

# **Clinical Cytogenetics Fellowship**

## **Basic Curriculum**

### **1. Clinical and Research Components**

During both the first and second year of training, fellows will participate in the daily diagnostic activities of the Cytogenetics Laboratory including daily cytogenetics intake rounds, bi-monthly laboratory sections meetings, and conferences and seminars which require the fellows' active participation. The first year will focus on completion of clinical rotations in pediatric, adult, cancer and prenatal genetics clinics as well as bench rotations in the cytogenetics laboratory to establish a comprehensive technologic background. The second year focuses on the laboratory rotations in the other laboratory genetic specialties, molecular and biochemical genetics. The second year will also encompass introduction to signing out cases and completion of the 150 case logbook as required by the ABMG.

Fellows are expected to complete a research project during the course of their training. It may be either a clinical or basic science research project. Emphasis is placed on 1) application of the scientific method (stressing the generation and testing of hypotheses, fundamentals of experimental design, statistical analysis and interpretation of results), preparation of written reports of findings for publication, and public presentation of research data at scientific meetings; and 2) gaining experience in current genetic diagnostic techniques.

### **2. Participant's supervisory and patient care responsibilities**

Fellows may supervise medical students, and residents who rotate from other services (e.g., Pathology, Adult and Pediatric Hematology/Oncology, Clinical Genetics). Supervisory responsibilities include oversight of clinical, teaching, and research activities as appropriate for the level of training and experience. All of these activities are ultimately overseen by specific Cytogenetics faculty members.

### **3. Procedural requirements**

During the 2 year training period, each trainee is expected to demonstrate proficiency in pre-analytic review at the time of specimen accessioning and designation of appropriate testing, culture initiation and harvest of all specimen types, slide preparation, various chromosome banding techniques and special stains, cytogenetic microscope analysis, karyotyping including facility with the electronic imaging system, all aspects of the fluorescence in situ hybridization technique (probe preparation, slide preparation, hybridization, fluorescence microscopy, and computer analysis), accurate use of cytogenetic nomenclature as established by international standards for reporting diagnostic patient results, and report generation including appropriate interpretive comments specific to each patient's clinical history.

### **4. Didactic components**

Fellows participate regularly in basic and clinical genetics lecture series, teaching conferences in genetics, and joint conferences involving the Cytogenetics Laboratory faculty and staff and other clinical services involved in the diagnosis and management of patients with genetic disorders. The Cytogenetics faculty conduct a monthly series of didactic lectures that are directed at the trainee level and are intended to include all major areas of clinical cytogenetics and chromosome disorders. Trainees are provided with abundant exposure to clinical settings in which genetic information is integrated into medical consultations with clinicians. These occur in the context of verbal consultation and at interdisciplinary and multidisciplinary conferences. Trainees are

exposed to the role clinical cytogenetics plays in patient care at clinical and research conferences and in the day to day performance of clinical duties that are a regular part of the Cytogenetics service.

### **5. Progression in responsibilities by PGY level**

During their first year of fellowship, trainees are expected to progress from passive observation to taking increasing responsibility for workup of clinical cases. Thus, in their second year of training, Cytogenetics fellows assume greater responsibility for signout of cytogenetic cases (both constitutional and acquired chromosome disorders), presentation at seminars such as Clinical Genetics Grand Rounds, and conducting various conferences with clinical colleagues from other disciplines (all under the supervision of the Cytogenetics faculty). Second year cytogenetics fellows will share responsibility with Cytogenetics faculty for presentations at clinical case conferences in the Departments of Pathology, Adult Hematology/Oncology, Pediatric Hematology/Oncology, Obstetrics and Gynecology and Pediatrics including preparation of images to be presented, presentation of the clinical relevance of the cytogenetic results, implications for clinical protocols, and references.

### **6. Evaluation**

Trainees are evaluated in each of the six ACGME general competencies through ongoing direct observation by supervising faculty, and rating forms completed by faculty at least semiannually, and at the end of training.