye protection; if the glasses provided to you are uncomfortable, we'll be happy to order you a different pair at no charge. If you don't see the PPE you need, ASK for it!
**SHARPS**

Scalpel blades and needles are the main sources of incised and puncture wounds in pathology, almost always on the hands. Minimize your use of scalpel blades and needles; use scissors or a larger knife whenever possible. Learn how to safely install and remove the blade from a scalpel; a special blade-removal device is safest. Use only one blade at a time and immediately dispose of that blade in the sharps disposal box; loose blades are a danger to you and your colleagues.

**UNIVERSAL PRECAUTIONS**

Treat ALL unfixed tissue as highly infectious (see below for additional precautions for prions). You can never be sure if the patient might be infected with hepatitis-C, HIV or another deadly pathogen. Prepare for and perform each dissection, as if the tissue was HIV+; never let your guard down. Although the staff take great lengths to ensure that the working environment is clean; you should assume that all instruments and surfaces are contaminated.

**IMMUNIZATIONS**

You must be immunized against several diseases, including hepatitis B and several childhood diseases, before beginning work at SUMC. Antibody titers against these diseases will be drawn by Employee Health at the time of employment and periodically thereafter (TB titers are drawn annually).

**NEEDLE STICK OR OTHER EXPOSURE**

Immediately notify a senior resident and/or attending and wash the area thoroughly. During work hours, proceed directly to employee health (basement floor, at bottom of central escalators). After hours, you can be seen in the ER. Alert someone in the ER that you are a Stanford Hospital employee and you have a sharp injury or blood/body fluid exposure. You should get rapid attention. If you have a deep wound, which may require stitches, go directly to the Emergency room. Your safety is first and foremost. You will need to fill out an employee injury report form (04-30A) (forms are available in surgical pathology on tall cabinet across from the receptionists).

**SPECIAL PRECAUTIONS**

**Surgical Pathology Gross Room**

Eyewear and gloves are required at all times. A mask is required whenever there is a splash or aerosol hazard. Hold tissue with an instrument, rather than your fingers, when taking sections. Use safe sharps practices.
Frozen Sections
Performing and interpreting frozen sections is an important part of your training in Surgical Pathology. The frozen-section technician will show you how to safely operate the cryostat. Assume any tissue within and any surface of the cryostat is contaminated. Seek advice before cutting any potentially infectious tissue (such from a patient suspected of TB or from a patient with rapid-onset dementia [potentially CJD]).

Bone Saw
Stanford has a single tissue band saw located in the cold room next to the Autopsy Room (L202). Rare specimens require cutting bone or frozen soft tissues. You must complete training and a certification examination before you operate this potentially dangerous equipment.

Autopsy Room
Complete gowns are required for the prosector and anyone else participating in the dissection of viscera.

Creutzfeldt-Jacob disease:
Suspect CJD in any middle-aged or older patient with rapid-onset dementia and rapid clinical course; myoclonus is not required.
Discuss any potential CJD case with an attending neuropathologist.
Special dissection and disinfection procedures are detailed in the Autopsy Manual.

Please see Appendix for further safety information.
Anatomic Pathology Rotations for RESIDENTS
AUTOPSY PATHOLOGY LEARNING OBJECTIVES

OVERVIEW
Residents on autopsy pathology are expected to master the following broad areas to the level expected of a new practitioner.

GOALS AND OBJECTIVES

Patient care
- To develop proficiency in all aspects of prosection and autopsy techniques, including standard dissection and removal of organs, including brain and spinal cord.
- To develop proficiency in selection and performance of routine and special (e.g., viral or fungal) cultures in the autopsy setting.
- To develop proficiency in procurement and preservation of special body fluids (vitreous fluid, bile, urine) for potential toxicology studies.
- To develop proficiency in removal of spinal fluid from adults and infants.
- To learn appropriate collection techniques for electron microscopy and molecular biologic studies.
- To learn appropriate collection techniques for samples for chromosomal analysis.
- To learn injection techniques for examination of coronary arteries for postmortem radiography.
- To develop proficiency in use of the Faxitron X-ray machine and frozen sections in appropriate cases.
- To understand approaches for performance of postmortem examinations on patients known to have viral hepatitis, HIV, or Creutzfeldt-Jacob disease.

Medical knowledge
- To understand basic concepts of disease and correlation with morphology.
- To develop expertise in correlation of autopsy findings with clinical course.
- To demonstrate an investigatory and analytic thinking approach to autopsy pathology.

Practice-based learning
- To use case-based learning as a tool for additional insight into disease pathogenesis.
- To locate, appraise, and assimilate pertinent evidence from scientific studies.
- To demonstrate effective problem solving skills, using a wide variety of information resources.
Interpersonal and communication skills
- To develop proficiency in presentation of autopsy findings to pathologists, medical students, and clinicians, at gross conference and standard clinical conferences at which autopsy cases are presented.
- To use effective writing skills to generate the autopsy report.
- To teach medical students who are assigned autopsy cases. In this role, the resident will develop the ability to explain what is being done during the dissection, clarify clinicopathologic issues, and direct students to other resources including appropriate faculty with specific expertise.
- To review pertinent gross findings in person with the relevant medical personnel involved in the patient care.

Professionalism
- To demonstrate respect, compassion, and integrity in the performance of the autopsy.
- To understand that the autopsy report may be read by a wide variety of medical and non-medical readers, and write the report in a manner sensitive to needs of family members.
- To complete written reports in a timely fashion.
- To work effectively as a team with autopsy staff, and treat technical and administrative staff with respect.

Systems-based practice
- To understand the role of autopsy in quality assurance of medical care.
- To understand the role of the autopsy in determination of cause of death, and its impact upon epidemiologic studies using death certificate data.
- To be able to establish a chain of custody for potential forensic cases.
- To understand cost-effective use of special techniques, such as chromosomal analysis and electron microscopy.
- To become familiar with OSHA requirements and assure that these requirements are met during the performance of the autopsy.
- To understand the risks of formalin and other commonly used solutions and how to minimize exposure.
- To become familiar with state and local laws governing reporting of communicable diseases.
- To understand and practice the concept of "universal precautions".
- To understand the rationale and necessity for hepatitis B vaccination and annual tuberculosis testing.
- To understand CAP requirements for documentation of intra- and extra departmental consultations.
- To understand CAP requirements for documentation of discrepancies in clinical and pathologic diagnosis.
INTRODUCTION TO THE STANFORD AUTOPSY SERVICE
1. Your work area (L-236 and L-202)
2. Hours of operation and paging
3. Supervision
4. Health and Safety
5. The Autopsy Room
6. The reporting process
7. Conferences
8. Other educational opportunities
9. Hospital death procedures

YOUR WORK AREA
1. Your primary workstation is in the Autopsy Residents' Room (Lane L-236) in the corner to the left and deep in the room. You may be sharing this room with the Immunodiagnosis fellow, another autopsy resident, a post-sophomore fellow, or a medical student rotating through the Stanford Autopsy service.

2. All AP-1 and AP-2 residents are assigned a locked cabinet in L-236 for their belongings. Please see Dr. Connolly for a key.

3. There are several Windows PC-type computers in the Autopsy Residents' Room. Two workstations near the windows are “university-asset” computers running the autopsy version of Tamtron “PowerPath” and are the primary sites for working on autopsy reports. The “hospital-asset” computer closest to the door runs the hospital "CareCast" application and a version of Tamtron "PowerPath" application to access Surgical Pathology reports. Galen supports the university computers, while Benito supports the one hospital computer.

4. There should be two complete, red-plastic, 3-ring bound copies of the Autopsy Service Manual in L-236. (See Dr. Connolly if either is missing.) The Autopsy Manual is detailed and explicit and includes numerous standard and unusual procedures, along with “standard” tables of normal organ weights.

5. The Stanford Autopsy service maintains a modest library of reference books in the Autopsy Residents' Room. Please return these books promptly. (Specific book suggestions are always welcome, see Dr. Regula.)
6. You will be reviewing several different chart formats in the Autopsy Residents' Room, including paper charts enclosed in the classic manila folders, reprinted blue paper charts from Medical Records, printouts from computerized records (such as CareCast), and fax transmissions. The paper charts are the property of the hospital and may be reclaimed, usually for coding, at any time. Please keep your charts clearly visible on a desktop in the Autopsy Residents' Room. (Charts should be reviewed within 24 hours of receipt and then placed in the wooden box next to the door.) Do not take any of the confidential protected health information out of the medical center. When disposing of papers with protected information please use the box designated for shredding.

7. The multi-headed microscope in the Autopsy Residents' Room is primarily for your use. At least one other single-headed microscope will also be available. Various other groups may wish to use the multi-headed scope: this is your room and you may politely ask any group to return at a time more convenient to you (please use your best judgment when dealing with our colleagues from other departments!)

8. A 100x oil objective and microscope oil are available in the top drawer closest to the multi-headed microscope. Always remove the objective and clean the microscope after the use of oil. (Never mention the existence of the 100x objective to any outside personnel: there is no faster way to gum-up our scope, than to let clinicians pour oil on it!)

9. Various telephone lists and other notices may be posted in the Autopsy Residents' Room for your use. The attending and resident rotation schedules are taped to the pillar directly facing the door.

10. A large key ring, containing keys for L-202, other commonly used rooms, and the glass slide archive (in the hallway between Edwards and Lane buildings), is kept in an upper corner cupboard. Please return it to the cupboard immediately after use.

HOURS OF OPERATION AND PAGING
1. The Autopsy Room, L-202, is staffed by one or two Autopsy Room Attendants (ARA) between 8am and 5pm, Monday through Friday. Either ARA may be reached: Jaime Vargas on pager #15057 or Matt Jones at extension 723-7675.

2. Our ARAs and most of the faculty carry alphanumeric-enabled pagers, which you may contact at: http://smartpage.stanford.edu It is much easier to send a specific message, than to wait for a call-back (e.g. "Please bring up the body of Mr. Smith")

3. The Autopsy Service office (723-6265 / 723-6041) is staffed between 8am and 4pm M-F (with breaks covered by the receptionist in H-2110.)
4. The Autopsy/Neuropathology Service assistant can help you with many time-intensive activities, such as placing calls to outside clinicians. Feel free to ask for assistance.

5. You are expected to attend 8am conferences in L-201 and encouraged to attend other educational activities as your duties permit. You may be paged at anytime during the above service hours and must be able to answer your page within 5 minutes and be prepared to return to L-236 within twenty minutes. You are Not required to stay in L-202 or L-236!

6. Our regular organ recital begins at 9:30am, each weekday following a case. Please be prepared to present a five minute clinical précis and to show the pertinent findings on your case. You are expected to thoroughly examine all tissues before conference. Most first-year residents require the entire 30 minutes after morning conference in L-201 to prepare for organ recital.

7. The two residents rotating on the Stanford and VA Autopsy services are expected, on the first day of the rotation, to devise and post a night & weekend resident on-call schedule. The on-call resident must answer an off-hour page within ten minutes and be within forty minutes of the hospital. You are responsible for ensuring that the page operator can reach you after hours (you may leave a telephone number to reach you with the page operator, 723-6661, if you happen to be in an out-of-pager-range location.)

8. After-hours questions about death procedures are common (see Hospital death procedures) and can usually be dispensed with a quick factual answer or a referral to a more knowledgeable physician (usually the attending autopsy pathologist or the Autopsy Service director.) Never answer a question if you are not sure. Do not delay calling your supervisor for an after-hours call (e.g. problems obtaining a valid permit are easily solved within an hour of death, but become progressively difficult after the next-of-kin leave the hospital!)

9. The most important of f-hours call regards the performance of an expedited autopsy to obtain tissue for the diagnosis of a suspected inborn error of metabolism. Important enzymes are degraded rapidly and in such cases tissues must be removed within two hours of death (ideally in under one hour.) Please notify your autopsy attending as soon as you become aware of such a case; you will need to stay close-by the hospital until the infant expires. There is a detailed "inborn-error" protocol in the red Autopsy Manual and the autopsy attending will assist you throughout such a case.
SUPERVISION
1. Your direct supervisor is the autopsy attending on-call (pager #13216.) If that attending is unavailable, please contact the Autopsy Service director (pager #13451.)

2. Your supervisor carries the legal responsibility for all activities in the Autopsy Room and for all autopsy reports. Feel free to ask any question or ask about any unfamiliar procedure.

3. You will be given graduated responsibilities based on the demonstration of your ability. We do not expect any new resident to have technical knowledge of the skills for post-mortem prosection.

4. You may expect to be directly supervised by an attending (or Autopsy fellow):
   a) whenever you ask for assistance
   b) until you are competent in Universal Precautions’ gowning and sharps procedures
   c) during any unfamiliar dissection (the entire dissection, if you have no autopsy experience!)
   d) during complex cases which require an experienced dissector or active tissue collection (e.g. inborn error of metabolism.)

5. You or any of the Autopsy Service staff may convey any signed autopsy report to an interested clinician who has taken part in the care of the patient. Please be circumspect when reporting oral preliminary results. You should invite any such interested professional to the regularly scheduled 9:30am Organ Recital in L-202, which occurs the next business day after each prosection. (This is an efficient way to communicate with all interested parties at the same time.)

HEALTH & SAFETY
1. You are primarily responsible for your own safety! Your attention to proper barrier protection and sharps procedures are your prime defense against infection.

2. The Stanford Autopsy Service practices true Universal Precautions: All unfixed tissues are regarded as highly infectious. There are no extraordinary procedures for known cases of blood-borne organisms such as HCV (see the special procedures for CJD in the Autopsy Manual and understand why such procedures violate UP.)

3. We hold to the basic principle of Universal Precautions: if you would handle a suspected case of Herpes type-43 by a special method, then you should consider that method for All cases!
4. You should be vaccinated against the hepatitis-B virus. Vaccination is provided at no cost through hospital employee health program. You will be asked to undergo annual skin testing for tuberculosis (the Stanford practice of formalin-perfusion of both lungs greatly reduces the risk of infection with TB.)

5. The Autopsy Service will provide you with any glove, tool, goggle, or other barrier protection for which you can make a reasonable argument. (Ask the ARAs, if they do not have the device here, we will attempt to get it.) We encourage you to try different types of eye protection, etc, so that you will discover the most comfortable barrier protection for you.

6. You will be expected to strictly follow the gowned/glove/eye/mask protection rules (in the Autopsy Manual and posted in L-202.) You will be specifically evaluated on these procedures.

7. Good sharps practice is learned. We will teach you how to use sharp scissors and a large blade for virtually the entire prossection. Only one blade at a time at either table! (Let the Autopsy Room attendants handle the rectangular-based table; they will leave you to dissect the block on the round-based table.) Avoid the use of scalpel blades, use only one scalpel blade at a time, never leave a scalpel blade on the table—discard them immediately in the plastic used-sharps containers (the ARAs can teach you how to safely remove a scalpel blade while fully gloved.)

8. Only professional staff associated with a specific case may enter L-202 at any time. Please refer all other requests for observation to Dr. Regula. You are expected to remind all visitors to L-202 of the appropriate gowned/mask procedures.

9. If you suspect a blood/fluid/unfixed tissue exposure, immediately stop prossection. Remove your gown and wash the suspected site. Tell someone of the staff or faculty of your injury and immediately go to hospital employee health (H-1250, first floor near escalators). Tell the desk clerk that you have had a possible blood-borne pathogen exposure; they know what to do next.

10. Use common sense in L-202; surfaces are often wet and slippery.

11. The Gross photography stand in the Autopsy Room uses a touchscreen digital camera system. Please have the ARAs demonstrate its features on the first day. When properly labeled, photographs will upload into the respective autopsy report in PowerPath. Please take the time to take gross photographs of the important or unusual pathology in your case; it will be used during organ recital, clinical conferences, and during signout of the case. Photos at the autopsy table are taken with a handheld 35mm camera.
THE AUTOPSY ROOM
1. The Autopsy Room door is locked requiring your magnetic card key. Please give Dr. Regula the five digit number on the back of your card key, so he can request access for you. The Autopsy Room is designed for safe prosection and demonstration of unfixed tissues. Loud music and shouting are inappropriate. Practice decorum in the Autopsy Room; a post-mortem examination should be as professional and private as a pelvic examination.

2. The Autopsy Room Attendants are knowledgeable and easy to work with. Please remember to communicate your plans to the ARA, especially when you wish to start the prosection and if your prosection must be interrupted (e.g. to present at M&M). You will be present for the entire prosection. Right before the first incision, take a moment for a “time out” in which you state the patient’s name, date of birth, medical record number, autopsy restrictions, and special aspects of the case, such as whether you will need the special setup for sterile lung cultures.

3. Our Autopsy Room is kept spotless and the floors are disinfected nightly. Your assistance is greatly appreciated. Be judicious with the use of water and be careful as you move the organs about (particularly with the weighing scale.) Please use a towel to prevent drips on the floor when you move organs from the table to the photography stand.

4. The vertical whiteboard, attached to the round-based table, is for your use during the prosection. You may write on that board while wearing dirty gloves, and then transcribe the weights to a clean sheet after the prosection. If you only have one case that day, leave the weights on the board- it provides an easy way for the attending and clinicians to read the weights during the organ recital.

5. A copy machine is available by the window to make clean copies of dirty documents. Do not bring contaminated sheets out of the Autopsy Room. You are encouraged to leave your dirty worksheet on the adjacent counter and to bring a clean copy to L-236 for your report.

6. The morning organ recital is an important teaching opportunity and you should be thoroughly prepared before 9:30am. You should cut the decalcified epicardial coronary arteries at 3mm intervals (cutting on a blue cloth towel is efficient.) The Autopsy Room Attendant will cut the formalin-inflated lungs into 1cm thick parasagittal slices and place them to rinse on one of the tables. The fixed bowel from your case will also be placed on the table under running water. Try to keep the room neat and clean for organ recital.

7. The Autopsy Room Attendant will label ten cassettes for your tissue sections. Be sure to prefix all additional cassettes with the letter "A". Cassette "-B B" is
used for a bone marrow squeeze from rib, acquired by the ARAs. Cassette “-PIT” is used by them for the pituitary and will be in the brain fixation bucket.

8. The Autopsy Room is the office for our Autopsy Room Attendants; please treat it as you would your own workplace!

THE REPORTING PROCESS
1. Your Autopsy / Neuropathology report is the major channel of communication with interested clinicians and the family. It should be accurate, clear, succinct, but complete, and prompt. (The Stanford reporting procedures differ slightly from other hospitals; we will explain where and why these differences occur.)

2. We want you to strive for "ownership " of each of your cases and to gain the familiarity and expertise necessary to be an outstanding consultant to your clinical colleagues. You are expected to participate in all relevant steps of the autopsy. (Stanford does not pass incomplete cases to other residents.) The complete autopsy is not just a "large surgical specimen". A complete autopsy entails the examination of the entire cadaver with a special attention for missed diagnoses (found in up to 20% of all cases!) You will be expected to not only identify the morphologic criteria for specific anatomical diagnoses, but to reconsider and extend the clinicopathologic correlative skills you developed with Pathophysiology in medical school. A good autopsy pathologist can engage the clinician in a knowledgeable discussion of Why and How the autopsy findings explain the course of disease and death.

3. The attending clinician expects an opportunity to consult with you before the post-mortem begins. You must contact the attending clinician or the delegate designated on the Autopsy Permit, before you present the case to your supervisor. Joint Commission requires your initials on the back of the Autopsy Permit testifying to this conversation. You may take this opportunity to remind the clinician that there is a standard Organ recital in L-202, each business day at 9:30am following the prosection (often the entire team will arrive.)

4. The "general" (below-the-neck) autopsy and the examination of the brain share the same autopsy number and report. The Power Path system lists "general" autopsies with a "SHA-" prefix and the report of neuropathologic findings with an "SHN" prefix. Our report shortens the number to "A" followed by the last five digits (your tissue cassettes are prefixed with "A" and these five digits.)

5. The "general" autopsy reports have three consecutive separately signed parts:
   a) the Provisional Anatomical Diagnosis (PAD) is comprised of a list of preliminary diagnoses, based on gross examination only. State law requires the PAD to be in the chart within 48hrs of autopsy. We expect you to submit a draft PAD to your attending by noon of the day of the organ recital. The brief clinical synopsis should be typed immediately before or after the
prosection (it may not be transcribed by the time the PAD is devised.) We suggest that you type the PAD as one-line diagnoses; this assures brevity and clarity. We strongly encourage you to complete the gross description of findings as soon as possible after your prosection. While not required for the initial PAD, your recording of the gross findings at this time minimizes the risk of omitting important diagnostic information. We provide detailed templates for the description of adult and neonatal cases. Open your report in Word, place the cursor under the “Morphologic Description” heading and select “Autopsy -> Adult Female” or “Autopsy -> Stillborn”, etc. from the menu bar. Please review every line in the template; your case findings may not correspond to the "default" template entry (e.g.- the appendix may not be present!). You will find that recording information immediately after it is gathered is the most time-efficient approach to managing your workload. This is especially important when the workload is heavy.

b) the Final Diagnostic Outline (FDO) is comprised of a list of final diagnoses, based on all relevant gross, microscopic, microbiological and special examinations. Stanford and Packard hospitals expect 95% of all FDO reports to be in the chart in two weeks (this includes all transit time!) We expect you to submit a draft FDO to your attending within one week from the day of prosection. Our Service averages a seven-day turn-around for this report, which is widely distributed among interested clinicians. Many clinical services at Stanford expect and rely upon this rapid turn-around. As with the description of gross findings, you are encouraged to complete the microscopic description of findings as soon as you have reviewed the slides with the faculty attending pathologist.

c) the Final Anatomic Diagnosis, Narrative builds on the framework of the FDO to include a complete morphologic description of the pertinent findings (both gross and microscopic), along with your discussion of the correlation of the clinical questions and the anatomic findings (the epicrisis.) The FDN is required by CAP regulations to be in the chart within 30 days, and by the state, within 60 days. We expect you to submit a draft Narrative to your attending within one month from the day of prosection.

d) the Neuropathologic report is added to the FDN and follows the report deadlines assigned by the Neuropathology Service. (The NP report may be prepared by a different resident than the prosector.)

6. You are expected to meet the following deadlines:
   a) draft PAD to attending by noon the day after the prosection,
   b) draft FDO to attending within one week of prosection, and
   c) draft FDN to attending within one month of prosection.

You will be notified of late cases by your attending and by automated e-mail at the one-month deadline.
7. You are strongly encouraged to:
   a) complete the description of gross findings immediately after the morning organ recital
   b) complete the description of microscopic findings immediately after reviewing the case with your attending.

   Failure to keep up with your work will require you to review the case multiple times!

8. The Stanford Autopsy/NP report is typed into the "Power Path" system. The computer screens and procedures are nearly identical to those in Stanford Surgical Pathology. Your login and password should be the same as with Surg Path. There are some slight differences from Surg path in updating your report status. Click on the … button by the status (or press Control-S) when your draft is ready to send to your attending. Choose the “Progress” check-box from the lower panel and select the “Faculty Review” option. Until you get to FDN stage, all text except the first page is hidden (underlined by a dotted line) and does not normally print or appear in the Power Path "Results" window. If you can't see any dotted-underlined text while editing in Word, you need to check the “Options->View->Hidden Text” option from the menu bar. If you’d like to print this text, choose Print from the File menu in Microsoft Word, then click on the "Options" button in the lower left corner, then click the “Hidden text” box under “Include with document”. Be careful to enter text only in the designated areas of the report, avoiding the specialized headers and section breaks that allow the transitions from PAD to FDO to FDN. If reports are “stuck” and do not save or progress, please let Dr. Regula know.

9. You may enter the narrative portions of the Autopsy/NP report at any workstation in Autopsy or Neuropathology (the workstations in Surgical pathology are not correctly configured for these reports and will delete past entries!)

CONFERENCES
1. Intra- and inter-departmental conferences are essential to learning new facts and for improving your skill as a consultant. A good autopsy pathologist is constantly reviewing not only the morphologic diagnoses, but their pathophysiologic correlates. We do not expect any new resident to be able to construct and give a cogent interdepartmental presentation of autopsy findings and correlates. We will teach you how to begin and how to improve this skill throughout the rotation.

2. You are expected to attend and participate in the usual 8am intradepartmental conferences. The Organ recital is scheduled for 9:30am to give you an opportunity to review the viscera, examine the cut sections of the fixed lungs, and to hone your presentation. You must attend the weekly brain-cutting conference, except when you are actually prosecting a case.
3. You are encouraged to avail yourself of other conferences and seminars which you find interesting. Stanford is an exciting medical center and you should feel free to explore the academic side of your residency experience.

4. A significant minority of cases are requested for presentation at an inter-disciplinary conference. You are expected to prepare, review with an attending, and present the morphologic findings and pathophysiologic correlates of your case. In the event that you are unable to attend a requested session you may, with the approval of the attending autopsy pathologist, prepare the requested case and equip the autopsy resident on-service for its presentation.

5. Most clinicians relate easily to demonstrative gross photographs. We will teach you the various methods to best demonstrate a finding by photography. Some clinicians, particularly in the medical specialties, are reassured by the presentation of representative photomicrographs. We provide a complete, fully staffed photo laboratory in L-206 and the Photo lab staff or your autopsy faculty would be happy to explain the equipment and procedures.

6. Most clinical conferences provide an LCD projector for your presentation, but please check whether you need to bring your own computer. Arrive early at conference to make sure the video projection is working properly. You do not want to waste the time of busy colleagues.

OTHER EDUCATIONAL OPPORTUNITIES
The Stanford Autopsy service has a varied caseload. Some days may be quite busy, while there may be periods of days without a case. Your caseload will not exceed the rate permitted by your level of training in autopsy (e.g.- your autopsy competence) during this rotation. You are expected to advance your own education during the lull between cases. The following rules should guide your study in such times.

The resident assigned to the Stanford Autopsy rotation must be available to review, discuss, perform, report, and present autopsy cases at all times. This is your first and prime responsibility on this rotation. You must be available by radio-pager during the service hours of operation and when you are on-call. You must be able to return to the hospital within twenty minutes of a page (this is the interval necessary for optimal preservation of tissues for enzyme analysis.) Your first task is to complete unfinished autopsy reports. Please ask your attending about any aspect of your report. Devising the preliminary and final diagnostic outlines is the most important way to learn how to express your anatomical diagnoses in a succinct and pathophysiologically plausible fashion. Our service role is to be the consultant to other busy clinicians who want a brief, clear and accurate assessment of the patient’s disease at the time of death. The final epicrisis is your opportunity to connect the clinician's questions with your anatomical findings. This requires a thorough understanding of the clinical manifestations of disease, sufficient to convince the most skeptical clinician!
At those times after you have completed your autopsy reports, you are expected to pursue the following educational opportunities:

1. Unless you are actually involved in a prosection, you are required to attend our weekly, Friday afternoon Brain Cutting session in L-202. Gross neuropathology can only be learned by the examination of autopsy brains and this session is an efficient educational exercise.

2. First year residents who have not finished the USMLE should study general medicine. Study materials are available from the chief resident.

3. Residents who have passed USMLE should consider developing or working on a research project. Such projects range from assembling a case report of one of your cases to becoming involved with a larger clinical or basic research project.

4. The Autopsy library in L-236 is extensive and available to you on all rotations. (You are welcome to bring a book home for study, but please return it promptly for the use of your colleagues!) If you have recently encountered an interesting case which has uncovered a gap in your knowledge, then take this time to study the standard texts. Your pathology boards will include many pathophysiology questions at the level of the Robbin’s textbook.

5. All residents must teach in the second-year medical student Human Health and Disease course. Many residents schedule their laboratories during or shortly after their Autopsy rotation. This allows you to choose laboratory topics with which you are not already familiar. Use your time to prepare for your medical student laboratories. (Glass slides and other course materials are available from the course coordinator in L-232.)

6. The Neuropathology Service is an active educational opportunity where you can learn about frozen section on the most difficult kind of specimen, as well as acquaint yourself with the unique realm of neuropathologic diagnosis. You are encouraged to join the NP team during their sign-out and frozen sections.

7. More advanced residents who have decided to pursue a primary career in surgical pathology or clinical pathology may attend any open sign-out in H-2110 or the Clinical Laboratories, including morning “plate rounds” in Microbiology.
HOSPITAL DEATH PROCEDURES

1. The average clinician experiences one in-hospital patient death annually. Although clinicians at Stanford are required by the medical staff bylaws to request an autopsy on every death, only about 25% actually obtain a valid permission for autopsy.

2. The most experienced staff is available during days. So, you are more likely to be asked questions about death procedures on nights and weekends. Most clinicians have no idea who to call about any aspect of death procedures and may call you with a question about nursing or mortuary procedures. Be supportive and page your attending! (We would rather deal with a small question at 3am, than confront a large problem at 8am the next morning!)

3. Stanford Hospital has a decedent affairs coordinator, Susan Scott, available during regular working hours. She is available at extension 736-1040 in the chaplains’ office and carries pager #15683. She coordinates discussions with physicians about the death certificate and discusses aspects of autopsy and disposition of remains with families. Autopsy permission is obtained by a physician involved with the case, but Susan Scott acts as a valuable coordinator.

4. The Stanford and Packard hospital "Administrative Guide" contains a detailed death protocol with explicit instructions for all parties. These pages are included in the back of the red Autopsy Manual. (Most are common sense; you are not expected to memorize the details!)

5. The typical "Authority for Autopsy" is granted through a written permit (Stanford 15-49A), which is available in bulk on every clinical floor. This permit is valid when the original or a fax copy is signed by the cognizant next-of-kin. Less frequently, a permit may be tape-recorded, either with the equipment in R-231 or by the hospital transport dispatcher. In either case the clinician need only remember a single telephone number "3-POST" (732-7678) and will be connected to an available clerk.
   -A "witnessed", but un-recorded permission is not valid; contact your attending.

6. At Stanford, the standard-of-practice is to have the attending clinician devise and sign the Death Certificate. In most private practices, the autopsy pathologist will complete the DC. You may wish to scan the spiral-bound manila booklet titled "the Medical Cause of Death Manual", available in the L-236 library.

7. The body of the deceased is generally enshrouded on their hospital bed and transported to the central Cold Room on the SHS loading dock in the basement. Removable valuables are placed in the hospital safe. (Be sure to note any jewelry which remains on the body.) Security services controls access to this room (3-7222,) The ARA will bring the body from the Cold Room to the Autopsy Room and return it after the prosection.
8. On rare occasion, you may be paged to give permission to accept a body from a patient who has died outside the confines of the hospital. Please page your attending if this delivery is unexpected.

9. There is No Charge for an autopsy for any patient seen at Stanford at any time (if the patient has a medical record number, that's good enough.) Please refer questions about other expenses, such as transportation or funeral expenses to the Service director. Any case without a Stanford medical record number must be explicitly cleared by the Service director (our criterion is that such rare cases must be of "extraordinary teaching value").

10. We actively encourage clinicians to seek permission for autopsy for any Stanford patient who dies at home or in a hospice. We maintain a small fund to recover the additional transportation costs and hence, there are no additional costs to the family. Refer questions to your attending or the Service director.
Throughout their first and second years of AP training, residents rotate through Cytopathology every three days during their months on Stanford Surgical Pathology. In addition, residents can choose to do a one-month elective in cytopathology. The specific expectations for these two experiences are provided below.

Requirements of the Surgical Pathology Cytopathology rotation

- Preview cytology cases prior to sign-out
- Write FNA reports or perform FNA biopsies and adequacy assessments for image-guided FNA’s (alternating responsibilities between two residents on service)
- Attend cytology sign-out with attending
- Perform primary screening of pap smears
- View “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung (available at: http://www.papsociety.org/fna.html)

Requirements of the Cytopathology elective

- Preview cytology cases and write FNA reports
- Attend cytology sign-out with attending
- Perform FNA biopsies
- Perform adequacy assessment for image-guided FNA’s
- Perform primary screening of pap smears
- View “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung (available at: http://www.papsociety.org/fna.html)

Resident duties and responsibilities for each level of training

Surgical Pathology Rotation (see sample sheets)

**Preview Service**

- Preview 5 non-GYN and 5 abnormal GYN specimens; enter your diagnosis under the “Notes” section in PowerPath prior to sign-out
- Write-up FNA cases: at least 2 for 1st yr residents and 4 for 2nd yr residents
- Do primary screening pap smears which will then be re-screened by a cytotechnologist: at least 1 for 1st yr residents and 2 for 2nd yr residents
FNA Service (1st and 2nd yr residents)
• Preview 5 non-GYN and 5 abnormal GYN specimens; enter your diagnosis under the "Notes" section in PowerPath prior to sign-out
• Attend at least one image-guided FNA with fellow or cytotech
• Attend all clinic FNA’s from 9AM-1PM

Elective rotation
First-year Resident
• Preview all cytology cases (gynecologic, non-gynecologic and fine needle aspirates) prior to afternoon sign-out with the attending
• Take primary responsibility for at least two FNA cases and five non-gynecologic cases each day
• Do primary screening of one pap smear per day which will then be re-screened by a cytotechnologist
• Attend image-guided FNA biopsies with the cytology fellow or cytotechnologist to learn how to perform adequacy assessments
• Learn how to perform FNA biopsies
• Review cytology study sets

Second-year Resident
• Preview all cytology cases (gynecologic, non-gynecologic and fine needle aspirates) prior to afternoon sign-out with the attending
• Take responsibility for at least four FNA cases and five non-gynecologic cases each day
• Do primary screening of two pap smears per day which will then be re-screened by a cytotechnologist
• Independently perform adequacy assessments on image-guided FNA’s
• Perform FNA biopsies under the supervision of the cytology attending or fellow
• Review cytology study sets

Supervision and Evaluation
• Daily supervision by on-service cytology attending and cytology fellow
• Monthly written evaluation by faculty
• Monthly 360° evaluation by cytology supervisor
Cytopathology Responsibilities on Surgical Pathology Rotation (MINIMUM Requirements)

PREVIEW SERVICE First or Second-year Resident

- Preview (enter a diagnosis for each case in PowerPath “NOTES” section prior to sign-out)
  - Non-GYN (min. 5)
    1. _________________
    2. _________________
    3. _________________
    4. _________________
    5. _________________
  - Abnormal GYN (min. 5)
    1. _________________
    2. _________________
    3. _________________
    4. _________________
    5. _________________
  - FNA (1st yrs – min. 2)
    1. _________________
    2. _________________
  - FNA (2nd yrs – min. 4)
    1. _________________
    2. _________________
    3. _________________
    4. _________________

- Screen Pap Smears (screen pap by 11:30AM, return to cytotech for re-screening; pap will be reviewed at sign-out)
  - 1st years – min. 1
    1. _________________
  - 2nd years – min. 2
    1. _________________
    2. _________________
Cytopathology Responsibilities on Surgical Pathology Rotation (MINIMUM Requirements)

FNA SERVICE  First or Second-year Resident

• Preview (enter a diagnosis for each case in PowerPath “NOTES” section prior to sign-out)
  o Non-GYN (min. 5)          Abnormal GYN (min. 5)
    1. _______________           1. _______________
    2. _______________           2. _______________
    3. _______________           3. _______________
    4. _______________           4. _______________
    5. _______________           5. _______________

• Image-guided FNA (must attend AT LEAST ONE with fellow or cytotech)
  Pt name or Accession #:
  __________________________________________
  __________________________________________

• Clinic FNA’s (9AM-1PM):
  Pt name or Accession #:
  __________________________________________
  __________________________________________
  __________________________________________
FNA Service Information

Fine Needle Aspiration Biopsy

- Answering Pages for FNAs
  - Required information – Patient name and location
  - Optional but helpful information – Referring clinician, FNA site, cancer history

  *Calls from Clinic E are for patients from off-site clinics. Please ask only for the Required Information, i.e. patient name and location*

- Know who you’re talking with
  - The office staff or medical assistant is unlikely to have information beyond the patient’s name, location and referring clinician
  - Residents, fellows and physician’s assistants will be able to give you more extensive information about the FNA site, patient’s history and their differential diagnosis

- Occasionally, referring MDs, residents, and/or nurses from off-site clinics will page the FNA pager wondering how their patients can get an FNA. Please convey the following information:

  *Patients from off-site clinics can drop-in for fine needle aspiration (FNA) biopsies Monday through Friday, 9:00AM-12:00PM and 1:00PM-3:00PM, at Clinic E in the Stanford Cancer Center, 875 Blake Wilbur Drive. No appointment is necessary.*

Image-Guided FNA

- Check board in Cytology for scheduled image-guided FNA’s
- Arrange with Cytopathology Fellow
Cytopathology Goals and Objectives

**Patient Care**
- To develop proficiency…
  - In obtaining relevant clinical information for each case
  - In evaluating a patient for fine needle aspiration (FNA) biopsy
  - In obtaining an informed consent for FNA biopsy
- To learn appropriate…
  - Manner of communication with clinicians regarding results
  - Manner of interacting with patients and their families

**Medical Knowledge**
- To understand …
  - The Bethesda System 2001 terminology and how to apply it to cervical cytology diagnosis
  - The current management recommendations for patients with cervical dysplasia
  - The proper use of ancillary studies such as HPV testing, GC/Chlamydia testing, flow cytometry, etc. in cytology samples
  - The criteria for adequacy in gynecologic, non-gynecologic and FNA cases
- To develop expertise …
  - In the interpretation of pap tests utilizing three different preparation methods (ThinPrep, Surepath, conventional)
  - In the interpretation of non-gynecologic and FNA specimens
  - In performing immediate assessment for adequacy in FNA biopsies

**Practice-Based Learning and Improvement**
- To locate, appraise and assimilate …
  - Relevant clinical information, radiology results, microbiology/lab results from the hospital computer system
  - Relevant information regarding prior pathology results from the lab data system
  - Journal articles pertinent to a specific topic by performing computer-based literature searches (i.e. PubMed) and be able to critically review the literature
- To use case-based learning …
  - By reviewing cytology study set cases
  - By attending the monthly Cytology Unknown conference
  - By participating in the monthly CME Unknown case review (MIME)
Interpersonal and Communication Skills
- To communicate…
  - Results accurately and in a timely fashion to clinicians
  - Effectively with patients and their families and be able to establish rapport and sense of trust when performing FNA biopsies
- To prepare concise, complete written reports on …
  - FNA biopsies

Professionalism
- To demonstrate integrity, honesty and respect …
  - When seeing patients for FNA biopsies
  - When working with the support staff (e.g. cytotechnologists, cytology prep techs, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The cytology staff (i.e. cytotechnologists, cytology prep techs, cytology fellow, cytology attending)
  - The clinicians and clinic staff when communicating results and when performing FNA biopsies
  - The radiology staff when assessing adequacy for image-guided FNA biopsies

Systems-based practice
- To understand …
  - How to evaluate cytology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to gynecologic, non-gynecologic and FNA cytology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture
DERMATOPATHOLOGY

Interim Director: Uma Sundram, M.D., PhD

Goals and Objectives

First-year and second-year residents
Patient Care
- To gain a basic understanding of diagnostic dermatopathology.
- To learn and develop competence in morphologic description of skin biopsies.
- To develop skills in dermatopathology pattern recognition.
- To develop a systematic approach to evaluating a skin biopsy.
- To understand the power and limits of ancillary techniques and learn to appropriately apply ancillary techniques, such as histochemical stains and immunohistochemistry.
- To gain an appreciation of the importance of clinicopathologic correlation and communication with clinicians concerning diagnosis.

Medical Knowledge
- Acquire knowledge of the structure and function of the skin.
- Develop a working knowledge of the diagnosis, pathogenesis, and treatment of important dermatologic entities, including common dermatoses, cutaneous infections, and basic skin tumors:
  - To recognize basic dermatologic skin patterns such as the “lichenoid reaction pattern”, the “spongiotic reaction pattern”, and the “psoriasiform reaction pattern”
  - To recognize basic skin tumors such as basal cell carcinoma and squamous cell carcinoma.
  - To recognize basic non-malignant skin tumors such as seborrheic keratosis.
  - To recognize benign nevi.
  - To develop an algorithm to approach atypical melanocytic lesions.

Practice-Based Learning and Improvement
- To locate, appraise and assimilate …
  - Relevant clinical information and microbiology/lab results from the hospital computer system.
  - Relevant information regarding prior pathology results from the laboratory data system.
- To use case-based learning …
  - By reviewing dermatopathology study set cases.
  - By participating in the weekly “Chapters of Weedon” fellow run teaching sessions.
Interpersonal and Communication Skills
- To obtain relevant clinical information from the treating clinician.
- To report results accurately and in a timely fashion to clinicians.
- To prepare concise, complete written reports on skin biopsies.

Professionalism
- To demonstrate integrity, honesty and respect …
  - When working with the support staff (e.g., histotechnologists, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The dermatopathology staff (i.e., histotechnologists, administrative assistants, co-fellows and residents, dermatopathology attending)
  - The clinicians and clinic staff when communicating results

Systems-based practice
- To evaluate dermatopathology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to dermatopathology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture

Surgical Pathology Fellow
Patient Care
- To continue gaining a basic understanding of diagnostic dermatopathology.
- To continue learning and developing competence in morphologic description of skin biopsies.
- To develop skills in dermatopathology pattern recognition.
- To develop a systematic approach to evaluating a skin biopsy.
- To learn how to develop a list of appropriate differential diagnoses.
- To understand the power and limits of ancillary techniques and learn to appropriately apply ancillary techniques, including histoch mical stains, immunohistochemistry, immunofluorescence, electron microscopy, and molecular studies.
- To gain an appreciation of the importance of clinicopathologic correlation and communication with clinicians concerning diagnosis.
- To develop proficiency in recognizing and obtaining relevant clinical information for each case.

Medical Knowledge
- Acquire knowledge of the structure and function of the skin.
- To continue to develop a working knowledge of the diagnosis, pathogenesis and treatment of important dermatologic entities including common...
dermatoses, cutaneous infections, bullous diseases, cutaneous manifestations of systemic disease, skin tumors, disorders of nails, hair and pigmentation.

Practice-Based Learning and Improvement
- To locate, appraise and assimilate …
  - Relevant clinical information and microbiology/lab results from the hospital computer system
  - Relevant information regarding prior pathology results from the lab data system
  - Journal articles pertinent to a specific topic by performing computer-based literature searches (i.e. PubMed) and be able to critically review the literature
- To use case-based learning …
  - By reviewing dermatopathology study set cases
  - By attending the weekly Dermatology Grand Rounds conference
  - By participating in the weekly “Chapters of Weedon” fellow run teaching session

Interpersonal and Communication Skills
- To obtain relevant clinical information from the treating clinician.
- To report results accurately and in a timely fashion to clinicians
- To prepare concise, complete written reports on skin biopsies.

