I. PROGRAM DESCRIPTION
Hematopathology is a comprehensive discipline involving all aspects of hematology including consultative clinical practice, diagnostic testing, multi-level teaching and an understanding of the principles of biomedical research as applied to hematologic disorders.

Instruction and practical exposure is provided for all aspects of hematologic disorders: lymphoid and myeloid disorders (including lymph node biopsies and bone marrow biopsies including aspirate smear and flow cytometry evaluation), coagulopathies (platelet aggregation studies) and red cell disorders (hemoglobin electrophoresis studies). The program takes advantage of the rich environment in both anatomic and clinical pathology at the Loyola University Medical Center and Cardinal Bernardin Cancer Center with a special emphasis on integrating all aspects of clinical practice, teaching and research with the other academic activities in Pathology and Laboratory Medicine.

II. DURATION
Hematopathology training is covered comprehensively in several rotations. There are 4, 1-month rotations in hematopathology, evenly distributed in PGY I, II, III and IV. In these rotations, the residents are exposed to concurrent experience in flow cytometry, molecular diagnostics, cytogenetics and HLA. The possibility of an additional (optional) 5th month (elective) is present for senior residents.

III. PROGRAM GOAL
The goal of the training program in Hematopathology is to educate the trainee in the broad aspects of laboratory Hematology to enable him/her to practice effectively in a community or academic setting. The overall aim is to introduce the resident to diagnostic techniques and their basic interpretation, as well as general analysis of hematologic disorders. The program fully integrates morphology, immunophenotyping, flow cytometry, cytogenetics, molecular diagnostics in order to provide a complete hematopathology consultation that is maximally useful in both establishing a patient's initial diagnosis/prognosis, and in monitoring the efficacy of therapeutic interventions. The trainee gains hands-on technical experience in all these areas with an emphasis on coordinating the results of different tests.

During the hematopathology rotation, the resident will gain expertise in the essentials of laboratory hematology, bone marrow aspiration / biopsy technique, evaluation and interpretation of bone marrow pathology, lymph node pathology,
and hematopoietic disorders in all organ systems. Additionally, the residents will gain exposure to referral cases from the core lab, which include body fluid and blood smear analysis. Correlation with immunohistochemical, flow cytometric, molecular pathology, cytogenetics and molecular genetic findings are an integral part of the rotations. At the end of the training period, the residents are expected to be able to handle all routine cases.

IV. PROGRAM OBJECTIVES AND CORE COMPETENCIES

1. Patient Care
Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents are expected to:
- Gather essential and accurate information about their patients
- Use all technology to support diagnostic evaluation
- Perform competently all procedures considered essential for the area of practice

2. Medical Knowledge
Residents 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. Residents are expected to:
- Demonstrate an investigatory and analytic thinking approach to clinical situations
- Know and apply the basic and clinically supportive sciences which are appropriate to their discipline

3. Practice-Based Learning and Improvement
Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Residents are expected to:
- Analyze practice experience and perform practice-based improvement activities using a systematic methodology
- Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems
- Obtain and use information about their own population of patients and the larger population from which their patients are drawn
- Apply knowledge of study designs and statistical methods to the appraisal of studies and other information on diagnostic evaluation
- Use information technology to manage information, access on-line medical information; and support their own education
- Facilitate the learning of students and other health care professionals

4. Interpersonal and Communication Skills
Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients' families, and professional associates.

5. Professionalism
Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

6. Systems-Based Practice
Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. Residents are expected to:

- Understand how their patient care 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
- Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
- Practice cost-effective health care and resource allocation that does not compromise quality of care
- Advocate for quality patient care and assist patients in dealing with system complexities
- Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.

V. DUTIES AND RESPONSIBILITIES OF RESIDENTS
During the PGY-I hematopathology rotation, the resident will be expected to learn the basics of hematopathology. The resident will work closely with faculty and fellows and be expected to be an active member of the group. Organization of the daily routine will be as follows:

AM:
Organize and preview the day's bone marrow and lymph node cases. Residents are expected to preview cases, forming an initial written impression and work up plan on the provided worksheets. Pertinent laboratory data, including flow cytometric and cytogenetic information, should be gathered by the resident. Peripheral blood and bone marrow differentials must be performed.

