

**University of Washington Department of Laboratory Medicine
Hematology Fellowship Goals and Objectives**

Revised: 27 June 2008

GOAL

The overall goal of the Hematology Fellowship is to provide the trainee with a set of tools that will enable him or her to develop and maintain a level of expertise in laboratory hematology appropriate to the professional responsibilities of a practicing hematopathologist. These tools will include: 1) basic principles of laboratory hematology, including hemoglobin electrophoresis, morphology, flow cytometry, molecular studies, quality assurance, and laboratory management; 2) development of effective personal references, including textbooks, journals, files, databases, search strategies, etc.; and 3) development of a set of personal educational objectives for the fellowship. Opportunities to gain proficiency in hematology by employing these tools in the clinical laboratory will be provided.

OBJECTIVES

A number of specific objectives subtend the overall goal. These objectives are presented below, organized by the general competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) and the Pathology Residency Review Committee (RRC) as expected of all residents.

Patient Care

The trainee will demonstrate ability to:

- Gather appropriate and accurate clinical information
- Interpret laboratory test results within the clinical context
- Use clinical decision-making concepts and techniques in interpreting results
- Advise clinicians on the choice of clinically appropriate, cost-effective tests
- Advise clinicians on appropriate follow-up for unexpected test results
- Perform bone marrow aspiration and biopsy

Medical Knowledge

The trainee will demonstrate:

- Knowledge of common hematopathology tests and their medical application and correlation
- Knowledge of the effects of anticoagulants, specimen collection techniques, aging of specimens, and fixatives on the various analytical techniques used in the hematology laboratory
- Ability to collect and evaluate medical evidence regarding the utility of laboratory tests

Ability to use a variety of resources to investigate clinical questions
Development of a personal strategy to maintain and update medical knowledge regularly

Practice-Based Learning and Improvement

The trainee will demonstrate:

Ongoing identification and remediation of gaps in personal medical knowledge
Understanding and ability to apply the principles of quality control and quality assurance
Ability to evaluate current and proposed testing methods for analytical performance, clinical utility and cost-effectiveness
Use of proficiency-testing results to improve laboratory practice
Ability to use laboratory problems and clinical inquiries to identify process improvements that may minimize opportunities for medical errors

Interpersonal and Communication Skills

The trainee will demonstrate:

Ability to communicate clearly and effectively with clinicians, medical technologists and other medical personnel
Ability to use appropriate modes of communication (direct, telephone, e-mail, written)
Ability to prepare and deliver effective presentations, including presentation of pathologic findings at interdisciplinary clinical conferences

Professionalism

The trainee will demonstrate:

Knowledge and understanding of ethical and privacy issues affecting the clinical laboratory
Maintenance of confidentiality of patient information
Respectful behavior towards all patients and medical personnel
Prompt and courteous response to all pager and telephone calls
Regular, punctual attendance and participation in rounds, conferences, meetings and rotation responsibilities

Systems-based practice

The trainee will demonstrate:

Understanding of the role of the laboratory in the health care system, and the importance of reliable, cost-effective and timely laboratory results in clinical decision-making
Ability to work with clinicians, administrators and others to determine the role of the laboratory in specific situations to optimize patient outcomes
Understanding of CLIA, CAP and JCAHO requirements for clinical laboratories

Understanding of basic laboratory reimbursement mechanisms and regulatory requirements, including kickbacks and compliance with Medicare/Medicaid “fraud and abuse” avoidance requirements

Ability to do cost analysis of laboratory tests

General Hematology Training for Hematology Fellows

Length of Rotation: 9 months, concurrent with other rotations

Goals

- 1) Become familiar with instrumentation used to determine blood counts.
- 2) Understand the technical limitations of automated hematology analyzers in various patient populations.

Objectives

- 1) Take a “tour” of the Sysmex XE2100 automated hematology analyzer; understand the principles involved in counting red cells, platelets, and white cells.
- 2) Review data from problem blood specimens and correlate with smear morphology.
- 3) Participate in instrument evaluation and purchase decisions where possible.
- 4) Participate in laboratory management decisions, including staffing, instrument troubleshooting, interaction with other hospital services, quality control and quality assurance.
- 5) Attend the following conferences:

Daily Sign-out Rounds (10 AM at SCCA, 1:00 PM at UWMC)

Pathologist review of abnormal smears and body fluids (2:30 PM at UWMC)

Daily Bone Marrow Conference (1:00 PM at UWMC)

Weekly Hematology Division Faculty/Staff Meeting (Tuesdays 9 AM at UWMC)

Weekly interesting case conference (Thursdays 12 PM at SCCA)

Weekly Hematopathology Lab meeting (Thursdays 11 AM at SCCA)

Semimonthly hematology-oncology conference (Odd-numbered Fridays, 12 PM at UWMC/SCCA)

Monthly Journal Club (First Thursday of the month, 11 AM at SCCA)

Laboratory Medicine Grand Rounds (Wednesdays 3:30 PM at UWMC (not during summer)

Laboratory Medicine Research and Development Conference (Wednesdays 2:30 PM at UWMC (not during summer)

Laboratory Medicine Call Rounds (optional) (Wednesdays 12 PM at UWMC)

Medical Grand Rounds (optional) (Thursdays 8 AM at UWMC)

Hematology Grand Rounds (optional) (Fridays 8 AM at FHCRC)

Hematopathology Training for Hematology Fellows

Length of Rotation: 9 months, concurrent with other rotations

Goals

- 1) Become proficient in morphological evaluation of peripheral blood, body fluid, bone marrow aspirate, and bone marrow biopsy material.
- 2) Become proficient in morphological evaluation of lymph node biopsies as well as biopsies of lymphoid tissue in other anatomic locations.
- 3) Learn to interpret flow cytometry and immunohistochemistry data, and use this information to diagnose disorders of the hematopoietic system.
- 4) Gain hands-on experience in analyzing raw flow cytometry (list mode) data
- 5) Learn the techniques required to perform bone marrow biopsies and to prepare bone marrow biopsy material for morphological review and other studies.