Professionalism
- To demonstrate integrity, honesty and respect …
  - When working with the support staff (e.g. histotechnologists, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The dermatopathology staff (i.e. histotechnologists, administrative assistants, co-fellows and residents, dermatopathology attending)
  - The clinicians and clinic staff when communicating results

Systems-based practice
- To evaluate dermatopathology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to dermatopathology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture

Introduction
At any given time the Dermatopathology service will have several trainees simultaneously rotating. Dermatopathology fellow(s) will be on the service throughout the entire academic year. Dermatology residents will attend
Dermatopathology (DP) sign-out during their second and third year of training for two 6 week rotations.

Daily sign-out will begin at 9:00 AM, except for Thursdays when sign-out begins immediately following Dermatology Grand Rounds at about 9:15 AM and for Tuesdays when the start of sign-out will be coordinated with the Dermatology lecture series at which pathology trained Dermatopathology fellows participate. While on the DP rotation, each person is expected to attend sign-out daily. Dermatology Grand Rounds are mandatory for DP Fellow(s) and Dermatology Residents and strongly recommended for Pathology Fellows and Residents.

Educational Goals
The dermatopathology rotation for SP residents is intended to build upon one’s fund of knowledge in dermatopathology through examination, clinical correlation, and interpretation of dermatopathologic material. At the conclusion of the two-month rotation, the SP resident is expected to recognize the major patterns of inflammatory and neoplastic skin disease, construct a list of differential diagnostic possibilities, and arrive at a final diagnosis.

General
All trainees are expected to preview the day’s slides and read about the respective disease entities.
For Pathology Residents and Fellows and Dermatology Residents, vacations should not exceed one week while on DP. Please inform the attending on service and your fellow residents of planned vacations. It is your responsibility that your area of the service is covered during your absence. Rotating Surgical Pathology (SP) Residents and Fellows should also read the “in-depth responsibilities for surgical pathology residents and fellows” that follows this information.

Expectations
SP Residents (along with SP Fellows) are directly responsible for the organization of all “in house” cases (i.e. cases that come from Stanford Dermatology Clinics). This means organizing levels, IPOX material, etc., in preparation for sign-out. In addition, SP Residents should aid the DP fellow in organization of the consult cases.
SP Residents are expected to preview each case (in house and consult) prior to sign-out, read up on the respective disease entity and pull relevant prior material for all in-house cases.
Following sign-out, the SP resident (along with the SP Fellow) is responsible for dictating the final report for in-house cases. (Also see “in-depth responsibilities for surgical pathology residents and fellows”).
In the afternoon, the SP resident is encouraged to work on a project of their choosing, not necessarily dermatopathology related. The SP resident is also expected to attend the eye pathology sign-out on Thursday afternoon in Ophthalmology (run by Dr. Peter Egbert) between 2:00 pm and 3:00 p.m. in S014.
(basement level). Please page Dr. Egbert (pager id number 13327) at the beginning of the rotation for instructions. All eye pathology cases should be separated from the general stack of dermatology cases and placed in the “Ophthalmology department” mail slot next to the water cooler in surgical pathology. As with other aspects of surgical pathology training, the surgical pathology resident should avail themselves of ancillary diagnostic techniques, as pertains to dermatopathology (including immunofluorescence, electron microscopy, immunophenotyping, and molecular diagnostics). The SP Resident should attend the weekly Surgical Pathology teaching conferences held Tuesday through Friday mornings in L201. Residents are strongly encouraged to attend Thursday morning Dermatology Grand Rounds. While there is no overnight or weekend “call” duty, SP Residents should realize that they are to complete assigned tasks in a timely manner, even if this requires staying late. As the dermatopathology service deals mostly with community dermatologists and is very service-oriented, we (the Stanford dermatopathology service, as a whole) are committed to dissemination of accurate pathology reports in a timely manner.

Stanford Dermatopathology Service
In-depth responsibilities for Dermatopathology Fellow(s), Surgical Pathology Fellows and Residents

Welcome to dermatopathology. The following details the responsibilities of surgical pathology residents and fellows who rotate onto the service.

Sign-out begins at 9:00 a.m. (except on Thursday, when it starts at approximately 9:15 a.m. due to Derm Grand rounds) and is usually complete by 12:00 noon. Tuesday poses another exception. The attending on service will determine the beginning of sign-out on Tuesdays and coordinate that time with the lecture schedule for pathology trained dermatopathology fellows.

As part of your learning experience you are expected to preview the slides either on your own or with the dermatopathology fellow(s). Do this either the night before or early in the morning prior to sign-out. Keep the slides and paperwork together in the order in which you found them, and do not lose them.

Things to do prior to sign-out:
1. Check the computer for prior biopsies on the patient and pull relevant historical slides. For example a prior biopsy of “malignant melanoma” or “atypical melanocytic proliferation” or “atypical lymphoid infiltrate.” In general, you do not need to pull prior BCCs, SCCs, AKs, etc., but if you think the attending may want to see a prior slide on a case, pull it. This will certainly be the case if there is a discrepancy in diagnosis between the initial biopsy and the subsequent excision.
2. Proof the draft copy of the report: Is the clinical information accurate? (i.e. compare the transcribed information on the draft copy to the handwritten information on the original requisition and make corrections as necessary) Is the gross description correct?

At the time of sign-out:
1. Pencil in the diagnosis (with comment, if necessary) on the white draft copy of the final report. This is important, as it is the attending’s only way of verifying that case #07-2242 is in fact a BCC and not a melanoma, without having to re-examine the slide. Also, if the case is held for special study (i.e. levels, stains, IPOX), pencil in this information on the draft copy. This is a record keeping measure that will allow the resident to know what is/is not pending on a case, and also helps the attending with billing for special stains, etc. when the case is finalized.
2. For those dealing with consult cases: Keep in mind that many of the “outside” outside cases (see list of doctors below) should have a re-cut slide attached to the paperwork. Slides and blocks from I/O cases should also be attached to the paperwork, unless the attending decides to keep the material. If the slide/block is not returned immediately, please jot a note to Gloria in the upper right hand corner of the white draft copy of the final report stating, for example, “Gloria, slide kept”.

After sign-out:
1. If a case is pending levels/special stains, keep the slides and paperwork together, and place both in the appropriate “inside pending” or “outside pending” box on the dermatopathology fellow’s desk. Do not keep the cases at your own desk.
2. Call Gloria before and after you dictate to tell her that you are beginning your dictations, and that you have completed all of your dictations (at 3-6736)
3. Dictate the final diagnosis, or type it yourself via Power Path (Macro modules are available on the derm computers). Dictate corrections to the clinical and gross sections (or correct them yourself if, via Power Path). Final diagnoses should read: “SKIN, SHOULDER, BIOPSY: SQUAMOUS CELL CARCINOMA IN-SITU, TRANSECTED”. In general, inside cases do not need a “microscopic description.” A “bottom line” diagnosis with or without a comment section will suffice.
4. There are three types of dictation:
   Bottom line: Most cases, particularly inside cases and Sunnyvale clinic cases (see list of Sunnyvale docs below), are signed out this way. There is no microscopic description and, usually, no comment. Tell Gloria “bottom line as nodular basal cell carcinoma” or “bottom line asbccnod.”
   Bottom line plus “macro”: This is the way that many of the outside cases are signed out. The “macro” is the canned microscopic description that
accompanies the more common dermpath diagnoses. For instance, we have a macro for basal cell carcinoma, nodular type, which will bring up a microscopic description automatically. Refer to the dermatopathology manual (Red binder, should be at every derm desk) which lists all of our "coded" macros. Tell Gloria “Use the macro for nodular basal cell carcinoma” or “Use the macro ‘bcnodd’” We generally use macros only for inflammatory conditions, melanocytic lesions (excluding intradermal nevi) and some of the more rare tumors, for example inverted follicular keratosis. BCCs, SCCs, and AKs, etc. do not need a macro. Use your judgment.

Micros: For cases which need a microscopic description, but for which no canned description (i.e. "macro") is available. An example would be a microscopic description for invasive malignant melanoma. For this type of dictation, you need to dictate it like a routine surgical.

To make Gloria’s life easier, please batch the bottom line and bottom line/macro dictations together, and do the more complex micro-type dictations separately.

5. Points to remember in your dictations:
   Nearly all tumors/neoplasms need margin status. One exception is as follows. For specimens which come in as “Moh’s done” or “Moh’s surgery performed,” you need not include margin status. Instead, say “SKIN, CHEEK, DEBULKING: BASAL CELL CARCINOMA, NODULAR TYPE”

In the line diagnosis, use “BIOPSY” for biopsies, and “EXCISION” for true excisions. Do not differentiate between shave and punch biopsies, just designate them as “biopsy” on the bottom line. If levels were performed please mention that in the “microscopic” or “comment” as “multiple leveled sections were examined” (VL macro).

If special stains/IPOX stains were performed and used in the final interpretation, we must mention them in the “microscopic” or “comment” sections of the report. Otherwise, we will not get reimbursed for the work done and worse yet, one of your treasured attendings could end up in the big house for Medicare fraud.

When using the “canned” microscopic descriptions, modify them as necessary to fit the case. In other words, if your case of lichen planus fails to show a “dense lichenoid infiltrate,” then strike that from the description.

Don’t forget to dictate corrections to the clinical and gross description portions of the report, or correct them yourself in the computer.

6. After dictating (or typing) the case, place the final paperwork on the top shelf of the file box adjacent to the dermpath fellow’s desk. Most of the time you will not have an opportunity to proof read the final report before the attending
sees it, but that’s OK. The final paperwork should include the white draft copy with your scribbled diagnoses, the original requisition, as well as the yellow IPOX interpretation forms, if IPOX has been performed.

7. Other information:
The dermpath phone (“hotline”) number is 498-7396. To access voice mail type 3-1111 and then the password “DERMPA” (337672)

Requesting blocks from APMG (Associated Pathology Medical Group)—FAX request to 408-395-0471

Requesting blocks from Veena Kupelli please call Gloria.

**Goals and Objectives: Dermatopathology Fellows**

Core Competency I: Patient Care
- To integrate diagnostic information to develop an appropriate differential diagnosis including patient chart review, imaging studies, previous biopsies and immunofluorescence studies
- To develop patient management recommendations including appropriate therapy or consultation with other specialists
- To convey consultation results and recommendations for patient management to providers as appropriate including re-biopsy or re-excision
- To keep a log of difficult patient encounters to review for content and management.
- Demonstrate by prompt action the understanding of timely service delivery and indications for rush service

Core Competency II: Medical Knowledge
- To access current literature via web based tools, texts and journals
- To generate an appropriate differential diagnosis and identify the most likely diagnosis during daily sign out and unknown conferences
- To identify common challenges and misdiagnoses in dermatopathology which should prompt consultation with a specialist
- To demonstrate a knowledge of when routine histology should be complemented by ancillary testing
- To maintain a patient case log of interesting cases for teaching and presenting.
- To use case logs as a record review with the fellowship director or to provide evidence of the fellow’s approach and knowledge relative to standard of care.

Core Competency III: Practice-Based Learning and Improvement
- To access online dermatology, pathology and dermatopathology resources for clinical and histologic aspects of skin disease
To critically appraise the medical literature, and apply scientific evidence to augment patient care

To be able to access, navigate and edit the hospital's patient-specific pathology database

To be able to teach dermatopathology to residents

To prepare a case or project for meeting or journal submission

To present at Grand Rounds or case conferences

To identify areas for quality improvement in their own dermatopathology experience, and subsequently devise and implement a quality improvement plan

Core Competency IV: Interpersonal and Communication Skills

To report results accurately and in a timely fashion to submitting clinicians

To use feedback from others to improve skills or behavior

To use humor and language appropriately

To prepare concise, complete written reports on skin biopsies.

To resolve diagnostic disagreements through verbal and written communication

To evaluate and be evaluated by their peers on the dermatopathology service with a 360° evaluation

Core Competency V: Professionalism

To arrive on time, prepared to work, and stay until the end of the work day
  - To remain behind or return from other duties to complete tasks assigned at the beginning of the work day

To willingly perform the work of obtaining and reading slides, as well as generating reports

To accept responsibility and accountability to patients, providers and the profession

To verbally describe HIPAA policies

To complete medical records honestly and punctually

To dress professionally

To serve on the dermatopathology fellowship selection committee as needed

Core Competency VI: Systems-based practice

To understand the techniques of the histology laboratory and the kind of information histotechnologists need to have in order to perform their job

To access patient information from other institutions

To consult other experts in dermatopathology as needed

To bill and code honestly and accurately for the diagnosis and level of service

To keep a log of difficult management and billing issues for discussion

To incorporate cost-effective health care into practice without compromising care

FORENSIC PATHOLOGY

Director: Joseph O'Hara, MD

GOALS AND OBJECTIVES

Patient care

- To acquire the ability to properly complete the “cause of death” and “manner of death” sections of the death certificate and understand the difference between “cause”, “mechanism”, and “manner of death”.
- To understand the difference between and the reason for medicolegal autopsies and hospital autopsies.
- To develop proficiency in all aspects of prossection and autopsy techniques, including standard dissection and removal of organs, including brain and spinal cord.
- To develop proficiency in selection and performance of routine and special (e.g., viral or fungal) cultures in the autopsy setting.
- To develop proficiency in procurement and preservation of special body fluids (vitreous fluid, bile, urine) for potential toxicology studies.
- To develop proficiency in removal of spinal fluid from adults and infants.
- To learn appropriate collection techniques for molecular biologic studies.
- To learn appropriate collection techniques for samples for chromosomal analysis.

Medical Knowledge

- To become familiar with means of identification of unknown victims.
- To become familiar with factors used to help establish time of death, including livor mortis, rigor mortis, algor mortis, insect activity, chemical tests, decomposition and the limitations of these factors.
- To recognize postmortem artifacts such as insect bites, animal destruction, pressure artifacts, postmortem injury, Tardieu spots, Tache noire and decomposition.
- To be aware of the cardiovascular, respiratory and central nervous system diseases, which most commonly result in sudden death.
- To be able to identify the characteristics and identifying criteria of the following types of gunshot wounds: entrance and exit gunshot wounds, contact wounds, near or distant range wounds.
- To be able to discuss the significance of examination of the clothing in forensic cases.
- To become familiar with suicidal deaths, the most common means, reasons and findings at the scene and at autopsy.
- To understand basic concepts of disease and correlation with morphology.
- To develop expertise in correlation of autopsy findings with clinical course.
• To demonstrate an investigatory and analytic thinking approach to autopsy pathology.

Practice-based learning
• To use case-based learning as a tool for additional insight into disease pathogenesis.
• To locate, appraise, and assimilate pertinent evidence from scientific studies.
• To demonstrate effective problem solving skills, using a wide variety of information resources.

Interpersonal and communication skills
• To develop proficiency in presentation of autopsy findings to pathologists, medical students, and clinicians, at conferences at which autopsy cases are presented.
• To use effective writing skills to generate the autopsy report.
• To teach medical students and interns who are participating in autopsy rotations. In this role, the resident will develop the ability to explain what is being done during the dissection, clarify clinicopathologic issues, and direct students/interns to other resources including appropriate faculty with specific expertise.
• To review pertinent gross findings in person with the relevant medical personnel involved in the patient care.

Professionalism
• To demonstrate respect, compassion, and integrity in the performance of the autopsy.
• To understand that the autopsy report may be read by a wide variety of medical and non-medical readers, and write the report in a manner sensitive to needs of family members.
• To complete written reports in a timely fashion.
• To work effectively as a team with autopsy staff, and treat technical and administrative staff with respect.

Systems-based practice
• To become familiar with the working relationships between the medical examiner and legal authorities, media representatives and governmental agencies.
• To understand the role of autopsy in quality assurance of medical care.
• To understand the role of the autopsy in determination of cause of death, and its impact upon epidemiologic studies using death certificate data.
• To be able to establish a chain of custody for potential forensic cases.
• To become familiar with OSHA requirements and assure that these requirements are met during the performance of the autopsy.
To understand the risks of formalin and other commonly used solutions and how to minimize exposure.

To become familiar with state and local laws governing reporting of communicable diseases.

To understand and practice the concept of "universal precautions."

To understand the rationale and necessity for hepatitis B vaccination and annual tuberculosis testing.

To understand CAP requirements for documentation of intra- and extra departmental consultations.

To understand CAP requirements for documentation of discrepancies in clinical and pathologic diagnosis.

The forensics rotation is a required one-month rotation. Residents complete the forensics requirement at the Santa Clara County Coroner’s office. The Program Coordinator will provide you with a contact person, as well as a phone number and directions. All residents are encouraged to take full advantage of the opportunities provided by this rotation. This includes going to scenes and attending court. Previous residents have found this experience extraordinarily informative and valuable. If you have planned a vacation during this rotation, one week is allowed. The Stanford Program Coordinator as well as the relevant Coroner’s office should be notified well before the commencement of the rotation. For the most part, residents are excused from intradepartmental conferences during the forensic rotation.
Goals and Objectives

Patient care
- Be familiar with a wide variety of adult and pediatric hematologic disorders
- Develop competency in peripheral blood smear, and bone marrow interpretation, including correlating morphology with ancillary tests used for diagnosis, such as special stains, flow cytometry, and tissue immunohistochemistry
- Gain skill in the technical and interpretative aspects of hematologic flow cytometry
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology

Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating timely processing of specimens

Professionalism
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the hematology/flow cytometry lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion
**Systems-based practice**
- Learn the process of case evaluation and work-flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

**Practice-based learning**
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems.

**Length of Rotation:** 1 month required (a second elective month is suggested).

**Requirements of the rotation/ Resident duties and responsibilities**
1. For the first week of the rotation, no more than 5 bone marrow cases will be signed-out by the AP resident per day. The remaining cases will be handled by CP residents, HP fellows, or the attending on-service.
2. Each afternoon, the resident should attempt to preview the peripheral blood and bone marrow aspirate smears for cases with biopsies coming out the following day, and will obtain adequate clinical information for each case.
3. If flow cytometry is ordered on cases with bone marrow biopsies, the appropriate flow cytometry panel will be ordered in advance by the CP resident or fellow, in consultation with the attending pathologist. Adding flow to a case requires a clinician order. If additional flow cytometry markers are needed on a case, the AP resident handling the case will add them in consultation with the attending pathologist or fellow.
4. Necessary bone marrow aspirate differential cell counts will be attempted prior to review of the cases with the attending pathologist.
5. The resident will take "first call" for all clinical questions addressed to the laboratory regarding bone marrow specimens, including selection of panels to be run in flow cytometry for cases that have biopsies. As needed, smears can be reviewed with either the Hematology Specialist or the attending pathologist.
6. At 9:00-9:30 AM each day, the resident will collect the bone marrow biopsies for the day from H2110 and begin case sign out with the attending.
7. Resident will contact clinicians for additional clinical history or for urgent diagnoses as necessary.
8. Following review with staff, the resident will dictate the bone marrow report using the standard bone marrow report format (the template is available in Power Path under the Surgical Marcos button as “Bone Marrow (template)”). Cases will be dictated as soon as possible and, after correcting the dictation, will forward the cases to the attending for sign out on the same day. The slides and paperwork must be available to the attending for re-review.

9. The AP resident will interpret flow cytometry results with the fellow or attending, check the entered flow cytometry data for accuracy in Power Path, and will incorporate an interpretation in the report. Text comments for negative flow cytometry reports are available in Power Path.

10. If ancillary studies, including immunohistochemistry, are needed, the resident will order the appropriate studies immediately after sign out and will retrieve the stains for review with the staff as soon as they are available.

11. The resident will follow up on pending special studies, such as IPOX or other special stains.

12. Additional procedures for Pediatric bone marrow aspirates include:

13. Indicate pathology interpretation on requisition and return to pediatric bone marrow area.

14. If pediatric hematologist has seen the aspirate, include peds hematology comment in report (in the comment: “Dr. X interprets the aspirate as showing xxx” or “case was discussed with Dr. X, who agrees”), and include peds hematologist in diagnosis line.

15. Attend weekly Thursday 1-2 pm heme consensus conference, and bring cases designated by attending to show.

CONFERENCES

- Wednesday: Around-the-microscope sessions, 2nd & 4th weeks, 12 noon
- Thursday: Heme Consensus Conference, 1 pm, Room H-1537M
- Wednesday: Hematology Conference, 1st week, 12 noon, CC 2nd floor
- Wednesday: New Patient Conference, weekly, 4:30 pm, CC 2nd floor
- Thursday: Acute Leukemia Tumor Board, monthly, 11:30 am, H-1537M
- Thursday: Laboratory Medicine Lecture Series, 12 noon, H1551
- Friday: CP Call Conference, 12 noon, L201
- Surgical Pathology & Current Concepts conferences

STUDY SETS

As it is not possible to see the large breadth of hematology during a rotation, glass slide sets are available for review of abnormalities on peripheral smear, bone marrow and body fluids. A list of correct diagnoses is provided. Independent study is strongly recommended to supplement the Hematology sign-out.
MAJOR TEXTS AND LEARNING RESOURCES
1. Swerdlow SH et al. WHO Classification of Tumours, Pathology & Genetics, Tumours of Haematopoietic and Lymphoid Tissues (2008)
3. Foucar K. Bone Marrow Pathology, 2nd Edition (2001)

SUPERVISION AND EVALUATION
The resident’s work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each director. Results will be reviewed formally with the resident.
Hematopathology I/O Rotation for AP Residents

Director: Yaso Natkunam, MD, PhD

Goals and Objectives

Patient care
- Be familiar with a wide variety of adult and pediatric hematologic disorders
- Develop competency in reactive and neoplastic lymphadenopathies, including correlating morphology with ancillary tests used for diagnosis, such as special stains, tissue immunohistochemistry, flow cytometry, FISH, cytogenetics and molecular diagnosis
- Correlate clinical findings with morphology and ancillary studies
- Learn appropriate selection of ancillary diagnostic tests

Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with fellows and staff in ancillary testing laboratories and outside hospitals to coordinate and communicate issues related to diagnostic cases for timely and appropriate handling of slides, blocks, reports etc.

Professionalism
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff at Stanford and at outside hospitals from where cases are sent to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice
- Learn the process of case evaluation and work-up of lymph node cases
- Optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff to obtain all necessary information related to
the patient’s diagnosis and ancillary testing results from outside hospitals or clinical colleagues that will be needed to sign-out cases

- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

**Practice-based learning**

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

**Length of Rotation:** 1 month required.

**The Resident’s Day**

1) Rotation responsibilities are performed during the first half of the day and should not extend beyond 2 pm, so as not to conflict with afternoon responsibilities in the Immunodiagnosis laboratory.

2) Each day, the resident must preview heme I/O cases accessioned to the service for sign-out the following day.

3) During preview, the resident should pay particular attention to whether all material/information necessary to sign-out the case (slides, reports, immunostains, reports of ancillary studies such as flow cytometry or cytogenetics) is available.

4) If information is missing, contact the outside hospital pathology department to request necessary information/reports/immunostains/blocks.

5) The resident will be responsible for all clinical questions addressed to the service regarding heme I/O cases, including ancillary studies that may be pending.

6) At 9:00-9:30 AM each day, the resident will collect the accessioned cases for the day and begin case sign out with the designated attending.

7) The resident will contact clinicians for additional clinical history or call outside laboratories for blocks or additional information as necessary.

8) Following review with faculty, the resident will dictate the reports. Cases must be dictated and, after correcting the dictations, must be forwarded to the attending for sign out in a timely manner. The slides and paperwork must be available to the attending for re-review.

9) If ancillary studies, including immunohistochemistry, are needed, the resident will order the appropriate studies immediately after sign-out and will retrieve the stains for review with the attending as soon as they are available.

10) The resident will follow up on pending ancillary studies.

11) A pre- and post-test of 7 glass slides will be administered during the rotation.
Conferences:
- Surgical Pathology morning conferences
- Tuesday: 8:00AM Current Concepts seminar
- Wednesday: 12 noon once-per-month around-the-microscope sessions
- Wednesday: 12 noon Hematology medicine conference

STUDY SETS
Professor Ronald F. Dorfman has dedicated his lifetime collection of hematopathology cases to the Department of Pathology. This phenomenal study collection spanning all aspects of lymph node pathology are housed in room H-1537M. Residents are highly encouraged to avail themselves of this study collection as it is not possible to see a wide breadth of cases during a one-month rotation. Independent study is strongly recommended to supplement sign-out sessions.

Major Texts and Learning Resources:

SUPERVISION AND EVALUATION:
The hematopathology attending on-service will triage cases and make all decisions regarding the appropriate case material and volume to be signed out by the Resident each day. The attending and the Consult fellow, as deemed necessary by the attending, will handle complex cases or increased case volume on this service.

The Resident’s work will be supervised by an attending hematopathologist at all times. The Resident will be evaluated on his/her daily work as assessed by each attending through the MedHub system. Results will also be reviewed formally with the Resident.
IMMUNODIAGNOSIS

Directors: Rob West, MD, PhD and Yaso Natkunam, MD, PhD

Goals and Objectives

Patient care

- Become familiar with the wide variety of surgical pathology and hematopathology cases undergoing immunodiagnostic studies
- Become familiar with immunohistologic and in situ hybridization tests used for diagnostic, prognostic, predictive and therapeutic purposes
- Gain skill in the technical and interpretive aspects of immunodiagnosis
- Correlate clinical findings and morphology with immunodiagnostic test results for clinical cases
- Learn appropriate selection of immunohistologic and in situ tests to aid in surgical and hematopathology diagnoses

Medical knowledge

- Learn and understand the basic principles of immunodiagnosis, including antigen retrieval, principles of antibody staining, overview of automated staining, validation studies, and quality control
- Become familiar with immunohistologic and in situ hybridization studies of HER2 expression and amplification in breast cancer, including scoring and reporting guidelines
- Become familiar with immunohistologic studies of ER and PR expression (as well as Ki-67) in breast cancer (in situ and invasive)
- Review current CAP guidelines and laboratory accreditation checklists for immunodiagnosis
- Understand technical and interpretive aspects of immunodiagnosis, including cell and tissue reactivity and expected cellular localization of stains, tissue artifacts and potential sources of technical and interpretive errors
- Become familiar with ordering specific immunohistologic and in situ hybridization studies and be able to do so properly (e.g., PowerPath and Servoy computer systems)
- Understand basic technical and interpretive aspects of specialty immunohistologic and molecular genetic testing for microsatellite instability (MSI) and defects in mismatch repair proteins

Interpersonal and communication skills

- Communicate clearly with residents, fellows and clinical colleagues to obtain clinical information in case evaluations
• Communicate immunodiagnosis results and describe the features that support a particular diagnosis effectively, both verbally and in written reports
• Work closely with laboratory staff in coordinating timely processing of cases

**Professionalism**

• Recognize and be sensitive to the needs of patients, clinicians and pathology colleagues in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
• Work effectively and efficiently with support and administrative staff to maximize productivity and maintain the quality of the work environment
• Distribute immunodiagnosis cases and reports in a timely fashion

**Systems-based practice**

• Learn the process of case evaluation and work-flow in the immunodiagnosis laboratory, from request for tests and processing of cases in the histology and immunodiagnosis labs to sign-out and delivery of reports to the ordering physician
• Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
• Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
• Review general immunodiagnosis billing guidelines including tests that can be used for quantitative estimation of specific cell types, growth fraction and minimal residual disease detection

**Practice-based learning**

• Use case-based learning as a tool for additional insight into the basis of disease
• Locate, appraise and assimilate pertinent data from scientific studies
• Understand the scientific and technical steps required to bring up a new antibody in the laboratory
• Demonstrate effective problem solving skills in immunodiagnosis using a wide variety of information resources

**Length of Rotation:** 1 month required (a second elective month is suggested)
Requirements of the rotation/ Resident duties and responsibilities

**First day of rotation:**
1) Schedule 30 minutes on the first day of the rotation with Rob West or Yaso Natkunam to review the daily workflow and resident responsibilities
2) Take the immunohistochemistry rotation pre-test and turn it in to Rob or Yaso for scoring and feedback
3) Schedule 10-15 minutes within the first three days of the rotation with immunotechnologist Ed Gilbert for a review of laboratory procedures and automated staining platforms (this is best scheduled for a time after the resident has reviewed Chapter 1 of the Dabbs Immunohistoc hemistry book, so that the resident has a basic understanding of principles of immunohistochemistry; see Recommended Reading below)
4) Review general immunodiagnosis billing guidelines and schedule approximately 30 minutes within the first three days of the rotation with Leigh Stacy (498-7840 or lstacy@stanford.edu) to review immunodiagnosis billing and add-on tests
5) Present your weekly schedule of heme or non-heme signout to the attendings on service for heme or non-heme cases

**Daily:**
1) Check in with immunotechnologists around 2:00 pm to begin sorting cases into heme and non-Heme cases
2) Preview cases and enter antibody scores and interpretive comments into the Servoy database if possible
3) Participate in sign-out with attending assigned to immunodiagnosis (heme or non-heme)
4) Distribute finalized cases to residents, fellows and attendings with comments and questions as appropriate
5) Assist in composing addendum report drafts for breast hormone studies, microsatellite instability studies and other “add-on” tests; send these reports electronically to the appropriate Immunodiagnosis attending
6) Assist with HER2 FISH interpretation with cytogenetics supervisor (Dana Bangs, call him at x5-7476 to arrange) every Tuesday and Friday. Review HER2 FISH images with attending signing out non-heme cases
7) Assume primary responsibility in ordering add-on tests from special test requisitions (including “add-on” breast hormone receptors, therapeutic markers such as CD117 and EGFR, and microsatellite instability studies): this includes searching patient’s PowerPath history for an appropriate case on which to order studies, requesting or retrieving old blocks, selecting an appropriate block for testing and ordering the appropriate antibodies/studies, and maintaining an accurate and complete logbook of the status of add-on studies (this logbook should be checked daily for any follow-up on pending cases)
8) Participate in troubleshooting problematic stains with the immunodiagnosis attending, lab directors and technologists
9) Participate in on-going validation of new antibodies and test platforms and quality assurance projects under the guidance of lab directors and technologists

10) Assist in searching for and collecting appropriate tissue for control blocks and/or in working up new antibodies, with the assistance of the lab directors, as appropriate and as needed throughout the rotation

**Last day of rotation**

1) Take the immunohistochemistry rotation post-test and turn it in to one of the directors for scoring and feedback

2) Prepare an itemized list of outstanding add-on tests that require follow-up action (e.g., call for blocks, blocks pending from Deliverex, etc.) and give this to the immunodiagnosis attending

**Major Texts and Learning Resources**

1) Dabbs DJ. *Diagnostic Immunohistochemistry*. Churchill Livingstone: Philadelphia, 2006. (Chapter 1 is required)

2) ASCO/CAP HER2 guidelines (required)

3) Rouse IPOX handout

4) CAP Laboratory Accreditation Checklist – Immunohistochemistry section (available online at [www.cap.org](http://www.cap.org) – click on Accreditation and Laboratory Improvement tab, then scroll down and click on link to Inspection Checklists and select the most recent Anatomic Pathology checklist)

**Supervision and Evaluation**

The Resident’s work will be supervised by attendings signing out on the heme and non-heme immunodiagnosis services. The Resident will be evaluated on his/her daily work as assessed by each director with the input of laboratory staff. Results will be reviewed formally with the resident.
NEUROPATHOLOGY

Director: Hannes Vogel, M.D.

Goals and Objectives

Patient Care

- To develop proficiency in diagnosing common neoplastic, degenerative, reactive, and metabolic conditions involving the brain and spinal cord, their coverings, and skeletal muscle and peripheral nerve by examining frozen and permanent sections of lesions of the nervous system.
- To learn appropriate methods of intraoperative diagnosis, grossing techniques, special stains and immunohistochemistry, and electron microscopy that are applicable to neuropathology.
- To learn to correlate clinical, radiological, laboratory and electrodagnostic features important to the accurate diagnosis of neuropathological conditions with neuropathological findings.

Medical Knowledge

- To be familiar with the pathogenesis and typical morphology of diseases of the central nervous system, muscle and peripheral nerve.
- To understand the natural history, effects of treatment, and prognosis of common neurological diseases.
- To understand the role of the nerve and muscle biopsy in the evaluation of neuromuscular disease.
- To develop expertise in developing a differential diagnosis based upon clinical and laboratory information along with the gross and microscopic findings in each case.

Practice-Based Learning and Improvement

- To use case-based learning as a tool for additional insight into the basis of disease.
- To locate, appraise, and assimilate pertinent evidence from scientific studies.
- To demonstrate effective problem solving skills in diagnostic neuropathology, using a wide variety of sources of information.

Interpersonal and Communication Skills

- To present surgical and autopsy neuropathology case findings effectively.
- To prepare concise, complete written neuropathology reports in surgical and autopsy neuropathology.
- To use effective verbal communication in the frozen section diagnosis setting.
- To participate in regularly scheduled neuropathology conferences (see below).
Professionalism
- To complete written reports and dictations in a timely fashion.
- To work effectively and with proper respect as a team with technical and administrative staff.
- To interact in a professional, helpful manner with clinicians in the performance of frozen sections and intraoperative consultations.

Systems-based practice
- To understand the role of quality assurance in diagnostic neuropathology by attending the group discussion of difficult cases twice a month.
- To practice cost-effective medicine in the selection of special studies as applied to neuropathology cases.

Requirements of the rotation
1. The resident should receive an office key to R241. Please do not leave the Neuropathology Laboratory area unlocked when no one is in the lab. Theft occurs on a regular basis in this area, and confidentiality of patient information may also be compromised. A desk and computer is available to the resident in the NP sign out room.
2. We recommend arriving between 7:30 and 8:00 am. Check the OR schedule for possible frozen sections prior to 8 AM (including the previous late afternoon/evening, and retrieve relevant clinical and radiological information. Alert the neuropathology histotechnician to any muscle biopsies that are being performed (muscle biopsies may not necessarily be done by the neurosurgeon). Ask the Office Assistant to retrieve any prior pathology slides that are relevant to planned procedures. It may be useful to recheck the OR schedule during the day for add-on neurosurgical procedures.
3. The following guidelines should be useful in checking the OR for neurosurgical procedures and muscle biopsies:

   How to access the Stanford Main OR grease-board:
   1. Login to ‘EPIC’
   2. Select the ‘Reports’ menu option
   3. Select the ‘OR Reports’ drop-down option
   4. Select ‘Grease Board’ from the unveiled options
   5. Select ‘MOR Control Desk Grease Board’

   How to access the Stanford ASC ORs grease-board:
   1. Login to ‘EPIC’
   2. Select the ‘Reports’ menu option
   3. Select the ‘OR Reports’ drop-down option
   4. Select ‘Grease Board’ from the unveiled options
   5. Select ‘ASC Control Desk Grease Board’

   Determining Neurosurgical Surgeries for the next day:
   1. Login to ‘EPIC’
   2. Select the ‘Reports’ menu option
3. Select the ‘OR Reports’ drop-down option
4. Select ‘Surgical Cases’ from the unveiled options
5. Select ‘MOR and ASC combined report’. Select the desired dates by highlighting the ‘Surgery Date’ field from the search options parameter window (NOTE: ‘T’ refers to today, and T+1 refers to tomorrow)
6. Note neurosurgical procedures – Surgeons include (but not limited to):
   a. Steinberg G.
   b. Shuer L.
   c. Harsh G.
   d. Chang S.
   e. Park J.
   f. Mindea S.
   g. Dodd R.
   h. Ryu S.
   i. Jackson P.
   j. Henderson J.
   k. Edwards M. (predominantly PEDS)
   l. Guzman R. (predominantly PEDS)
7. Look up all patients for whom surgery is scheduled the following day. For all patients, check to see if prior pathology is available (resident/fellow can use either PowerPath or Epic). If prior material is available, provide list to NP assistant (Usually Dory Palacio)

How to obtain patient histories from EPIC:
1. Login to ‘EPIC’
2. Select the ‘Pt. Station’ option
3. Enter the patient’s name/MRN
4. Click ‘Review’ on the patient’s electronic chart
5. Select ‘Notes/Trans’ tab

How to obtain radiology reports from EPIC:
1. Login to ‘EPIC’
2. Select the ‘Pt. Station’ option
3. Enter the patient’s name/MRN
4. Click ‘Review’ on the patient’s electronic chart
5. Select the ‘Rad’ tab

How to obtain histories from LINKS:
1. Login to ‘LINKS’
2. Select the ‘Pt. Search’ option (depicted by the human and hourglass icon)
3. Enter the patient’s name/MRN
4. Click ‘Review’ on the patient’s electronic chart
5. Select ‘Clin Docs’ tab

How to obtain radiology reports from LINKS:
1. Login to ‘LINKS’
2. Select the ‘Pt. Search’ option (depicted by the human and hourglass icon)
3. Enter the patient’s name/MRN
4. Click ‘Review’ on the patient’s electronic chart
5. Select ‘Rad’ tab

How to examine the LPCH OR grease-board:
1. Login to ‘SNSSurgiNet’
2. Scroll down to the cases listed for the LPORs
3. Look up relevant history in LINKS, and check for prior pathology on any pediatric neurosurgical cases
Requirements of the rotation (continued)

4. Retrieve and preview neurosurgical case slides from the previous day of grossing before previewing with the fellow or attending. Order special stains and immunohistochemistry.

5. Attend all NP frozen sections. Do not process tissue for frozen section or cytological preparation without explicit knowledge, approval, and supervision by an attending neuropathologist.

6. Remember that the pathology resident is not subject to supervision by neurosurgeons, and if tissue is not available for immediate transport from the OR, politely inform the neurosurgeon that Neuropathology may be called for immediate intraoperative consultation if and when the tissue is available.

7. Punctual signout at 11AM and 4PM is important since other housestaff on neuropathology rotation, various clinical services, and other pathologists may rely on this time to seek neuropathology consultation. If circumstances prevent review prior to 11AM and 4PM signouts, (late preparation of slides, IPOX, etc.) please advise the attending neuropathologist and the signout time will be adjusted.

8. Preview the Kaiser Redwood City cases that we receive weekly on Monday, on Tuesday before preview with the Fellow, in preparation for viewing at sign-out.

9. Assume primary responsibility for assigned muscle and nerve biopsies with adequate supervision.

10. Attend Brain Cutting, on Tuesday at 1:30PM and prepare Gross Descriptions prior to 5PM of that day, for review by Dr. Haddix. Signout of these cases with Dr. Haddix would occur during the following Tuesday before or after Brain Cutting.

11. Attend all NP conferences (please see below). If special circumstances are foreseen that preclude involvement in certain activity, please notify the Director in advance. Residents are encouraged to attend morning conferences offered in Pathology and will be excused from frozen sections during this time.

12. For epilepsy cases: we have an "epilepsy case" kit; the NP fellow will assist the resident in grossing in the specimen. Specimen needs to run on the long cycle in NP (not in surgical pathology) using the larger autopsy brain cassettes.
CONFERENCES

Pediatric Neuro-Oncology Tumor Board:  
(Monday 7:30 a.m. – 8:30 a.m.) – in LP CH, Radiology Department. Slides previewed previous Friday, and AP Resident from Friday attends the Monday conference.

Neuropathology Journal Club:  
Monday 12-1 p.m. Meet in R241 at 11:45 to go buy lunch (department provided). Select any article for informal presentation. No copies for distribution are necessary.

Biweekly Monday Case Conference:  
R241 sign-out room, 5:00-6:00 PM every 1st and 3rd Monday.

Tuesday Muscle/Nerve Pathology Conference:  
R241 sign-out room, 5:00-6:00 PM, every 3rd Tuesday of the month

Adult Neuro-Oncology Tumor Board:  
Cancer Center, 12:15-1:15 p.m. every Friday

Brain Cutting:  
Tuesday 1:30-2:30 p.m.

Optional: Neurology Grand Rounds:  
Friday 8:00 a.m.-9:00 a.m.


Other recommended texts:
1) Ellison and Love Neuropathology Atlas  
2) WHO 2007 Classification of CNS Tumours  
3) AFIP Fascicle: Tumors of the Central Nervous System, by Burger and Scheithauer  
5) Fuller and Goodman: Manual of Basic Neuropathology  
GOALS AND OBJECTIVES

OVERVIEW

Residents on surgical pathology are expected to master the following broad areas to the level expected of a new practitioner. While it is recognized that it is not entirely practical or necessarily desirable to delineate levels of competency that are specific for year of training, the following are offered as rough guidelines. It is expected that the resident will develop the knowledge base, tools, skills, and demeanor that will foster life-long learning in her/his professional career.

BASIC PRINCIPLES

Year 1: Resident demonstrates knowledge about tissue fixation (including commonly used special fixatives), tissue processing, embedding, orientation of specimens, section preparation, levels, use of special stains, immunohistology, electron microscopy (EM) and cytogenetics.

Year 1: Resident demonstrates basic computer skills in anatomic pathology.

Year 2: Resident is able to order and interpret immunohistochemical panels with minimal supervision.

Year 2: Resident is proficient in the preparation and presentation of PowerPoint presentation and is capable of independent case presentation.

Year 2: Resident is proficient at seeking interdepartmental consultation and is able to resolve diagnostic disagreement.

GROSS EXAMINATION

Year 1: Resident develops proficiency in specimen identification, perform anatomically correct dissection, dictate accurate descriptions, and take appropriate sections for microscopic examination, including appropriate section for examination of margins (where appropriate).

Year 1: Resident is knowledgeable about and able to perform specimen photography when appropriate.

Year 1: Resident is proficient in the handling of common specimens (e.g. culture, EM, cytogenetics, bone marrows)
**Year 2:** Ability to gross in complicated specimens (e.g., Whipple’s, pelvic exenterations, radical neck dissections) with minimal supervision. Must be able to recognize when to seek additional assistance from colleagues or surgeon.

**MICROSCOPIC EXAMINATION**

**Year 1:** Resident is able to generate an accurate morphologic description, with a reasonable diagnosis/differential diagnosis. Resident is able to provide basic elements of information in all reports, prepare report, correlate findings with frozen section findings, and have report prepared for sign-out with faculty.

**Year 2:** Resident is able to formulate an accurate diagnosis or recognize need for consultation, select special stains/ipox (where appropriate), interpret immunostains (and associated artifacts).