Peripheral blood smears and body fluids referred by the technical staff should be reviewed prior to formal afternoon sign out.
The resident is also responsible for review of hemoglobin electrophoresis, including gathering the clinical and laboratory data, and writing an interpretation of the findings.

**PM:**
Daily sign out with attending staff and/or fellow usually occur in the afternoon at which time the staff discusses the cases already reviewed by the residents in the morning. The discussions will also include utilization of the information obtained from ancillary studies. By attending daily sign out, the resident will become proficient at bone marrow, lymph node, blood smear, and body fluid interpretation.

Flow cytometry sign out. The resident will review the previous days' cases with the attending and fellow. As the resident becomes proficient in interpretation, the resident may independently review cases and form a preliminary written report.

During PGY-II the resident and senior residents will arrange time (for 2 weeks) with senior technical staff to discuss automated hematology analyzers, blood smear and body fluid morphology. Residents are also responsible to arrange bone marrow aspirate/biopsy to work with hematology/oncology staff to learn this procedure and document in the log kept by the residency coordinator.

Residents who are interested in performing or observing bone marrow aspirate/biopsy procedures are encouraged to schedule appropriate time for this with the flow cytometry technical staff. This time should be agreed upon with the attending on service and coordinated with the fellow.

**VI. FACULTY RESPONSIBILITIES**
The program director and faculty are responsible for the general administration of the program and for establishment and maintenance of a stable educational environment. Faculty members must devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities. The faculty must evaluate in timely manner the residents whom they supervise. The faculty must demonstrate a strong interest in the education of residents, demonstrate competence in both clinical care and teaching abilities, support the goals and core competencies of the educational program, and demonstrate a commitment to their own continuing medical education. Faculty must provide residents direct experience in progressive responsibility for patient management.

**VII. QUALITY ASSURANCE**
Residents are required to participate in the QA program in hematopathology. They are involved in setting QA standards and monitoring and reviewing outcomes. Residents are required to participate in all proficiency testing programs.

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VIII. CONFERENCES
Residents are expected to attend regular departmental conferences and, when possible, attend Clinical Hematology conferences (e.g., Lymphoma conference, Grand Rounds). Residents are encouraged to give one CE lecture to the technical staff during their residency. Residents should seek out appropriate cases for AP/CP conferences, CP unknowns and other conferences as appropriate. They also participate at the local/national (IRAP/CAP) and international (USCAP) meeting to present their research papers.

IX. LAB MANAGEMENT SKILLS
Residents are expected to learn laboratory management skills throughout the duration of the residency. Residents are actively involved in the evaluation and implementations of new procedures during the laboratory management rotation. Residents are expected to be an active member during the preparation for a CAP inspection. He/she is integrally involved in the review of the paper work needed for an inspection. If the inspection is not scheduled for a particular year, residents are encouraged to participate to a mock inspection of the laboratory.

X. MATERIALS AVAILABLE
The hematopathology laboratory evaluates approximately 1100 bone marrow and 250 lymph node biopsies per year. In addition, approximately 200 cases are reviewed as a consultation submitted from the surgical pathology service. Ample space is provided for educational purposes. The resident has access to a multi-headed microscope and state-of-the-art computer system in the sign-out room for both clinical and research purposes. A second area is provided in the resident's room. Numerous teaching slide sets, journals and textbooks are available for the residents to read and review.

XI. EXAMINATIONS
The resident-assessment is integral part of our daily sign-out since the fellows on service directly involves with evaluation of hematologic materials submitted for hematopathologists evaluation. Residents interpret the cases; write down their impression and ultimately presents to the attending hematopathologist on service. Their correct evaluation and interpretation of diagnosis as well as use of ancillary techniques is a direct reflection of resident commitment and capacity for learning hematopathology. If any deficiency noted during this practice, residents then review the detailed information about that topic and discussed again the following day. In addition, residents will be assessed by both the in-house RISE and national RISE examinations.

We expect that the residents should be able to provide analytical skills for diagnostic evaluation by providing evidence for use of histologic, cytogenetic, immunohistochemical and molecular biology tools for arrival of diagnosis.

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XII. ELECTIVE ROTATIONS AVAILABLE
A month-long elective is available for residents. They can choose from any AP/CP rotations available in the Department or can utilize elective month for his/her research.