Objectives

- 1) Review smears, cytopsin preparations, and tissue sections. Generate interpretive reports combining morphology with flow cytometry, immunohistochemistry, and/or molecular diagnostic results.
- 2) Participate in the development and evaluation of new diagnostic methods or undertake a basic or applied research project.
- 3) Give a short in-service presentation to medical technologist staff.
- 4) Review selected topics in hematopathology with faculty.
- 5) Make appointments with hematology faculty and senior fellows to be trained in bone marrow aspirate and biopsy procedures.

Red Cell Disorders Training for Hematology Fellows

Length of Rotation: 9 months, concurrent with other rotations

Goals

- 1) Understand the genetics, biochemistry, and pathophysiology of disorders affecting red cells.
- 2) Become familiar with the workup of hemolytic disorders, and make diagnoses based on laboratory data.
- 3) Become familiar with the diagnostic techniques used to diagnose red cell disorders including molecular techniques.

Objectives

- 1) Evaluate red cell indices, iron studies, electrophoresis and HPLC results, and brilliant cresyl blue staining to diagnose patients with thalassemias and hemoglobinopathies, and write interpretive results based on this evaluation.
- 2) Learn the principle of the osmotic fragility test, and the use of this information in the context of clinical findings to diagnose hereditary spherocytosis. Become familiar with flow cytometry-based diagnosis of hereditary spherocytosis.
- 3) Review selected topics in red cell disorders with faculty.
- 4) In addition to the conferences listed under “General Hematology Training”, attend Red Cell Disorders signout (2 PM at UWMC)

Molecular Diagnosis Training for Hematology Fellows

Length of Rotation: 9 months, concurrent with other rotations

Goals

- 1) Understand the use of molecular diagnostic tests in hematopathology.
- 2) Become familiar with the molecular diagnostic techniques used in the hematopathology laboratory.

Objectives

- 1) Interpret data from various molecular tests in the context of other diagnostic information, and write interpretive reports.
- 2) Participate in the evaluation of new diagnostic methods.
- 3) Review selected topics in molecular diagnosis with faculty.
- 4) In addition to the conferences listed under “General Hematology Training”, attend Molecular Diagnosis weekly case conference (Thursdays 1:30 PM at UWMC)

Clinical Coagulation Training for Hematology Fellows

Length of Rotation: 1 month, concurrent with Pediatric Hematology rotation

Goals

1. Understand the pathophysiology, diagnosis, basic treatment and clinical interpretation of laboratory testing for diseases of the hemostatic system including both hemorrhage and thrombotic diseases.
2. Understand the principle, basic methodology and major types of instrumentation used in performing hemostasis and thrombosis testing.

Objectives

1. Evaluate history, physical findings and laboratory data for patients on the Clinical Coagulation services at UWMC and HMC - including coagulation screens, venous and arterial thrombosis workups, platelet aggregation studies, and von Willebrand factor workups.
2. Complete a literature review or small project on a selected topic. Present in-service on findings to technologists at UWMC and/or HMC coagulation labs.
3. Become familiar with major types of coagulation instrumentation available at UWMC and HMC. Review instrumentation with lead technologists at UWMC and HMC, discuss technologies with faculty.
4. Review selected topics in clinical coagulation with faculty.
5. In addition to the conferences listed under “General Hematology Training”, attend Coagulation signout

Pediatric Hematology Training for Hematology Fellows

Length of Rotation: 1 month, concurrent with Coagulation rotation

Goals

- 1) Become proficient in morphological evaluation of pediatric peripheral blood, body fluid, bone marrow aspirate, and bone marrow biopsy material.
- 2) Gain experience in morphological evaluation of lymph node biopsies as well as biopsies of lymphoid tissue in other anatomic locations.
- 3) Gain experience in evaluating pediatric coagulation problems.
- 3) Learn to interpret flow cytometry and immunohistochemistry data, and use this information to diagnose disorders of the hematopoietic system.
- 4) Get exposure to cytogenetics and related diagnostic techniques.
- 5) Learn the techniques required to perform bone marrow biopsies on children

Objectives

- 1) Review smears, cytospin preparations, and tissue sections. Generate interpretive reports combining morphology with flow cytometry, immunohistochemistry, cytogenetics, and/or molecular diagnostic results.
- 2) Review data from interesting coagulation cases, and provide feedback to clinical staff where indicated.
- 3) Review selected topics in pediatric hematology with faculty.

Immunology Training for Hematology Fellows

Length of Rotation: 1 month (elective)

Goals

- 1) Understand the relationships between immune system disorders and hematological diseases.
- 2) Become familiar with the laboratory techniques used in the immunology laboratory.

Objectives

- 1) Know the indications for and interpret data from serum and urine protein electrophoresis.
- 2) Know the indications for and interpret data from autoimmunity tests including immunofluorescence assays, ELISA assays, and assays for immune complexes, rheumatoid factor, and complement.
- 3) Know the indications for tumor marker assays and understand the limitations of these tests.
- 4) Become familiar with methods for the quantification of specific serum proteins
- 5) Learn appropriate algorithms for working up immunodeficiency disorders.
- 6) Participate in the evaluation of new diagnostic methods.
- 7) In addition to the conferences listed under “General Hematology Training”, attend Electrophoresis signout