**Year 2:** Resident demonstrates adequate knowledge/use of grading systems, use of synoptic reports (as appropriate), indications for amended/addendum reports, and proper handling of consultation cases.

**Year 2:** Resident is proficient at photomicroscopy.

**INTRAOPERATIVE FROZEN SECTIONS/SMEARS**

**Year 1:** Resident understands role of intraoperative diagnosis; appropriate indications; tissue sampling for intraoperative diagnosis, can cut/stain frozen section (within 10 minutes), and is knowledgeable about precautions for handling fresh tissue or other specimens for intraoperative diagnosis.

**Year 2:** Resident is proficient at the preparation/staining of smears, interpretation of frozen sections/smears with minimal supervision, understand limitations of intraoperative diagnosis, and able to communicate effectively and engage in dialogue with treating surgeon and/or clinician.

**SYSTEMS-BASED PRACTICE (LAB MANAGEMENT)**

**Year 1:** Resident demonstrates knowledge of JCAHO/CAP standards/requirements for specimen submission and occupational hazards/infection control, particularly with respect to storage/disposal of specimens and hazardous chemicals.

**Year 2:** Resident is competent in billing/coding procedures and the cost effective practice of pathology and medicine.
Year 2: Resident demonstrates knowledge of quality assurance and improvement and basic risk management issues.

PROFESSIONALISM

Year 1: Resident develops expertise in use of appropriate phraseology in reports, demonstrates effective skills in communication to physicians and patients, when appropriate, and understands importance of timeliness, turnaround and rush cases.

Year 2: Resident assumes responsibility for informal and formal junior resident teaching conferences and actively and effectively participates in all pathology teaching conferences.

Year 1&2: Resident communicates with support staff, administrative staff, technical staff, and supervising faculty in a respectful and efficient manner. Residents receive 360 degree evaluations on every rotation.

MEDICAL KNOWLEDGE

Year 1: Resident develops basic understanding of disease with correlation to morphology. The resident develops a managerial classification that includes concepts of benign, borderline (low malignant potential), uncertain malignant potential, and malignant.

Year 1: Resident develops understanding of the role of intraoperative frozen section/touch preparations in clinical decision making.

Year 2: Resident is proficient with the correlation of cytogenetic and molecular abnormalities with morphologic findings.

Year 2: Resident is proficient at analysis and investigation of unusual or difficult cases and can workup cases with minimal supervision.

PRACTICE-BASED LEARNING

Year 1: Resident develops case-based learning as a tool for disease pathogenesis via end-of-month resident conferences, daily gross conferences and interesting case conferences.

Year 2: Resident is able to use wide variety of information sources and is able to use effective problem solving skills in surgical pathology. Proficiency in literature
searches and assimilation of scientific and clinical-pathologic information to apply to specific problems in surgical pathology is required.

**INTERPERSONAL AND COMMUNICATION SKILLS**

**Year 1:** Residents learn to prepare accurate, concise, complete and cogent written surgical pathology reports that incorporate all relevant findings (e.g., clinical, radiologic, serologic, cytogenetic, immunohistochemical, etc.)

**Year 1:** Residents learn to communicate effectively with surgeons and other clinicians during intraoperative consultation and at case sign-out, when appropriate.

**Year 1&2:** Residents teach medical students in the medical school pathology labs in an effective and clear manner: i.e., correlation of gross and microscopic findings with clinical findings.

**Year 2:** Residents actively participate in teaching medical students and post-sophomore fellows on surgical pathology rotation.
Surgical Pathology at Stanford University Medical Center

Director: Richard Sibley, M.D.
Associate Directors: Gerald Berry, M.D. & Teri Longacre, M.D.

Residents in the Anatomic Pathology (AP) or combined (AP/CP) program rotate through Stanford Surgical Pathology Service (SP) for 9 separate months during their 1st and 2nd year.

Surgical Pathology Work Flow at Stanford

Day 1/G
Gross room all day (may be frozen section back-up if extremely busy). Gross in majority of big specimens and some of the medium/smalls, with goal to have roughly equal caseload between G and G/FS residents (see below). Gross in cases that arrive before 6 pm and at discretion of PAs.

Day 2/C/P
Review gross dictations with PAs in the morning (PA will check off in database); cytopathology all day (see Cytology Pathology section, pages 50-51) preview all of your Surg path cases as they come out; residents should arrive at sign-out the following day with a diagnosis and/or a differential diagnosis. This will require reading relevant textbooks in many instances. Beginning residents should not hesitate to avail themselves of senior residents’ expertise – it is part of the learning process.

The Surgical Pathology Fellow issues preliminary diagnosis on all surgical pathology cases. In addition, the fellow is responsible for ordering ER and PR on all ductal carcinoma in situ biopsy specimens and the entire breast panel (ER/PR/Ki67/HER2NEU FISH) on all invasive breast carcinoma biopsy specimens. NOTE: These studies are generally NOT ORDERED on core biopsies UNLESS the patient is scheduled for neoadjuvant therapy. The breast panel should be ordered on slides that contain sufficient in situ and invasive carcinoma so that both can be scored, when applicable. All DCIS cases must include ER/PR results in order to be signed out, so it is important that these tests be ordered on Day 2. The breast panel is signed out as an addendum.

Day 3/S
Sign out surgical cases (sign-out with attending, sign-out with hot seat, complete reports). Case load for first year residents sign-out is 40 total cases per sign-out (this includes ‘bigs’ and biopsies). Case load for second year residents is 50 total cases per sign-out. The post-
sophomore fellow case load is set at 30 per sign-out. Case load is adjusted down for the first rotation at Stanford surgical pathology and is gradually increased as competency to handle the case load increases.

Day 4/G/FS
Frozen sections (including neuropathology), grossing duties will involve fewer big specimens and more medium and small specimens (and maybe more biopsies) with goal to have roughly equal case load between G and G/FS residents, will not be able to gross all cases that were frozen the same day.

Day 5/C/P
Review gross dictations with PAs in the morning (PA will check of f in database); cytopathology all day (see Cyt pathology section, pages 50-51); preview all of your Surg path cases as they come out; residents should arrive at sign-out the following day with a diagnosis and/or a differential diagnosis. This will require reading relevant textbooks in many instances. Beginning residents should not hesitate to avail themselves of senior residents’ expertise – it is part of the learning process.

Day 6/S
Same as sign-out above (Day 3)

Day 7/G
Repeat of Day 1

Residents are expected to be dictating all their cases, as well as keeping brief notes with their paperwork (in case dictations are not back by the time of sign-out). Except for the first month of Surg Path in the first year, residents are expected to come to sign-out prepared with their preliminary diagnoses on all cases.

Breast core needle biopsies and new diagnosis lumpectomy specimens (does not include mastectomy specimens, re-excisions, reduction mammoplasty, etc.) that are grossed in on Thursday are to be split between the two Friday sign-out residents and are to be prioritized by the hot seat fellow as the slides come out and signed out with an attending on Friday afternoon (and checked off with hot seat Friday afternoon/evening).

Friday biopsies are divided between Thursday gross room residents to be signed out on Monday. Thursday gross room residents can choose to preview their cases for Monday sign-out on Friday night or over the weekend, with the understanding that biopsies from Friday (cut in histology Saturday, slides to Hot

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Seat Saturday) will not be available until Saturday afternoon (could also preview biopsies early Monday morning, if they don't want to come in over the weekend).

The "G" residents on Fridays will gross cases on Saturday. Cases cut in histology and seen by hot seat on Saturday will be equally divided between the two Tuesday sign-out residents. Residents will be required to come in on weekends only every fourth weekend.

One vacation week will be allowed (provided there is cross coverage) during the Surg Path rotations and should be taken during a week when the resident grosses only on Wednesday (e.g., in scheme above, if Day 1 is Monday, this would correspond to Resident D, days 1-5) and is the "G" resident rather than "G/FS".

**THINGS TO DO ON EACH CASE**

- Proofread your (and those of the PAs) gross dictations (paperwork usually stapled to requisition sheet).
- Check patient history in Power Path (“History” tab has a blue square on it when the patient has prior pathology.
- If cervical/endocervical specimen has a concurrent Pap smear, ask the Cytology Supervisor to pull the case for screening on your preview day so that it can be seen by the Cytopathology faculty for sign-out on the following day.
- Pull relevant prior cases (slides) from slide room. Check them out with the accession number, your name, the date, and your pager number (this takes a few extra minutes of your time, but is helpful when someone is looking for a case!).
- Preview cases and make notes. Check Last Word database for any missing clinical history/lab results.
- It may be helpful to make your notes in black pen, then to take a red pen into sign-out with your attending and add their notes in red ink, so that you know what the final diagnosis is.
- Once you feel comfortable doing so, you should pre-dictate your reports (tubular adenomas, POCs, etc.) the night before sign-out to streamline the next day’s work.
- Once a case is reviewed with the faculty, it must be checked off with the Hot Seat. **THIS INCLUDES ALL CASES REVIEWED BY THE FACULTY, INCLUDING CASES PENDING ADDITIONAL STUDIES. IT IS THE RESPONSIBILITY OF THE RESIDENTS TO KEEP HOT SEAT INFORMED OF THE STATUS OF ALL OF THEIR CASES.**
WHEN TO PULL CYTOLOGY PRIORS

**General Rule:** If surgical and cytology specimens from the same site do not share the same diagnosis, the prior cytology must be reviewed.

Why do we do this?
- Ensure that a surgical biopsy or excision has not missed a neoplastic lesion that was identified cytologically
- Educational - refine our histologic and cytologic criteria (i.e. what led to an overcall or undercall on one of the cases?)

How do we do this?
- **Paper correlation:** Check “History” tab in PowerPath for prior cytology cases
- **Pull cytology slides:**
  - Absolutely required if there is a discordance
  - For educational benefit, especially if signing out with a cytopathologist

What to do with discrepant cases?
- Have the prior cytology reviewed by a Cytopathology attending
- **Obtain level sections** on the surgical or submit more material
- Comment on discrepancy in surgical report

**Cervical Cytology**

*Critical Correlations:*
- Cytology is suspicious or positive for a high grade lesion (ASC-H, HGSIL, SCC, AGUS favor neoplastic, AIS, and adenocarcinoma) and the surgical is negative. In these situations, imagine the clinical quandary caused by the discordance.

**ASC-US or LSIL Cytology:**
- Not unusual to have negative cervical biopsy in these cases
- Still helpful to confirm cytologic diagnosis of LSIL and obtain levels on surgical
- Also helpful to make sure the surgical findings explain the ASC-US cytology

**Concurrent Cases:**
- On your preview day, ask the cytology supervisor to pull the pap smear for immediate screening to ensure the case is signed-out in time for correlating. Do not mention Cytologic Diagnosis in surgical report unless the cytology is final.

**Fine Needle Aspiration (FNA) Cytology**

*Critical Correlations:*
- FNA is suspicious or malignant and the surgical specimen is negative, e.g. breast FNA suspicious or malignant and the core needle or excisional biopsy is negative.
Non-GYN Cytology

**Critical Correlations:**
- Correlate concurrent cytology and surgical specimens before either case is finalized. The cytology and surgical reports should reference each other. Example: Bile duct brush and ampulla biopsy.

**HELPFUL DICTATION HINTS**

You may find it more efficient and safer to take the time to jot down relevant measurements and may be even cassette numbers with a description of their contents on the requisition sheet as you gross specimens (pink area at the top that says “for pathology use only”). Then you can dictate the gross description of the case in a more continuous and flowing manner and, if the dictation gets lost, you still have all your relevant measurements!! DO NOT GET INTO THE PRACTICE OF DELAYING YOUR GROSS DICTATION – DO IT AT THE TIME THE CASE IS ACTUALLY BEING GROSSED!

**SPECIAL INFORMATION**

**Ordering specials**
Special stains and VLs (vladd) and IPOX are all ordered in Power Path under the “Specimens” tab. See Power Path manual for detailed instructions. Specials and VLs have to be ordered by noon to come out the same afternoon. IPOX orders have to be in by 6:00PM and will be done the following day (you’ll get results the following evening). Don’t forget to save (F10 button) the case after you input the ordering info.

**IPOX orders**
For IPOX, you must also input information into the requisition data tab of the case in Power Path. Scroll down to the IPOX info section. Enter the site of the tissue, the histologic findings, your question, and your name. This page and the specimen page with the particular stains that you order should be printed out (control-P, then select Form Image; see instructions in Power Path manual) and placed in the wooden in-box at the side of the Kempson consult desk.

**Correlating frozens**
Frozen sections need to be mentioned in the comment ("Permanent sections confirm the frozen section diagnosis of …" or "The original frozen section slides were reviewed and all frozen sections confirmed" – the second phrase for cases where tissue is exhausted at the time of frozen section) and also need to be correlated in Power Path. To do this, go to the Results tab in Power Path and click on
the Correlate button. Highlight the specimen you wish to correlate, then click on the QA Results button. Click on Macros, then Agree (unless you disagree), then click on the Pathologist and scroll down to insert the name of the pathologist (attending) who did the frozen section (it will be in the frozen section diagnosis box at the bottom of the requisition). Click OK after all that. I don’t think you have to save after doing this, but it might not be such a bad idea to just hit F10 to be safe.

**Reviewed priors**

If you review the priors on a case, you can insert a line into the comment section to the effect of “We have reviewed the patient’s prior pathology (SHS-XX-XXX) and agree with the diagnosis of …”.
ANATOMY OF A MICROSCOPE

1. Arm
2. Duct Channel
3. Binocular Body
4. Focusing Reverse Nosepiece
5. Infinity Corrected Objectives
6. Fixed Stage
7. Condenser
8. Aperture Diaphragm Control
9. Condenser Alignment Screw
10. Collector Lens w/ Field Diaphragm
11. Field Diaphragm Lever
12. Rheostat Control Knob
13. Base
14. Illuminator
15. Stage Adjustment Knobs
16. Fine Focus Adjustment Knob
17. Coarse Focus Adjustment Knob
SAMPLE GROSS DICTATIONS

NOTE: Many residents like to dictate all their cassettes in list form at the end of the dictation (all cassettes should be dictated at the end of the dictation anyway). This can make previewing and sign-out more organized and easier.

ALL RESIDENTS ASSIGNED TO THE GROSS ROOM MUST PREVIEW ALL OF THEIR CASES WITH A PA (OR AN ATTENDING) PRIOR TO GROSSING THEM IN. The PAs are there to instruct you in methods of prosection and will be evaluating your gross dictations in order to assist you in proper prosection techniques and in the preparation of a clear, concise, and complete gross report. The only exception to this may be the weekend resident; this resident should feel free to request advice from the Hot Seat resident if there is concern about the correct method togross in a weekend specimen. Please refer to the Gross Room Manual at each grossing station for more detailed descriptions of complicated specimens and instructions on labeling cassettes.

Initial sentence
(Number of specimens) specimens are received, each labeled with the patient’s name, “(patient last name, say and spell)”, and medical record number.

Small biopsy
Received in formalin additionally labeled “(specimen label)” (is a single/are #/are multiple) fragment(s) of (color) tissue measuring (#) x (#) x (#) cm (in aggregate). (It is/These are) entirely submitted between sponges in a single cassette labeled (cassette letter) (special stain tags if needed).

Singleton placenta
Specimen A is received (fresh/fixed) labeled with (patient’s name). It consists of a placenta with attached umbilical cord and fetal membranes.

The (tan/grey/white/green) umbilical cord measures ____ cm in length by ____ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- if in membranes, measure distance of intramembranous course of vessels to disc) and contains (1/2/3) vessels on cut section. No (or give # and describe if present) true knots, edema (unless present) or other lesions are seen.

[Cut off cord 1-1.5 cm above insertion and take sections for cassettes A1, A2]

The (translucent/tan/green-tinged) fetal membranes attach (normally at the disc margin/circumvallate for ___% of the circumference/circummarginate for ___% of the circumference). The area of membrane rupture is located ___ cm from the closest placental margin (delete sentence if C-section, or membranes are excessively torn).
[Take two membrane rolls for cassette A1, cut off membranes]

The (round/oval/irregularly shaped) placental disc weighs ________ g and measures ____X____X____ cm. The fetal surface is (steel gray/blue/purple) with (normal/magistral/sparse) dispersion of the chorionic plate vessels. No (or describe if present) thrombi are identified. The maternal surface appears intact with no grossly obvious missing cotyledons (or not). [Identify and measure any adherent blood clot]. Serial sectioning through the placental disc at one cm intervals reveals spongy dark red parenchyma with (no grossly identifiable lesions/or note # tan areas, firm areas, measuring ___ cm in greatest diameter, located ___ cm from the nearest the margin).

Representative sections are submitted as follows:
A1 Umbilical cord, fetal end, and membrane rolls.
A2 Umbilical cord, placental end, and chorionic plate section near cord insertion. [take section approx. 2 cm away from cord insertion, trying to show chorionic plate vessels]
A3 Central placenta, full thickness section.
A4 Placenta, full thickness section. [Can take from more peripheral areas, but avoid <2 cm from margin]
(A5 Section any lesions – i.e. chorionic plate thrombi with underlying parenchyma, firm areas, tan areas, placenta beneath blood clot AND/OR take 3-4 small wedge sections of maternal surface to try to get maternal spiral arteries if pre-eclampsia/pregnancy-induced hypertension case).

Twin placenta
Specimen A is received (fresh/fixed) labeled with patient’s name. It consists of (a single/two separate) placenta(s) with attached umbilical cords and fetal membranes.

The twin A placenta is identified by a clamp on the umbilical cord (correct if different).

The (tan/grey/white/green) umbilical cord of twin A measures ______ cm in length by ______ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- if near the margin, state how close, if in membranes, measure distance of intramembranous course of vessels to disc) and contains (1/2/3) vessels on cut section. No (or give # and describe if present) true knots, edema (unless present) or other lesions are seen. [Cut off cord 1-1.5 cm above insertion and take sections for cassettes A1, A2]

The (tan/grey/white/green) umbilical cord of twin B measures ______ cm in length by ______ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- if near the margin, state how close, if in membranes, measure distance of intramembranous course of vessels to disc) and contains
(1/2/3) vessels on cut section. No (or give # and describe if present) true knots, edema (unless present) or other lesions are seen.

[Cut off cord 1-1.5 cm above insertion and take sections for cassettes A5, A6]

(If monoamnionic, dictate one description for membranes and placenta of both twins. Otherwise, continue dictating separately)

The (translucent/tan/green-tinged) fetal membranes of twin A attach (normally at the disc margin/circumvallate for __% of the circumference/circummarginate for __% of the circumference). The area of membrane rupture is located __cm from the closest placental margin (delete sentence if C-section, or membranes are excessively torn).

[Take twin A membrane roll for cassette A1]

The (translucent/tan/green-tinged) fetal membranes of twin B attach (normally at the disc margin/circumvallate for __% of the circumference/circummarginate for __% of the circumference). The area of membrane rupture is located __cm from the closest placental margin (delete sentence if C-section, or membranes are excessively torn).

[Take twin B membrane roll for cassette A5]

The interplacental membrane is (translucent/tan/green-tinged) (with/without) a delicate branching pattern of regressed chorionic villi.

[Take interplacental membrane roll T-section for cassette A9, cut off fetal membranes]

The (round/oval/irregularly shaped) placental disc weighs ________g and measures ____X___X___cm. The fetal surface is (steel gray/blue/purple) with (normal/magistral/sparse) dispersion of the chorionic plate vessels. No (or describe if present) thrombi are identified.

If monochorionic, or dichorionic fused:
(Identify any twin-twin arterial-arterial, or venous-venous anastomoses on the surface of the placenta. Remember that arteries cross over the veins. Arteries and veins should dive down into the parenchyma in pairs. Any single penetrating vessel is suspicious for a deep arterio-venous anastomosis.)

The maternal surface appears intact with no grossly obvious missing cotyledons (or not). [Identify and measure any adherent blood clot]. Serial sectioning through the placental disc at one cm intervals reveals spongy dark red parenchyma with (no grossly identifiable lesions/or note # tan areas, firm areas, measuring __cm in greatest diameter, located __cm from the nearest the margin).
Representative sections are submitted as follows:
A1 Twin A umbilical cord, fetal end, and membrane roll.
A2 Twin A umbilical cord, placental end, and chorionic plate section near cord insertion.
A3 Twin A central placenta, full thickness section.
A4 Twin A placenta, full thickness section.
A5 Twin B umbilical cord, fetal end, and membrane roll.
A6 Twin B umbilical cord, placental end, and chorionic plate section near cord insertion.
A7 Twin B central placenta, full thickness section.
A8 Twin B placenta, full thickness section.
A9 Interplacental membrane T-section

Benign uterus
Received in formalin additionally labeled “uterus (and tubes and ovaries, if included)” is a uterus (with attached bilateral fallopian tubes and ovaries) which weighs (#) grams and measures (#) cm from cornu to cornu, (#) cm from anterior to posterior, and (#) cm from cervix to fundus. The serosal surface is smooth, pink-tan and glistening (also describe additional features, e.g., leiomyomata). The fallopian tube(s) are pink-tan and tortuous (also describe any paratubal cysts, hydrosalpinx, etc.) and measure (#) cm in length and (#) cm in average diameter. The right ovary is yellow-white and lobulated (also include any cysts or masses) and measures (#) x (#) x (#) cm. The cut surface is (color and texture, cysts, masses). The left ovary is yellow-white and lobulated (also include any cysts or masses) and measures (#) x (#) x (#) cm. The endometrial cavity is red-tan and velvety (also describe masses, leiomyomata, polyps) and measures (#) x (#) x (#) cm. The myometrial wall thickness is (#) cm (describe any abnormalities in the myometrium: adenomyosis, leiomyomata, etc.).

Uterus for cervical cancer
As above under benign uterus, only with a more extensive description of the ecto- and endocervix and any gross masses, biopsy sites, etc. Also, the peritoneal reflections of the uterus will be inked (anterior surface one color and posterior surface another) and sections of the vaginal cuff a nd right and left parametria will be submitted (entire parametria should be submitted). Finally, the cervix is typically amputated and treated like a cone biopsy (the entire cervix is submitted according to quadrants of a clockface with 12 o’clock representing the mid-anterior cervix).
Uterus for endometrial cancer
As above under benign uterus, only with a more extensive description of the endometrial lining and any masses present in the endometrium, particularly stressing their depth of invasion into the myometrium. It is important to get a full-thickness section (sometimes a section will have to be cut into several cassettes) of the maximum myometrial invasion of the tumor.

Prostate
Received in formalin additionally labeled “prostate” is a prostate gland (with attached bilateral seminal vesicles, if attached). It measures (#) x (#) x (#) cm and weighs (#) gm. The right seminal vesicle measures (#) x (#) x (#) cm and the left seminal vesicle measures (#) x (#) x (#) cm. The anterior surface is inked green, the right posterolateral surface is inked black and the left posterolateral surface is inked blue. The seminal vesicles are then amputated and the anterior nodular portion of the gland is removed. The remainder of the prostate is serially sectioned from apex to base and submitted as follows (cassette letters).

Breast biopsy or needle-localized biopsy
The specimen is received fresh in a Dubin’s container (usually only the needle-localized biopsies are received from Radiology in a Dubin’s container), labelled with the patient’s name “XXXX” and medical record number, and additionally labeled “one stitch_______, two stitches_______” (include clinician’s orientation comments in label). [The specimen is accompanied by a Dubin’s radiograph showing (wires, microcalcifications circled by mammographer with coordinate designation)]. It consists of a fatty/fibrofatty/fibrous piece of tissue measuring X by Y by Z cm (is skin present; what does it measure? what color? any lesions on skin?). It is oriented as follows: (or as described above). The specimen is inked per protocol (anterior/superior inked blue, anterior/inferior inked green, posterior inked black). The specimen is fixed overnight in formalin and subsequently serially sectioned at approximately 3 mm intervals to reveal.....HERE IS WHERE A GROSS DESCRIPTION OF THE TISSUE BELONGS: CYSTS, AREAS OF HEMORRHAGE, FIBROSIS, INDURATION, STELLATE SCAR, COMEDO NECROSIS, ETC. The specimen is laid flat from (medial to lateral or lateral to medial), with _______ at 12 o’clock and _________ at 3 o’clock on each slice (write this down on x-rays too). The specimen is then radiographed. The specimen radiograph shows (calcifications, circumscribed mass, spiculated mass, dense tissue, biopsy site cavity, etc). Gross examination shows (describe). Sections are submitted in cassettes A1 to A15, as noted on the specimen radiograph (draw on x-ray the sections submitted). Areas of microcalcifications are submitted in cassettes A_ and A_. Areas of mass are submitted in A_ and A_, etc.

Note: Many biopsy specimens arrive in Dubin’s container, fresh.
Mnemonic for inking: blue like the sky (ant/superior), green like the grass (ant/inferior) and the back (deep) is black
Submit on the order of 15 cassettes per breast biopsy, if specimen is extremely large. Note: This does not apply to all specimens. In most instances, representative sections of breast reduction procedures and fibroadenomas are sufficient.

**Mastectomy (with nodes, including sentinel)**
The specimen is received fresh labeled with the patient’s name “XXXX” and medical record number, and additionally labeled “one stitch______, two stitches________” (include clinician’s orientation comments in label). It consists of a mastectomy specimen measuring X by Y by Z cm. It contains an ellipse of skin measuring A by B cm (any scars, nipple?). It is oriented as follows: (or as described above).

The specimen is inked per protocol (anterior/superior inked blue, anterior/inferior inked green, posterior inked black). The nipple is amputated and the area under the nipple is inked yellow. The specimen is fixed overnight in formalin and subsequently serially sectioned at approximately 3 mm intervals to reveal....THIS IS WHERE THE GROSS DESCRIPTION OF THE BREAST TISSUE GOES – SEE ABOVE. The specimen is laid flat from (medial to lateral or lateral to medial), with ______ at 12 o’clock and ________ at 3 o’clock on each slice (write this down on x-rays too). The specimen is then radiographed. The specimen radiograph shows (calcifications, circumscribed mass, stellate mass, dense tissue, biopsy site cavity etc). Gross examination shows (describe). Sections are submitted in cassettes A_ to A_, as noted on the specimen radiograph (draw on x-ray the sections submitted). The nipple is submitted in cassette A__.

The axillary tail is dissected and X# of candidate lymph nodes are identified, measuring up to Y cm in greatest dimension. These are submitted in cassettes as follows (list # of candidate nodes in each cassette and whether or not they are bisected or appear grossly involved). Note that sometimes axillary nodes will be sectioned with main specimen; these should be retrieved.

Received in formalin labeled with the same patient’s name and medical record # and labeled “_____(include surgeon’s designated CPM counts and color)” is a sentinel lymph node measuring X by Y by Z cm. It is serially sectioned and submitted in a (single) cassette with a SLN tag.

**FROZEN SECTIONS**

When the resident is assigned to the frozen section room, they should arrive in time to change into scrubs and preview the OR schedule in order to prepare for the day’s frozen sections. All residents will be formally instructed in the mechanics (and art) of preparing a frozen section by Alonzo Velasquez, Dr.
Gerry Berry and Dr. Teri Longacre (see Outline below). The level of responsibility that a resident assumes for frozen sections will be gradated, depending on the level of the individual resident’s overall experience and specific expertise in preparing the frozen section. Faculty will supervise at all times.

**FROZEN SECTION TRAINING FOR 1ST/2ND YEAR HOUSESTAFF**

**A. GENERAL CONCEPTS:**
2. “To exhaust or not” (see frozen section room paper)

**B. TECHNICAL COMPONENTS OF FROZEN SECTION PREPARATION AND STAINING:**
1. TISSUE PREPARATION
2. PREPARATION OF TISSUE BLOCK
3. TISSUE PLACEMENT & FREEZING
4. TRIMMING OF THE BLOCK
5. FACING THE BLOCK
6. SLIDE LABELLING/PREPARATION
7. STAINING SEQUENCE (Timing is everything!)
8. COVERSIPPING

**C. TROUBLE SHOOTING IN THE FROZEN SECTION ROOM**
1. THE DIFFICULT SPECIMEN (FATTY, STAPLED, ETC)
2. STAINING ARTIFACTS & PROBLEMS
3. CRYOSTAT SETTINGS
4. INFECTIOUS CASES

**D. SAFETY ISSUES IN THE FROZEN SECTION ROOM**
1. HANDLING KNIVES AND SCAPEL BLADES
2. EXPOSURE TO POTENTIAL INFECTIOUS/TOXIC MATERIALS
PEDIATRIC SOLID TUMOR PROTOCOL

IMPORTANT:
**Notify Kim Hazard, MD (Director of Pediatric Surgical Pathology) AND Surgical Pathology Director on service when any Pediatric Tumor is received.**

1. Tissue should be submitted in a GOLD cassette either the same day or the following morning following fixation if received late in the evening. For large specimens, put through one pilot section and submit additional sections the following day. ALL SECTIONS SHOULD BE SUBMITTED IN GOLD CASSETTES.

2. Order at least 10 unstained slides upfront. (If after hours, place patient last name on cassette in lieu of accession number.) Notify histology, immunohistology, and Hot Seat that the case is coming through.

3. If needed, Hot Seat fellow will order a panel of immunohistochemical stains when slides are reviewed. (However, if small round blue cell tumor & you know it needs immunostains: order SRBCT panel on day of receipt of specimen. Coordinate this with Kim Hazard and/or Service Chief).

FROZEN SECTION ROOM/GROSS ROOM

1. Submit tissue for Cytogenetic analysis:
   A. Save 3-4 cubes measuring 0.1 x 0.1 cm in RPMI
   B. Complete the Cytogenetics requisition form located in the gross room
   C. SEND sample and requisition form to Cytogenetics; tube to station #222 in the clinical lab (order can be cancelled following initial microscopic evaluation)

2. Portions of tumor should be frozen (and/or keep the frozen section sample frozen):
   A. Freeze tissue in plastic clear containers located in frozen section room and gross room. Containers should be labeled with the patient’s name, medical record number, specimen site, and date (PAs can help freeze tissue with isopentane solution)
   B. Record specimen in Gross Room log book
   C. Place tissue sample(s) in -80C freezer in IPOX lab boxes (third cabinet):
      Box# 1: “Peds Gross Room”
      Box# 2: “COG”
*If at least 2 samples cannot be frozen, place tissue in Peds Gross Room Box only

Things to think about...
3. Should the tumor be sent for flow cytometry?
A. Save 3-4 cubes measuring 0.1 x 0.1 cm in RPMI and HOLD in refrigerator
   B. Send tissue for flow cytometry after initial microscopic evaluation, if appropriate

4. Should the tumor be saved for electron microscopy?
   A. Save 3-4 cubes measuring 0.1 x 0.1 cm in gluteraldehyde and HOLD in refrigerator
   B. Activate electron microscopy by contacting EM lab (5-5196) after initial microscopic evaluation, if appropriate

**Special Consideration**
On occasion, patients are enrolled on special study protocols prior to resection of their tumor. In this situation, the resident(s) responsible for frozen sections will be contact by a Clinical Research Associate (CRA) from LPCH (typically via email or pager) several days prior to the surgery. The CRA will give the resident the following information: patient name, medical record number, diagnosis, surgeon name, surgery date and approximate time. The resident will also be given special instructions for processing the fresh tissue to ensure the patient can be enrolled on the study. Although these instructions often mirror those of the Pediatric Solid Tumor Protocol (see above), additional requirements may exist.

Please touch base with the Pediatric Pathologist supervising the case (either Kim Hazard, MD or Amy McKenney, MD) when you are contacted and review the specimen requirements. On the day of the surgery you will be paged when the specimen is ready to either be picked up from the LPCH OR by you or delivered via courier to the SHS Frozen Section Room. Once the specimen has been received, please process the fresh tissue as required by the study protocol and Pediatric Solid Tumor Protocol. Place this tissue in the Gross Room refrigerator and IPOX -80C freezer, as per instructions. The remaining tissue can be grossed in as per our usual procedures. Finally, contact the CRA in charge of the case to let him/her know the tissue is ready for them to retrieve.

If you experience any difficulty or have questions at any point, please contact either Kim Hazard, MD or Amy McKenney, MD.

**GROSSING OF SPECIMENS**


1. **Neuroblastoma/Ganglioneuroblastoma:** (also see page 208 in surgical path dissection guide)
   A. Look for circumscribed hemorrhagic nodules (a feature of nodular ganglioneuroblastoma)
B. State the presence or absence of these nodules in gross description

2. Wilms tumor: (also see page 215 in surgical path dissection guide)
   A. Assess the number of tumor nodules present; measure each nodule
   B. State the presence or absence of nephrogenic rests
   C. Map the sections on a gross photograph of the tumor or a free hand diagram of the tumor slices (helps determine focal versus diffuse anaplasia)
   D. Take special care to submit sections of the entire renal sinus
   E. Scan the section map into Powerpath for records!

3. Osteosarcoma: (also see page 117 in surgical path dissection guide)
   A. Assess the extent of tumor involvement (bone, joint space, dermis, subcutaneous tissue, etc…)
   B. Measure the distance between the tumor and proximal and distal surgical resection margins.
   C. Submit an entire longitudinal cross-section of the greatest extent of tumor
   D. Map the sections taken on a gross photograph, radiograph, or free hand diagram (to assess the distribution and percentage of viable versus non-viable tumor)
   E. Scan the section map into Powerpath for records!
ANATOMIC PATHOLOGY AT THE
VA PALO ALTO HEALTH CARE SYSTEM

Director: Kristin C. Jensen, M.D.

Residents in the Anatomic Pathology (AP) or combined (AP/CP) program rotate through the VA Anatomic Pathology Service for 4.5 months during their first and/or second years. The Anatomic Pathology Service at VA Palo Alto Health Care System is a rotating service consisting of 2-3 residents (depending on vacation schedules and other leave time). The three day rotation is as follows:

First day
- All grossing *
- Cover frozen sections
- Attend Stanford interesting case neuropathology conferences, if scheduled for that day (third day resident to cover frozen)
- Finish up cases from previous sign-outs

Second day
- Any autopsies (including removal of the brain)
- Cut brains if on brain cutting day
- Review microscopic slides of any current autopsy brains
- Preview surgical (including dermatopathology) pathology cases
  (released from other duties at 4 pm)
- Finish up cases from previous sign-outs

Third day
- Signout surgical pathology (including dermatopathology) cases and generate all reports
- Attend cytology signout in the afternoon
- Finish up cases from previous sign-outs

The two day rotation is as follows:

First day
- All grossing *
- Cover frozen sections
- Any autopsies (including removal of the brain)
- Cut brains if on brain cutting day
- Finish up cases from previous sign-outs

Second day
- Preview surgical (including dermatopathology) pathology cases
- Signout surgical (including dermatopathology) pathology cases and generate all reports
- Assist as needed with autopsies and frozen sections
- Review microscopic slides of any current autopsy brains
Finish up cases from previous sign-outs

A sample two-week schedule for residents A, B, and C will look like this:

**WEEK 1**

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>Resident A</td>
<td>G/FS</td>
<td>A/P</td>
<td>S/O</td>
<td>G/FS</td>
<td>A/P</td>
</tr>
<tr>
<td>Resident B</td>
<td>A/P</td>
<td>S/O</td>
<td>G/FS</td>
<td>A/P</td>
<td>S/O</td>
</tr>
<tr>
<td>Resident C</td>
<td>S/O</td>
<td>G/FS</td>
<td>A/P</td>
<td>S/O</td>
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**WEEK 2**

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<tr>
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<tr>
<td>Resident A</td>
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<td>G/FS</td>
<td>A/P</td>
<td>S/O</td>
<td>G/FS</td>
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<tr>
<td>Resident B</td>
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<td>A/P</td>
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<td>G/FS</td>
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</tr>
<tr>
<td>Resident C</td>
<td>A/P</td>
<td>S/O</td>
<td>G/FS</td>
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G/FS=Gross/frozen sections (first day duties as above)
A/P=Autopsy/preview (second day duties as above)
S/O=Signout (third day duties as above)

* Unfixed large specimens requiring overnight fixation may occasionally arrive in the late afternoon and be postponed until the following day; this will be monitored by the Surgical Pathology Attending.

The decision as to day and time to perform an autopsy will be made by the morgue attendant/consultant, with input as needed from the Autopsy Attending. In general, when an organ block is available before 11 am, the resident on A/P will do the case that day. When the organ block is not available until after 11 am, the dissection is postponed until the next day. Exceptions are made in certain circumstances.

While the rotation system is designed to parallel common practice in community pathology groups as well as provide well-defined duties and responsibilities for residents, the overall VA Anatomic Pathology rotation is intended to be an integrative and collaborative service maintained by three (or two, when one resident is on leave) residents with cross-service coverage and/or assistance provided for frozen sections, autopsies, or during busy times on the service.

**GOALS AND OBJECTIVES**

**OVERVIEW**

During each month of the rotation, residents will see over 200 specimens obtained in the operating rooms, various clinics or from referring institutions. Residents will be responsible for whatever material they gross each day, including dermatopathologic and neuropathologic specimens. Residents are responsible for the gross description and placement of the fixed specimens in the automatic processor (or outside laboratory collection canisters). When the stained sections are delivered by the histology laboratory (usually around noon the following day), the resident will
examine them and obtain the appropriate ancillary information needed in some instances (e.g., clinical history, prior biopsies, etc.). On signout days, every attempt will be made to complete the surgical pathology and initial dermatopathology signout by noon (both done by the attending on surgical pathology); in a two-person rotation, the signout will be in the afternoon. Specialty dermatopathology signout with Dr. Egbert will occur on Monday, Tuesday, Thursday and Friday afternoons, or according to her schedule. During signout, the attending and the resident will agree upon a diagnosis and will decide whether or not a microscopic description is necessary. Following this signout session, the resident will dictate or enter into the surgical pathology database the diagnosis and description. The diagnosis of routine cases may be dictated or entered by the attending. Following signout, the resident should also order any special stains or immunohistochemical stains needed for the case, and seek consultative opinions from other attendings on difficult or malignant cases as required. The resident will verify all cancer diagnoses with a second attending and, where appropriate, CAP protocols will be followed and TNM staging will be performed. Subsequently, the attending will review the entire report (gross and microscopic descriptions, diagnosis, etc.) and release the diagnosis for the clinical staff. The residents, in conjunction with the given attending, are responsible for presenting interesting and/or challenging surgical (including dermatopathologic and neuropathologic) pathology cases at the weekly microscopic conference (Tuesday at noon).

The number of autopsies during each rotation at the VA will be variable; residents might expect to perform anywhere from 0 to 6 autopsies in a given month. The resident will be instructed and assisted in the external examinations of the body and in the dissection by experienced morgue attendant(s) and/or the autopsy attending. The resident is strongly encouraged to learn and participate in the evisceration process.

For each case the resident will:

-- Examine and validate the autopsy permit and identify the body.
-- Read the clinical history, consult with clinicians, and discuss the case with the attending.
-- Obtain the names of at least four clinicians (for VA cases) involved in the care of the patient from the review of clinical history, and enter these names in the appropriate field in the autopsy report.
-- When appropriate, contact the coroner.
-- Do an external examination and dissection of organs.
-- Obtain and fix samples of all appropriate tissues.
-- Discuss the organ findings with the attending.
-- Formulate, with the attending, a Provisional Anatomic Diagnosis (PAD).
-- Enter (or dictate) a gross description of all organs.
-- Trim for histology, and submit the samples when fixation is completed.
-- Present a brief clinical history as well as the organ findings at the weekly organ recital for all staff (including radiology staff and interested clinicians).
-- Examine the histologic sections independently and then with the attending.
-- Discuss the case with the attending and formulate a Final Anatomic Diagnosis (FAD).
-- Participate in brain removal.
-- Take pictures of gross findings.

If the resident’s autopsy rotation falls on the day of a family conference, the resident is strongly encouraged to participate in these conferences during the first rotation and to conduct the conferences after obtaining appropriate training and experience.

If brain cutting will be performed on the second day of the rotation, the resident will participate in brain cutting. In addition, the resident will review the diagnostic neuropathology slides on current autopsy cases and present interesting autopsy (including neuropathologic) findings at the weekly microscopic conference.

During the first day of the rotation scheme, the resident will be responsible for operating room consultations from 8 am until 6 pm (covered by the third day resident on the days of Stanford interesting neuropathology conferences). A pager carried by the resident announces the request from the operating room or a clinic. Approximately 15 to 20 operating room consultations occur per month, with 30 to 50 individual specimens cut as frozen sections. The resident should obtain all the necessary information to process further the specimens used for operating room consultations. When a request is received, the resident will inform the surgical pathology faculty attending of the request; then, will proceed to pick up the specimen (and the important clinical information that comes with it) in the operating room, noting the time of the pickup. Once the specimen is obtained, the resident and attending will decide if and where to sample the tissue. If needed, a frozen section (FS) will be cut by the resident under faculty supervision. The result will be communicated to the surgeon by the resident and the diagnosis will be written verbatim for the report, noting the time of the communication and obtaining the signature of the attending. The resident must maintain specimen orientation and information regarding specimen sampling for further processing.

All residents are encouraged to attend several interdepartmental conferences routinely involving pathology (Tumor Boards, weekly Medicine Multidisciplinary conferences, GI, Urology, etc.). The entire pathology staff (faculty and residents and students and visitors) is encouraged to attend the weekly autopsy organ presentation (Thursday at 1:15 pm in the morgue). Journal clubs are held on most Fridays, providing an opportunity to critically review current literature. Interesting cases are presented at the weekly pathology microscopic conference at noon on Tuesdays. Stanford conferences (8 am Tuesday through Friday and occasional others) are available via teleconference and/or an internet connection. Attendance at the 8 am Tuesday through Friday lecture series is required and is documented using the conference calendar in the VA residents’ room.

Since medical students often spend clerkship rotations in the VA pathology service, it is expected that the residents provide to them some guidance and teaching within their frame of expertise and availability. In turn, students are expected to assist the residents as appropriate for their level of training.

Residents on anatomic pathology at the VA are expected to master the following broad areas to the level expected of a new practitioner. While it is recognized that it
is not entirely practical or necessarily desirable to delineate levels of competency that are specific for year of training, the following are offered as rough guidelines. It is expected that the resident will develop the knowledge base, tools, skills, and demeanor that will foster life-long learning in her/his professional career.

The anatomic pathology rotation at the VA requires considerable dedication and efficient organization. Residents should be prepared to spend time in the preparation and study of cases. In the second and subsequent months, the technical and logistical experience gained during the first month should make work easier and more efficient.

PATIENT CARE

BASIC PRINCIPLES

Year 1: Resident demonstrates knowledge about tissue fixation (including commonly used special fixatives), tissue processing, embedding, orientation of specimens, margin assessment, section preparation, levels, use of special stains, immunohistology, electron microscopy (EM), and cytogenetics.

Year 1: Resident demonstrates basic computer skills in anatomic pathology.

Year 2: Resident is able to order special stains and levels independently when previewing.

Year 2: Resident is proficient in the preparation and delivery of PowerPoint presentations and is capable of independent case presentation.

Year 2: Resident is proficient at seeking intradepartmental consultation and clinical correlations and is able to resolve diagnostic disagreement.

Year 2: Resident is able to present pathologic findings at weekly interdepartmental conferences.

GROSS EXAMINATION

Year 1: Resident develops proficiency in specimen identification, performs anatomically correct dissection, dictates accurate descriptions, and takes appropriate sections for microscopic examination, including appropriate sections for examination of margins (where appropriate).

Year 1: Resident is knowledgeable about and able to perform specimen photography when appropriate.

Year 1: Resident is proficient in the handling of common specimens requiring special processing (e.g., culture, EM, cytogenetics, bone marrows, direct immunofluorescence).
Year 1: Resident is proficient in the handling of neuropathologic specimens (including brain removal at the time of autopsy).

Year 1: Resident is proficient at recognizing the need for special studies or dissections (e.g., cultures, bone lesions, peripheral vascular lesions).

Year 2: Ability to gross in complicated specimens (e.g., Whipple resection, pelvic exenterations, radical neck dissections) and dissect complicated autopsy cases (e.g., post-surgical, ampullary/bile duct lesions) with minimal supervision. Must be able to recognize when to seek additional assistance from colleagues or surgeon.

MICROSCOPIC EXAMINATION

Year 1: Resident is able to generate an accurate morphologic description, with a reasonable diagnosis/differential diagnosis. Resident is able to provide basic elements of information in all reports, prepare report, correlate findings with any frozen section findings, and present report to faculty at sign-out.

Year 2: Resident is able to formulate an accurate diagnosis or recognize need for consultation, select special stains/IPOX (where appropriate), interpret special stains (and associated artifacts).

Year 2: Resident demonstrates adequate knowledge/use of grading systems, use of synoptic reports (as appropriate), indications for supplementary reports, and proper handling of consultation cases.

INTRAOPERATIVE FROZEN SECTIONS/SMEARS

Year 1: Resident understands role of intraoperative diagnosis; appropriate indications; tissue sampling for intraoperative diagnosis, can cut/stain frozen section (within 10 minutes), and is knowledgeable about precautions for handling fresh tissue or other specimens for intraoperative diagnosis.

Year 2: Resident is proficient at the preparation/staining of smears, interpretation of frozen sections/smears with minimal supervision, understands limitations of intraoperative diagnosis, and is able to communicate effectively and engage in dialogue with treating surgeon and/or clinician.

SYSTEMS-BASED PRACTICE (LAB MANAGEMENT)

Year 1: Resident demonstrates knowledge of JCAHO/CAP standards/requirements for specimen submission and occupational hazards/infection control, particularly with respect to personal protective equipment, storage/disposal of specimens and hazardous chemicals.

Year 2: Resident is competent in the cost-effective practice of pathology and medicine.
Year 1&2: Resident participates in QA review activities and demonstrates knowledge of quality assurance and improvement and basic risk management issues.

Year 1&2: Resident recognizes which autopsy cases require consultation with the coroner.

PROFESSIONALISM

Year 1: Resident develops expertise in use of appropriate phraseology in reports, demonstrates effective skills in communication to physicians and patients, when appropriate, and understands importance of timeliness, turnaround and rush cases.

Year 2: Resident assumes responsibility for presentation of pathology at interdepartmental conferences.

Year 1&2: Resident communicates with support staff, administrative staff, technical staff, housestaff colleagues, and supervising faculty in a respectful and efficient manner. Residents receive 360 degree evaluations on every rotation.

Year 1&2: Resident functions as a member of an integrated anatomic pathology team, helping colleagues as appropriate, to provide accurate, efficient, high quality patient care.

MEDICAL KNOWLEDGE

Year 1: Resident develops basic understanding of disease with correlation to morphology. The resident develops a managerial classification that includes concepts of benign, borderline (low malignant potential), uncertain malignant potential, and malignant.

Year 1: Resident develops understanding of the role of intraoperative frozen section/touch preparations in clinical decision making.

Year 2: Resident is proficient at dissection, analysis and investigation of unusual or difficult cases and can workup cases with minimal supervision.

Year 1&2: Resident participates in journal club.

PRACTICE-BASED LEARNING

Year 1: Resident develops case-based learning as a tool for disease pathogenesis via weekly gross conferences.

Year 2: Resident is able to use wide variety of information sources and is able to use effective problem solving skills in pathology. Proficiency in literature searches and assimilation of scientific and clinico-pathologic information to apply to specific problems in pathology is required.
Year 1&2: Resident reviews chart and/or prior anatomic pathology specimens, contacts relevant clinicians and summarizes clinical findings and correlates them with the gross and microscopic findings.

INTERPERSONAL AND COMMUNICATION SKILLS

Year 1: Resident learns to prepare accurate, concise, complete and cogent written surgical pathology and autopsy pathology reports that incorporate all relevant findings (e.g., clinical, radiologic, serologic, cytogenetic, immunohistochemical, etc.).

Year 1: Resident learns to communicate effectively with surgeons and other clinicians during intraoperative consultation and at case sign-out, when appropriate.

Year 1: Resident participates in post-mortem conferences with family members of the deceased.

Year 2: Resident actively participates in teaching medical students and first year residents on the anatomic pathology rotation.

Year 2: Resident conducts post-mortem conferences with family members of the deceased.

Year 1&2: Resident teaches medical students in the medical school pathology labs in an effective and clear manner, i.e., correlation of gross and microscopic findings with clinical findings.
TRANSFUSION MEDICINE

Program Director: Lawrence Tim Goodnough, MD
Director of Education, Transfusion Service: Magali Fontaine, MD, PhD
Director of Education, Blood Center: Chris Gonzalez, MD

Goals
The goal of this rotation is for the resident to attain proficiency in managing medical issues related to a hospital based transfusion service, including selection of appropriate products, pre-transfusion testing, and evaluation of transfusion-related complications. Additionally, the trainee will acquire a firm background in immunohematology, blood inventory management, apheresis, and in the principles of safety, quality assurance, and record keeping. Similarly, the trainee will confidently understand the principles and confidently deal with issues related to blood collection, preparation, storage, and shipment.

Objectives
The resident rotating on the Transfusion Service (TS) will be an integral part of the Transfusion Service/Blood Center operations. He/she will have substantial responsibilities for patient care, and usually serve as the primary link between the clinical services and the Blood Center/Transfusion Service. The following objectives for the rotation are listed as follows:

Patient care
- To develop a thorough knowledge of blood collection, preparation, storage, and shipment
- To understand indications for transfusion and develop proficiency in selection of appropriate blood products for transfusion
- To understand pre-transfusion testing
- To attain proficiency in managing transfusion-related complications

Medical knowledge
- To understand the immunologic and genetic principles that underlie transfusion medicine
- To understand the role of transfusion medicine in managing specific acute and chronic diseases
- To understand complications of blood transfusion, including infections and iron overload and other non-infectious side effects

Interpersonal and Communications Skills
- To teach medical technology staff thorough presentation of continuing education lectures
- To develop effective writing skills by writing a brief case report of an unusual case appearing during the rotation
- To serve as a liaison between blood bank staff and clinicians
• To communicate effectively in the role of first call consultant to clinicians with questions or problems
• To serve as a helpful resource for technologists and clinicians regarding blood banking/transfusion medicine issues
• To assist in teaching Core Lab rotation residents principles and practices of the Transfusion Service

**Professionalism**
• To complete interpretive reports in an accurate and timely fashion
• To interact in a professional, helpful and respectful manner with clinicians, other house staff, and technical and administrative staff
• To display sensitivity to ethical, cultural, and religious issues relating to blood transfusion

**Systems-based Practice**
• To develop an understanding of quality assurance in blood banking and transfusion medicine
• To understand the role of the Stanford University Medical Blood Center in relationship to the Stanford Medical Center transfusion service
• To understand CAP and AABB accreditation requirements
• To provide consultation in cost-effective medical practice regarding indications for transfusion and selection of appropriate products
• To become familiar with the regulatory agencies and rules governing collection, processing and distribution of blood products
• To be aware of emerging pathogens and their potential impact on national blood supply
• To understand inventory management of blood products, at the local and national level

**Practice-based Learning**
• To use case-based learning as a tool for additional insight into the basis of disease
• To locate and assimilate pertinent evidence from scientific studies
• To demonstrate effective problem solving skills in transfusion medicine, using a wide variety of information resources

The core competencies described are summarized on the next page.
# Competencies for Stanford Transfusion Medicine/Blood Center

ACGME Competencies for Transfusion Medicine/Blood Center

## Goal

This document defines the Stanford University Transfusion Medicine/Blood Center rotation program objectives, strategies, and assessment tools, used to fulfill ACGME requirements. Trainees are responsible for reviewing the objectives as they begin the rotation. A detailed description is available in the Transfusion Service/Blood Center.

<table>
<thead>
<tr>
<th>ACGME Competency</th>
<th>Program Objectives</th>
<th>Strategy</th>
<th>Assessment Tool</th>
</tr>
</thead>
</table>
| Patient Care      | Develop Diagnostic Competence  
• Appropriate & effective consultation (in context of Transfusion Medicine Service)  
• Gather essential & accurate information on specific patient/donor issues  
• Make informed decisions concerning patient/donor safety and product quality (i.e. safety, purity, potency and efficacy) | • Management of daily Transfusion Medicine activities  
• Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference | • 360° Evaluation  
• Case presentation at daily rounds and weekly on-call conference |
| Medical Knowledge | Demonstrate Knowledge about the established & evolving science of Transfusion Medicine  
• Application of knowledge about the established & evolving science of Transfusion Medicine | • Didactic sessions with lectures from staff physicians and technical training personnel  
• Wet laboratory experience  
• Computer based training  
• Attendance and participation in morning conference  
• Required maintenance of weekly portfolio entries | • Pre-Post Examination  
• 360° Evaluation  
• Review of Case Log entries |
| Practice-Based Learning & Improvement | Demonstrate ability to:  
- Analyze, evaluate, appraise, their practice in Transfusion Medicine  
- Locate, appraise and assimilate information from scientific studies related to patients'/donors' health care problems  
- Provide educational experiences for co-workers and other allied health professionals | Required maintenance of weekly portfolio entries  
- Deliver Divisional continuing educational events | 360° Evaluation  
- Review of Case log entries |
| Interpersonal & Communication Skills | Demonstrate  
- Effective communication with co-workers  
- Ability to prepare diagnostically accurate reports  
- Accurately and effectively communicate diagnostic information verbally to colleagues | Management of daily Transfusion Medicine activities  
- Consultation with physicians, patients, donors and allied health personnel  
- Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference | 360° Evaluation  
- Review of Case log entries |
| Professionalism | Demonstrate commitment to:  
- Professional responsibilities  
- Adherence to ethical principles  
- Sensitivity to the diverse patient/donor and co-worker populations | Management of daily Transfusion Medicine/Blood Center activities | Daily rounds  
- Presentation at Monday on-call conference  
- 360° MedHub evaluation |
| System-Based Practice | Demonstrate:  
- Ability to efficiently perform Transfusion Medicine Trainee responsibilities  
- Understanding of Stanford Hospital organization, processes and systems, | Management of daily Transfusion Medicine activities  
- Consultation with physicians, patients, donors and allied health | 360° MedHub Evaluation  
- Review of Case log entries |
and the impact of Transfusion Medicine decisions on that system.
- Identify strengths and weaknesses in the Div. of Transfusion Medicine/Blood Center operational processes
- Ability to call on Stanford Hospital system resources to provide better service
- Understanding of insurance and reimbursement issue associated with Transfusion Medicine practices
- Understanding of regulatory and accreditation agency standards influencing the practice of Transfusion Medicine

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<thead>
<tr>
<th>personnel</th>
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<tbody>
<tr>
<td>Required maintenance of weekly case log entries</td>
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</table>
Requirements of the rotation

During the first two-month rotation, the resident will learn the basic immunologic and genetic principles of transfusion medicine, and will have hands-on experience with the bench work. The resident will work on transfusion reactions under the close supervision of the service director. This will include chart review and patient examination as necessary. The resident will become familiar with blood donor questionnaire donor deferral, blood collection, preparation, storage, and shipment. The resident will become familiar with typical consultative questions from clinical staff, including special needs, massive transfusion guidelines, etc.

During the return rotations to the Blood Center/Transfusion Service laboratory, the resident will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director.

Responsibilities:

1) To be actively present in the Transfusion Service from 8:00am – 5:00pm, to gather relevant information to be presented on daily rounds which starts at 9:30 AM, and during which the following items are reviewed:
   a. Problems from the night call
   b. Blood Component inventory including RBCs, platelets, and plasma products
   c. Special requests such as HLA/crossmatched platelets.
   d. Transfusion reactions
   e. Special antibody work ups, and or ABO discrepancies
   f. Donor reactions

2) The resident will meet with the Transfusion Service Director and/or the Blood Center Director on a regular basis to review the objectives of the rotations, listed below. The list of objectives should be covered once during the first two-month rotations and reinforced during the third-month rotation.

3) The resident will rotate through the different areas of the Blood Center and the Transfusion Service according to a schedule kept by Jason Calcagno, the education coordinator.

4) The resident will take first call, until 5 PM, for the Transfusion Service/Blood Center related issues addressed to either the transfusion service or the blood center and with the back up of an attending physician the resident should be able to:
   - to receive phone calls regarding:
     - Donor eligibility
     - Donor reactions
     - Transfusion Reactions
     - Trigger Hemoglobin values for transfusion
     - Therapeutic indications of blood products from physician in other specialties.
   - to place phone calls regarding:
     - Indication for special products i.e., washed, irradiated, leukoreduced, CMV negative
     - Clarification of surgical orders
- Clarifications of transfusion reactions
- Assessment and prioritization of the transfusion needs of patients with multiple alloantibodies or autoantibodies
- Clarification of clinical condition and follow up of transfused patients

5) The resident will actively assist with inventory management and provide clinical consultation in patients with extraordinary needs (e.g., massive transfusion protocol in trauma, surgery, or obstetrical emergencies; coagulopathic bleeding; bloodless medicine patients; and non standard protocol in patients with alloantibody problems who require substantial blood support).

6) The resident will attend and participate in a weekly conference (Mondays at 1 PM) during which weekly on-call transfusion/blood center issues will be presented.

7) The resident will keep a portfolio of all transfusion and blood case, in which he or she was involved. Each case summary will include a brief description, the resolution, and the alternative therapy providing a brief review of the related literature.

8) The resident will present a blood bank related seminar during the rotation for the Blood Bank technologists. Topic may be one suggested/requested by the techs. This may be presented in shifts during the day of the last week of the rotation.

9) At Friday-noon CP on call-interesting case conference, the resident will present a case report of one of the interesting cases that appeared during the rotation on transfusion service/Blood center.

10) The resident will be encouraged to write up a case report during the rotation of one of the interesting cases that appeared during that time, including recent literature support for the discussion.

11) The resident will be encouraged to get involved in the Laboratory Administrative and Management activities regarding personnel, staffing, budgeting, quality assessment and improvement.

12) The resident will attend all Transfusion Service/Blood Center supervisors meeting, QA and Quality Committee meetings.

13) Perform Quality Audits as requested, including participation in CAP, AABB, and other outside audits when they occur.

**Teaching staff responsible for supervision and instruction:**

The director of education for the Transfusion Medicine Service/Blood Center and the education coordinator of the transfusion service will together be primarily responsible for the instruction of the resident. A list of related transfusion and blood center topics will be assigned to each attending. Supervision is the ultimate responsibility of the service director, with assistance from the laboratory supervisor and from technologists in the lab during the teaching of specific bench procedures.
### Didactics:

<table>
<thead>
<tr>
<th>Professor</th>
<th>Subject</th>
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<tbody>
<tr>
<td><strong>Dr. Viele</strong></td>
<td>Hemolytic Disease of the Newborn and the use of Rhlg</td>
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<td>Uremic Bleeding</td>
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<td>Computer systems in the Transfusion Service</td>
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<td>Transfusion Service Basics</td>
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<thead>
<tr>
<th>Professor</th>
<th>Subject</th>
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<tbody>
<tr>
<td><strong>Dr. Fontaine</strong></td>
<td>Transfusion reactions and special needs</td>
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<td></td>
<td>Basics of immunohematology</td>
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<td></td>
<td>Transfusion medicine quality systems - overview regulation</td>
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<td></td>
<td>Therapeutic apheresis</td>
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<td>TRALI</td>
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<td>polyagglutination</td>
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<td>Hemolytic anemia</td>
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<td>Lookbacks</td>
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<td>Platelet Refractoriness</td>
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<th>Professor</th>
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<tbody>
<tr>
<td><strong>Dr. Goodnough</strong></td>
<td>Blood Transfusion and blood conservation</td>
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<td>Therapeutic apheresis</td>
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<td>Anemia of chronic disease</td>
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<td>Erythropoietin, iron and erythropoiesis</td>
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<td>Factor VIIa indications</td>
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<th>Professor</th>
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<tr>
<td><strong>Dr. Galel</strong></td>
<td>MSM policy regarding donation from men who have sex w/ men</td>
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<td>Current good manufacturing practices</td>
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<td>Biologic product deviations</td>
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<td>HIV HCV look back studies</td>
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<td>Investigation of post-transfusion hepatitis or TRALI reports</td>
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<tr>
<th>Professor</th>
<th>Subject</th>
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<tbody>
<tr>
<td><strong>Dr. Gonzalez</strong></td>
<td>Apheresis collections</td>
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<td>Transfusion associated graft vs. host disease</td>
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<td>Autologous and designated donations: logistics, safety relative to community donations</td>
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<td>UDHQ: what is on it, deferral policies, CUE option</td>
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<td>Support of patients with sickle cell anemia</td>
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<td></td>
<td>Molecular vs. serologic red cell typing: when to use each method</td>
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<td>Donor anemia: prevention, management</td>
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Manner of supervision and evaluation:
The transfusion medicine physician on service will meet with the resident daily to review assigned topics in order to verify that the resident is progressing in his or her understanding of transfusion medicine. All interpretations, conclusions, and consultative opinions will be verified with the director for education prior to posting in the chart or final communication with the clinical staff.

The resident will be evaluated by the director for education, with input from the Medical Directors from both the Blood Center and the Transfusion Service and with input from the laboratory supervisors and manager. This evaluation will be documented in the standard evaluation form used throughout the program. In addition, feedback is continuous throughout the duration of the rotation.

Evaluation based upon
1. Daily report quality and accuracy.
2. Report of completion of bench work
3. Verbal interactive evidence of comprehension of the reading.
4. Multiple choice exams.
5. Work ethic/habits.
6. Interaction with staff daily and at meetings
7. Educational activities for staff and/or students
8. Written case report
9. Oral case reports at CP conference
10. Attendance and participation at required meetings/conferences

Evaluation criteria:
- Unsatisfactory: anything below successful completion of all of the above activities/responsibilities.
- Appropriate for level: Responsibilities and Activities completed promptly. Thorough preparation for daily sessions. Good interaction with clinicians/staff to investigate and educate about problems.
- Unable to evaluate: because of incomplete rotation
<table>
<thead>
<tr>
<th>THEME</th>
<th>TOPICS</th>
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<tbody>
<tr>
<td>To be met in the First Month</td>
<td>To be met in the First Month</td>
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</table>
| **Understanding of the donor selection and phlebotomy process** | 1. Donor history  
2. Donor examination  
3. Interval between donations  
4. Community vs. directed donors  
5. Reactions to donation  
6. Therapeutic donation  
7. Collection process  
   a. Whole blood (manual)  
   b. Apheresis |
| **Knowledge of specific tests performed on donated blood** | 1. Know what tests are done on donor blood and how they are performed.  
2. Screening tests vs. confirmatory tests  
3. Testing algorithms  
4. Donor deferral/re-entry |
| **General knowledge regarding component preparation and storage** | 1. Red blood cells (additive, packed, dry packed)  
2. Fresh frozen plasma  
3. Platelet concentrates  
4. Apheresis  
   a. platelets  
   b. granulocytes  
   c. lymphocytes  
   d. red cells  
   e. plasma  
5. Cryoprecipitate  
6. Quality control testing requirements for components  
7. Fibrin sealants  
8. Commercial products; e.g. coagulation factor concentrates  
9. Solvent/detergent plasma  
10. RBC substitutes |
| **Understanding of different alternatives for autologous blood collection, advantages and contraindications** | 1. Pre-deposit collection  
2. Peri-operative salvage  
3. Acute normovolemic hemodilution  
4. Role of iron and erythropoietin |
| **Understanding of the following component manipulation methods/techniques** | 1. Sterile connection  
2. Irradiation  
3. Leukoreduction  
4. Freezing  
5. Pathogen inactivation  
6. Washing  
7. Packing |
| 8. Pooling  
9. Thawing | 1. ABO system  
   a. Forward and reverse typing  
   b. Blood components compatible with patient’s ABO type  
   c. Inheritance of ABO blood groups  
   d. ABO discrepancies  
   e. Major crossmatch: immediate spin & AHG  
2. Rh system  
   a. Nomenclature  
   b. Du phenotype  
   c. Clinical relevance/HDN  
3. Other major blood groups  
4. Clinically significant vs. clinically insignificant antibodies  
5. Antibody screen and compatibility testing |
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<tbody>
<tr>
<td><strong>Basic knowledge of the major blood group systems</strong></td>
<td><strong>Basic knowledge and indications for the following tests</strong></td>
</tr>
</tbody>
</table>
| 1. Direct AHG  
2. Indirect AHG and antibody panel studies  
3. Eluates  
4. Kleihauer-Betke  
5. Thermal amplitude/Titer studies  
6. Special reference techniques: enzyme, absorption studies, use of phenotypically similar cells, rare cells, survival studies | **Indications for the following products** |
| **Indications for the following products** | 1. Washed red cells, platelets  
2. Leukoreduced red cells, platelets  
3. CMV safe cellular products  
4. Irradiated cellular products |
| **Evaluation and management of transfusion reactions** | 1. Allergic  
2. Febrile  
3. Acute hemolytic  
4. Delayed hemolytic/delayed serologic  
5. Bacterial contamination  
6. TRALI  
7. Complications of massive transfusion |
<table>
<thead>
<tr>
<th>To be met in the Second Month</th>
<th>To be met in the Second Month</th>
</tr>
</thead>
</table>
| Evaluation and management of AIHA | 1. Cold  
2. Warm  
3. Drug related |
| Determination of need, timing, and appropriate dose of RhIg | 1. Prevention of HDN  
2. Rh+ products given to RH- recipients |
| Managing the platelet refractory patient | 1. Definition of refractoriness  
2. Causes of refractoriness  
3. Methods of managing the HLA-alloimmunized patient  
4. Managing refractoriness not related to HLA  
5. Platelet alloantigens, PTP, NAITP |
| Understanding of special protocols | 1. Massive transfusion  
2. Emergency processes (uncrossmatched blood, type specific, antigen negative, infectious testing incomplete) |
| General overview of inventory management | 1. Considerations in managing inventory  
2. Selection of products when ideal products are not available |
| Guidelines for appropriate use of blood components and indications for component therapy | 1. Approaches to Blood Utilization management and review (e.g. MSBOS, prospective vs. retrospective review)  
2. Indications for use of each blood component |
| Knowledge of blood administration procedures | 1. Importance of proper identification  
2. Transfusion administration devices  
3. Product doses/rates of infusion  
4. Management of transfusion reactions |

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<tr>
<th>To be met in the Third Month</th>
<th>To be met in the Third Month</th>
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</table>
| Understanding of “lookback” procedures | 1. Regulatory requirements  
2. Methods  
3. Legal and ethical issues |
| Information Systems in Blood Banking | 1. Importance of controls over product release  
2. Electronic crossmatch  
3. Tracking of products |
| Special considerations in perinatal transfusion | 1. Intrauterine transfusion  
2. Exchange transfusion  
3. ECMO  
4. Selection of products for use in aliquot vs. massive transfusions in neonates  
5. Doses of blood products for neonates  
6. Compatibility testing in neonates |
**Therapeutic uses of apheresis technology: indications, methods, and complications**

<table>
<thead>
<tr>
<th>1. Therapeutic plasma exchange</th>
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<tbody>
<tr>
<td>2. Collection of hematopoietic progenitor cells*</td>
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<tr>
<td>3. Processing of hematopoietic progenitor cells*</td>
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</table>

**Use of coagulation laboratory tests to guide transfusion therapy***

| 1. Review available laboratory, point of care, and reference coagulation tests and the turnaround time for each* |
| 2. Identify how these tests can be used to guide transfusion therapy* |

**Insuring compliance with regulatory requirements**

| 1. Review agencies/regulations involved (e.g. FDA, AABB, State, CLIA, JCAHO, OSHA) |
| 2. Blood Bank as a manufacturer (GMP’s) |
| 3. Quality Assurance |
| 4. SOP’s, training, documentation, quality control, proficiency testing, event monitoring |

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**Text books:**


Rotation Director: Jim Faix MD

Goals and Objectives

Patient Care
- Learn to interpret results for a variety of laboratory tests including:
  - markers of myocardial damage and cardiovascular risk
  - tests used to diagnose common and uncommon endocrine disorders
  - tests important in management of critical illness
  - common markers of renal and liver function
  - tumor markers
  - therapeutic drug monitoring and toxicology

Medical Knowledge
- be familiar with the wide variety of analytical principles used in Clinical Chemistry & Immunology including spectrophotometry, electrochemistry, chromatography, mass spectroscopy and immunoassay
- understand how laboratory tests used in the diagnosis and treatment of a variety of diseases reflect their underlying pathophysiology

Practice-Based Learning and Improvement
- for all important Chemistry analytes, become familiar with:
  - common pre-analytic influences on test results
  - common uses in diagnosis and/or monitoring of clinical disease

Interpersonal and Communication Skills
- be able to interact effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests

Professionalism
- be able to interact effectively with clinical laboratory scientists regarding laboratory technical problems
- understand different approaches to resolving human resource issues

Healthcare Delivery
- recognize important aspects of the administration of a clinical laboratory
- be capable of implementing a method, as indicated by understanding how to:
  - do a formal method evaluation
  - write a procedure
  - establish quality control policies and evaluate QC performance
  - evaluate proficiency testing data
Requirements of the rotation

The Chemistry & Immunology rotation is divided into two sections:
1) Months One (Core Laboratory at Stanford) and Two (Special Chemistry Laboratory at Hillview) are meant to introduce the resident to the major themes and topics of Clinical Chemistry & Immunology.
2) Month Three (return in the spring) is meant to allow the resident to review areas that need revisiting and also to function at a higher level in terms of clinical and administrative responsibility.

Requirements during Months One & Two:
1) The resident will meet with a supervisor each weekday to review any major clinical issues.
2) The resident will attend the following meetings:
   - Chemistry Operations Meeting Wednesday (1:00–2:00 PM in Hillview room 2906) - weekly
   - Chemistry Quality Meeting Friday (9:00–10:00 AM in H1551 Left) – monthly (first Friday of each month).
3) The resident will take “first call” (in place of director) for all clinical questions addressed to laboratory during each weekday.
4) The resident will also assume primary responsibility for:
   Month One:
   - review all toxicology analyses, with appropriate follow-up (e.g., evaluate discrepancies)
   - review results of all requests for intra-operative PTH
   - review any problematic testing results and determine the appropriate interpretation.
   Month Two:
   - review and sign-out of protein electrophoresis & immunofixation electrophoreses
   - review and sign-out of all problematic autoimmune or infectious disease serology testing results
   - review any problematic testing results and determine the appropriate interpretation.
5) The resident should also meet regularly (each day) with the director to discuss problems and issues.

During the introductory (two-month) rotation, the resident should cover all of the major topics of Clinical Chemistry or Clinical Immunology. To assist the resident, each of these has a specific “didactic” exercise (see table).

Requirements during Month Three:
The resident should function as the medical director (handle all medical and administrative issues, review quality control and proficiency test results and plan the implementation of a new assay). The resident will need to divide her/his time between both campuses during this month.
<table>
<thead>
<tr>
<th>THEME</th>
<th>TOPICS</th>
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</table>
| Chemistry Methods & Instruments   | 1. Specimen Processing & Instrumentation  
2. Photometry  
3. Electrochemistry  
4. Point-of-Care Testing  
5. Chromatography, Electrophoresis & Mass Spectrometry  
6. Immunohistology |
| Critical Care Chemistry           | 7. Osmolality & Body Fluids  
8. Electrolytes  
9. Blood Gas & Acid/Base  
10. Glucose & Ketones |
| Endocrine Disorders               | 11. Diabetes Mellitus  
12. Thyroid Disorders  
13. Adrenal Disorders  
14. Reproductive Disorders  
15. Unusual Endocrine Disorders |
17. Proteins & Enzymes  
18. Iron & Heme  
19. Mineral & Bone  
20. Vitamins & Trace Elements |
| Organ Injury & Dysfunction        | 21. Liver Disease  
22. Renal Disease  
23. Gastrointestinal Disorders  
24. Cardiovascular Disease  
25. Tumor Markers |
| Toxicology & TDM                  | 26. Pharmacokinetics  
27. Therapeutic Drug Monitoring  
28. Immunosuppressive Drugs  
29. Toxic Syndromes  
30. Environmental Toxins |
| Immunologic Disorders             | 31. Innate Immunity & Cytokines  
32. Serologic Diagnosis of Infectious Disease  
33. Allergic Disorders  
34. Autoimmune Disorders  
35. Chemistry of Myeloma & Lymphoma  
36. Immunodeficiency Disorders |

Topics # 1-3; 6-10; 16-17; 21-24 and 26-29 need to be covered during Month One. Topics # 4-5; 11-15; 18-20; 25 and 30-36 need to be covered during Month Two.


**Supervision and Evaluation**

During the introductory (two-month) rotation, the resident will meet regularly with a medical director to discuss problems encountered during the day, on-going issues or any of the topics outlined in the schedule noted above. He or she should reserve some time for these review sessions.

The resident will be evaluated not only based on his/her daily work as assessed by the director and supervisors but also by a written, open-book, examination, administered at the end of each month of the rotation. The examination will be designed to highlight areas of importance and to assess whether the resident needs additional help in gaining competence in any specific areas. Results will be reviewed formally with the resident.

**Major text and learning resources:**

For our primary textbook, we have selected Burtis, Ashwood & Bruns, ed. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 4th Edition (2006) from which reading assignments for each didactic session will be given. However, it should be noted that this text will frequently be supplemented with more current journal articles; these supplemental references will be included, along with the textbook reading assignments, in the didactic session handout.
COAGULATION / RBC SPECIAL STUDIES / HLA

Director, Coagulation: James Zehnder, MD
Directors, RBC Special Studies: Bertil Glader, MD and Tracy George, MD

Goals and Objectives

Patient care
- Be familiar with a wide variety of adult and pediatric coagulation and red blood cell disorders
- Develop competency in interpretation of coagulation and special red cell disorder testing
- Gain skill in the technical and interpretative aspects of these special tests
- Correlate clinical findings laboratory results in samples submitted for coagulation and special red blood cell testing
- Learn appropriate selection of diagnostic tests in these areas

Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, and laboratory features of the more common coagulation and red cell disorders
- Understand the significance of the various diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common coagulation and red cell diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the results and testing that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating specimen timely processing

Professionalism
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice
- Learn the process of case evaluation and work flow in the laboratory, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
• Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
• Begin to develop awareness of issues in coding and billing

**Practice-based learning**
• Use case-based learning as a tool for additional insight into the basis of disease
• Locate, appraise and assimilate pertinent data from scientific studies
• Demonstrate effective problem solving skills in diagnosing coagulopathies and red cell disorders using a wide variety of information resources, including laboratory and hospital information systems

**Length of Rotation: One month**
• 2-3 weeks spent in coagulation and
• 1-2 weeks in the red blood cell laboratory

**Requirements of the rotation/ Resident duties and responsibilities**

**Week 1: Coagulation**

**Monday:**

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Processing, PT, PTT, TT, Inhibitor Screen

PM:
1pm Transfusion Call Conference
Meet with Dr. Zehnder: Introduction to Coag, Inhibitor Screens

**Tuesday:**

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Heparin Level, ATIII, D-Dimer, vWF antigen

Noon: Hematology Journal Club (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases: 1-10

**Wednesday:**

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Factor Levels and Inhibitors
Noon: Hematology Conference (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases 11-20

Thursday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Platelet Aggregation

Noon: CP Lecture series Hillview Purple Room

PM:
Sign out Inhibitor Screens
Work on cases 21-30

Friday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Heparin Induced Platelet Aggregation, Heparin Induced Platelet Antibodies

Noon: CP Call Conference

PM:
Sign out Inhibitor Screens
Meet with Dr. Zehnder: Case Discussion

**Week 2: Coag/Red Cell Special Studies**

Monday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Protein C, Protein S, alpha2-antiplasmin, Activated Protein C, DDRVV

PM:
1pm Transfusion Call Conference
Meet with Dr. Zehnder: Case Discussion
Tuesday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: FactorXIII, PFA. Euglobulin

Noon: Hematology Journal Club (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases: 31-40

Wednesday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:

Noon: Hematology Conference (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases 41-50

Thursday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:

Noon: CP Lecture series Hillview Purple Room

PM:
Sign out Inhibitor Screens
Work on cases 51-60

Friday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:

Noon: CP Call Conference

PM:
Sign out Inhibitor Screens
Meet with Dr. Zehnder: Case Discussion
**Week 3: HLA Serology**

**Monday:**

AM:
Didactics with Dr. Tyan:
Overview of the MHC/HLA including typing, screening, and crossmatching
HLA antibody screening and identification

Tour of the HLA lab
Review with HLA Technologists: Luminex system

PM:
1pm Transfusion Call Conference
Analyze Luminex antibody screens (IgG and C1q)

**Tuesday:**

AM:
Assigned Reading:
The role of HLA in transplantation.

Clinical Conferences:
11AM 750 Welch Road, First Floor, Room? Adult Kidney Transplant
1PM 770 Welch Road, First Floor, Room? Pediatric Kidney Transplant
3PM 770 Welch Road, First Floor, Room? Pediatric Heart Transplant

**Wednesday:**

AM:
Didactic with Dr. Tyan:
HLA Crossmatching

Review Assays with HLA technologists:
Complement Dependent Cytotoxicity Assay and Flow Cytometry Crossmatch

PM:
Interpret Serologic Crossmatch and Flow Crossmatch Results

**Thursday:**

AM:
Didactics with Dr. Tyan:
Desensitization with IVIG

Analyze Donor Specific Antibody Tests
Noon: CP Lecture series Hillview Purple Room

PM:
Assigned Reading:
Continue: The role of HLA in transplantation.

Friday:

AM:
Clinical Conferences:
7AM Falk Library Adult Cardio-Thoracic Transplant
10:15 AM 750 Welch Road, First Floor, Room? Adult Kidney Transplant Desensitization

Noon: CP Call Conference L201

PM:
Assigned Reading:
HLA disease associations.
The clinical importance of HLA in transfusion and autoimmunity.

Week 4: HLA Typing

Monday:
Didactic with Dr. Tyan:
HLA genetics and typing

AM:
Review with HLA technologists:
Lymphocyte Isolation/ DNA extraction
Low, intermediate, and high resolution typing assays

PM:
Analyze SSP cases and assign low resolution types
Analyze Luminex typing and assign intermediate types

Tuesday:

AM:
Continue low and intermediate typing analysis

Clinical Conferences:
11AM 750 Welch Road, First Floor, Room? Adult Kidney Transplant
1PM 770 Welch Road, First Floor, Room? Pediatric Kidney Transplant
3PM 770 Welch Road, First Floor, Room? Pediatric Heart Transplant
Wednesday:

AM:
Review with HLA technologists:
Sequence Based high resolution typing
Heterozygous Ambiguity Resolution Primers (HARPs) and Haploprep

PM:
Analyze high resolution types.

Thursday:

AM:
Didactic with Dr. Tyan:
Haplotypes

Review with HLA technologist:
Engraftment/Chimerism analysis

Noon: CP Lecture series Hillview Purple Room

PM:
Pedigree analysis cases

Friday:

AM:
Clinical Conferences:
7AM Falk Library Adult Cardio-Thoracic Transplant
10:15 AM 750 Welch Road, First Floor, Room? Adult Kidney Transplant Desensitization

Noon: CP Call Conference L201

PM:
Review Pedigrees with Dr. Tyan
Summary Discussion
Coagulation reference materials:
1) Clinical Use of Coagulation Tests: Zehnder JL, UpToDate (available on line):  
2) Disorders of Hemostasis and Thrombosis: Goodnight SH, Hathaway WE, McGraw Hill (available at medical bookstore, residents' library)  
3) A syllabus of laboratory tests and case histories for review and discussion will be provided.

Supervision and Evaluation:  
The resident’s work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each director. Results will be reviewed formally with the resident.
CP HEMATOLOGY

Hematopathology Director: Yasodha Natkunam, MD, PhD
Directors, Hematology Lab: Tracy George, MD and Brent Tan, MD, PhD
Director, Flow Cytometry Lab: Susan Atwater, MD

Note: CP only residents will initially do a one-month rotation identical to the AP bone marrow hematopathology rotation before doing the CP rotation described here. Some other CP residents may also do additional weeks or months of the previously described AP hematopathology rotation.

Goals and Objectives

Patient care
- Be familiar with a wide variety of adult and pediatric hematologic disorders, neoplastic and benign
- Develop competency in peripheral blood smear, body fluid and bone marrow interpretation, including correlating morphology with ancillary tests used for diagnosis, such as special stains (i.e. cytochemistry, iron, etc…), HPLC/hemoglobin electrophoresis, NBT test, Kleihauer Betke test, flow cytometry, and tissue immunohistochemistry
- Gain skill in the technical and interpretative aspects of flow cytometry
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology
- Develop basic expertise in medical microscopy of body fluids and urinalysis
- Correlate findings in fluid samples with those in the cytopathology laboratory

Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating specimen timely processing
**Professionalism**
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the hematology/flow cytometry lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

**Systems-based practice**
- Learn the process of case evaluation and workflow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory workflow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

**Practice-based learning**
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

**Length of Rotation:** Initial two months, returning later in the year for one month. The third month has similar Goals and Objectives to the first months, but also has the objective of the resident learning more about interacting effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests

**Requirements of the rotation/ Resident duties and responsibilities**

1) The work load will be divided between CP residents and Hematopathology Fellows with one trainee handling peripheral blood smears and body fluids as Stanford, and the other handling flow cytometry specimens at Hillview.

2) Each morning one trainee will review held-over abnormal blood smears beginning 7:15-7:30am. As necessary, they will call physicians with results or to request further clinical information. Smears will be reviewed with either the Hematology Specialist or the attending pathologist.

3) From 9:30 – noon each day trainees will the bone marrow sign-out. This sign-out will include AP and CP residents and HP fellows as scheduled. CP residents should preview, perform 200-cell differential counts and be responsible for signing out at least 2 bone marrow cases per day.
4) The CP resident or Hemepath fellow (whomever is covering flow cytometry at the time) will take “first call” for all clinical questions regarding the morphologic evaluation of aspirates and peripheral blood smears prior to testing and cases that (s)he is writing up. For flow cytometry specimens submitted with in-house marrows that the AP resident will sign out, the AP resident will take “first-call” during normal working hours once the flow results are available and/or have been reviewed with the AP bone marrow sign-out attending. As needed, smears can be reviewed with either the Hematology Specialist or the attending pathologist.

5) If covering Flow Cytometry (Hillview): Flow cytometry sign-out will begin mid-morning, approximately 10 am. The resident is responsible for sign-out of all flow cytometry that is not linked to a bone marrow biopsy (handled by AP rotation), including result entry into the computer.

6) If covering body fluids: Body fluid sign-out will begin at a time agreed upon by the on-service resident and attending pathologist. The resident is responsible for sign-out and billing of all body fluids. The resident will enter results into the LIS.

7) Residents/fellows on body fluids will review molecular and cytogenetic results weekly and create addendum reports to integrate results.

8) Resident will contact clinicians for additional clinical history or for urgent diagnoses as necessary.

9) Following review with staff, the resident will dictate the flow cytometry reports using the standard blood/bone marrow report format. Cases will be dictated as soon as possible and, after correcting the dictation, will forward the cases to the attending for sign-out on the same day. The slides and paperwork must be available to the attending for re-review.

10) The resident will interpret flow cytometry results with the fellow or attending, check the entered flow cytometry data for accuracy in Power Path, and will incorporate an interpretation in the report. Text comments for negative flow cytometry reports are available in Power Path.

11) Residents also complete the body fluid billing log each day, and correlate all body fluids that also have cytology specimens each day.

12) Training Sections: Each week the resident rotates through a different section of hematology for detailed instruction by a reference technician, for a total of 6 weeks. The following sections are included: flow cytometry (2 weeks), heme specimen processing & automated hematology, body fluids, urinalysis, special hematology.

13) Teaching:
   - Either the resident or fellow give a weekly (Thursday 2-2:30 pm) conference to BMT fellows, as requested
   - Either the resident or fellow give a Monday am session to the flow cytometry techs
   - The resident is to give at least 1 in-service to the Hematology techs at the Hematology section meetings

14) Conferences:
   - Friday Noon CP Conference- Each resident will select at least 1 case for discussion.
Tuesday: 8AM Current Concepts seminar
Thursday: 12 noon Laboratory Medicine Lecture Series
1st Thursday of the month: Core Lab Teaching Conference
3rd Monday of the month: QA/QI Meeting
Tuesday: 12 noon—once per month around-the-microscope session
Surgical Pathology conferences are optional
Thursday 1:00pm, weekly interesting case conference
Monthly Hematology QA meeting
Wednesday: 9AM or 3:30PM, Core Lab Operations meeting
Friday: 8AM or 2:30PM, Hematology Operations meeting
Monthly Hematology/Hematopathology Conference- Optional
Bimonthly Acute Leukemia Tumor Board-Optional

15) Hematology and BMT Clinics are available so the resident can complete at least 5 patient bone marrow aspirate/biopsies
16) Attends the 2:30pm sign out conference and presents cases as designated by attending pathologist.
17) For evenings and weekends, “first-call” involving picking flow panels and morphologic evaluation of specimens submitted for flow cytometry evaluation should be taken by the CP resident/hemepath fellow covering the flow cytometry service. All other hematopathology-related “first-call” (e.g., peripheral smears and body fluids) involving “critical” issues should be taken by the on-call CP resident (#12005 pager). Routine examination of peripheral blood smears and body fluids, however, will be performed by the CP resident/hemepath fellow covering the Peripheral Smears/Body Fluids service.

Call Responsibilities:
The CP resident on call (#12005) handles all calls after normal working hours. A hematopathology fellow is usually also on call as an initial back-up to the resident, but the bone marrow service attending for any given week is the ultimate back-up person for both the resident and fellow. Monthly call schedules that designate the fellow and attending pathologists on call are posted on the first day of each month throughout the clinical laboratory.

During normal working hours, the resident or fellow on a given part of the CP hematology service takes the initial calls for that service with fellow and attending back-up. For example, if the CP resident is handling flow cytometry specimens in a given week, all requests related to flow cytometry will be initially directed to that resident, with the designated service attending available to assist the resident.

STUDY SETS
As it is not possible to see the large breadth of hematology during a rotation, glass slide sets are available for review of abnormalities on peripheral smear, bone marrow and body fluids. A list of correct diagnoses is provided. Independent study is strongly recommended to supplement the Hematology sign-out.
Although it is best to cover themes when problems and issues in those areas arise, here is an approximate guide for gaining experience in the following important topics during the rotations in Hematology and Coagulation.

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<th>TOPICS</th>
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<td>2 Peripheral smear: RBC morphology</td>
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<td>3 Peripheral smear: WBC morphology</td>
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<td>4 Reticulocyte counts</td>
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<td>37 Reactive disorders</td>
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<td>38 Myelodysplastic syndrome</td>
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</table>
39 Myeloproliferative neoplasms

Miscellaneous 40 CAP standards, QI/QC

Major Texts and Learning Resources:


Foucar K. Bone Marrow Pathology, 2nd Edition (2001)


George TI. Laboratory Hematology, UpToDate (online)


Henry JB. Clinical Diagnosis and Management by Laboratory Methods. 21st Ed. (2006)


Swerdlow SH et al. WHO Classification of Tumours, Pathology & Genetics, Tumours of Haematopoietic and Lymphoid Tissues (2008)


Supervision and Evaluation:
The resident’s work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each director. Results will be reviewed formally with the resident.
CLINICAL PATHOLOGY AT
VA PALO ALTO HEALTHCARE SYSTEM

Director: Stephen S. Chen, MD

Goals and Objectives
The primary goal of this rotation is to offer residents an experience of practicing clinical pathology in a setting in which organization and management are more similar to those in community hospitals than those in Stanford Medical Center. The resident will play the role of a “laboratory director,” taking service calls from the Chemistry, Hematology, Microbiology, Blood Transfusion, Serology and Molecular Diagnostics sections and helping clinicians appropriately utilize specialized tests and interpret test results.

Patient Care
- To develop proficiency in the interpretation of commonly ordered laboratory tests, such as electrolytes, enzymes, hormones, tumor markers, blood gases, blood cell counts and serum antibody titers.
- To learn microscopic examinations of body fluids, peripheral blood smears, and bone marrow specimens.
- Opportunity to perform bone marrow biopsies under supervision by hematology attending, both to fulfill the requirement for board certification (minimum 5 biopsies) and to become comfortable with this important procedure often performed by pathologists in community practice.

Medical Knowledge
- To understand the biochemical basis of metabolic diseases and the pathogenesis of coagulation disorders.
- To become familiar with the role of Microbiology laboratory in the diagnosis and management of infectious diseases.

Practice-Based Learning and Improvement
- To use case-based learning (test results and clinical findings) as a tool for insight into the basis of the disease.
- To improve problem solving skills in clinical pathology by using a wide variety of informational resources.
- To stay informed of the current clinically relevant literature through journal club.

Interpersonal and Communication Skills
- To present cases at clinical conferences in support of patient care and medical education of staff, residents and faculty.
- To write concise and clear interpretative reports when indicated.
- To communicate effectively with clinical colleagues in case evaluation and with laboratory staff in technical and management issues.

Professionalism
- To recognize and be sensitive to the needs of patients and clinicians in making timely diagnoses in a cost effective manner.
To work effectively as a team with other staff in the lab to maximize productivity and maintain an excellent quality of work environment.

**Systems-based practice**
- To understand principles of QC and QA, and to resolve problems when they occur.
- To become familiar with the missions of VA, and management issues within Veterans Affairs Medical Centers.
- To understand federal regulatory issues governing the clinical pathology laboratory.

**Requirements of the rotation:**
Two months.

**Resident duties and responsibilities**
The VA rotation is offered to the residents in the second year of their clinical pathology training. The emphasis is to train residents how to function as a “director of clinical laboratories” in a community hospital environment. Thus, residents will take service calls from all six sections of the lab on every working day. The following are examples of their activities:

**Chemistry**
- Residents evaluate requests for sending samples to reference laboratories. They discuss with clinicians justifications for sending tests out.
- Residents review interesting cases, and correlate test results with clinical findings.
- Residents answer inquiries from clinical staff regarding test significance and possible interferences.

**Hematology**
- Do microscopic examinations of body fluid cytology.
- Review and interpret abnormal CBC and peripheral blood smear findings. Determine whether special studies requested by clinicians (flow cytometry, cytogenetics, molecular studies) are indicated.
- Preview bone marrow aspirates (wet read) and determine whether special studies requested by clinicians (flow cytometry, cytogenetics, molecular studies) are indicated.
- Read bone marrow aspirates with accompanying peripheral blood smears and core biopsies, and formulate diagnostic reports. Incorporate results of special studies.
- Opportunity to learn and improve bone marrow biopsy skills under hematology attending supervision.

**Microbiology**
- Participate in the laboratory bench-side “show and tell” session every Wednesday in which all interesting cases of the week are reviewed.

**Blood Transfusion Service**
- Perform review of blood product utilization.
- Review and investigate blood transfusion reactions.
- Attend quarterly Blood transfusion Committee meetings.
Serology
- Recommend to clinical staff the selection of appropriate laboratory tests for autoimmune disorders and neuro-syphilis.
- Review and approve requests for performing those very expensive genetics tests.

Molecular Diagnostics
- Our laboratory performs nucleic acid testing of HIV and HCV for all VA patients in Northern California. Residents provide consultative services to clients.

Laboratory management
- Residents attend monthly Supervisors' meetings and monthly QA meetings.
- Residents participate in CAP inspection tours, and perform as inspectors for laboratory accreditation.
- Review results of CAP proficiency testing and Q-Probes.
- Residents have access to hospital-wide, computerized information system, e-mail and internet.

Supervision and Evaluation
The teaching staff for supervision are the attending clinical pathologists and hematopathologists at the VA. Staff pathologists discuss with residents all consultative reports.

The primary evaluation tool is the form, RESIDENT ROTATION EVALUATION, completed in Medhub by staff pathologists.

The organization and services of VA Clinical Laboratories closely resemble those in community hospitals. The VA rotation offers residents an experience of practicing clinical pathology in a setting different from that of Stanford Medical Center.

Service Responsibilities
Clinical laboratories are divided into six sections: Chemistry, Hematology, Blood transfusion, Serology, Microbiology and Molecular diagnostics. However, CP residents in the VA rotation play the role of “laboratory director,” being responsible for taking service calls from all six sections every working day via a dedicated pager. Specifically, the majority of the residents' work will consist of the following:

1. Daily rounds in all laboratory sections
2. Participation in QC and QA programs and all clinical laboratory meetings.
3. Consultative activities: Under guidance of VA attending faculty, residents review and approve requests for sending tests to reference laboratories. They interact with clinicians to discuss findings and reasons for the request.
4. Review of abnormal test results and interesting cases for clinical-laboratory correlations.
5. Reading and interpretation of peripheral blood smears, bone marrow specimens and body fluids, with formulation of reports for bone marrows.
Teaching Activities
Residents need to attend teaching activities arranged by pathologists and medical technologists.

1. Attend required Stanford clinical pathology residency lectures.
2. Tuesday noon journal club meetings involving the whole VA pathology department (AP and CP faculty, residents and fellows).
Goals and Objectives

**Patient Care**
- To develop proficiency in the basic interpretation of cytogenetics laboratory results and their clinical significance.
- To learn appropriate skills to search reference materials and databases to arrive at a correct interpretation of results and concise, helpful communication of these results to the treating clinician.
- Learn about the considerations involved in appropriate test selection and development.

**Medical Knowledge**
- To understand genetic principles and cytogenetic and molecular cytogenetic testing techniques.
- To develop expertise in the test selection and results interpretation of inherited and acquired chromosomal disorders.

**Practice-Based Learning and Improvement**
- To locate, appraise and assimilate clinical and laboratory information, as well as information from scientific studies.
- Become proficient in correlating these results with morphology, flow cytometry, molecular, and other laboratory results.

**Interpersonal and Communication Skills**
- To present in-service talks to the staff, and case presentations to fellow residents.
- To prepare concise, complete written reports on complex clinical cases, newly developed assays, and for publications (as appropriate).
- Communicate laboratory results and interpretation effectively to laboratory and clinical colleagues.

**Professionalism**
- To demonstrate integrity, honesty and respect in personal interactions as well as in patient care, through careful interpretation of results reports, attention to quality assurance and completion of the daily tasks in a timely fashion.
- To work effectively and as a team with the medical directors, laboratory staff, and administrative staff, as well as with consulting physicians and patients.

**Systems-based practice**
- To understand the interplay between laboratory and clinical results from various clinical disciplines and their impact on patient care.
To become familiar with the interdisciplinary nature of genetic disease testing and the continuous evolution in technology as well as knowledge about the human genome and proteome.

Develop awareness and skills related to cost-effective diagnostic testing, laboratory workflow, and turn-around time.

**Requirements of the rotation**
The two-month Genetics rotation in the Stanford Pathology Department is interdisciplinary and includes participation of faculty in the Departments of Pathology, Medicine, Pediatrics (Division of Medical Genetics) and Department of Genetics.

Laboratory rotations include formal training in Molecular Pathology, Cytogenetics, and Biochemical Genetics and residents spend approximately three weeks in each area. Residents are strongly encouraged to attend sign-out sessions in all three areas during the two-month rotation. Residents will be involved in assay development, quality assurance and results interpretation in all three laboratories.

Residents are expected to initiate a project during their two-month rotation. This project can be performed in any of the three laboratories, and may involve research, quality assurance, or test development.

**Resident duties and responsibilities for each level of training**
The genetics rotation for pathology residents is always scheduled in the second year of pathology residency training. Individual objectives for each of the three laboratory rotations are:

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<tr>
<td><strong>Molecular Pathology rotation—CP aspects.</strong> Objectives: Become proficient in a wide range of molecular diagnostic methods and interpretation, learn about the development of new assays, perform case interpretations, have interaction with physicians from other disciplines, and have teaching Sessions with attending directors, give case presentations. Emphasis on DNA diagnostic tests and the forefront of diagnostic developments.</td>
<td><strong>Cytogenetics rotation.</strong> Objectives: Become familiar with cytogenetic methods and interpretation, be able to make correlations with molecular genetic results, and to explore diagnostic advantages and disadvantages of cytogenetic and molecular pathology techniques for individual genetic diseases. Be able to recognize the significance of abnormal cytogenetic results, both acquired and constitutional. Learn ISCN nomenclature.</td>
<td><strong>Biochemical Genetics rotation.</strong> Objectives: Become familiar with biochemical screening and diagnostic methods, interpretation of results and their clinical correlation, confirmation by molecular methods, development of new assays, interaction with physicians from other disciplines, attend clinics and consults for biochemical genetic disorders.</td>
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</table>

These objectives are adjusted for elective rotations of both AP and CP residents on an individual basis and discussed at the beginning of the elective.
Daily schedule
Regular working hours are approximately 8:00AM to 6:00PM, Monday-Friday.

Responsibilities:
Sign out cases with attending directors in each of the three genetics laboratories. During the remainder of the day, CP residents are expected to be present in the laboratory where they currently rotate and discuss their activities with the attending director. They are expected to carefully prepare and preview cases for sign-out, be available for consultation and laboratory issues, observe, perform, study and help develop laboratory assays, and work on their project.

Table of the typical meeting schedule

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<th>Day</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Attend the weekly laboratory meetings (italic):</td>
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<tr>
<td>Molecular Pathology lab meeting</td>
<td>Mondays</td>
<td>9 AM</td>
<td>HV sign-out room</td>
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<tr>
<td>Metabolic Conference</td>
<td>Mondays</td>
<td>1:00 PM</td>
<td>Pediatric Library</td>
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<tr>
<td>Hemopath clinpath correlation conference</td>
<td>Mondays</td>
<td>2:30 PM</td>
<td>Heme signout</td>
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<tr>
<td>Teaching session mol genetics</td>
<td>Mondays</td>
<td>4:30 PM</td>
<td>HV sign-out room</td>
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<tr>
<td>Current Concepts lecture series</td>
<td>Tuesdays</td>
<td>8:00 AM</td>
<td>L201</td>
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<tr>
<td>Hematology journal club</td>
<td>Tuesdays</td>
<td>noon</td>
<td>2nd fl., Cancer center</td>
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<tr>
<td>Human Genetics Journal Club</td>
<td>Tuesdays</td>
<td>4:00 PM</td>
<td>Beckman Center, B200</td>
</tr>
<tr>
<td>Cytogenetics lab meeting</td>
<td>Every other Wednesday</td>
<td>10:15 AM</td>
<td>Cytogenetics Lab</td>
</tr>
<tr>
<td>Hematology conference</td>
<td>Wednesdays</td>
<td>noon</td>
<td>2nd fl., Cancer center</td>
</tr>
<tr>
<td>Hematology new patient conference</td>
<td>Wednesdays</td>
<td>4:30 PM</td>
<td>2nd fl., Cancer center</td>
</tr>
<tr>
<td>Biochemical Genetics lab meeting</td>
<td>Thursdays</td>
<td>10:00 AM</td>
<td>HV sign-out room</td>
</tr>
<tr>
<td>Clinical Pathology lecture series. This series includes a block of genetics lectures, which address critical aspects of genetic diagnostic testing in molecular, biochemical and cytogenetics.</td>
<td>Thursdays</td>
<td>noon</td>
<td>H1551L</td>
</tr>
<tr>
<td>OB/Genetics Prenatal Clinical Conference</td>
<td>Thursdays</td>
<td>12:30 PM</td>
<td>OB Library, 3rd floor</td>
</tr>
<tr>
<td>Medical Genetics Grand Rounds. Inter-disciplinary meeting with lecture and case presentations. General discussion of genetic concepts.</td>
<td>Fridays</td>
<td>9:30 AM</td>
<td>Beckman Center, B200</td>
</tr>
<tr>
<td>Present interesting cases at the Friday Clinical Pathology residents conference and discuss involvement in phone calls received from physicians regarding interpretation of genetic tests.</td>
<td>Fridays</td>
<td>noon</td>
<td>H1551L</td>
</tr>
<tr>
<td>Self study and conducting a project</td>
<td></td>
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<tr>
<td>QA/QC Meeting</td>
<td>Every third Monday</td>
<td>2:00 PM</td>
<td>H1551L</td>
</tr>
<tr>
<td>Pediatric Tumor Board conference</td>
<td>Tuesdays</td>
<td>5:00 PM</td>
<td>LPCH Board Room</td>
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<tr>
<td>Integrated genetics laboratories meeting (lecture, with technologists)</td>
<td>TBA</td>
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<tr>
<td>Elective: Attending genetics clinics</td>
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Supervision and Evaluation

Residents are evaluated monthly by the attending directors (using the pathology department evaluation form) and by the staff (using the pathology department 360-degree evaluation form).

Cytogenetics test list:

1. Chromosomal Analysis of:
   a. Amniotic fluid for prenatal diagnosis
   b. Chorionic villi sampling (CVS) for prenatal diagnosis
   c. Peripheral blood (stimulated - routine) for constitutional anomalies
   d. Peripheral blood (high resolution)
   e. Bone marrow for acquired anomalies
   f. Peripheral blood (unstimulated – leukemic) for acquired anomalies
   g. Products of conception
   h. Skin fibroblasts
   i. Solid tumors
   j. Peripheral blood for breakage studies (Fanconi and ataxia telangiectasia)

2. Fluorescence In Situ Hybridization (FISH):
   a. Microdeletion syndromes:
      (1.) DiGeorge/Velocardiofacial syndrome: 22q11.2
      (2.) Distal 22q13 deletion
      (3.) Prader-Willi syndrome: 15q11.2
      (4.) Angelman syndrome: 15q11.2
      (5.) Williams syndrome: 7q11.23
      (6.) Miller-Dieker syndrome: 17p13.3
      (7.) Smith-Magenis syndrome: 17p11.2
      (8.) STS deletion (X-linked ichthyosis): Xp22.3
   b. Subtelomeric repeats for cryptic rearrangements
   c. Prenatal panel: X, Y, 13, 18 and 21
   d. X/Y
   e. Whole chromosome painting panel (Octochrome)
   f. Cancer-related:
      (1.) BCR/ABL for t(9;22)
      (2.) PML/RARA for t(15;17)
      (3.) CBFB for inv(16), t(16;16), del(16)
      (4.) TEL/AML1 for t(12;21)
      (5.) ETO/AML1 for t(8;21)
      (6.) IGH/BCL2 for t(14;18)
      (7.) +4, +10 and +17 in ALL
      (8.) CMYC separation for t(8;14), t(2;8) and t(8;22)
      (9.) MLL separation for 11q23
      (10.) EWS separation for t(11;22)
      (11.) CLL panel for 11q-, +12, 13q- and 17p-
      (12.) -13/13q- for multiple myeloma
(13.) CCND1/IGH for t(11;14)  
(14.) -5/5q-  
(15.) -7/7q-  
(16.) +8  
(17.) ALK separation for t(2;5)  
(18.) SYT separation for t(X;18) [synovial sarcoma]  
(19.) MALT1 separation in t(11;18)  
(20.) HER2/neu amplification (breast cancer)  
(21.) Urovysion (+3, +7, +17, 9p-)

Cytogenetics Checklist:
1. Culture initiation and/or culturing, harvesting, slidemaking, G-banding, analysis, interpretation and report, for all tissue/test types, including:
   - Amniotic fluid  
   - Chorionic villus sampling  
   - Bone marrow/leukemic blood  
   - Peripheral blood/high resolution  
   - Breakage studies (Fanconi anemia and/or ataxia telangiectasia)  
   - Products of conception  
   - Skin biopsies  
   - Solid tumors

2. Interphase and metaphase fluorescence in situ hybridization (FISH), slidemaking, analysis, interpretation and report including:
   - Enumeration probes  
   - Whole chromosome paints (Octochrome)  
   - Unique sequence probes for microdeletion syndromes  
   - Subtelomeric probes (MultiProbe) for cryptic rearrangements  
   - Fusion and break-apart probes for cancer rearrangements  
   - HER2/neu amplification in breast cancer

3. Other banding techniques (as performed).
MICROBIOLOGY

Director: Niaz Banaei, MD

Goals and Objectives

**Patient Care**
- To develop proficiency in helping physicians interpret microbiology test results
- To learn appropriate tests to order based on clinical criteria as described by the patient’s physician
- To determine which results are critical and learn to convey those results to the appropriate caregivers.

**Medical Knowledge**
- To understand the microbiology of infectious diseases based on organ system, history, and epidemiology
- To develop expertise in interpreting the clinical implications of lab results, suggesting antibiotics to test, and determining the medical necessity of unusual test requests.

**Practice-Based Learning and Improvement**
- To locate, appraise and assimilate microbiology laboratory test results, particularly microscopic images
- To use case-based learning to correctly interpret such results to caring physicians

**Interpersonal and Communication Skills**
- To present learning modules to Infectious Disease fellows and attendings, and to present case results at Infectious Disease rounds
- To prepare concise, complete written reports on test evaluation, interesting cases, inspections, and other lab-based activities.

**Professionalism**
- To demonstrate integrity, honesty and respect …
- To work effectively as a team with the physicians caring for the patients, the laboratory scientists and assistants, the infection control practitioners, and the director.

**Systems-based practice**
- To understand basic identification and susceptibility testing of bacteria and yeast, and basic detection and identification methods for fungal and parasitic agents of infectious disease. To be able to differentiate commensal flora from pathogens and to choose and interpret results of sendout tests.
• To become familiar with the administrative and logistical areas of a microbiology laboratory, including specimen collection, transport, front-end processing, results delivery, QC and QA, and financial considerations.

Requirements of the rotation

See attached guidelines.

Resident duties and responsibilities for each level of training

See attached guidelines.

Supervision and Evaluation

Director will oversee training and receive feedback from CLSs. Meetings to go over rotation questions will be the best basis for evaluating the level of progress. An evaluation will be given after each month of rotation based on:

1. Level of participation in daily rounds
2. Meeting the learning objectives
3. Completion of weekly unknown cases
4. Participation in ID plate rounds and ID grand rounds

The resident will be evaluated not only based on his/her daily work as assessed by each director but also by a written, open-book, examination, administered at the end of the rotation. The examination will be designed to highlight areas of importance and to assess whether the resident needs additional help in gaining competence in any specific areas. Results will be reviewed formally with the resident.
Microbiology & Virology Expectations:

A. Virology Rounds one day/week from 10:30am – 11:00am
B. Microbiology Plate rounds everyday from 11:00am -12:00am.
C. Present interesting cases at the weekly plate rounds with pediatrics and adult ID teams on Thurs at 10:30 am at Stanford Hospital.
D. Weekly I.D. Conference, Thursdays 4:30pm – 6:00pm

<table>
<thead>
<tr>
<th></th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
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</thead>
<tbody>
<tr>
<td>8:00</td>
<td></td>
<td>ID Fellows Lecture</td>
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<tr>
<td>10:30</td>
<td>VIRROUNDS</td>
<td>VIRROUNDS</td>
<td>VIRROUNDS</td>
<td>ID PLATE ROUNDS</td>
<td>VIRO ROUNDS</td>
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<tr>
<td>11:00</td>
<td>MICRO ROUNDS</td>
<td>MICRO ROUNDS</td>
<td>MICRO ROUNDS</td>
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<td>MICRO ROUNDS</td>
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<tr>
<td>12:00</td>
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<td>*CP Lecture *Call conference</td>
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<td>3:30</td>
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<td></td>
<td>ID conference</td>
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<td>4:30</td>
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</table>

E. Residents will take first call for microbiology problems that arise during the day shift and for all clinician consults or questions. Please review calls with the Lab Director as appropriate.
F. Assume primary responsibility for:
   • Contacting physicians to discuss cases and determine additional workup for complex microbiological culture results
   • Approve unusual Microbiology and Virology lab send-out test and discuss with director
G. Workup unknown cases during the first month. See handout.

Objectives and Responsibilities:

A. Discuss with lab director about budget and cost containment
B. Attend laboratory meetings
C. Follow up on problems and questions related to laboratory.
   1. Work with laboratory staff and clinicians
   2. Checking on pathology reports, review charts, etc. (will add value to the concurrent microbiology on patient samples).
D. Prepare short tutorials for I.D. Fellows – once per week. Pick a topic relevant to current cases.
   Topics to choose from Microbiology:
   • Enteric gram-negative rods.
   • Streptococci.
   • Non-fermenting and fastidious gram-negative rods.
   • Aerobic gram-positive rods.
   • Explain media used for microbe isolation.
Gram stain appearance.
Nucleic acid tests.
Other useful special identification methodologies.

Topics to choose from Virology cover the following:
Discussion of transport media
Culture tubes
Patient background information
Other special identification methodologies.

E. Training time is broken down in the following manner:
1. 8 weeks in Microbiology:
   a. Will involve review of microbes from the following types of specimens:
      i. CSF
      ii. Respiratory
      iii. Blood
      iv. Stool
      v. Urine
      vi. Wound
      vii. Genital
      viii. Body Fluids
   b. Training on Molecular, Susceptibility Testing and Anaerobes
   c. Training in Parasitology and Mycology
2. 6 weeks training time in Virology, broken down in the following manner:
   a. Time will be spent discussing methods and virus families
   b. Training will be technique oriented and will cover the following:
      i. Culture
      ii. Serology
      iii. Molecular
3. Complete assigned Unknown Cases.

F. Review the training objectives recommended by the ASCP and those from the Washington University Medicine Training Program.
1. These objectives are attached as “Additional Core Knowledge”.
2. They provide an excellent summary of the topics with which you should become familiar. It is your responsibility to identify topics that have not been covered and plan to discuss them with Dr. Baron in advance of completing your rotation.

At the end of the two month training, the resident should:

A. Be familiar with a wide variety of microorganisms and viruses causing clinical disease.
B. Know these essential concepts:
   1. Organisms that commonly occur as normal flora at a given site
   2. Microbes and viruses commonly associated with infection at a given site.
   3. Factors associated with susceptibility to infection at this site.
   4. Optimum specimen required for documentation of infection at a given site.
   5. Work-up and interpretation of “mixed cultures” at a given site
C. Learn to identify common agents of infectious diseases by morphology and key test results and understand the theory and basis of the tests used.

D. Review common antibiotics by class, mechanisms of action and resistance and spectrum of activity and be familiar with the uses, limitations and techniques of antimicrobial susceptibility testing.

1. Microbiology:
   i. Knowing the process of certain staining techniques.
   ii. Being an expert at direct gram stains for all important clinical specimen types
   iii. Understand antibiograms of organisms.

2. Virology:
   i. Know which cell lines are appropriate for which virus.
   ii. Differentiating acute infections through the use of serological markers
   iii. Read shell vials for CMV

Schedule the following activities for the 3rd month rotation:

A. One-day visit to a public health laboratory. Choose from the following options for a public health laboratory:
   - Alameda County Lab, 499 5th St., Rm. 403, Oakland,
     - Contact Ann Chandler (Director) at (510) 268-2700
   - Santa Clara County Lab
     - Pat Dadone (Supervisor) at (408) 885-4272
   - San Francisco Dept. Health Lab, 101 Grove St., Rm. 419, San Francisco
     - Contact Sally Liska (Director) at 415-554-2994
   You will visit and interview the lab director about the degree of support which a public health laboratory can provide to a hospital laboratory and what the public health laboratory needs from a hospital lab. Be sure to see how they handle the AFB cultures, since we do not identify AFB in our lab.

B. One-day visit to Dr. Jack Remington’s Toxoplasmosis laboratory (plan for a Wednesday): Palo Alto Med. Foundation Toxo-Serology Lab, El Camino Road, Palo Alto - check location of laboratory:
   a) Contact Cindy Press (Lab supervisor) at (650) 614-3215.
   b) Things to think about when observing the toxo lab:
      - Note: women must sign a form stating that they are not pregnant or planning to get pregnant within the next 6 months.
      - Everyone needs baseline Toxo serology IgG test (performed in our lab)

C. Infectious Disease (I.D.)
   1. Attend afternoon rounds with I.D. Team on Monday and Tuesday every other week. Make arrangements with Fellow.
   2. Collect available microbiology and histopathology lab data on the patients they are following prior to attending rounds.

D. Schedule two afternoons to observe E1 and ICU satellite pharmacies.
   1. Discuss antibiotic utilization efforts and how the Microbiology Laboratory can support these or other pharmacy efforts.
   2. Contact Larry Witt (5-5802) or Deepak Sisodiya (3-5272) to schedule time.

E. Infection Control (Sasha Madison at 5-1106)
1. Arrange with IC to accompany them on rounds to at least two departments.
2. Make appointments with them to discuss laboratory-based surveillance and how the laboratory can support the infection control program.

At the end of the 3rd month rotation, the resident should:

A. Be able to interact effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests
B. Be capable of implementing a method, as indicated by understanding how to:
   1. Do a formal method evaluation
   2. Write a procedure
   3. Establish quality control policies and evaluate QC performance
   4. Evaluate proficiency testing data.

Although it is best to cover themes when problems and issues in those areas arise, here is an approximate guide for gaining experience in the following important topics during the introductory (two-month) rotation in Microbiology/Virology:

<table>
<thead>
<tr>
<th>WEEK</th>
<th>THEMES</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blood Cultures</td>
<td>a. Major Clinical syndromes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Specimen collection, transport processing</td>
</tr>
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<td></td>
<td></td>
<td>c. Laboratory methodology</td>
</tr>
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<td></td>
<td></td>
<td>d. Epidemiology &amp; Infection control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>e. Bacteria to focus on:</td>
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<tr>
<td></td>
<td></td>
<td>- Enterobacteriaceae*</td>
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<tr>
<td></td>
<td></td>
<td>- Nonfermentative gram-negative bacilli*</td>
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<tr>
<td></td>
<td></td>
<td>- Miscellaneous/fastidious gram-negative bacilli</td>
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<tr>
<td></td>
<td></td>
<td>- Gram-negative cocci</td>
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<tr>
<td></td>
<td></td>
<td>- Gram-positive bacilli aerobic actinomycetales</td>
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<td></td>
<td></td>
<td>- Mycobacteria*</td>
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<tr>
<td></td>
<td></td>
<td>- Gram-positive cocci*</td>
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<td>- Spirochetes</td>
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<td>- Mycoplasma</td>
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<td>- Anaerobic bacteria</td>
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<tr>
<td>1</td>
<td>Respiratory Cultures</td>
<td>a. Pharmacokinetics and pharmacodynamics</td>
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<tr>
<td></td>
<td></td>
<td>b. Susceptibility testing methods</td>
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<td></td>
<td></td>
<td>c. Empiric therapy</td>
</tr>
<tr>
<td>2</td>
<td>CSF Cultures</td>
<td>a. Specimen Processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Contamination prevention</td>
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<tr>
<td></td>
<td></td>
<td>c. Other molecular detection technologies</td>
</tr>
<tr>
<td>2</td>
<td>Genitourinary Cultures</td>
<td>a. Using all available serological markers for Hepatitis B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Hepatitis B</td>
</tr>
<tr>
<td>3</td>
<td>Wound and Tissue Cultures</td>
<td>a. Using all available serological markers for Hepatitis B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Hepatitis B</td>
</tr>
<tr>
<td>3</td>
<td>Special Studies</td>
<td>a. Pharmacokinetics and pharmacodynamics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Susceptibility testing methods</td>
</tr>
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<td></td>
<td></td>
<td>c. Empiric therapy</td>
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<tr>
<td>4</td>
<td>PCR &amp; Sequencing</td>
<td>a. Specimen Processing</td>
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<td></td>
<td></td>
<td>b. Contamination prevention</td>
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<tr>
<td></td>
<td></td>
<td>c. Other molecular detection technologies</td>
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<tr>
<td>4&amp;5</td>
<td>Serology</td>
<td>a. Hepatitis B</td>
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<tr>
<td></td>
<td></td>
<td>b. Using all available serological markers for Hepatitis B, be able to determine whether patient is acute, chronic or latent.</td>
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<tr>
<td>WEEK</td>
<td>THEMES</td>
<td>TOPICS</td>
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<td>------------------------------------------------------------------------</td>
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</tbody>
</table>
| 5    | Serology/management | a. Examine current methods used for Hep C determination and discuss them in terms of throughput, labor, and cost-effectiveness.  
  b. Prepare a cost analysis of one conventional and one molecular test.  
  c. Identify a new or revised protocol that must be created and write it. Talk to all relevant parties to incorporate all necessary factors. |
| 6    | Management      | a. Epidemiology  
  b. Nosocomial Infections |
| 6    | Strain typing   | a. Epidemiology  
  b. Nosocomial Infections |
| 6    | Parasitology    | a. Specimen collection  
  b. Protozoa  
  c. Helminths  
  d. Arthropods |
| 7    | Mycology/AFB    | a. Specimen Collection  
  b. Stain methodologies  
  c. Clinically relevant Fungus & Mold  
  d. Stat AFB  
  e. DNA testing for select Mycobacterium species  
  f. Cutaneous mycoses  
  g. Subcutaneous mycoses  
  h. Systemic mycoses  
  i. Opportunistic mycoses |
| 8    | Virus cultures  | a. Specimen Collection  
  b. Culture workup  
  c. CMV, Herpes, Respiratory virus panel, Chlamydiae, Rickettsiae  
  d. All detection methods  
  e. Perform analysis of sensitivity of each method using Viro monthly comparison stats. |
| 8    | DFAs for Virus  | a. Specimen collection  
  b. CMV, RSV, HSV, FLUA/B  
  c. IFA vs. DFA |
Journals

1. Antimicrobial Agents and Chemotherapy
2. Clinical Infectious Diseases
3. Clinical Microbiology Reviews
4. Diagnostic Microbiology and Infectious Diseases
5. European Journal of Clinical Microbiology and Infectious Diseases
6. Journal of Clinical Microbiology

Many articles of importance to clinical microbiology appear in general medical journals, such as JAMA, The New England Journal of Medicine and Annals of Internal Medicine. It is presumed that residents are already familiar with these periodicals.

Books


Lantern Slide Teaching Collections

Lambert HP, Farrar WE. Infectious Diseases Illustrated. Gower; London. 1982
Smith JW, ed. Diagnostic Medical Parasitology. ASCP Press; Chicago. 1976

Handbooks and Miscellaneous Materials

1. CD-ROMs- Case studies in medical microbiology; Gram stain Tutor; Mycology Tutor; Parasitology Tutor (if available)
Approved Standard. NCCLS Document M7-A3. NCCLS, Villanova, Pennsylvania 19085

MOLECULAR GENETIC PATHOLOGY

Directors: Iris Schrijver, MD and James Zehnder, MD

Goals and Objectives

Patient Care
- To develop proficiency in the basic interpretation of molecular diagnostic laboratory results and their clinical significance.
- To learn appropriate skills to search for reference materials and databases to arrive at a correct interpretation of results and concise, helpful communication of these results to the treating clinician.
- Learn about the considerations involved in appropriate test selection and development.

Medical Knowledge
- To understand genetic principles and molecular testing techniques.
- To develop expertise in the test selection and results interpretation of inherited and acquired genetic disorders.

Practice-Based Learning and Improvement
- To locate, appraise and assimilate clinical and laboratory information, as well as information from scientific studies.
- Become proficient in correlating these results with morphology, flow cytometry, cytogenetic, and other laboratory results.
- To use case-based learning during daily sign-out sessions with the directors and staff, through review of previous patient and results records, and through the interactive molecular pathology website (http://www.molpath.stanford.edu)

Interpersonal and Communication Skills
- To present in-service talks to the staff, and case presentations to fellow residents.
- To prepare concise, complete written reports on complex clinical cases, newly developed assays, and for publications (as appropriate).
- Communicate laboratory results and interpretation effectively to laboratory and clinical colleagues.

Professionalism
- To demonstrate integrity, honesty and respect in personal interactions as well as in patient care, through careful interpretation of results reports, attention to quality assurance and completion of the daily tasks in a timely fashion.
- To work effectively and as a team with the medical directors, laboratory staff, and administrative staff, as well as with consulting physicians and patients.
**Systems-based practice**
- To understand the interplay between laboratory and clinical results from various clinical disciplines and their impact on patient care.
- To become familiar with the interdisciplinary nature of genetic disease testing and the continuous evolution in technology as well as knowledge about the human genome and proteome.
- Develop awareness and skills related to cost-effective diagnostic testing, laboratory work-flow, and turn-around time

**Requirements of the rotation**
Refer to Cytogenetics Rotation Description.

**Resident duties and responsibilities for each level of training**
Refer to Cytogenetics Rotation Description.

**Supervision and Evaluation**
Refer to Cytogenetics Rotation Description.
VIROLOGY

Director: Benjamin Pinsky, MD, PhD

Goals and Objectives

Patient Care
- To develop proficiency in determining if signs, symptoms, history and physical findings indicate the possibility of a viral etiology. If a viral etiology is suspected then the resident must be able to develop a differential diagnosis based on the immune status of the patient, the site of the infection, and the clinical history.
- To learn appropriate use of diagnostic tools to differentiate the infections considered in the differential diagnosis.

Medical Knowledge
- To understand the diseases and conditions caused by or exacerbated by viral infections
- To develop expertise at diagnosing and managing viral infections with a new emphasis on determining infections that can be treated and monitoring response to treatment.

Practice-Based Learning and Improvement
- To locate, appraise and assimilate quality parameters and systems in the daily practice of clinical virology. To gain hands-on knowledge of diagnostic assays and how systems are implemented to ensure the accuracy of reportable results.
- To use case-based learning to gain expertise at developing a differential diagnosis, to use diagnostic tests effectively and economically, and to work with clinicians in developing a rational treatment plan based on the laboratory findings.

Interpersonal and Communication Skills
- To present cases to the laboratory staff including the Medical Director and supervisors. To present laboratory data to clinicians as an aid to diagnoses. To present cases to the infectious disease staff during the Wed morning Virology Rounds.
- To prepare concise, complete written reports on selected topics for the education and training of laboratory and clinical staff members

Professionalism
- To demonstrate integrity, honesty and respect in the conduct of daily activities in the Clinical Virology Laboratory.
- To work effectively as a team with the Medical Director, Supervisors, and staff of the Clinical Virology Laboratory including the CLS and paratechnical staff.

Systems-based practice
- To understand viral infections affecting the different organ systems
To become familiar integrating clinical presentation and laboratory evaluation in contributing to the final diagnosis and management of patients.

**By the end of the introductory (two-month) rotation, the resident should:**

1. Be familiar with the wide variety of viruses causing clinical disease
2. Know these essential concepts:
   - When and how to use molecular, immunologic and culture methods to manage viral diseases
   - Know the relative sensitivity/specificity and NPV/PPV of virology assays
   - Know which viral infections that with significant immediate morbidity and mortality (panic values)
3. For all organ systems, become familiar with:
   - Viruses that commonly cause acute versus chronic infections
   - Viruses commonly associated with infection in certain organs
   - Factors associated with susceptibility to infection at site
   - Optimum specimen for documentation of infection at this site
4. Learn to identify common agents of infectious diseases by key test results and understand the theory and basis of the tests used
5. Learn genotyping (GART and HCV) and viral resistance. Review anti-virals by class, mechanisms of action and resistance and spectrum of activity and be familiar with the uses, limitations and techniques of anti-viral susceptibility tests (I.E. genotyping vs. phenotyping)

**By the end of the follow-up (third-month) rotation, the resident should, in addition:**

1. Be able to interact effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests
2. Be capable of implementing a method, as indicated by understanding how to:
   - Do a formal method evaluation
   - Write a procedure
   - Establish quality control policies and evaluate QC performance
   - Evaluate proficiency testing data

**The Resident’s Day**

1) The resident will attend and conduct weekly Virology Rounds with Dr. Patterson’s guidance for the clinical ID team between 10:30-11:00 AM each Wednesday.
2) In addition, the resident will participate in the clinical ID service rounds held afternoons at the time specified by the ID Attending Physician and the weekly Infectious Disease conference Thursdays 4:30-5:30 PM.
3) The resident will take first call for virology problems that arise during the day shift and for all clinician consults or questions. Calls are reviewed with the Director on call as appropriate.
4) The resident will also assume primary responsibility for:
   - Review molecular and genotyping (GART results for each day)
   - Review of Virology lab send-out test results
The resident will meet regularly for didactic sessions with a director to discuss topics as outlined in the schedule noted. Please reserve the time between 4:00–5:00 PM for this review session. The resident is expected to do the recommended reading and laboratory exercise, if indicated, in advance.

**Schedule the following additional activities (3rd Month):**

1. **Infectious Diseases**
   Positive Care Clinic: Schedule an interview with Dr. Andrew Zolopa or Mark Holodniy to discuss the laboratory support required for management of patients with HIV infection.

2. **Infection Prevention**
   Arrange with Infection Prevention to accompany them on rounds to at least two departments. Also make appointments to discuss with them laboratory-based surveillance and how the laboratory can support the infection control program.

   **Note:** If you will be absent, due to conferences, rounds etc., notify in advance the technologist with whom you would be working so the lab work can be planned accordingly.

**Objectives**

Review the training objectives recommended by the ASCP and those from the Washington University Medicine Training Program. These provide an excellent summary of the topics with which you should become familiar. The vast majority of training objectives will be addressed as you rotate through the laboratory sections.

**Tutorial Discussions.**

Every other week, schedule a one-hour discussion/tutorial with Dr. Patterson to review questions and issues related to the scheduled topic(s). In preparation for these sections, you should have reviewed the relevant literature on rapidly evolving or controversial subjects.

**Rotations and Interviews**

**Virology Laboratory:**

1) **Budget:** Interview the lab director about budget and cost containment issues.

2) **Attend laboratory meetings.**

3) **You will be asked to follow-up on some problems or questions which come up in the lab and which may involve working with lab staff or clinicians.** Checking on the pathology reports, reviewing charts, etc. will add value to the virology studies on patient samples.

4) **Take questions, work with physicians on problems, and conduct rounds in the absence of the Virology director.**
PEDIATRIC CLINICAL PATHOLOGY

Director: Sharon Geaghan M.D.

The performance and interpretation of clinical laboratory tests on infants, children, and adolescents present unique challenges to the clinical pathologist. Laboratory tests are essential to the correct diagnosis of pediatric diseases, many of which either present in childhood, or are unique to this age group. Laboratory tests are also critically important for prognosis, and for monitoring of the response to therapy in these patients. Yet the small size of the youngest patients, their metabolic instability, the effect of growth and development on the interpretation of results, the tremendous breadth and yet the relative rarity of most pediatric diseases require specialized consideration. The trainee will prepare for these challenges by developing expertise in pediatric laboratory medicine throughout Clinical Pathology training in the areas of clinical chemistry, endocrinology, hematology, urinalysis, coagulation medicine, transfusion medicine, immunology, microbiology, virology, biochemical genetics, cytogenetics, molecular diagnostics, point of care testing and laboratory management. This rotation will allow for additional focus on topics in pediatric laboratory diagnostics, training experiences and learning resources that will facilitate the transition of the resident to a consultant in pediatric laboratory medicine.

Goals and Objectives

Specific competencies for pediatric laboratory medicine in the six AGCME-designated areas follow:

Patient Care

- Communicate effectively with pediatric colleagues
- Gather essential and accurate information about pediatric patients
- Make informed decisions about diagnostic testing selection and interpretation for pediatric patients based on patient information, scientific evidence, and clinical judgment
- Use information technology to support clinical consultations and diagnostic decision-making
- Provide health care providers with test selection, interpretation and clinical consultation aimed at health maintenance and preventative health care for children
- Work collaboratively with health care providers to support patient-focused pediatric care

Medical Knowledge

- Demonstrate an investigatory and analytic approach to diagnostic decision-making, test interpretation and clinical consultation in pediatrics
- Know and apply basic and clinical sciences to pediatric laboratory medicine
Practice-based Learning and Improvement
- analyze laboratory practice experience and perform practice-based improvement activities using systematic methodology
- locate, appraise and assimilate evidence from scientific studies related to pediatric diagnostics
- obtain and use information about the pediatric patient population and the larger pediatric population
- apply knowledge of study designs and statistical methods to appraisal of test performance and diagnostic efficacy for pediatric health problems
- use information technology to manage information, access online information and for educational advancement in pediatric pathology
- facilitate the learning of students and laboratory professionals about pediatric health and disease

Interpersonal and Communication Skills
- develop and sustain effective working relationships with clinicians
- use listening skills to elicit information regarding patient cases; use effective verbal skills to provide diagnostic information; and effective writing skills to provide clear, concise diagnostic reports
- work collaboratively with members of the pediatric clinical team, laboratory professionals, or other professional group

Professionalism
- demonstrate respect, compassion, integrity; responsiveness to the needs of pediatric patients and society that supersedes self-interest; accountability to patients, society and the profession; commitment to excellence and ongoing professional development
- demonstrate commitment to ethical principles pertaining to provision or withholding of care to premature, neonatal and pediatric patients, confidentiality of patient information, informed consent and business practices of the laboratory
- demonstrate sensitivity and responsiveness to patient culture, age, gender and disabilities

Systems-Based Practice
- understand how laboratory practice affects other health care professionals, the health care organization, and society; and how these elements affect laboratory practice
- understand methods of controlling laboratory costs and allocating laboratory resources for pediatric patients
- practice cost-effective health care and resource allocation that does not compromise quality of pediatric care
- advocate for quality pediatric health care including laboratory services
- partner with health care managers and providers to assess, coordinate and improve pediatric health care and understand how these activities can affect system performance
Length of Rotation: One month with one week each focusing on pediatric issues in hematology, chemistry/immunology, transfusion medicine and microbiology/virology.

Requirements of the rotation/ Resident duties and responsibilities
The resident’s duties will be divided into one week blocks in the different areas of the clinical laboratory. Each day, the resident will check in with the directors of each section to review any interesting pediatric cases in that area, but will spend most of the day focusing on the area of focus for the week. A pre-test will be administered during one of the first days of the rotation and again as a post-test at the close of the rotation, to assess mastery of content covered in the rotation.

1. Hematology Duties
   A. Hematology focus week:
      o The resident will review all pediatric bone marrows with the attending hematopathologist or hematopathology fellow and will dictate and sign out all pediatric cases.
      o The resident will review and report all pediatric body fluids with the attending hematopathologist.
      o The resident will be the primary physician interacting with pediatricians on these cases
      o The resident will attend the daily 2:30 interesting case conference and present unusual or difficult pediatric cases
   B. Other weeks
      o The resident will check daily with the hematopathologist on service to review any unusual or interesting pediatric bone marrow or body fluid samples.
      o The resident is encouraged to attend the daily 2:30 interesting case conference, if this does not interfere with pediatric duties on the other service weeks.

2. Chemistry/Immunology Duties
   A. Chemistry/Immunology focus week
      o The resident will round each day with the attending on the chemistry/immunology service to address daily pediatric issues
      o The resident will meet daily with the attending to discuss a specific pediatric-related topic in chemistry/immunology
      o The resident will contact the pertinent pediatric faculty or residents to discuss unusual cases and to follow up on unusual laboratory results
   B. Other weeks
      o The resident will check in daily with the attending on chemistry/immunology to discuss current unusual pediatric cases and to correlate those results with other areas of the laboratory
3. Transfusion Medicine Duties
   A. Transfusion medicine focus week
      - The resident will attend transfusion medicine rounds with a focus on discussing and following up on pediatric transfusion issues
      - The resident will be involved in the work up and communication of results of transfusion screening and transfusion reaction work up of all pediatric patients
      - The resident will contact the pertinent pediatric faculty or residents to discuss unusual cases and to follow up on unusual transfusion medicine results
      - The resident will attend the weekly transfusion medicine conference to discuss current pediatric issues with faculty and other residents
   B. Other weeks
      - The resident will check in daily with the attending to discuss current unusual pediatric cases on the transfusion service and to correlate those results with other areas of the laboratory
      - The resident is encouraged to attend the weekly transfusion medicine conference, if this does not interfere with pediatric duties on the other service weeks

4. Microbiology/Virology Duties
   A. Microbiology/Virology focus week
      - The resident will attend Pediatric Infectious Disease rounds on Monday, Wednesday and Friday
      - The resident will each day review ongoing pediatric cases at the bench with the technologists focusing on pediatric disease-related infections, such as organisms associated with cystic fibrosis
      - The resident will meet with the virology medical director to discuss pediatric virology testing
      - The resident will meet with the Pediatrics Infection Control Manager
   B. Other weeks
      - The resident will check in daily with the medical directors to discuss current unusual pediatric cases in microbiology and virology and to correlate those results with other areas of the laboratory
      - The resident is encouraged to attend the Monday, Wednesday and Friday Pediatric Infectious Disease Rounds, if this does not interfere with pediatric duties on the other service weeks

Curriculum Topics in Pediatric Laboratory Medicine
The following topics represent a compendium of special topics in pediatric laboratory medicine which can be used throughout the training experience to provide pediatric focus, and also may be used for focused study during this rotation.

(Adapted from: Pysher, Bach, Geaghan et al, Teaching Pediatric Laboratory Medicine to Pathology Residents. Arch Pathol Lab Med 2006 July;130(7)1031-8.)
Clinical Chemistry

1) utilization of age-appropriate (and gender-appropriate, when indicated) reference intervals;
2) principles of screening strategies using serum markers in singleton and in multiple gestations;
3) antenatal assessment of fetal lung maturity screening;
4) significance of umbilical cord blood gas values in diagnosis of neonatal asphyxia;
5) effect of fetal hemoglobin on blood gas and oximetry, and factors that might affect the transition from fetal to adult hemoglobin;
6) effect of interferences commonly present in neonatal samples (lipidemia, hemolysis, hyperbilirubinemia) on frequently ordered laboratory tests;
7) the biochemistry, metabolism, and measurement of bilirubin and the interpretation of conjugated and unconjugated bilirubin results in infants;
8) characteristics of an ideal chemistry analyzer for pediatric specimens;
9) possible physiologic causes of elevated or depressed levels of common automated chemical tests in children;
10) therapeutic drug tests that should be performed in a clinical laboratory serving a pediatric population;
11) analytic consideration in digoxin monitoring of neonates (neonatal digoxin-like immunoreactive substances);
12) toxicology testing (including meconium) in neonate and mother in the peripartum setting;
13) performance and interpretation of tests for heavy metals (lead, copper) in children;
14) performance and interpretation of tests for cystic fibrosis with emphasis on their limitations;
15) lipid screening in children;
16) limitations of the laboratory evaluation of nutritional status in children;
17) monitoring parenteral nutrition therapy in children;
18) characteristic biochemical abnormalities in neuroblastoma, and the reasons why neonatal screening for neuroblastoma is not recommended;
19) utility of the following analytes in the diagnosis, prognosis and monitoring of pediatric tumors:
   a. alpha-fetoprotein,
   b. human chorionic gonadotropin,
   c. lactate dehydrogenase;

Endocrinology

1) utilization of gender, age- and development-specific reference intervals;
2) laboratory evaluation of a neonate with ambiguous genitalia;
3) diagnosis of neonatal hypothyroidism; including clinical urgency of expedited results;
4) the differential diagnosis and evaluation of neonatal hypoglycemia;
5) monitoring of microalbumin and glycated hemoglobin in children with diabetes mellitus;
6) laboratory evaluation of the thin child, and the overweight child;
7) laboratory evaluation of the child with short stature; and tall stature;
8) laboratory evaluation of the child with early sexual development, and
9) late sexual development;
10) laboratory evaluation of a child with suspected hypo- or hyperthyroidism;
11) evaluation of marked elevation of alkaline phosphatase;
12) pathogenesis and evaluation of congenital adrenal hyperplasia, acute adrenal insufficiency, and Cushing syndrome in children;
13) laboratory evaluation of the child with polyuria and dehydration;

Hematology/Urinalysis
1) sources for age-appropriate hematologic reference intervals, and the challenges to developing or validating ranges in each laboratory;
2) characterization and potential uses for placental and umbilical cord blood hematopoietic progenitor cells;
3) laboratory evaluation of fetal-maternal hemorrhage;
4) developmental changes in red cell parameters and counts, reticulocyte counts, leukocyte counts and differential in the neonate, infant and child;
5) quantitative nucleated red blood cell counts for evaluation of neonatal status;
6) cord blood hemoglobin content and expected time course of transition from fetal to adult hemoglobin;
7) characteristics of an ideal automated hematology analyzer for pediatric specimens;
8) differential diagnosis of and outline of a sequence of laboratory testing for the following in an infant;
   a. anemia,
   b. neutropenia,
   c. thrombocytopenia,
   d. bone marrow failure
   e. lymphocytosis,
   f. lymphocytopenia;
9) basis for utilization of immature neutrophil counts in the evaluation of sepsis in neonates;
10) molecular lesion, pathogenesis, diagnosis, and treatment of the following conditions:
    a. G6PD deficiency,
    b. pyruvate kinase deficiency,
    c. hereditary spherocytosis,
    d. sickle cell disease,
    e. thalassemia syndromes
11) laboratory diagnosis of transient erythroblastopenia of childhood versus other causes of pure red cell aplasia in childhood;
12) expected bone marrow cellularity and cellular populations (differential) as a function of age;
13) proper handling and distribution of bone marrow and tissue specimens in cases of suspected pediatric hematologic malignancy;
14) accurate identification of the following disorders by examination of microscopic slides, and recognition of the characteristic flow cytometric, cytogenetic, and/or
molecular genetic abnormalities, and associated prognosis, of each of the following:

a. acute lymphoblastic leukemia, and subtypes,
b. acute myeloid leukemia, and subtypes,
c. transient myeloproliferative disorder of Down’s Syndrome
d. juvenile myelomonocytic leukemia,
e. chronic myelogenous leukemia,
f. malignant lymphoma – lymphoblastic, Burkitt, diffuse large B-cell, and anaplastic large cell,
g. atypical lymphoid proliferations, including post-transplantation lymphoproliferative disorder,
h. the histiocytic disorders, including hemophagocytic syndrome,
i. metastatic tumor involving bone marrow;

15) appearance of the following disorders by examination of bone marrow morphology:

a. parvovirus infection,
b. Gaucher disease,
c. Niemann-Pick disease,
d. Chediak-Higashi syndrome,
e. ceroid lipofuscinosis;

16) health – associated reference values for cerebrospinal fluid white counts in neonates, and children;

17) recognition of cerebrospinal fluid contaminants found in neonatal specimens (bone marrow; germinal matrix);

18) appearance of the following conditions on cytocentrifuge preparations from pediatric body fluid specimens:

a. acute lymphocytic leukemia,
b. remote CSF hemorrhage,
c. CSF shunt,
d. CNS tissue: neuroglia, choroid plexus, and ependymal cells,
e. chylothorax in a neonate;

19) utility of urinalysis in the evaluation of suspected urinary tract infection in children;

20) evaluation of proteinuria and hematuria, alone and in combination, discovered on a routine urinalysis in a child;

Coagulation

1) expected values for coagulation tests in premature infants and neonates, and the effect of high hematocrit on coagulation tests;

2) basis for hemorrhagic disease of the newborn, and vitamin K therapy;

3) differential diagnosis of thrombocytopenia in the following:

a. a term neonate,
b. a healthy child,
c. a hospitalized bone marrow transplant patient;

4) criteria for diagnosis of anti-phospholipid syndrome in cases of recurrent fetal loss or a neonatal thrombotic disorder;

5) work-up for suspected thrombophilia in a child;
6) laboratory evaluation for a bleeding diathesis in a child;
7) expected results of screening tests (prothrombin time, activated partial thromboplastin time, and platelet count and morphology), and outline the definitive tests that should be performed to make a diagnosis for the following:
   a. disseminated intravascular coagulation in a low birth weight infant,
   b. Hemophilia A and B,
   c. other congenital deficiencies,
   d. von Willebrand Disease,
   e. qualitative platelet disorders;
8) coagulation laboratory support for cardiovascular surgery and extra-corporeal membrane oxygenator (ECMO) therapy in infants;

**Transfusion Medicine**
1) familiarization with availability of autologous storage of placental and umbilical cord blood and potential uses (especially for high-risk families);
2) diagnostic testing for neonatal alloimmune thrombocytopenia;
3) diagnostic work up for ABO hemolytic disease of the newborn;
4) diagnostic testing for isoimmune neonatal neutropenia;
5) pretransfusion testing and product selection in the following situations:
   a. intrauterine transfusion,
   b. newborn infant,
   c. exchange transfusion for hemolytic disease of the newborn or severe hyperbilirubinemia,
   d. neonatal alloimmune thrombocytopenia,
   e. pediatric trauma,
   f. pediatric cardiovascular surgery and extra-corporeal membrane oxygenator (ECMO) therapy,
   g. sickle cell disease,
   h. hemophilia,
   i. idiopathic thrombocytopenic purpura,
   j. bone marrow transplant recipient,
   k. solid organ transplant recipient,
   l. for an ABO-incompatible transplant;
6) prevention of volume overload in pediatric transfusion therapy;
7) expected response to product therapy in children;
8) indications for and controversies surrounding use of the following in pediatric transfusions:
   a. sterile docking and issue of aliquots
   b. additive solutions for red blood cell storage,
   c. leukoreduced products,
   d. irradiated products,
   e. cytomegalovirus “safe” products
   f. autologous and directed products
9) major indications for, and limitations of therapeutic apheresis in children;
Immunology
1) development of the immune response in the fetus and infant, and placental transfer of maternal antibodies;
2) sources for reference intervals for immunoglobulins and lymphocyte populations in infants and children;
3) laboratory evaluation of the child with suspected allergy;
4) problems associated with the diagnosis of Epstein-Barr Virus infection in young children;
5) outline of an initial set of tests for the infant or child with suspected immunodeficiency;
6) characteristic serologic findings in the following:
   a. neonatal lupus syndrome,
   b. juvenile rheumatoid arthritis,
   c. juvenile ankylosing spondylitis,
   d. celiac disease;
   e. inflammatory bowel disease;
   f. autoimmune hepatitis in childhood,
   g. acute rheumatic fever,
   h. mucocutaneous lymph node syndrome;

Microbiology/Virology
1) principles of preventative strategies, diagnosis and pathogenesis of early-onset and late-onset Group B Streptococcal disease in neonates;
2) historical background and current limitations of TORCH serologies, and interpretation of serologies in suspected perinatal infections;
3) laboratory studies recommended for infants adopted from developing countries;
4) direct observation of nasopharyngeal aspirate and swab specimen collection for respiratory virus detection;
5) test performance limitations and best practices for Group A streptococcal for testing in children;
6) test means of diagnosing the following common infections in infants and children:
   a. cytomegalovirus,
   b. hepatitis B,
   c. herpes simplex virus,
   d. toxoplasmosis,
   e. enterovirus,
   f. respiratory viruses,
   g. pertussis,
   h. human immunodeficiency virus;
7) proper testing and interpretation of microbiological specimens from the following:
   a. a NICU patient with suspected sepsis,
   b. a febrile infant 30-90 days of age,
   c. a patient with Cystic Fibrosis;
8) principles of antimicrobial susceptibility testing with emphasis on agents that should and should not be used in children;
9) salivary sample collection and testing for adolescent patient HIV testing and other applications;

**Biochemical Genetics**

1) process for collecting dried blood spots for neonatal screening
2) principles of neonatal screening and list the disease that are screened for in CA
3) principles and clinical applications of tandem mass spectrometry
4) clinical presentation of metabolic diseases in the neonate and older child;
5) tests most frequently used to diagnose the following categories of inborn errors of metabolism
   a. amino acidopathies, including urea cycle defects,
   b. disorders of organic acid metabolism, including fatty acid oxidation defects,
   c. disorders of carbohydrate metabolism (galactosemia, fructose disorders);
   d. disorders of steroid metabolism,
   e. hypothyroidism,
   f. congenital disorders of glycosylation,
   g. glycogen storage diseases,
   h. lysosomal storage diseases (including mucopolysaccharidoses),
   i. mitochondrial respiratory chain disorders,
   j. purine and pyrimidine disorders,
   k. peroxisomal disorders,
   l. porphyrias;
   m. congenital disorders of glycosylation
6) principle and clinical applications of tandem mass spectrometry, particularly the metabolic diseases that can be detected by amino acid and acylcarnitine profiling;
7) collection and preservation of postmortem specimens in stillborns and pediatric demise cases of suspected genetic metabolic disorders.

**Cytogenetics / Molecular Genetics**

1) principle methods of antenatal diagnosis, including risks, indications, invasiveness and accuracy (chorionic villous sampling, amniocentesis, fetal blood sampling);
2) indications for chromosome studies in the following situations:
   a. spontaneous abortion,
   b. stillbirth,
   c. fetuses or infants with congenital malformations or ambiguous genitalia,
   d. children with mental retardation,
   e. pediatric tumor specimens,
   f. pediatric hematologic malignancies and bone marrow failure syndromes;
3) major clinical and anatomic findings associated with each of the following:
   a. Monosomy X,
   b. Trisomy 13,
   c. Trisomy 18,
   d. Trisomy 21,
   e. Beckwith-Weidemann Syndrome,
   f. Prader-Willi and Angelman Syndromes,
   g. DiGeorge Syndrome,
4) basic principles and limitations of molecular diagnostic testing (including PCR-based assays (including nested techniques and quantitative PCR; detection methods; gene sequencing; fluorescent resonance energy transfer technique; and Southern blot)

5) common applications for molecular diagnostics in the following settings:
   a. antenatal testing,
   b. mental retardation,
   c. pediatric hematopoietic neoplasms,
   d. pediatric small round cell tumors,
   e. congenital hearing loss,
   f. thrombophilia

6) cost-effective use of molecular genetic tests in pediatric health care

**Point-of-Care Testing**

1) opportunities and successful applications for neonatal and pediatric point-of-care testing (POCT);

2) physiologic characteristics of premature and neonatal populations which support the use of point-of-care blood gas and electrolyte monitoring

3) factors to be considered in implementing POCT in both inpatient and outpatient settings, including informatics, regulations and health economics

**Laboratory Management**

1) pre-analytic and analytic factors that can be optimized to minimize the volume of sample required for a laboratory test;

2) familiarization with specialized sample collection devices for premature and neonatal heelsticks

3) direct observation of neonatal bloodspot collection and preparation for state screening program

4) direct observation of specimen collection, including patient preparation, safety precautions, and possible sources of error, including:
   a. capillary blood from a neonate,
   b. venipuncture from pre-school age child,
   c. sweat test

5) processing pediatric specimens, including limitations and possible sources of error;

6) consideration of pediatric patient needs in the selection of test methods and laboratory equipment (sample size, dynamic range, interferences);

7) utilization of appropriate reference intervals when interpreting pediatric test results;

8) obstacles to the recommendation that each laboratory should determine its own reference intervals for the population it serves as it relates to pediatric tests, and list alternative approaches for meeting this goal;

9) selection of critical values for neonates, infants, children

10) selection of reference laboratories for pediatric laboratory testing;

11) practical exercise of finding a rare analysis for patient testing

12) effective communication with pediatric clinicians regarding test menus, report formats, and appropriate expectations for turn-around time;
13) effective communication with laboratory staff and hospital administration regarding laboratory service needs of pediatric patients.

**Resources**

**General**


[http://www.childx.org/topics.htm](http://www.childx.org/topics.htm) (PubMed search links for pediatric laboratory medicine topics)

[http://www.labtestsonline.org/](http://www.labtestsonline.org/)

**Clinical Chemistry**


http://www.aacc.org American Association for Clinical Chemistry.

http://www.cff.org Cystic Fibrosis Foundation

Hematology


Coagulation


Transfusion Medicine


http://www.aabb.org American Association of Blood Banks

http://www.bloodline.net/

Microbiology

Biochemical Genetics


http://www.geneclinics.org/


Point of Care Testing

Responsibilities for Clinical FELLOWS
GENERAL POLICIES FOR CLINICAL FELLOWS

Fellow personal time off guidelines

Many fellows will be interviewing for jobs during their fellowship and may be moving or under pressure to start a new position immediately following the end of the fellowship year, making June a difficult time of year for programs that rely on fellows for pager coverage and service work. To minimize the disruption of service, we ask that you adhere to the following guidelines for personal time off during your fellowship year:

- Please review the House Staff Policy Handbook at the GME website (http://gme.stanford.edu/). A section on personal time-off is available under “Other benefits.”
- Three weeks personal time off is provided to fellows. Separate educational leave for presenting at national conferences is allowed. Time-off for job interviews should be arranged with the fellowship director (or proxy) in conjunction with the attending on-service. Total allowable time off is limited to four weeks.
- No more than one week of personal time off should be taken on any given rotation (in a given month), unless approved by the fellowship director (or proxy) and the faculty on-service.
- No more than one week of personal time off can be granted during the month of June (please plan your start dates accordingly).
- Please contact your fellowship director (or proxy) for approval of your proposed personal time off no later than two months prior to proposed dates.
- DO NOT make irreversible plans prior to fellowship director (or proxy) approval.
- Please provide the fellowship director (or proxy) with a proposed coverage schedule during your absence.
- Every effort will be made to respond to personal time off requests in one week or less.

Methods of assessment/evaluation

All clinical fellows are assessed by the relevant faculty during each given rotation, using the Stanford Pathology Department’s evaluation tool located at the MedHub website.

Policies and procedures

Stanford Hospital and Clinics House Staff Policies and Procedures govern the policies and procedures for the Stanford Hospital and Clinics residents during this rotation.
**CYTOPATHOLOGY FELLOWSHIP**

**Director:** Christina Kong, MD

**Education content: Stanford (5 months):**
During the rotation at Stanford, the fellow is responsible for running the cytopathology service. This includes daily previewing of non-gynecologic, FNA and gynecologic cases, and performing fine needle aspiration biopsies with the cytology attending on-service. The fellow is also responsible for distributing cases to the residents on their cytology day (see “Cytopathology – Resident rotations”). Towards the end of the year, the fellow will “junior attend” on the cytology service, signing out cases with the residents which will then be finalized by the cytology attending on-service.

**Education content: PAVAHCS (5 months):**
The rotation at PAVAHCS is an opportunity for cytopathology fellows to extend their technical and interpretive cytopathology skills with graduated responsibility and independence. In addition, cytopathology fellows enhance their morphologic skills and cytologic-histologic correlations by assuming graduated responsibility of “junior attending” surgical pathology sign-out. The patient population at PAVAHCS consists predominantly of aging male veterans, although increasing numbers of younger and female patients are being seen and are expected to accumulate in future years. Currently, the prevalence of malignancy is relatively high and advanced states of malignant disease are not uncommon. This setting provides excellent material for the cytologic diagnosis of a wide spectrum of malignant (and benign) disease processes.

**Level of supervision:**
Cytopathology fellows have attending back-up at all times, for all procedures, cytologic interpretations and presentations. As fellows increase their technical fine needle aspiration skills, they assume increased responsibility for independently performing this procedure as well as increased responsibility in assessing adequacy of samples, providing preliminary and final results and presenting cytopathologic findings at multidisciplinary conferences. The overwhelming majority of cytopathology fellows are PGY4 or beyond, with 3 or more years of anatomic pathology experience. There is no difference in level of supervision or responsibilities between fellows of different PGY levels.

**Competency-based goals and objectives:**
Please see the following pages.

**Instructional methods:**
Instruction is largely didactic, including one-on-one skills sessions on fine needle aspiration technique and teaching over a double- or multi-headed microscope. Instruction by direct observation is also utilized in initial months, as fellows observe fine needle aspiration procedures performed by the attending as well as ensuring clinical
discussions with referring physicians. Independent study is an important aspect of the fellowship, and fellows are expected to independently prepare for microscopic signout sessions on a daily basis.

**Methods of assessment/evaluation:**
Cytopathology fellows are assessed by relevant cytopathology and surgical pathology faculty during each given rotation, using the Stanford Pathology Department’s evaluation tool located at the MedHub website. At PAVAHCS, the site director (Dr. Kristin Jensen) shall be responsible for notifying the program director promptly, of any issue, clinical or academic, that may seriously affect any trainee.

**Policies and procedures:**
Stanford Hospital and Clinics House Staff Policies and Procedures govern the policies and procedures for the Stanford Hospital and Clinics residents during this rotation.

**Fellow personal time off guidelines:**
See policy for all fellows in the Department of Pathology (above).
# Educational Goals and Objectives: Stanford

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| **Patient care** | 1) Participate in signout of cytopathologic specimens received in the laboratory  
2) Understand and observe privacy policies, and participate in all appropriate training  
3) Understand the implications of the cytologic diagnosis for each specific body site  
4) Watch the “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung  
5) Practice fine needle aspiration (FNA) technique using beef liver in a latex glove and slide smearing under observation by cytology attending on-service  
8) Perform clinical fine needle aspirations and obtain informed consent, initially under direct observation and supervision  
9) Read relevant literature on the management of patients with cervical cytologic abnormalities, including indications for HPV testing and different methods available for HPV detection | 1) Independently interpret and classify FNA, gynecologic and non-gynecologic specimens, entering a first draft report for attending review at the time of signout  
2) Know and be able to identify infectious organisms seen in exfoliative cytology  
3) Know and be able to identify common slide artifacts seen in exfoliative cytology  
4) Participate in immediate adequacy assessments of various FNA specimens  
5) Independently perform clinical FNAs, becoming proficient in performing biopsies and in preparing aspirate smears, as well as adequacy assessment and specimen triage  
6) Understand when to collect material for ancillary studies  
8) Understand and explain current Consensus Guidelines for management of patients with cervical cytologic abnormalities | 1) “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung (available online at [http://www.papsociety.org/fna.html](http://www.papsociety.org/fna.html))  
2) The Bethesda System for Reporting Cervical Cytology (2nd edition)  
4) Consensus Guidelines: [www.asccp.org](http://www.asccp.org) |
| **Medical knowledge** | 1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to each body site  
2) Learn diagnostic criteria of malignancy, specific to each body site  
3) Learn causes of inflammation specific to each body site, including infectious and non-infectious etiologies  
4) Attend the 8 am Wed-Fri surgical pathology didactic conferences & | 1) Attend the 8 am Wed-Fri surgical pathology didactic conferences  
2) Organize and present Cytology Noon conference  
3) Present at Current Issues conference (journal club)  
4) Give weekly or bi-weekly Cytology Teaching Conference to residents, starting in September  
5) Understand and apply appropriate use of special stains and/or | 1) Cibas and Ducatman, Cytology: Diagnostic Principles and Clinical Correlates (2nd edition)  
2) DeMay, The Art and Science of Cytopathology: Exfoliative Cytology  
3) DeMay, The Art and Science of Cytopathology: Aspiration Cytology  
4) Atkinson, Atlas of Diagnostic Cytopathology  
5) Gray and McKee, Diagnostic Cytopathology  
6) Geisinger et al, Modern Cytopathology  
7) Bibbo, Comprehensive Cytopathology  
8) Holladay, Cytopathology Review Guide |
| Practice-based learning and improvement | 1) Attend monthly Stanford QA conference (3rd Tuesday of each month) 2) Be able to explain proper collection methods for FNA, gynecologic and non-gynecologic specimens 3) Become proficient at various Stanford information systems (e.g., PowerPath, EPIC) 4) Comply with all safety regulations 5) Become familiar with and adhere to patient safety goals as they apply to cytology (use of two patient identifiers, performing “time-out” confirmation before performing an FNA procedure) | 1) Complete the cytopathology fellow self-assessment quarterly 2) Participate in monthly cyto-histo correlation conference 3) Perform literature searches on cases when indicated | 1) Cancer Cytopathology 2) American Journal of Surgical Pathology 3) Modern Pathology 4) American Journal of Clinical Pathology (other journals available online through Lane Library at Stanford) |
| Interpersonal and communication skills | 1) Effectively communicate with all others within and outside the laboratory 2) Compose clear and concise pathology reports, with explanatory comments as needed 3) Be able to explain the fine needle aspiration procedure to patients, including potential complications of the procedure | 1) In the last quarter of the year, act as a “junior attending”, signing out cytology cases with residents 2-3 times/week 3) Instruct anatomic pathology residents on fine needle aspiration technique 4) Discuss preliminary and final cytologic results with clinicians and patients (as applicable) | 1) “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung (available online at [http://www.papsociety.org/fna.html](http://www.papsociety.org/fna.html)) |
| Professionalism | 1) Participate in all Stanford HIPAA training prior to obtaining | 1) Insure continuity of care by informing the cytopathology faculty of | |
| Systems-based practice | 1) Attend department-wide annual quality assurance meeting  
3) Become familiar with the cytopathology section of the College of American Pathologists' (CAP) Laboratory Inspection Checklist | 1) If timing permits (inspections occur approximately once every two years), participate in the cytopathology portion of a CAP inspection  
2) If timing permits, conduct a mock laboratory inspection using CAP laboratory accreditation checklists for cytology | 1) www.cap.org |
### Educational Goals and Objectives: PAVAHCS

<table>
<thead>
<tr>
<th><strong>ACGME competency</strong></th>
<th><strong>Program Goals and Objectives: First Month</strong></th>
<th><strong>Program Goals and Objectives: Subsequent Months</strong></th>
<th><strong>Resources</strong></th>
</tr>
</thead>
</table>
| **Patient care**     | 1) Participate in signout of cytopathologic specimens received in the laboratory  
2) Understand and observe privacy policies, and participate in all appropriate training  
3) Understand the implications of the cytologic diagnosis for each specific body site  
4) Watch the “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung  
5) Practice fine needle aspiration (FNA) technique using beef liver in a latex glove under observation by Dr. Kristin Jensen  
6) Practice slide smearing technique under observation by Dr. Kristin Jensen  
7) Observe clinical fine needle aspiration technique as performed by Dr. Kristin Jensen  
8) Perform clinical fine needle aspirations, initially under direct observation and supervision  
9) Read relevant literature on the management of patients with cervical cytologic abnormalities, including indications for HPV testing and different methods available for HPV detection | 1) Independently interpret and classify FNA, gynecologic and non-gynecologic specimens, entering a first draft report in the cytology report database for attending review at the time of signout  
2) Know and be able to identify infectious organisms seen in exfoliative cytology  
3) Know and be able to identify common slide artifacts seen in exfoliative cytology  
4) Participate in immediate adequacy assessments of various FNA specimens  
5) Independently perform clinical FNAs, becoming proficient in performing biopsies and in preparing aspirate smears, as well as adequacy assessment and specimen triage  
6) Understand when to collect material for ancillary studies  
7) Attend flow cytometry and/or molecular pathology and/or cytogenetics signout on cytology cases at Hillview  
8) Understand and explain current Consensus Guidelines for management of patients with cervical cytologic abnormalities | 1) “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung (available at [http://www.papsociety.org/fna.html](http://www.papsociety.org/fna.html))  
2) The Bethesda System for Reporting Cervical Cytology (2nd edition)  
4) Consensus Guidelines: [www.asccp.org](http://www.asccp.org) |
| **Medical knowledge** | 1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to each body site | 1) Participate in FNA, gynecologic and non-gynecologic slide and online educational programs as available (e.g., CAP, Cibas and Ducatman, *Cytology: Diagnostic Principles and Clinical Correlates* (2nd edition))  
2) DeMay, *The Art and Science of Cytopathology: Exfoliative Cytology* |
<p>| Practice-based learning and improvement | 2) Learn diagnostic criteria of malignancy, specific to each body site 3) Learn causes of inflammation specific to each body site, including infectious and non-infectious etiologies 4) Attend by teleconference the 8 am Wed-Fri surgical pathology didactic conferences 5) Understand preparatory and processing steps for all types of cytology specimens 6) Learn The Bethesda System for Reporting Cervical Cytology, including criteria for unsatisfactory Pap smears and quality indicators according to Bethesda 2001 7) Learn and understand the etiology of squamous intraepithelial lesions | ASCP, and/or VA medical education programs 2) Read and present one cytology journal article each month at the biweekly VA journal club 3) Understand and apply appropriate use of special stains and/or studies to facilitate diagnosis 3) DeMay, The Art and Science of Cytopathology: Aspiration Cytology 4) Atkinson, Atlas of Diagnostic Cytopathology 5) Gray and McKee, Diagnostic Cytopathology 6) Geisinger et al, Modern Cytopathology 7) Bibbo, Comprehensive Cytopathology 8) Holladay, Cytopathology Review Guide 9) The Bethesda System for Reporting Cervical Cytology (2nd edition) 10) ASCUS-LSIL Triage Study literature: Am J Obstet Gynecol 2003;188:1383-1392 and Am J Obstet Gynecol 2003;188:1393-1400 | 1) Complete the cytopathology fellow self-assessment quarterly 2) Present monthly cytopathology quality assurance data (review of cases diagnosed as malignant) 3) Prior to the last Friday of each month, run the cytopathology quality assurance report and summarize data, reviewing cases as appropriate with the cytopathology attending 4) Read and present one cytopathology journal article each month at the biweekly VA journal club meeting 5) Collect cases and conduct monthly slide-based teaching 1) Cancer Cytopathology 2) American Journal of Surgical Pathology 3) Modern Pathology 4) American Journal of Clinical Pathology (other journals available online through Lane Library at Stanford) |</p>
<table>
<thead>
<tr>
<th>Interpersonal and communication skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Effectively communicate with all others within and outside the laboratory</td>
</tr>
<tr>
<td>2) Compose clear and concise pathology reports, with explanatory comments as needed</td>
</tr>
<tr>
<td>3) Be able to explain the fine needle aspiration procedure to patients, including potential complications of the procedure</td>
</tr>
</tbody>
</table>

| 1) Present cytopathology findings at the monthly cardiothoracic tumor board (last Thursday of the month) |
| 2) In the second half of the year, act as a “junior attending”, signing out surgical cases with a resident one or more times per month |
| 3) Instruct anatomic pathology residents on fine needle aspiration technique |
| 4) Discuss preliminary and final cytologic results with clinicians and patients (as applicable) |

<table>
<thead>
<tr>
<th>Professionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Participate in all VA privacy training prior to obtaining computer password and access</td>
</tr>
<tr>
<td>2) Demonstrate ethical behavior</td>
</tr>
</tbody>
</table>

| 1) Insure continuity of care by informing the cytopathology faculty of any pending cases prior to a scheduled absence |

<table>
<thead>
<tr>
<th>Systems-based practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Present interesting/difficult cytopathology cases at weekly VA microscopic conference (Fridays at noon)</td>
</tr>
<tr>
<td>2) Present interesting/positive cytopathology results for correlation with autopsy results at weekly autopsy conference (Thursdays at 1:15 pm)</td>
</tr>
<tr>
<td>2) Attend department-wide annual quality assurance meeting</td>
</tr>
<tr>
<td>3) Become familiar with the cytopathology section of the College of American Pathologists’ (CAP) Laboratory Inspection Checklist</td>
</tr>
</tbody>
</table>

| 1) If timing permits (inspections occur approximately once every two years), participate in the cytopathology portion of a CAP inspection |
| 2) If timing permits, conduct a mock laboratory inspection using CAP laboratory accreditation checklists for cytology |
| 3) Participate in organ-specific diagnostic analysis, observing trends in sample yield by sampling method and/or operator, nondiagnostic rates, rates of malignancy, and usage of FNA for diagnosis, as well as identifying possible areas of performance improvement |

1) “Fine Needle Aspiration Technique” DVD by Dr. Britt-Marie Ljung’

1) www.cap.org
* Time allotted for initial knowledge and skill acquisition may vary depending on the fellow’s prior training and individual learning experience. One month is considered to be a goal timeframe for acquisition of introductory knowledge and skill; however, fellows may proceed to more graduated responsibilities in an earlier time interval as determined appropriate by cytopathology faculty.
## STANFORD/PAVAHCS CYTOPATHOLOGY FELLOWSHIP
### REQUIRED CONFERENCE ATTENDANCE SUMMARY

#### ALL ROTATIONS

<table>
<thead>
<tr>
<th>Conference</th>
<th>Frequency</th>
<th>Required?</th>
<th>Percent Attendance *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Concepts (Journal Club)</td>
<td>1x/week</td>
<td>Yes</td>
<td>50%</td>
</tr>
<tr>
<td>Pathology Morning Conference</td>
<td>3x/week</td>
<td>Yes</td>
<td>50%</td>
</tr>
</tbody>
</table>

**Optional Conferences (Attendance Not Required)**

| Pathology Grand Rounds                          | 1x/month  | No        | N/A                  |

#### STANFORD ROTATIONS

<table>
<thead>
<tr>
<th>Conference</th>
<th>Frequency</th>
<th>Required?</th>
<th>Percent Attendance *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cytology Noon Conference</td>
<td>1x/month</td>
<td>Yes</td>
<td>80% (4/5)</td>
</tr>
<tr>
<td>Cytology Teaching Conference</td>
<td>2x/month</td>
<td>Yes (starting in September)</td>
<td>100% (given by fellow)</td>
</tr>
<tr>
<td>Pathology Gross Conference (FNA session)</td>
<td>1x/month</td>
<td>Yes</td>
<td>80%</td>
</tr>
<tr>
<td>Stanford ENT Tumor Board (when fellow is assigned primary responsibility)</td>
<td>1x/week</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Cytology-Histology Correlation Conference</td>
<td>1x/month</td>
<td>Yes</td>
<td>80% (4/5)</td>
</tr>
<tr>
<td>Lab Management Conference</td>
<td>1x/month</td>
<td>Yes</td>
<td>60% (3/5)</td>
</tr>
<tr>
<td>Surgical Pathology QA Conference</td>
<td>1x/month</td>
<td>Yes</td>
<td>80% (4/5)</td>
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</tbody>
</table>

**Optional Conferences (Attendance Not Required)**

| Cytology CME Conference                         | 1x/month  | No        | N/A                  |

#### PAVAHCS ROTATIONS

<table>
<thead>
<tr>
<th>Conference</th>
<th>Frequency</th>
<th>Required?</th>
<th>Percent Attendance *</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA Pathology Journal Club</td>
<td>2x/month</td>
<td>Yes</td>
<td>90%</td>
</tr>
<tr>
<td>VA Autopsy (Gross) Conference</td>
<td>1x/week</td>
<td>Yes</td>
<td>90%</td>
</tr>
<tr>
<td>VA Thoracic Tumor Board</td>
<td>1x/month</td>
<td>Yes</td>
<td>80%</td>
</tr>
<tr>
<td>VA Interesting Case Conference</td>
<td>1x/week</td>
<td>Yes</td>
<td>90%</td>
</tr>
</tbody>
</table>

**Optional Conferences (Attendance Not Required)**

| VA Oncology Tumor Board                         | 1x/month  | No        | N/A                  |
| VA Medicine Conference                          | 1x/week   | No        | N/A                  |
## Formal Teaching Presentations by Fellow

<table>
<thead>
<tr>
<th>Session Date</th>
<th>Name of Fellow</th>
<th>Topic</th>
<th>Audience</th>
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Copy and attach additional pages as needed.
### Professional Meetings Attended by Fellows

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Name of Fellow Who Attended</th>
<th>Name of Meeting and Sponsoring Organization</th>
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<tbody>
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### Research Projects

<table>
<thead>
<tr>
<th>Faculty Mentor/ Senior Author</th>
<th>Subject/Title</th>
<th>Date Project Started</th>
<th>Anticipated Completion Date</th>
<th>Goal for Presentation/ Publication</th>
</tr>
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Please give a brief description of the project below, including research hypothesis, size of study group, stains or special studies to be done, etc.:

___________________________________________________________________________________
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Copy and attach additional pages as needed.
DERMATOPATHOLOGY FELLOWSHIP

Director: Uma Sundram, MD, PhD

Educational Goals:
This one year fellowship is intended to provide pathologists or dermatologists with subspecialty competence in dermatopathology. At the end of the year trainees are expected to have acquired the expertise to independently set up and operate a DP laboratory. This expertise includes diagnostic abilities, competence in ancillary techniques (immunofluorescence, immunophenotyping, molecular diagnostics, electron microscopy) supervision and training of laboratory personnel, laboratory management, quality assurance, and a fundamental understanding of basic science.

The Dermatopathology Fellow(s) will be involved in the DP service throughout the entire year and will attend morning sign-out every day.

Expectations:
- Fellows are expected to preview each case (in house and consult) prior to sign-out, read up on the respective disease entity and pull relevant prior material for all consult cases.
- Following sign-out DP Fellows are responsible for dictating the final report for consult (outside) cases. (Also see “in-depth responsibilities for surgical pathology residents and fellows”)
- DP Fellows who are pathologists must participate in the examination of at least 1000 dermatology patients during the one year fellowship. This is met by attending the dermatology clinics two to three times per week in the afternoon at Stanford University (Redwood City Clinics). You are encouraged to keep a log book of all patients personally seen, which would include their name, diagnosis, and whether or not you performed a biopsy. This serves as a good record of your clinical activities which you can refer back to when completing applications for Board Certification. Also, DP fellows are required to attend the weekly Dermatology Grand Rounds held on Thursday morning from 7:30 to 9 AM.
- DP Fellows who are dermatologists must participate in the activities of the surgical pathology service during the one year fellowship. This is met by a four month rotation on surgical pathology, a one month rotation on Warnke hematopathology service, a one month rotation on the Kempson consult service, a rotation on molecular pathology, and a one month rotation on the immunopathology service. All of these rotations occur in the afternoon, following dermatopathology sign-out. In addition, DP Fellows who are dermatologist should attend the 8:00 a.m. surgical pathology teaching conferences held Wednesday and Friday in L201 (Thursday mornings are reserved for Dermatology Grand Rounds).
- DP Fellows are expected to run the “Chapters of Lever (or Weedon)” conference. This is a teaching conference for first year dermatology residents held on a weekly basis. The DP Fellow should read the assigned chapter of Weedon’s Skin Pathology, and pull relevant slides from the teaching collection located in Dr. Sundram’s Office. These slides are reviewed with the dermatology residents on Tuesday morning at 7:30. DP Fellows are expected to run an unknown conference.
for the senior dermatology residents. This conference is also on Tuesday morning at 7:30.

- DP fellows are expected to run a microscope session for the pathology residents, which is held one Wednesday a month at noon. The fellow should choose the topic for the session and may show recent interesting cases or cover a topic in dermatopathology.

- DP Fellows are expected to attend the following conferences: Thursday morning dermatology grand rounds; Dermatology teaching conferences held Tuesday (if a pathologist); Surgical pathology teaching conferences on Wednesday and Friday (if a dermatologist); “Chapters of Lever (Weedon) conference”, unknown conference.

- DP Fellows should involve themselves in the evaluation and interpretation of immunofluorescence, molecular diagnostic, microbiologic, and electron microscopic material. Also, DP Fellows should involve themselves in issues of laboratory management, including QA, laboratory procedures, and personnel management, as they arise.

- DP Fellows should review, as time permits, the extensive teaching slide collection located in Dr. Sundram’s office. This is usually done in the course of preparing for the weekly “Chapters of Weedon” conference.

During the course of the year long fellowship, DP Fellows are expected to participate in at least one research project that results in presentation or publication. The research project can be clinical, pathologic or basic science-related. Consult with Dr. Sundram or other members of the dermatology or pathology faculty for ideas and projects.

DP Fellows are encouraged to attend the annual meeting of the American Society of Dermatopathology, and funds are available to pay for this trip.

DP Fellows are expected to give two didactic lectures per year in the Department of Pathology.

The DP fellows are expected to cover call on weekends (at home call). This entails serving as a consultant for the surgical pathology fellow on call or hotseat fellow on “gold cassette” DP cases that come in over the weekend. In addition, the DP fellow is expected to gross in all DP specimens that are accessioned on Saturdays. DP Fellows should realize that they are to complete assigned tasks in a timely manner, even if this requires staying late or coming in on weekends. As the dermatopathology service deals mostly with community dermatologists and is very service-oriented, we (Stanford DP service, as a whole) are committed to dissemination of accurate pathology reports in a timely manner.

At the end of the year DP Fellows are asked to evaluate their Fellowship training and faculty.
GYNECOLOGIC/BREAST PATHOLOGY FELLOWSHIP

Director: Teri Longacre, MD

General Philosophy
The fellowship in gynecologic/breast pathology is designed to offer advanced, focused and intensive diagnostic training in gynecologic and breast pathology. Specific responsibilities include: sign out of consultation material (including immunohistochemistry and other special diagnostic techniques), sign out of residents, and participation in weekly breast and gyn tumor boards. Additional time will be designed to pursue additional subspecialty training in areas of cytopathology (as it relates to breast/gyn pathology), placental pathology, and research.

Specific Responsibilities
Fellows participate in departmental and interdepartmental conferences such as the Breast Tumor Board and Gynecologic Oncology Tumor Board, as well as medical student and resident teaching. The fellow is responsible for review of all gyn and breast cases sent from outside hospitals.

During the course of the year long fellowship, the fellow is expected to participate in at least one research project that results in presentation and publication. The research project can be clinical, pathologic or basic science-related.

On-Call
Refer to the on-call schedule for specific coverage dates. Coverage is provided from 6:00PM to 7:30AM on weekdays and all day on Saturdays, Sundays and holidays. Responsibilities include preparation, interpretation and reporting of GMS specimens, preparation of FNA samples from radiology for immediate evaluation/tissue and frozen section coverage. The on-call fellow should contact the on-call faculty member by pager or home number to sign out frozen sections.

Frozen Section
The fellow is responsible for frozen section coverage from 9:00AM to 2:00PM Monday through Friday. It is expected that the fellow, in conjunction with the assigned resident in surgical pathology and the frozen section technician, prepare and interpret all frozen sections and touch preparations following discussion(s) with the submitting surgeon. The assigned faculty is available for assistance and is expected to preview all frozen sections and their diagnoses following the fellow’s preliminary diagnoses. The assigned faculty will take over frozen section coverage from the fellow for the 2:00PM to 6:00PM period.

Surgical Pathology Sign-Out
During this rotation, the fellow is responsible for resident sign-out and at least one shift of frozen section coverage. The fellow will be responsible for sign-out of one resident. This will include ordering of additional stains, determination of cases to be shown to additional faculty, instruction provided to the resident concerning the gross, microscopic,
and relevant diagnostic and differential diagnostic issues, as well as preparation of the final report. Once the final report is completed and corrected by the fellow, the case is to be forwarded to the assigned faculty and formally signed out by that faculty member.

**Consults**
The fellow is responsible for preview and work-up of gyn/breast consult cases. On this service, this includes showing individual cases to the relevant faculty, preparing a consult report with relevant references and conveying these interpretations to the consulting physicians. In almost all cases, the fellow will be required to telephone consulting physicians with preliminary diagnoses and requests for more clinical or pathologic data, additional slides/blocks and/or additional reports, if required. At times, this may appear somewhat daunting, but the ability to discuss difficult cases with colleagues who may on occasion have differing opinions and develop a cogent report that addresses these differences is an important aspect of the fellow’s training experience. Once the report is completed and corrected by the fellow, the case is forwarded to the assigned faculty and formally signed out by that faculty member.

The fellow is also responsible for preparation of gyn/breast cases for the Monday morning Kempson Consult Conference as well as the monthly Tuesday noon Consult Conference for the residents. The latter conference is conducted by the fellow(s) and is meant to provide exposure (and teaching) of interesting consult cases to the first and second year residents.

**Specific Educational Goals and Objectives:**

<table>
<thead>
<tr>
<th>ACGME competency</th>
<th>Program Goals and Objectives: First Month*</th>
<th>Program Goals and Objectives: Subsequent Months*</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient care</td>
<td>1) Participate in signout of gyn/breast specimens received in the laboratory 2) Understand and observe privacy policies, and participate in all appropriate training 3) Understand the controversies &amp; implications of the diagnosis of atypical hyperplasia of the endometrium 4) Understand the role of breast core needle biopsies &amp; the implications of specific diagnoses 4) Understand the role &amp; limitations of sentinel lymph node biopsy in breast cancer patients 5) Understand the role of the pathologist in the evaluation of patients with possible hereditary breast/gyn cancer 8) Understand the role of</td>
<td>1) Independently interpret and classify gynecologic and breast specimens, entering a first draft report for attending review at the time of signout 2) Know and be able to identify reactive conditions seen in gyn/breast pathology 3) Know and be able to identify (and resolve) common problematic differential diagnoses in gyn/breast pathology 4) Participate in gyn/breast tumor boards 5) Independently perform &amp; interpret frozen sections of gyn/breast pathology specimens 6) Understand when to collect material for ancillary studies 8) Understand and explain current consensus guidelines for</td>
<td>1) Consensus Guidelines: <a href="http://www.asccp.org">www.asccp.org</a> 2) Consensus Guidelines: ADASP</td>
</tr>
</tbody>
</table>
the pathologist in the evaluation of possible gestational trophoblastic disease
9) Read relevant literature on the management of patients with cervical abnormalities, including indications for HPV testing and different methods available for HPV detection

| Medical knowledge | 1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to gyn/breast diagnosis & immunodiagnosis
2) Learn diagnostic criteria of malignancy, specific to breast & gyn site
3) Learn grading & staging of breast/gyn malignancies
4) Attend the 8 am Wed-Fri surgical pathology didactic conferences & Tues noon conferences
5) Understand preparatory and processing steps for all breast/gyn cytology specimens
6) Learn The Bethesda System for Reporting Cervical Cytology, including criteria for unsatisfactory Pap smears and quality indicators according to Bethesda 2001
7) Learn prosection & microscopic exam techniques for placentas. Learn major differential diagnoses in gestational & placental pathology

| Practice-based learning and improvement | 1) Attend monthly Stanford QA/QI conference (3rd Tuesday of each month)
2) Become proficient at various Stanford information systems (e.g., PowerPath, EPIC)
3) Comply with all safety regulations
4) Become familiar with and adhere to patient safety goals as they apply to breast/gyn specimens (use of two patient identifiers)

| Interpersonal and communication skills | 1) Effectively communicate with all others within and outside the laboratory

| 1) Attend the 8 am Wed-Fri surgical pathology didactic conferences
2) Organize and present gyn/breast consult cases at Tuesday noon conference
3) Participate in monthly journal club
4) Participate in medical student teaching in the breast/gyn blocks
5) Understand and apply appropriate use of special stains and/or studies to facilitate diagnosis
6) Become familiar with outcome and prognosis of common breast/gyn malignancies

1) Attend the 8 am Wed-Fri surgical pathology didactic conferences
2) Organize and present gyn/breast consult cases at Tuesday noon conference
3) Participate in monthly journal club
4) Participate in medical student teaching in the breast/gyn blocks
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1) Attend the 8 am Wed-Fri surgical pathology didactic conferences
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4) Participate in medical student teaching in the breast/gyn blocks
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6) Become familiar with outcome and prognosis of common breast/gyn malignancies

1) Attend monthly Stanford QA/QI conference (3rd Tuesday of each month)
2) Become proficient at various Stanford information systems (e.g., PowerPath, EPIC)
3) Comply with all safety regulations
4) Become familiar with and adhere to patient safety goals as they apply to breast/gyn specimens (use of two patient identifiers)

1) Participate in cyto-histo correlation conference for Pap smears
2) Perform literature searches on cases when indicated

1) American Journal of Surgical Pathology
2) Modern Pathology
3) International Journal of Gynecological Pathology
(other journals available online through Lane Library at Stanford)

1) In the last quarter of the year, act as a “junior attending”, signing out

1) Monthly lab management meetings (Tuesday, Noon-1:00 PM)
<table>
<thead>
<tr>
<th>Professionalism</th>
<th>2) Compose clear and concise pathology reports, with explanatory comments as needed 3) Be able to present and explain gyn/breast pathologic findings to other health care professionals in the tumor board setting 4) Discuss preliminary and final gyn/breast pathology results with clinicians and patients (as applicable)</th>
<th>1) Insure continuity of care by informing the gyn/breast faculty of any pending cases prior to a scheduled absence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems-based practice</td>
<td>1) Participate in all Stanford HIPAA training prior to obtaining computer password and access 2) Demonstrate ethical behavior 1) Monthly lab management meetings (Tuesday, Noon-1:00 PM)</td>
<td>1) If timing permits (inspections occur approximately once every two years), participate in the immunodiagnosis portion of a CAP inspection, esp as it pertains to breast/gyn 2) Participate in the annual QA/QI review of synoptic reporting n breast/gyn cancers 3) Participate in proficiency testing for ER/PR/Her2neu 4) Serve as a consultant for ordering immunodiagnostic and other ancillary studies in problematic gyn/breast cases 1) <a href="http://www.cap.org">www.cap.org</a> 2) Monthly lab management meetings (Tuesday, Noon-1:00 PM)</td>
</tr>
</tbody>
</table>
HEMATOPATHOLOGY FELLOWSHIP

Director: Yasodha Natkunam, MD, PhD

General Philosophy
The goal of the Stanford Hematopathology Fellowship program is to provide comprehensive exposure to all aspects of hematopathology, including laboratory hematology (adult and pediatric), clinical coagulation, surgical hematopathology, flow cytometry, immunodiagnosis, cytogenetics, and molecular diagnostics. The program has a particular emphasis in developing expertise in the morphologic aspects of hematopathology, with extensive exposure to both bone marrow and lymph node pathology. In addition, scholarly research and publication is strongly encouraged.

Specific Goals and Objectives

Laboratory Hematology / Bone Marrows

Patient care
- Be familiar with a wide variety of adult and pediatric hematologic disorders
- Develop competency in peripheral blood smear, body fluid and bone marrow interpretation, including correlating morphology with ancillary tests used for diagnosis, such as special stains, flow cytometry, HPLC/hemoglobin electrophoresis and tissue immunodiagnostics
- Gain skill in the technical and interpretive aspects of hematologic flow cytometry
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology
- Develop basic expertise in medical microscopy of body fluids
- Correlate findings in fluid samples with those in the cytopathology laboratory
- Learn the technique of performing bone marrow aspirates and biopsies
- Recognize the importance and time-sensitive nature of certain hematologic diagnoses

Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
• Work closely with laboratory staff in coordinating timely specimen processing

**Professionalism**
• Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
• Work effectively and efficiently with support and administrative staff in the hematology/flow cytometry lab to maximize productivity and maintain the quality of the work environment
• Complete written reports in a timely fashion

**Systems-based practice**
• Learn the process of case evaluation and work flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
• Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
• Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
• Begin to develop awareness of issues in coding and billing

**Practice-based learning**
• Use case-based learning as a tool for additional insight into the basis of disease
• Locate, appraise and assimilate pertinent data from scientific studies
• Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

**Tissue Hematopathology**

**Patient care**
• Develop competency in interpretation of lymph nodes and other hematolymphoid tissues, including correlation of morphology with ancillary tests used for diagnosis, such as immunohistochemistry and in situ hybridization
• Attain proficiency in hematologic immunohistochemistry, including both technical and consultative aspects
• Gain skill in tissue in-situ hybridization techniques and interpretation
• Learn how histopathologic diagnoses in tissue hematopathology affect clinical prognosis and therapy
• Learn about quality control and quality assurance in surgical pathology
• Learn appropriate selection of diagnostic tests in the work up of hematopathology specimens
Medical knowledge
- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues and consulting pathologists to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with pathology staff in coordinating timely specimen processing

Professionalism
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the surgical pathology, immunodiagnosis, cytogenetic and molecular pathology labs to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice
- Learn the process of case evaluation and work flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

Cytogenetics and Molecular Diagnosis/Coagulation

Patient care
- Learn cytogenetic and molecular techniques and procedures, including technical pitfalls and limitations
• Learn to detect visual chromosome banding abnormalities.
• Gain consultative skill in hematologic cytogenetic and molecular test selection and clinical interpretation.
• Learn about quality control and quality assurance in cytogenetics, molecular diagnosis and coagulation.
• Increase understanding of the relationship of the coagulation results to the diagnosis of clinical bleeding and thrombosis problems

Medical knowledge
• Learn cytogenetic and molecular nomenclature
• Increase understanding of FISH analysis
• Understand the correlation of cytogenetic and molecular testing with other complimentary test results, such as tissue morphology/diagnosis, flow cytometry immunophenotyping, FISH.
• Understand the significance of various hematologic diagnoses in determining treatment plans
• Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
• Communicate clearly with clinical colleagues and consulting pathologists to obtain clinical information in case evaluation
• Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
• Work closely with pathology staff in coordinating timely specimen processing

Professionalism
• Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
• Work effectively and efficiently with support and administrative staff in the coagulation, cytogenetics and molecular pathology labs to maximize productivity and maintain the quality of the work environment
• Complete written reports in a timely fashion

Systems-based practice
• Learn the process of case evaluation and work flow in coagulation, cytogenetics and molecular pathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
• Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
• Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
• Begin to develop awareness of issues in coding and billing
Practice-based learning

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in these specialized areas using a wide variety of information resources, including laboratory and hospital information systems

Fellows will supervise and perform, as needed, the activities described in the AP and CP hematopathology resident rotations.

A detailed description of each rotation follows:

LABORATORY HEMATOLOGY/ BONE MARROW

Responsibilities:

1. Attend bone marrow / body fluid sign-out daily. Responsible for dictations on all consult samples. Serve as Junior attending as determined by faculty.
2. Preview new adult and pediatric bone marrow aspirates daily and ensure appropriate ancillary tests have been ordered. Pull relevant prior samples for next day’s sign-out.
3. Correlate bone marrow diagnoses with relevant cytogenetics results. Add addendums to reports as necessary.
4. Perform 5 bone marrow aspirates/biopsies with hematology, oncology or BMT fellows or faculty. Supervise / teach first year CP residents in performing bone marrow aspirates / biopsies. This may also be done during other rotations during the year.
5. Review abnormal adult and pediatric peripheral blood smears daily; call physicians as required.
6. Sign-out adult and pediatric Wright-Giemsa body fluid cytology. Enter results in LIS.
7. Correlate body fluid diagnoses with cytology. Pull discrepant results for review.
8. Sign-out flow cytometry panels. Enter results into LIS. Call results to physicians as requested.
9. Sign-out Hb electrophoresis/HPLC cases. Enter results into LIS.
10. Review completed red cell enzyme analyses.
11. Attend weekly coagulation sign-out / review of special coagulation analyses.
12. Rotate through coagulation laboratory (During Molecular Pathology/Coagulation rotation).
13. Rotate through laboratory hematology testing areas (once weekly). Read accompanying syllabus.
14. Attend monthly QC/QA meetings for the Hematology section (adult and pediatric) and entire clinical laboratory.
15. Attend relevant lab management and lab computer lectures or teleconferences.
16. Attend weekly CP conference; present problem cases.
17. Attend weekly faculty CP conference, if presentation covers laboratory hematology or management topic.
19. Prepare for the monthly Interdepartmental conference with Adult Hematology.
20. Prepare weekly microscope conference for AP and CP residents of interesting bone marrow / flow cytometry cases.
21. Sign-out Nitroblue Tetrazolium tests for Chronic Granulomatous Disease (under supervision).
22. Prepare microscope conferences for hematology and bone marrow transplantation fellows, as requested.
23. Review bone marrow slides or blood smears with clinical faculty or residents, as requested.
24. Review teaching slide sets with Surgical Pathology resident on the bone marrow service.
25. First call for evening and weekend problems / cases (weekends shared with clinical pathology resident on service).

**Weekly Rotations for Laboratory Instruction:**

<table>
<thead>
<tr>
<th># WEEKS</th>
<th>TOPIC</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>2</td>
<td>Coagulation</td>
<td>Two weeks of intensive exposure to coagulation testing and interpretation, including specimen processing, routine coagulation tests and special coagulation tests (D-dimer, FSP, KC4, inhibitor screens, ATIII, factor assays, factor inhibitors, ristocetin cofactor, vW antigen, anticardiolipin, euglobulin clot lysis, factor XIII, clot retraction, protein S, protein C, platelet aggregation, alpha-2, plasminogen, Xa, factor V Leiden, PT20210A, MTHFR, HIPA, ELISA D-dimer, platelet function testing).</td>
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<tr>
<td>1</td>
<td>Slide review, Hb electrophoresis.</td>
<td>Review abnormal blood smears with Hematology Specialist Technologist. Become familiar with lab reporting system and algorithms for blood smear review. Observe techniques in HPLC/Hb electrophoresis in RBC special studies laboratory. Begin Hb electrophoresis unknown case sets and complete during your rotation. Review additional Hb electrophoresis study case materials throughout the 3 months.</td>
</tr>
<tr>
<td>1</td>
<td>Specimen processing, slide preparation, malaria slide preparation and identification, manual counts, WSR.</td>
<td>Observe tests and become familiar with appropriate use and interpretation. Review malaria study sets with Hematology Specialist Technologist.</td>
</tr>
<tr>
<td>2</td>
<td>Flow cytometry</td>
<td>Observe tests and become familiar with appropriate use and interpretation of flow cytometry panels and gating strategies. Analyze ungated archival cases stored in computer.</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Automated hematology, Quality control.</td>
<td>Observe tests and become familiar with appropriate use and interpretation. Learn about interpretation of instrument scatterplots. Become familiar with factors that can cause spurious instrument results. Review laboratory algorithms for quality control. Review monthly QC data with Clinical Pathologist.</td>
</tr>
<tr>
<td>1</td>
<td>Body fluid cell count and morphology.</td>
<td>Observe tests and become familiar with appropriate use and interpretation. Review abnormal body fluid slide sets with technologist. Optionally review previous year's files of malignant fluid slides.</td>
</tr>
<tr>
<td>1</td>
<td>Special stains, bone marrow slide preparation, cryoglobulins, serum viscosity, G-6-PD screen.</td>
<td>Observe tests and become familiar with appropriate use and interpretation. Note that selected readings in bone marrow morphology interpretation are assigned in the syllabus for this week.</td>
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**TISSUE HEMATOPATHOLOGY**

During the four-month rotation in tissue hematopathology (lymph nodes, immunohistochemistry and inside/outside slides), the HP fellow will have the following responsibilities:

1. Attend the hematopathology sign-out sessions with the surgical pathology fellow 5 mornings each week. In addition to reviewing the cases, the fellow will assist with the ordering of immunohistochemical stains and molecular studies, communication with referring pathologists and clinicians, dictation of reports, and obtaining additional consultation, particularly in cases including lymph nodes or bone marrow materials.
2. Sign-out immunodiagnosis cases 5 afternoons each week. The antibody stains will be entered into the computer database, immunohistochemical stains will be reviewed and the results entered in the database, and cases will be finalized with the faculty attending.
3. Serve as a consultant, to determine which immunohistochemical stains and molecular studies to order on diagnostic problem cases.
4. Sign-out in-situ hybridization cases after they are performed, usually 2-3 days per week.
5. Participate in monthly microscopic teaching sessions, presenting the most interesting hematopathology cases to the surgical pathology residents.
6. Attend the morning teaching conferences in Surgical Pathology Topics, 3 days per week.
7. Attend the interdepartmental Lymphoma Staging conference, 1 day per week.
8. Attend the monthly surgical pathology QA/QC meeting.
9. Optionally, initiate a research project, which might be completed during the 4 month rotation or extended into the elective period.

Cytogenetics Laboratory Rotation

Week One:
1. Initial orientation – setting up, harvesting and slidemaking for all sample types.
2. Fellow may initiate/harvest/make slides/do analysis of own peripheral blood cultures.
4. Attend conferences with the laboratory director.

Week Two:
1. Learn how to karyotype normal and abnormal chromosomes.
2. Learn how to write cytogenetic nomenclature per ISCN 1995.
3. Observe/participate in FISH analysis.
4. Observe other special staining and/or banding techniques.
5. Attend conferences with the laboratory director.

Week Three:
1. Do cytogenetic analyses of normal and abnormal unknowns.
2. Write proper nomenclature for these cases.
3. Attend conferences with the laboratory director.

Week Four:
1. Review normal/abnormal cases with the laboratory director and/or supervisor.
2. Attend conferences with the laboratory director.

In addition, the fellows have the opportunity to attend genetic counseling sessions in both prenatal diagnosis clinic and pediatric genetics clinic.

Molecular Pathology Rotation

1. Observe and/or perform basic molecular methods, including DNA and RNA extraction from blood, bone marrow and tissue; reverse transcription of RNA to cDNA; PCR methods for qualitative and quantitative amplification of genomic DNA and cDNA; restriction enzyme digestion, agarose gel electrophoresis and Southern hybridization.
2. Review test procedures and interactive online teaching tool developed for this rotation, understand molecular basis for tests performed in the laboratory.
3. Interpret test results. Understand errors that can be made in test performance and limitations of tests. Under the supervision of the laboratory directors, participate in troubleshooting problems with tests.
4. Correlate molecular rest results with other complimentary tests, such as surgical pathology tissue diagnosis, flow cytometry immunophenotyping, FISH.

5. Under the supervision of the laboratory directors, function as a consultant to clinicians in test selection and result interpretation.

6. Attend laboratory QC/QA meetings.

7. Attend weekly combined molecular/hematology conference for correlation of molecular results (occurs once a week with the molecular fellow during the daily 2:30PM conference).

**Supervision and Evaluation:**
The resident’s work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each director. Results will be reviewed formally with the resident.
MOLECULAR GENETIC PATHOLOGY FELLOWSHIP

Director: Iris Schrijver, MD

The Molecular Pathology Fellowship is an ACGME-accredited fellowship offering comprehensive training in Molecular Genetic Pathology.

General overview of the one-year fellowship:

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Length</th>
<th>Objectives</th>
</tr>
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<tbody>
<tr>
<td>Molecular Pathology — CP aspects</td>
<td>3 months</td>
<td>Become proficient in a wide range of molecular diagnostic methods and interpretation, in the development of new assays, case interpretations, have interaction with physicians from other disciplines, and teaching sessions by attending physicians, give case presentations. Emphasis on DNA diagnostic tests and the forefront of diagnostic developments.</td>
</tr>
<tr>
<td>Clinical Genetics and Cancer Genetics</td>
<td>2 months</td>
<td>Expand knowledge of clinical cancer genetics, genetic counseling aspects, and examination and counseling of patients in genetics clinics.</td>
</tr>
<tr>
<td>Cytogenetics rotation</td>
<td>1 month</td>
<td>Become familiar with cytogenetic methods and interpretation, be able to make correlations with molecular genetic results, and to explore diagnostic advantages and disadvantages of cytogenetic and molecular pathology techniques for individual genetic diseases.</td>
</tr>
<tr>
<td>Biochemical Genetics rotation</td>
<td>1 month</td>
<td>Become familiar with biochemical diagnostic methods and interpretation, their correlation with and confirmation by molecular methods, development of new assays, interaction with physicians from other disciplines, attend clinics and consults for biochemical genetic disorders.</td>
</tr>
<tr>
<td>Molecular Pathology research project</td>
<td>2 months</td>
<td>Carry out a Molecular Pathology research project. Residents can choose from a large number of labs, and research projects. This rotation may be spread out over the year. Research is expected to lead to publication and will provide residents with the opportunity to gain bench experience, critically evaluate research results, understand the difference between molecular pathology research tools and diagnostic applications.</td>
</tr>
<tr>
<td>Molecular Pathology — AP aspects</td>
<td>3 months</td>
<td>Become proficient in a wide range of molecular diagnostic methods and interpretation, in development of new assays, case interpretations, have interaction with physicians from other disciplines, and teaching sessions by attending physicians, give case presentations. Emphasis on array technology.</td>
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</tbody>
</table>
The Stanford Molecular Pathology program serves the adult and pediatric populations at Stanford and also sees referrals from Northern California and the U.S. The program is interdisciplinary and includes participation of faculty in the Departments of Pathology, Medicine, Pediatrics (Division of Medical Genetics) and Department of Genetics.

Laboratory rotations include formal training in Biochemical Genetics and Cytogenetics. Fellows will be trained in assay development, quality assurance and results interpretation in the Molecular Pathology Laboratory at Stanford and the Kaiser-Permanente Regional Molecular Diagnosis Laboratory, a large reference laboratory for the Kaiser system which offers a testing menu that is complimentary to that at Stanford.

Fellows are expected to initiate a research project during the fellowship. This project can be performed in any appropriate laboratory at Stanford, which offers unmatched opportunities for research in Molecular Pathology and Molecular Genetics. Departmental funding is available for suitable research projects. Moreover, additional funding may be available for qualified fellows to continue their research beyond the period of the formal fellowship.

**Weekly schedule**

Daily: sign out cases with attending in the Molecular Pathology laboratory and the current lab of rotation/anatomic pathology area/examine and counsel patients in pediatric genetics.

- Once a month: Pediatric tumor board conference.
- While on clinical laboratory rotations, present interesting cases at the Friday Clinical Pathology resident’s conference and discuss phone calls received from physicians regarding interpretation of Molecular Genetic Pathology tests.
- Weekly laboratory meeting, in the laboratory where the fellow is rotating.
- Weekly laboratory meeting, in the laboratory where the fellow conducts the research project.
- Tuesdays, 8 am: Current Concepts lecture series. These are one hour lectures by Pathology residents and faculty, with an emphasis on molecular pathology.
- Tuesdays, 4 pm: Human Genetics Journal Club
- Thursdays at noon: Clinical Pathology lecture series. This series includes a block of genetics lectures, which address critical aspects of genetic diagnostic testing in molecular, biochemical and cytogenetics.
- Friday, 9 am: Genetics Grand Rounds. Interdisciplinary meeting with lecture and case presentations. General discussion of genetic concepts.
- Self study and performance of a scholarly research project.
Certification

Certification in molecular genetic pathology is a joint and equal function of The American Board of Medical Genetics (ABMG) and the ABP. Such function relates to qualifications of candidates, standards of examination, and the form of the certificate.

All candidates applying for certification must be physicians and hold a currently valid, full, and unrestricted license to practice medicine or osteopathy in the United States or Canada.

The ABMG and the ABP will qualify candidates for examination for certification in MGP who:

a. Are diplomates of the ABMG or the ABP
   and
b. Document MGP practice of at least 25% full-time experience within each of the immediately preceding five years or 100% experience over the immediately preceding two years to the satisfaction of the ABMG and the ABP
   and
c. Submit a completed application that includes a logbook of 150 cases from the time period in b and a completed supplemental information form.

Section: Molecular Genetic Pathology Responsibilities

Responsibilities:

- Regular working hours are approximately 8AM to 6PM, Monday-Friday. One of the Fellows will carry the on-call beeper for the laboratory during the week.
- Daily sign out of all cases with the attending in the Molecular Pathology laboratory
- Development of new molecular pathology assays
- Perform and complete a research project
- Daily sign out of cases with the attending in the lab of current rotation
- Attend and present at seminars and meetings as outlined in the weekly schedule
- Collect 150 cases for the logbook, as required for subspecialty examination
- Self study

Specific expectations:

1. All cases are expected to be presented with knowledge of clinical history whenever possible (should always be available on Stanford patients in Epic, Cerner or Powerpath, usually a short history is provided for UCSF patients. There should be a low threshold for contacting a referring clinician/resident/fellow if the reason for the test is unclear. They are usually glad to provide these details. This knowledge makes the experience
more interesting and rewarding for all participants, as every case is a story, they are all interesting and unique, and there is always something to learn.

2. It is critical that prior results from our lab always be documented and correlated with the current specimen. This is the standard of care for our laboratory, and deviations from this will require corrective action documentation.

3. The information from our lab must, where possible, be integrated with testing performed in other labs on the same patient. This most commonly (but by no means exclusively) happens in hemepath cases. For example, a referring physician may independently order histopath and molecular testing on a given specimen. It is critical that this data be correlated prior to result reporting (unless the molecular result is ready prior to other testing, which will only rarely be the case) so that discrepancies are addressed before the results are released.

4. It is not uncommon for equivocal or difficult cases to have repeat or additional testing performed, which can result in a significant increase in TAT. In such cases it is imperative for the fellow to communicate with the referring physician. Often this will lead to a discussion about the case, which results in a better understanding of why the test was ordered, additional tests which might be indicated, or study of additional specimens.

5. Similarly, if a result is equivocal or complex, it is our policy to call in advance the referring physician and give them the opportunity to consider, question and discuss the result. Very few referring clinicians are experts on the nuances of molecular pathology, and they depend on the expertise provided to provide clarity in difficult cases, or, if a result is unclear, recommendations for additional evaluation and follow up.

6. The Laboratory Directors are always available to discuss these cases. As in all areas of medicine, fellows should not feel forced out of their comfort zone. If you don't know the answer to a question, rather than hedge or guess, involve the Director who will be signing out the case.
NEUROPATHOLOGY FELLOWSHIP

Director: Hannes Vogel, MD

Duration: 24 months (contiguous)

Prerequisites: Completion of at least one year of Anatomic Pathology training

Goals and Objectives

COMPETENCY #1: PATIENT CARE IN NEUROPATHOLOGY
Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. In the context of neuropathology, this means recognizing one's personal responsibility to provide clear, accurate, and timely consultations in the context of a medical team. Fellows are expected to do the following:

- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families. For example, the fellow must be available to explain the findings to the patient and/or next of kin in a sympathetic and understandable way and must recognize the private nature of all personal health information.

  Assessment Tools:
  Objective structured clinical examination (OSCE): Opportunities to meet with families and access to standardized patients are often limited in a pathology training program. In the absence of these opportunities, one may utilize role-playing in which the resident provides information to a member of the clerical staff about a hypothetical situation.
  Checklist: Observe the resident's behavior for respectful interactions in the following or similar circumstances:

  - Provides lay language answers to questions from families
  - Observes discretion during awake surgical procedures
  - Observes the right of privacy about personal health information in public places (elevator, hall, cafeteria conversations)

- Gather essential and accurate information about their patients. For example, pertinent clinical history, imaging data, and laboratory results must be available at sign-out.

  Assessment Tools:
  Checklists: Verify that essential history, imaging studies, and laboratory results are available at sign-out (meets minimal standards).
  Portfolio: The fellow collects checklists and reflects on potential significance of missing information on cases (should show improvement over time).
  OSCE: Give test slide to fellow and ask what extra information is needed to formulate differential diagnosis (minimal standards).

- Make informed diagnoses that incorporate patient information, pathological/clinical judgment, and up-to-date scientific evidence. For example, formulation of the surgical neuropathologic diagnosis should include knowledge of the diagnostic and therapeutic implications for the individual patient. Formulation of the autopsy neuropathologic
diagnosis should include consideration of the clinical history and the implications, if any, of the diagnosis for surviving family members.

Assessment Tools:
**Chart stimulated recall**: Pull 10 reports, including frozen section cases and autopsy cases. Discuss the implications of each diagnosis for management. Discuss the significance of differences between frozen section diagnosis and final diagnosis to assure that the resident understands the different circumstances under which each was rendered. This tutors the resident on his/her understanding of the art of rendering a frozen section diagnosis.

**Literature portfolio**: As the resident progresses, he/she should show significant improvement in the ability to find and apply key literature with regard to a specific patient. This activity may also be used to document improvement in use of information technology over time.

- Make informed selections of diagnostic tests, counsel the clinician on the appropriateness of test selection, and take responsibility for the cost and ethical implications of the tests ordered.

Assessment Tools:
**Chart stimulated recall**: Pull cases with genetic and/or special tests. Query resident on the utility of the additional tests and the implications of the tests for patient/third party/departmental costs, further treatment, and disease prognosis.

**Checklist**: The fellow should bring a written list of recommended special stains to sign-out. After sign-out, compare tests on the list to tests actually ordered and determine the appropriateness of the suggested studies.

**Portfolio**: Collect information above over time to determine progress.

- Counsel and educate patients and their families. The fellow should be able to explain the importance of medical tests in an understandable manner and be available for counseling on the results of tests.

Assessment Tools:
**OSCE**: Direct interactions with patients and families are often limited in pathology. However, one may utilize role-playing in which the resident provides information to a member of the clerical or technical staff about a hypothetical situation such as a new diagnosis of inherited or possibly inherited disease (such as Duchenne's muscular dystrophy, Alzheimer's disease, hemangioblastoma) or a misdiagnosed brain tumor. The staff member then completes a brief questionnaire on the fellow's effectiveness (enough information given, information understandable, fellow encouraged questions, etc.).

- Use information technology to support patient care decisions and patient education. In neuropathology, this includes searching the current literature and the Web for help in difficult diagnostic situations.

Assessment Tools:
**Literature portfolio**: Difficult and unusual cases frequently require literature searches for complete evaluation. Such cases can be used in a portfolio method to evaluate both information technology skills and improvement in these skills over time. The faculty member should provide a direct assessment of the pertinence of the literature collected and also give feedback as to inclusion of both recent and classic papers. This can be done on a scale of 1 (most pertinent and/or current) to 5 (irrelevant and/or obsolete).
Record Review: Review appropriateness of citations in 10 neuropathology consults.

OSCE: Case conferences offer an excellent opportunity for fellows to perform literature searches, prepare reviews, and teach others. Conference evaluations may be kept to fulfill this requirement.

- Perform competently all dissection and sectioning skills necessary to perform diagnostic services. For example, the fellow must be able to remove brains at autopsy, localize pertinent brain regions, cut frozen sections on a cryostat, provide complete and accurate descriptions of gross and microscopic features, and provide appropriate descriptions of special stains and their results.

Assessment Tools:

OSCE: Give the fellow a test slide and have him/her describe and photograph the diagnostic features. This exercise can also be performed in the context of preparing for a case conference. Document an assessment of the trainee's initial conference preparation (choice of images, inclusion of proper diagnostic fields and special stains, etc.) and not just the final presentation, as the latter may reflect "coaching" by the attending.

Checklist: Observe the fellow as s/he cuts brains, prepares frozen sections, makes touch preps, etc. Evaluate surgical and autopsy gross descriptions for specimen size, weight, etc. according to organ- and disease-specific standards developed by the hospital or outside agencies.

- Provide health care services aimed at preventing health problems or maintaining health. For example, the fellow may demonstrate the ability to counsel the clinician and the patient on the implications of DNA testing and can provide general health education on preventive neurological health maintenance (decreasing stroke risk, etc.).

Assessment Tools:

OSCE or oral examination: Opportunities to teach the patient directly are often limited in pathology training and practice. In the absence of such opportunities, one may utilize role-playing in which the resident provides information to a member of the clinical staff about a hypothetical situation. Alternatively, one may provide clinical scenarios and ask for either a verbal or a short essay answer.

Checklist: Observe the resident's interactions with the clinicians.

- Work with health care professionals, including those from other disciplines, to provide patient-focused care. In the context of neuropathology this includes ordering appropriate tests, keeping the patient's welfare at the forefront, and recognizing the sanctity of the human body in the context of autopsies, the operating room, and the laboratory. These behaviors incorporate aspects of professionalism, ethical behavior, and interpersonal communication skills that are also tested in the other competencies.

Assessment Tools:

360° evaluation: Determine that the fellow is taking personal responsibility for clinical consultations in the context of a health-care team. An instrument for this purpose is under development by ACGME staff (4/29/02).

Checklist: A yes-no checklist for fellows on surgical neuropathology rotations might include appropriate tests ordered, cases brought to sign-out in a timely manner, outside slides ordered in a timely fashion and followed up in a timely fashion, surgeon contacted...
Global assessment: Document these behaviors in a qualitative assessment at the end of each

COMPETENCY #2: MEDICAL KNOWLEDGE IN NEUROPATHOLOGY
Fellows must demonstrate knowledge about established and evolving biomedical, clinical and cognate (e.g., epidemiological and social-behavioral) sciences and the application of this knowledge to patient care in neuropathology. Fellows are expected to do the following:

- Demonstrate an investigatory and analytical thinking approach to clinical situations. From time to time in their training neuropathology fellows will be confronted with difficult diagnostic problems that require extensive research of the medical literature and, in some cases, experimental laboratory investigation. The fellow's ability to appropriately investigate the medical and scientific questions raised by these cases will often result in the advancement of medical science through publications in the peer-reviewed literature.

- Know and apply the basic and clinically supportive sciences that are appropriate to the practice of neuropathology. A large part of the fellow's training will be the mastery of the large body of clinical, histologic, and scientific knowledge that constitutes modern neuropathology. Teaching that material and its application to diagnostic neuropathology is the primary mission of a neuropathology fellowship program and is something most training programs have traditionally done very well. Only the required degree of documentation is new.

Assessment tools:
Oral examination: Possibly the most efficient assessment tool for evaluating the competency of a neuropathology fellow in medical knowledge will be the regular use of oral examinations. Conducted informally on a daily basis in the context of case sign-outs and brain cuttings, these conversations provide both the fellow and the mentor with regular feedback about the fellow's progress through the program. These informal examinations should trigger the provision of immediate informal remedial instruction. For this teaching style to be counted as an assessment tool, the mentor must document both the results of the examinations and the subsequent instruction. In many programs it will also be desirable to conduct more formal oral examinations at regular intervals to assess and document the fellow's progress through the program and his/her ultimate mastery of neuropathology.

Multiple-choice examination: This tool is a traditional way to monitor the fellow's progress and to prepare him for the board examination. Large collections of excellent questions are available at many institutions and are freely circulated over the Internet.
Portfolio: Finally, a portfolio of presentations at scientific meetings and published papers is an excellent way of assessing and documenting the fellow's competency in the use of investigatory and analytical thinking in the analysis of clinical situations.

COMPETENCY #3: PRACTICE-BASED LEARNING AND IMPROVEMENT IN NEUROPATHOLOGY
Fellows must be able to investigate and evaluate their patient care practices, appraise
and assimilate scientific evidence, and improve their patient care practice. Fellows in neuropathology are expected to do the following:

- Analyze practice experience and perform practice-based improvement activities using a systematic methodology. Tools listed on the ACGME website for this subcompetency include questionnaires for patients and colleagues about practice habits. Some general pathology curricula suggest a management project (quality assurance or continuing quality improvement project). The neuropathology fellow is similarly expected to analyze his/her own practice in a systematic way for needed improvements (administrative, behavioral, or knowledge-based) and then make the improvements in a systematic way.

Assessment tool:
**Hybrid tool combining record review, chart-stimulated recall, OSCE, and/or portfolio formats**: The fellow or the faculty member can select current or standardized cases for the fellow to evaluate using a questionnaire similar to that below. The faculty will then evaluate the answers and provide feedback to the fellow. These forms can also be incorporated into the fellow's portfolio for further reflection and assessment and for documenting improvement over time.

Sample Practice-Based Learning Case Work-Up Questionnaire:
1. What are the critical issues in this case?
2. Do you have enough information to make a final diagnosis?
3. What information do the clinicians want and need with respect to this case?
4. What do you need to be able to complete this case?
5. How do you go about obtaining what you need and finalizing the case?

- Locate, appraise and assimilate evidence from scientific studies related to patient material in neuropathology cases. This includes knowing how to utilize hospital information systems (patient records, pathology records, radiology records), how to do a literature search, how to evaluate the validity and reliability of data, how to critically review a scientific study, and how and when to incorporate scientific data into everyday practice.

- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.

- Use information technology to manage information, assess online medical information and support their own educations.

Assessment tools for the above three subcompetencies:
**Hybrid tool combining record review, chart-stimulated recall, OSCE, checklist, and/or portfolio formats**: Identify an academic activity (departmental conference, classroom lecture, journal club, or other formal or informal presentation) where the fellow will have had to review the literature and make a presentation. Complete an anchored rating form documenting that the fellow performed an appropriate literature search, is able to critically analyze the studies, accurately synthesize new information from the literature, and appropriately judge the applicability of this information to neuropathology practice. For convenience, appropriate questions may simply be added to the written case-based hybrid tool described above. The following items could be incorporated:

Additional Questions for Practice-Based Learning Case Work-Up Questionnaire
1. The learner performed an appropriate literature search for this activity.
2. The learner is able to critically analyze the studies.
3. The learner is able to synthesize new information from the literature.
4. The learner is able to appropriately judge the applicability of this information.

Portfolio: The fellow keeps the above rating forms for reflection and documentation of improvement over time.

Facilitate the learning of students and other healthcare professionals. Fellows should participate in divisional/departmental teaching activities, actively involve and guide rotating students and housestaff in service activities, and present appropriate information to clinicians and other healthcare professionals regarding optimal patient management.

- Assessment tool:
  Anchored 360° global rating: A sample form for evaluating and assessing competence in facilitating learning is attached in the Appendix. Such a form is recommended as a routine exit survey for rotators. Pertinent questions should also be incorporated into the faculty's monthly evaluation of each fellow.

COMPETENCY #4: INTERPERSONAL AND COMMUNICATION SKILLS IN NEUROPATHOLOGY

Neuropathology fellows must be able to demonstrate excellent interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, colleagues, technicians, secretaries, other residents, and students. Fellows are expected to:

- Be able to explain diagnoses, procedures, results to be expected, costs associated with neuropathologic studies of autopsy and neurosurgical specimens to another person in a manner that will create ethically sound relationships with patients and their families.
- Promote a constructive working relationship with a colleague, resident/student, or subordinate during the study of a specific case and ensure that results are obtained in a timely and cost effective manner.

Assessment tools:
Portfolio: The fellow's portfolio should document the following:

- Formal presentations of clinical cases at pathology and interdisciplinary conferences
- Scientific and clinical papers
- Scientific and clinical presentations at professional meetings
- Communication of findings in clinical cases to clinicians, family, and others (including samples of reports, letters, and notes about telephone calls)
- Communication with other members of the pathology laboratory team
- Analysis of the quality of the communication (attendings, administration, legal affairs, and resident)
- Modification of the communication as indicated

360-degree evaluation instrument: Clinicians, clerical and technical personnel, and attendings rate the fellow's interpersonal and communication skills. An anchored checklist would be an appropriate format. Such a checklist would include a list of desired
behaviors or skills that are evaluated on a 5-point scale with verbal "anchors" describing the meaning of the scale. For example:

Skill: Able to explain diagnosis and its implications for therapy
Anchors: Rate from "Unable to provide understandable information" (1) to "Always provides clear and concise information" (5)

Skill: Able to write diagnoses and reports in Standard English
Anchors: Rate from "Unable to write intelligible reports" (1) to "Writes well organized, grammatically correct reports" (5)

Skill: Able to work with technicians to solve problems
Anchors: Rate from "Acts in ways that inhibit problem-solving in laboratory" (1) to "Always works effectively as a member of the laboratory team in problem-solving" (5)

COMPETENCY #5: PROFESSIONALISM IN NEUROPATHOLOGY
Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diverse populations. It is recognized that neuropathologists interact only occasionally with patients and their families. More frequent interactions include those with colleagues in pathology, colleagues in neurology and neurosurgery, laboratory technicians, secretaries, other residents and students. Fellows are expected to:

- Carry out their duties in an altruistic, ethical, respectful and timely manner. This includes demonstrating a commitment to ethical principles pertaining to confidentiality of patient information, informed consent and business practices
- Show sensitivity when interacting with those who are different from them in educational level, cultural background, age, gender and disability status.
- Adopt practices that promote their own personal well being, both physical and mental, so that they can better perform their professional duties.

Assessment tools:
**OSCE:** Neuropathology fellows will be asked to respond to open-ended queries based on a case scenario with professional/ethical choices. Multiple competencies may be tested from a single scenario. Scenarios may be presented in their entirety or adapted for progressive disclosure. Case scenarios may be formulated for oral, written, or computer-based testing.

*Example #1:* You are the neuropathology autopsy resident at brain cutting. You read the consent for the autopsy and read that all organs were to be returned to the body after the autopsy. The brain is now before you on the table. What do you tell the family?

*Example #2:* A brain tumor support group asks you to speak at their next meeting. They request you to discuss the grading of astrocytomas to their lay audience. Outline your talk. A month later you are asked to participate in a CPC of a patient with an anaplastic astrocytoma. One section of your discussion will concern the grading systems of astrocytomas. Please outline your discussion.
Example #3 with progressive disclosure:
You are a pathology fellow assigned to surgical neuropathology. A therapeutic abortion specimen (approximately 18 weeks gestational age) is received. The specimen is referred to neuropathology due to a possible meningomyelocele. The attending is meeting with the dean but is available for urgent consultation.

The OB chief resident calls. Tissue from that fetus is immediately needed for Professor X's stem cell project. He requests that tissue for this fetus be sent to Professor X's lab. What will you do?

The district attorney calls. The pregnancy allegedly was the result of a rape. He wants immediate information about the specimen. What do you tell him?

The family calls 2 weeks later. Although they had spoken with their OB attending, they wanted to ask a neuropathologist about meningomyelocele. Should you speak with them? They found a story about fetal surgery for meningomyelocele and they weren't told about such surgery.

Portfolio: The fellow's portfolio should document the following:

- Events where professional behavior was observable
- Analysis of the quality of the behavior (attendings, administration, legal affairs, and resident)
- Modification of the behavior as indicated

360-Degree Evaluation Instrument: The fellow's professionalism is evaluated by technicians, clerical staff, attendings, administration, and legal affair (if indicated). An anchored checklist would be an appropriate format. For example:
- Attitude or behavior: Respect for others
  Anchors: "Treats others with disdain and disrespect" (1) to "Always highly respectful" (2)

- Attitude or behavior: Altruism
  Anchors: "Never inconveniences self for others" (1) to "Invariably helpful; delays personal wants to finish professional work" (5)

- Attitude or behavior: Able to admit and correct mistakes
  Anchors: "Never admits to making mistakes" (1) to "Actively moves to admit and correct mistakes" (5)

COMPETENCY #6: SYSTEMS-BASED PRACTICE IN NEUROPATHOLOGY
Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care. In neuropathology, the fellow must be able to provide effective guidance to the clinicians directly responsible for making treatment decisions and calling on system resources. The fellow must be aware of the consequences to the patient of the diagnosis and play an active role in assuring that the appropriate care is provided. Fellows are expected to:
• Understand how their diagnostic opinions and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice. For example, neuropathology fellows need to be aware of the specific deadlines faced by the clinical services that rely on their diagnostic information and to know the consequences of their turnaround times. At the same time fellows need to know the costs of various tests both in terms of financial cost to the institution and in terms of the effort required by the technical and secretarial staff.

• Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources. Neuropathology fellows need to understand the financial realities faced by health care system administrators and be sympathetic to decisions that result in what they may perceive as inadequate support of their services.

• Practice cost-effective health care and resource allocation that does not compromise quality of care. Neuropathology fellows must demonstrate knowledge of the availability of outside resources (such as genetic testing labs, outside opinions, etc) and show good judgment in choosing when to use such resources.

• Advocate for quality patient care and assist the clinicians in dealing with system complexities. Neuropathology fellows should be aware of the appropriate clinical protocols for treating the patients they diagnose, especially when there are diagnostic uncertainties in a particular case, and be prepared to provide guidance to other health care professionals. For example, in a glioma where grading is difficult, the fellow should be able to provide some guidance as to how a specific patient should be treated. The fellow should understand the importance of using only CLIA-approved laboratories for diagnostic testing and be able to refer specimens to appropriately certified reference laboratories for specialized testing (e.g., genetic or other "boutique" testing).

• Know how to partner with health care managers and health care providers to assess, coordinate and improve health care and know how these activities affect system performance. Neuropathology fellows should know how to provide quality assurance (QA) on resource management in a pathology laboratory and be able to assure that their laboratory is conducting appropriate but not excessive special studies. Fellows should know how to prepare a laboratory for inspection by the College of American Pathologists (CAP), the Joint Commission on Accreditation of Health Care Organizations (JCAHO), or a similar accrediting agency.

Assessment tools:

**360° evaluation instrument:** The most effective assessment tool for evaluating the competency of a neuropathology fellow in Systems Based Practice may be a 360° global rating. This need not be a lengthy questionnaire requiring substantial institution investment in staff time and effort. As long as the results of the assessment are rigorously documented, a simple questionnaire or even a telephone interview could suffice. For example, in one institution the residents are evaluated at the end of the monthly anatomic pathology (AP) section meeting by the attending staff with input from the senior technologist, the physicians' assistants, and the senior transcriptionist. Additional input in a neuropathology setting could be obtained from neurosurgeons and neurologists. In such an evaluation, open-ended questions like "Tell me about your interactions with Dr. X this month" may be the most effective way of eliciting the desired information.

**OSCE:** The objective structured clinical examination is usually modified for a neuropathology setting by replacing the patient encounters with a description of a clinical scenario and an examination of pathologic material (slides or gross tissue). Questions
pertaining to Systems-Based Practice may be included along with more "traditional" questions on diagnosis.

**Multiple-choice examination:** Written multiple-choice questions could be another effective tool for evaluating some aspects of competency in Systems Base Practice. For example a fellow should know the amount billed for a test like an immunohistochemical stain and how little reimbursement the institution actually receives from Medicare or a private insurance company. Questions about the financial health of the fellow's own institution and department are also appropriate (are they operating in the black this year or not?), and the fellow should be aware of the major contractual arrangements of the institution with insurance companies, HMO's, and the like.

**Clinician survey:** Since the primary interaction of a neuropathologist is with the referring neurosurgeon or neurologist rather than the patient, a survey of referring neurosurgeons or neurologists may be used in lieu of a patient survey. This tool could be very effective in the assessment of competency in neuropathology Systems Base Practice. For example, the referring physician might be asked, "Does Dr X often act as an advocate for the patient (play an active role in insuring that the patient receives appropriate treatment or is enrolled on an appropriate protocol)".

**Record review and chart stimulated recall:** These are less effective ways of assessing competency of a fellow's own Systems Based Practice because in most training programs the attending neuropathologist makes the decisions reflected in the record or chart. However, they may be used as "springboards" for discussions with the fellow.

**Requirements of the fellowship**

**Surgical neuropathology:**
During the first 6-9 months of the first year, the Fellow is expected to become familiar with the elements of surgical neuropathology necessary for the competent practice of diagnostic neuropathology in an academic or community setting. This includes competency in the skills required for frozen section, and the ability to diagnose most common CNS tumors, demyelinating, and infectious diseases as may be encountered in routine surgical neuropathology. At the latter portion of training (usually the final 2-3 months), the Fellow functions as an experienced and capable fledgling neuropathologist, whereby the rationale for ordering appropriate special stains, immunocytochemistry, FISH, cytogenetics, and electron microscopy is learned. By this phase, the fellow has greater autonomy and responsibility, but consults with a staff neuropathologist prior to any critical patient care related decisions being made.

**Autopsy neuropathology:**
The fellow devotes the first six months mainly to an introduction to the fundamentals of classical neuropathology that includes review of neuroanatomy, basic necropsy dissection, including both adult and pediatric brain and spinal cord removal, under close supervision.

**Muscle and nerve pathology:**
The fellow will learn the proper method of handling fresh muscle and nerve biopsies within the first months of the program, and occasionally be encouraged to be actively involved in the techniques of freezing muscle biopsies for enzyme histochemistry, nerve teasing, and cutting sections for plastic embedding.
Developmental and pediatric pathology:
Over the 2-year fellowship, the fellow will gradually accrue exposure to common forms of pediatric neuropathology related to prematurity, chromosomal abnormalities and infection through the autopsy experience. The fellow will also be expected to become knowledgeable in common metabolic and heritable diseases often presenting in childhood through responsibilities for muscle/nerve, skin, brain and other diagnostic procedures.

Neurodegenerative pathology:
Through the gradual and continual accrual process of both in-house and consultative brain specimens in cases of neurodegeneration, the fellow is expected to attain competency in the gross and microscopic diagnosis of common neurodegenerative diseases, and the proper technique of brain sampling for microscopy for such diagnoses. During the second year, a more complete familiarity with diverse neurodegenerative diseases and their etiologies is expected, along with an awareness of contemporary molecular diagnostic approaches.

Forensic pathology:
The fellow will organize a plan for the equivalent of one month full time training in forensic neuropathology, preferably in the second year, using the existing arrangement with the Alameda County Medical Examiner, or the Santa Clara County Medical Examiner.

Individual research:
After the first 3-6 months of training, the fellow is expected to begin appropriate reading and discussion with faculty that will enable him/her to formulate and initiate research projects. Case reporting is expected to promote the skills of thinking, review of literature, and writing scientific papers.
CONFERENCES

Neuropathology Fellows (customarily the first year Fellow) is responsible for the presentation of cases as requested in the following conferences:

**Pediatric Neuro-Oncology Tumor Board:** (Monday 7:30 a.m. – 8:30 a.m.) – in LPCH, Radiology Department. Slides previewed previous Friday, and AP Resident from Friday attends the Monday conference, then may attend regular 8AM conference in progress or leave the Tumor Board in time to attend 8AM conference.

**Journal Club,** Monday 12-1 p.m. Meet in R241 at 11:45 to go buy lunch (department provided). Select any article for informal presentation. No copies necessary.

**Biweekly Monday Case Conference,** R241 sign-out room, 5:00-6:00 PM every 1st and 3rd Monday.

**Tuesday Muscle/Nerve Pathology Conference,** R241 sign-out room, 5:00-6:00 PM, every 3rd Tuesday of the month

**Adult Neuro-Oncology Tumor Board:** Cancer Center, 12:15-1:15 p.m. every Friday

**Brain Cutting,** Wednesday 1:30-2:30 p.m.

**Optional: Neurology Grand Rounds,** Friday 8:00 a.m.-9:00 a.m.

**Required reading:**

Manual of Basic Neuropathology. Escourolle & Poirier

**Other recommended texts:**

1.) Ellison and Love Neuropathology Atlas
2.) WHO 2000 Classification of CNS tumors
3.) AFIP Tumors of the Central Nervous System, Fascicle by Burger and Scheithauer
5.) Fuller and Goodman: Manual of Basic Neuropathology
SURGICAL PATHOLOGY FELLOWSHIP

Director: Gerald Berry, MD

General Philosophy
The fellowship in surgical pathology is designed to offer advanced, focused and intensive training in diagnostic surgical pathology. Specific rotations include: “Hot Seat”, Frozen Section, sign out of consultation material (including immunohistochemistry and other special diagnostic techniques), surgical pathology sign out of residents and elective time. Elective time may be designed to pursue additional subspecialty training in areas of gynecologic, soft tissue, breast, gastrointestinal, renal, cardiopulmonary, transplantation, or molecular pathology, dermatopathology, cytopathology and/or research.

Specific Responsibilities
The specific responsibilities associated with each rotation will be discussed during the Surgical Pathology orientation. Objectives and goals related to Cytopathology, Dermatopathology, and Hematopathology can be found in their respective sections of this manual.

Fellows participate in departmental and interdepartmental conferences such as the ENT Tumor Board, as well as medical student and resident teaching. The laboratory accessions over 42,000 surgicals (12,000 of them consultation cases) annually and departmental resources and support for clinicopathologic and translational research projects are available.

On-Call Fellow
The Chief Resident formulates the on-call schedule. Refer to the on-call schedule for specific coverage dates. Coverage is provided from 6:00PM to 7:30AM on weekdays and all day on Saturdays, Sundays and holidays. Responsibilities include preparation, interpretation and reporting of GMS specimens, preparation of FNA samples from radiology for immediate evaluation/tissue and frozen section coverage. The on-call fellow should contact the on-call faculty member by pager or home number to sign out frozen sections.

Hot Seat Fellow
The Hot Seat Fellow issues preliminary diagnosis on all surgical pathology cases. The Hot Seat Fellow also covers frozen sections from 7:30AM (8:00AM on Monday) to 9:00AM. In addition, the fellow is responsible for ordering ER and PR on all ductal carcinoma in situ biopsy specimens and the entire breast panel (ER/PR/Ki67/HER2NEU FISH) on all invasive breast carcinoma biopsy specimens. NOTE: These studies are generally NOT ORDERED on core biopsies UNLESS the patient is scheduled for neoadjuvant therapy. The breast panel should be ordered on slides that contain sufficient in situ and invasive carcinoma so that both can be scored, when applicable.
All DCIS cases must include ER/PR results in order to be signed out, so it is important that these tests be ordered on Day 2. The breast panel is signed out as an addendum. The Hot Seat Fellow is responsible for distributing cases to the residents for sign-out after Hot Seat issues a preliminary diagnosis. A case ‘cap’ of 40 total cases per sign-out is set for first year residents (includes ‘bigs’ and biopsies). The cap for second year residents is set at 50 total cases. The post-sophomore fellow cap is set at 30. At the initial rotation for the first year resident (or post-sophomore fellow), the cap is adjusted down and gradually increased to the cap over the ensuing rotation cycle. This will require judgement on the part of the Hot Seat in consultation with faculty and the Associate Director of Residency Training (Anatomic Pathology). Overflow cases are signed out by the designated faculty assigned to overflow. Overflow cases should be selected by the Hot Seat so as not to diminish resident education. For example, although ‘big’ cases can go into overflow (especially early in the training year and during particularly high volume periods), no case grossed in by a trainee should go to overflow. Similarly, bone cases do not belong in overflow.

Frozen Section Fellow
The Frozen Section Fellow is responsible for frozen section coverage from 9:00AM to 2:00PM Monday through Friday. It is expected that the fellow, in conjunction with the assigned resident in surgical pathology and the frozen section technician, prepare and interpret all frozen sections and touch preparations following discussion(s) with the submitting surgeon. The assigned faculty is available for assistance and is expected to preview all frozen sections and their diagnoses following the fellow’s preliminary diagnoses. The assigned faculty will take over frozen section coverage from the fellow for the 2:00PM to 6:00PM period.

Surgical Pathology Fellow
During this rotation, the Surgical Pathology Fellow is responsible for resident sign-out and at least one shift of frozen section coverage. The fellow will be responsible for sign-out of one resident. This will include ordering of additional stains, determination of cases to be shown to additional faculty, instruction provided to the resident concerning the gross, microscopic, and relevant diagnostic and differential diagnostic issues, as well as preparation of the final report. Once the final report is completed and corrected by the fellow, the case is to be forwarded to the assigned faculty and formally signed out by that faculty member.

Consult Fellow(s)
The Consult Fellow(s) are responsible for review and work-up of all consult cases. On this service, this includes showing individual cases to the relevant faculty, preparing a consult report with relevant references and conveying these interpretations to the consulting physicians. In almost all cases, the fellow will be required to telephone consulting physicians with preliminary diagnoses and requests for more clinical or pathologic data, additional slides/blocks and/or additional reports, if required. At times, this may appear somewhat daunting, but the ability to discuss difficult cases with colleagues who may on occasion have differing opinions and develop a cogent report that addresses these differences is an important aspect of the fellow’s training.
experience. Once the report is completed and corrected by the fellow, the case is forwarded to the assigned faculty and formally signed out by that faculty member.

The Surgical Pathology Consult Fellow is responsible for preparation of cases for the Monday morning Kempson Consult Conference as well as the monthly Tuesday noon Surgical Pathology Consult Conference for the residents. The latter conference is conducted by the fellow(s) and is meant to provide exposure (and teaching) of interesting consult cases to the first and second year residents.
BLOOD BANK/TRANSFUSION MEDICINE FELLOWSHIP

Program Director: Lawrence Tim Goodnough, MD
Director of Education, Transfusion Service: Magali Fontaine, MD, PhD
Director of Education, Blood Center: Chris Gonzalez, MD

Goals
This one year fellowship is intended to provide trainees with additional subspecialty competence in the practice of Blood Banking and Transfusion Medicine. At the end of the year trainees are expected to have acquired the foundation and expertise for an academic career in Transfusion Medicine, and to independently run a Transfusion Medicine Service and/or a Blood Center in an academic medical center. This expertise includes such domains as immunohematology, blood collection and processing, stem cell collection and cellular therapies, consultative transfusion medicine, therapeutic apheresis, supervision and training of laboratory personnel, laboratory management, and quality assurance.

Objectives
The Transfusion Medicine Fellow will be an integral part of the Transfusion Service/Blood Center operations. He/she will have substantial responsibilities for patient care, and usually serve as the primary link between the clinical services and the Blood center/Transfusion Service. The following objectives for the rotation are listed as follows:

Patient care
• To develop a thorough knowledge of blood collection, preparation, storage, and shipment
• To understand indications for transfusion and develop proficiency in selection of appropriate blood products for transfusion
• To understand pre-transfusion testing
• To attain proficiency in managing transfusion-related complications

Medical knowledge
• To understand the immunologic and genetic principles that underlie transfusion medicine
• To understand the role of transfusion medicine in managing specific acute and chronic diseases
• To understand complications of blood transfusion, including infections and iron overload and other non-infectious side effects

Interpersonal and Communications Skills
• To teach medical technology staff thorough presentation of continuing education lectures
• To develop effective writing skills by writing a brief case report of an unusual case appearing during the rotation
• To serve as a liaison between blood bank staff and clinicians
• To communicate effectively in the role of first call consultant to clinicians with questions or problems
• To serve as a helpful resource for technologists and clinicians regarding blood banking/transfusion medicine issues
• To assist in teaching Core Lab rotation residents principles and practices of the Transfusion Service

**Professionalism**
• To complete interpretive reports in an accurate and timely fashion
• To interact in a professional, helpful and respectful manner with clinicians, other house staff, and technical and administrative staff
• To display sensitivity to ethical, cultural, and religious issues relating to blood transfusion

**Systems-based Practice**
• To develop an understanding of quality assurance in blood banking and transfusion medicine
• To understand the role of the Stanford University Medical Blood Center in relationship to the Stanford Medical Center transfusion service
• To understand CAP and AABB accreditation requirements
• To provide consultation in cost-effective medical practice regarding indications for transfusion and selection of appropriate products
• To become familiar with the regulatory agencies and rules governing collection, processing and distribution of blood products
• To be aware of emerging pathogens and their potential impact on national blood supply
• To understand inventory management of blood products, at the local and national level

**Practice-based Learning**
• To use case-based learning as a tool for additional insight into the basis of disease
• To locate and assimilate pertinent evidence from scientific studies
• To demonstrate effective problem solving skills in transfusion medicine, using a wide variety of information resources

**During the first six-months**, the fellow will learn the basic immunologic and genetic principles of transfusion medicine, and will have hands-on experience with the bench work. The fellow will become familiar with blood donor questionnaire donor deferral, blood collection, preparation, storage, and shipment. The fellow will become familiar with typical consultative questions from clinical staff, including special needs, non-standard protocols, massive transfusion guidelines, ECMO protocols, etc.
During the last six months, the fellow will have electives at either the Blood Center and/or the Transfusion Service laboratory, including a rotation in the Therapeutic Apheresis Unit, the HLA laboratory, the coagulation laboratory and the Stem Cell Processing Laboratory. The Fellow will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director. He/She will take first calls during the first six months and progressively will take second calls being covered by the attending, who will be third call. The Transfusion Medicine Fellow will be expected to attend all Clinical Pathology conferences related to Transfusion Medicine by the Transfusion Medicine / Blood Center Staff. He/she will be expected to teach the residents and technical staff by giving a 45 minute didactic at least once a quarter. He/she will also be expected to actively participate in the Transfusion Medicine and Blood Center Management and quality meetings. The Fellow is also expected to contribute substantially to a scholarly project which results in publication.

Responsibilities:
1) The fellow will lead the weekly conference (Mondays at 1 PM) during which weekly on-call transfusion /blood center issues will be presented.
2) The fellow will supervise residents and students on rounds and during calls (taking second call with the supervision of an attending as third call) as soon as the second or third quarter of the fellowship.
3) The fellow will be in charge of the house staff training in transfusion medicine. This will consist in a one hour lecture to residents and fellows in surgery, medicine, pediatrics, and anesthesia.
4) The fellow will develop one project to work on during his/her elective time for a potential presentation at a national meeting and/or a publication.

Evaluation
Monthly evaluations are generated through Medhub that include all of the core competencies. The completed evaluation is electronically forwarded to the Trainee for review. All potentially negative evaluations must be discussed with the Trainee by the middle of the month, to allow the Trainee to improve before the formal evaluation is completed. All negative final evaluations must be discussed directly with the Trainee and a plan for improvement addressed. Additionally, the Trainee will complete a series of quizzes during the first month of the rotation; this quiz will be repeated at the end of the curriculum (see appendix). The Trainee will meet quarterly with the Director of the Educational Program, Dr. Fontaine, review the list of objectives that have been completed, and discuss their progress in the program.
POST SOPHOMORE YEAR FELLOWSHIP

Co-Directors: John Higgins, MD and Andrew Connolly, MD, PhD

Educational Goals

The goal of this one year program is to offer medical students between their pre-clinical and clinical years a broad exposure to the practice of pathology in an academic medical center. The year is comprised of six months of clinical work and six months of research. The research months are primarily dedicated to a single research project, which for Stanford medical students must represent an approved Medical Scholars project. To enhance the pathology training experience, post-sophomore fellows (PSF) are strongly encouraged but not required to work with a faculty member in the Pathology Department.

The clinical service months consist of four months of Surgical Pathology, one month of Autopsy, and one month of elective time. The elective month must be directed toward clinical activities in pathology, and may include rotations in subspecialty areas of Anatomic or Clinical Pathology. The research and clinical service months consist of rotating one-month blocks. In general, the responsibilities of the PSF are similar to those of the pathology residents, as outlined in this handbook, but on a smaller scale. It is not the intention of this program to have the PSF fill gaps in the resident schedule, but to allow them to carry a manageable workload for optimal educational benefit. However, their experience will be greatly enhanced by being an integral component of the workflow. They are required to assume full responsibility for the work-up and completion of their cases in a timely manner.

Expectations on Surgical Pathology

The PSF on Surgical Pathology rotate in the same six-day cycle as the residents: Sign-out (S), gross room (G), cytology/preview (CY), sign-out (S), gross room/frozen sections (G/FS), cytology fine needle aspiration/preview (CY/FNA). This is detailed on pages 68 – 79 of this handbook and the PSF should become familiar with the system.

The PSF will initially be assigned no more than 10 cases in the Gross Room. These are to be cut-in under the guidance of the Pathology Assistants (PA). Based on the assessment of the faculty members with whom the PSF is signing out, the number of cases may be increased in increments of 5 for a minimum of 20 cases by the end of the first month. The number of cases assigned to the PSF will be determined by educational goals and not based on the amount of work or the number of residents available to cover service work. However, the ‘cap’ is set at 30 total cases per sign-out.
Prior to sign-out the PSF must:
1. Organize their slides and paperwork by case accession number.
2. Preview all cases and write the potential diagnoses on the cover page.
3. Read about the topics pertaining to the cases.
4. Pull all relevant prior specimens from the Surgical Pathology slide file.
5. With experience, be able to pre-dictate the diagnosis and comment prior to sign-out.

Following sign-out the PSF must:
1. Check all cases with the Hot Seat fellow.
2. Show cases with disputed diagnoses and cases that require consultation to other faculty.
3. Dictate the diagnoses and comment sections of the reports, being careful to comment on special stains, address clinical concerns, address issues raised in the gross description, include synoptic reports for neoplastic cases, include TNM and correlate frozen section diagnoses as appropriate. Note: It is essential that the cases be dictated rather than typed. This is an important skill and must be learned by the PSFs.
4. Proofread and correct the entire report once the dictation is transcribed.
5. Transfer the electronic version of the report to the sign-out faculty’s folder and deliver the paperwork to him/her for sign-out.
6. Bring additional levels and special stains including IP OX to the faculty member as they become available.
7. Be mindful of the importance of timely turnaround of cases.

The PSF responsibilities on the Cytopathology day are the same as those of the first year residents on the Surgical Pathology rotation. These are detailed on pages 44 – 47 of this handbook.

The PSF will not be expected to take weekend call.

Expectations on Autopsy Pathology

The PSF rotates on Stanford Autopsy Pathology with responsibilities similar to those of the residents as detailed on pages 30 – 41 of this handbook. The PSF should read and be familiar with these pages prior to beginning their Autopsy rotations. A sense of “ownership” of one’s cases is particularly encouraged, but this may be somewhat constrained by the number of cases available and cases may be shared with the resident rotating on the Autopsy service.

The Autopsy Service is an excellent opportunity to learn more about general medicine and pathophysiology. By the end of the rotation on the Autopsy Service, the PSF will be expected to analyze the autopsy findings and generate a cogent differential diagnosis, just as one would be expected to do on a clinical clerkship.
Conferences

The PSF must attend all Tuesday – Friday 8:00 AM and noon Surgical Pathology conferences and preview unknown slides prior to those conferences when applicable. They are expected to attend daily Gross Room conferences while rotating on Surgical Pathology.

The PSF is expected to present cases at the “End-of-the-Month” case conference during each of their four months on Surgical Pathology. In addition, they are expected to give one “Current Concepts” talk on their research or a topic of their choice.

The PSF must attend the monthly QA/QI meetings in L201.

Supervision and evaluation

- Mentors
  The PSF will initially be assigned a faculty mentor, either Yaso Natkunam, MD PhD or John Higgins, MD. However, the PSF may choose a different mentor at any time. The mentor should be used as a resource for problems and questions about the training program. The mentor will also closely follow the PSF progress through the fellowship. The PSF should meet with their mentor at least once every six months.

- Individual Evaluations by Faculty
  The PSF will receive a formal evaluation for each clinical month. These will be submitted to the Program Coordinator. Areas evaluated are identical to those of the residents and are described in detail on page 15 – 16 of this handbook.

- Semi-Annual Evaluation by Mentor
  Every six months the PSF will meet with their mentors. Issues discussed at this meeting are recorded by the mentors, signed by both the mentor and the PSF, and entered into the PSF file.

- Annual meeting with the Chair
  At the end of the year the PSF will meet with the Chair of the Department of Pathology to review the PSF performance and to discuss academic issues and plans.

- Evaluations of Training Program & Faculty
  Every 6 months the PSF will be asked for written evaluations of their rotations and the faculty members. These evaluations are anonymous and are collated by the Program Coordinator.
GENERAL TELEPHONE NUMBERS

Accessioning (Surg Path)  5-5190
Autopsy
   Resident's Room 1  5-5891
   Resident's Room 2  3-7154
   Autopsy Suite (Morgue)  3-7675
Bone Marrow Reading Room  8-6274/3-8847
California Café  325-2233
Carolyn Fat (Chemistry Lab)  4-3342
Clinical Labs (SUH main)  3-6111
   Cary Schrandt (LIS Support)  5-5619
   Cytogenetics  5-6396
   Cytogenetics Lab Supervisor  5-7476
   Education Coordinator  3-9711
   Flow Cytometry  4-2250
   Fluids (e.g., CSF)  4-2252
   Microbiology  3-6671
   Molecular  3-6574
   Special Heme (marrows)  4-2249
   Virology  3-5706
Clinical Labs (LPCH main)  7-8614
   Microbiology  7-8618
Cytology  3-7553
David Myrick (Heme Section Chief)  3-6122
Dictation Access  (877) 729-9791
EM Lab  5-5196
Frozen Section Room  5-7145
Gloria Brown (Chemistry Lab)  5-5634
Gloria Magpantay (Derm)  5-5192/3-6736
Graduate Medical Education  3-5948 (Ann Dohn)
Gross Room  5-5191
Histology  5-5188
Information (SUH)  3-4000
Immunology/Endocrinology  6-2426
Immunoperoxidase Lab  3-6075
Immunoperoxidase Fellow  4-7800
Irma Pereira (Heme specialist)  4-2245
John Williams (Heme Lab)  4-2246
Karen Backer (RBC Lab)  3-5235
Lane Medical Library  3-6831
Leigh Stacey (consults)  8-7840
Linda Thomason (Heme supervisor)  7-8630
Mary Arroyo (Virology supervisor)  5-4146
Melissa Parry (Virology supervisor)  4-7092
Mercy Dones (Heme supervisor) 4-3594
Nancy Brooks (Dr. Mohler’s nurse) 15556 pager
Neuropathology (main) 3-6041
    Martin Estrada (Histotech) 3-6042
    Resident's Room 5-4903
Operating Room Scheduling 3-6454
Operating Room Control Desk 3-7251
    Individual Main ORs 4-70XX
Paging Access (in hospital) 222
Paging Access (outside hospital) 723-8222
Page Operator (in hospital) 288
Page Operator (outside hospital) 723-6661
Photo Lab 3-7521
Radiology File Room (SUH) 3-6717
Radiology File Room (LPCH) 7-8578
Radiology Reading Room 3-6737
    Dr. Chris Beaulieu #13168
    Dr. Kate Stevens #23202
Rosie Nolley (Urology) 8-4639
Residency Coordinator 5-8383
Security (hospital)/Cold room access 3-7222
Slide Room 8-7527
Surgical Pathology (reception) 3-7211
Transfusion Service Ed Coordinator 5-4493/3-6445
VA Hospital (main) 493-5000
    Resident's Room (Autopsy) 6-5092
    Resident's Room (Surg path) 6-6239
    Autopsy Suite (Morgue) 6-5079
    FAX 725-7023
Will Flores (Coagulation) 5-9866

**ON CALL NUMBERS**

Surgical Pathology Fellow (eve, S, S) 12642
Histotech Frozen Section Pager (days) 16032
FNA Pager 13378
Histotechnologist (on call, after hours) 17362
Autopsy Attending 13216
Weekday Resident Frozen Pager 17353
Clinical Pathology On Call Pager 12005
ADDRESSES

Laboratory of Surgical Pathology
Room H2110
300 Pasteur Drive
Stanford, CA  94305-5243
(650) 723-7211 Telephone
(650) 725-7409 FAX

Department of Pathology
Room L235
300 Pasteur Drive
Stanford, CA  94305-5324
(650) 723-5252 Telephone
(650) 725-6902 FAX

Department of Pathology
Veterans Affairs Palo Alto Health Care System
3801 Miranda Avenue
Palo Alto, CA  94304
(650) 493-5000 Main Telephone
(650) 725-7023 Pathology FAX

SHC Clinical Laboratory
3375 Hillview Avenue
Palo Alto, CA 94304

School of Medicine
Blood Center
3373 Hillview Avenue
Palo Alto, CA 94304
FREQUENTLY ASKED QUESTIONS

Who do I call if I'm late/sick?
The most important person to call is your attending. If you can't reach that person, try contacting a chief resident or one of the senior residents or fellows for your rotation. It is also a good idea to contact the administrative support person(s) for your rotation (i.e., receptionists in surgical pathology, neuropathology, etc.).

What do I need to do before going on vacation?
Please see the vacation guidelines in this handbook. Coverage should be arranged (contact the chief residents for assistance). Leave detailed notes for or have a discussion with the covering resident on any pending cases. Alert your attending(s) and any other residents on your rotation well in advance, including the appropriate coverage. It is helpful for the receptionists and the accessioning staff to know when you will be gone and who will be covering so that they can appropriately direct inquiries.

Where can I get office supplies (pens, pencils, dotting pens, post-its, etc.)?
Many office supplies (ballpoint pens, staples, paper clips) are stored in the cabinets above the water cooler in Surgical Pathology, Room H2110. If you can't finding something or have any questions, one of the receptionists can usually point you in the right direction.

Where are pager batteries?
Pager batteries can be obtained in Surgical Pathology. Replacement batteries are also available from Pager Administration (first floor, across from the Gift Shop) or from Security after hours (basement, approximately below the ATMs near the Emergency Room).

What is the range on my pager?
According to Pager Administration, the range of standard house staff pagers is 50 miles in ideal conditions. In practice, you may find that the range is closer to 15-20 miles. You may call the Page Operator and forward any pages to a cell phone if you will be out of range.

Who do I see about dictation problems?
Please contact the Service Desk (723-3333) for problems with dictation, your user ID, reports without gross dictations, etc.

What happens if I have an accident in the gross room?
If you have a chemical spill (including formalin), alert the gross room supervisor and one of the gross room employees. There are spill
pillows and neutralizing agents available in the cabinets opposite the accessioning area.

If you get hurt (needle stick/scalpel wound), alert the gross room supervisor or one of the pathologist’s assistants. You should be seen in Employee Health (3-5922) or the Emergency Room. Note if it was a clean or dirty blade/needle and note the name of the patient(s) from whom the specimen(s) you were working with came. If your injury is “dirty”, you and the patient will undergo testing for blood-borne diseases and you may be provided with the opportunity to initiate anti-infective therapy, if available. Injuries at the VA should be seen at the VA Emergency Room; testing and treatment may start in the VA ER. Follow-up will be with Stanford Employee Health. For more information, please refer to the Hospital’s Blood/Body Fluid Exposure policy. Finally, your injury should be documented within the department for Quality Assurance purposes.

What if my microscope isn’t working/light bulb burns out?
Perform a cursory check of all cord connections, etc. If your bulb is burned out or your microscope doesn’t seem to be working, contact Sharyn Caplan for assistance. The Department contracts with an instrument company to perform regular maintenance and emergency repair.

What do I do when a clinician wants to see a case?
If you do not feel comfortable showing the case, ask your attending, a senior resident or the hot seat fellow for assistance. If the clinician(s) is/are calling in advance, set up a convenient time for yourself to meet them. It’s often easiest to show cases around the multi-headed derm room microscope or one of the multi-headed scopes in the faculty sign-out offices.

What do I do if a patient calls?
Although pathologists rarely speak to patients, occasionally a patient may request to speak to you. Be polite, respectful and understanding. The best thing to do is get the patient’s phone number and ask if you can have your attending give them a call. If there is an unusual request, again defer a definitive answer until you check with your attending.

Where is the photo lab?
The photo lab is located in Room L206, in the Lane Building.

What if I’ve never given a pathology talk before?
Public speaking can be overwhelming and intimidating. Despite the initial impression that these talks are simply the means by which to
torture trainees, the purpose of resident presentations is truly educational. Your presentation skills will be enhanced, and your subject knowledge will improve greatly. It is easier said than done, but try to relax and enjoy yourself. Ask a more senior resident or attending for suggestions or assistance. Allow yourself plenty of time to prepare. Some people find practicing a talk in front of a mirror (or in front of another person) helpful. Some people use “case breaker” slides with humor or an outside area of interest (photos from a recent trip) to lighten the talk up every 15 minutes or so.

What do I have to do for the end of the month Surg Path presentation?
The end of the month Surgical Pathology presentations are meant to be casual and fun. There is no defined format, although most people present one-three interesting cases from the month. You can choose cases according to a theme, according to organ or completely at random. Try to choose cases for which you have a gross photograph available. You can solicit audience participation (your turn to put the senior residents or attendings on the spot) if you’d like. Ask a senior resident or fellow to help you take microscopic photos if you’ve never taken them before. Most residents read a little bit about the entity they will present to know its diagnostic features and the differential diagnosis, and then photograph areas to highlight these points or other interesting points from the case (a diagnostic pitfall, a rare finding, etc.). Text slides are not required and each resident’s presentation should be no longer than 10 minutes. Residents are encouraged to make use of this opportunity to develop (exhibit) their gross and microscopic photography skills.

What is available in our surgical pathology library?
Copies of almost all the major general and specialty surgical pathology textbooks and several pathology journals are available in the Surgical Pathology library. If you can’t find the text you require, ask one of the Surgical Pathology fellows. If there is a text you think we need in the library, ask one of the Surgical Pathology directors.

What do I need to know for the student labs?
Weeks in advance of your designated student lab, you will receive material from Dr. Connolly, the pathology course coordinator, regarding your lab. In addition, there will be a meeting of all the residents and faculty participating in the given laboratory prior to that section, usually held in the Bing Dining Room with a free meal. You will be paired with an attending, who will be able to answer any questions that you can’t, so relax and have fun. If you are motivated, you can review sections of Robbins or the course syllabus as a self-review and in preparation for the lab.
How do I call the VA?
The VAPA hospital main number is (650) 493-5000. An automatic greeting will then come on the line. You will then be instructed to enter the five-digit extension (VAPA extensions start with 6-XXXX) and be transferred. If you know the five-digit extension, press 1 when the greeting begins.

How do I get to the VA?
The Veterans Affairs Palo Alto Health Care System facility is located at 3801 Miranda Avenue in Palo Alto. From Stanford Hospital, exit to Campus Drive, heading in the direction of Highway 280 (west). Turn left on Junipero Serra Avenue, which becomes Foothill Expressway as you cross Page Mill Road. Turn left at Hillview Avenue and make an immediate right onto Miranda Avenue. The hospital will be the first left following the stop sign. Drive around the perimeter drive (watch your speed, the VA hospital is on government property and if you get a speeding ticket, you will have to appear in federal court in San Francisco!) to the helicopter pad in the back and park. You can go up the back stairwell of building 100 to the fourth floor. The pathology suite is down the first hallway to the right after you exit the stairwell on the fourth floor (the resident’s room is straight back to the windows (great view!).

How do I get to Forensics (Santa Clara County Coroner)?
From the Palo Alto area, take Highway 280 South. Exit Winchester Boulevard towards Campbell. Turn left on Moorpark Avenue, cross under Highway 880 and take a right on Thornton Way. The office is located a few blocks down on the left, at 850 Thornton Way. There is a parking lot at the building.

Where are housestaff mailboxes?
Housestaff mailboxes are located on the wall outside the departmental office in Room L235, Lane Building. The first two rows of mailboxes are faculty mailboxes, organized alphabetically by last name. The mailboxes are located above the name. The next row is resident mailboxes, also alphabetical. The final row of mailboxes is for general lab groups and administrative assistants.

Where are faculty mailboxes?
In addition to the faculty mailboxes outside L235 (see above), Surgical Path faculty have mailboxes located within Room H2110, Surgical Pathology. These are located near the sink and water cooler. Use the mailbox area above the posted name. These mailboxes generally have enough room to store slide flats.
Where can I keep my things?

All of the cubicles in Room H2110 have ample drawer and desktop space; many include vertical files. While it is safest not to bring in valuables, you can also obtain a key to lock the desk drawers from Sharyn Caplan. Because the cubicles relate to the position and not the person, the residents play monthly musical desks. See Sharyn Caplan for more permanent space if needed (there are cabinets available in the autopsy residents’ room). As a courtesy to the person inheriting your desk at the end of the month, try to clean up any old paperwork or personal items in order for the other person to move in a timely manner. There is a small refrigerator in Room H2110 in which to store your lunch. Please promptly remove any items you do not plan to eat.
I. I have received the Stanford University Department of Pathology Resident and Clinical Fellow Handbook (2008-2009).

II. I have been informed of the following requirements for house staff:

   1) Required conference attendance
   2) Formal teaching responsibilities
   3) Reporting of duty hours in MedHub
   4) Safety policies and procedures
   5) On call procedures
   6) Procedure for schedule changes
   7) Licensure requirements

III. I understand that it is my responsibility to be aware of the policies/procedures as stated in the handbook.

Signature ________________________________ Date __________________

** Please submit this signature page to the residency & fellowship coordinator at R250 no later than July 10.**