CCMG Training Program in Cytogenetics

A. Supervisory Committee

2 cytogeneticists (B. Argiropoulos and J.E. Chernos), 1 clinical geneticist (Mary Ann Thomas) and one cancer cytogeneticist (J. A. van den Berghe)

B. Basic Knowledge Background

Course work will include any relevant advanced human genetics courses (if committee recommends) and informal teaching based on the text *Chromosome Abnormalities and Genetic Counseling* by Gardner and Sutherland. The trainee will attend the Medical Genetics Residents "Core Month", and any other relevant educational activities developed for residents and fellows. The candidate will acquire other basic knowledge through self-study and review of topics with the cytogeneticist. The Bar Harbour course would be a useful adjunct to training, funding permitting.

C. Rounds and Seminars *trainee to attend and participate as appropriate*

Required – Regular:

1. Cytogenetics abnormal weekly case reviews, Fridays 8:30 – 9:30 am
2. Medical Genetics Grand Rounds, once/week, Wednesdays 12:00 – 1:00 pm
3. Cytogenetics journal club, once/month, TBD
4. Clinical Genetics rotating learning activities (journal club, dysmorphology, clinical review, metabolic) Mondays 10:00 – 12:00
5. General Genetics Residents Teaching: Wednesdays 9:30-noon

Optional or while on rotation and when topics are relevant:

1. Developmental /High risk Pregnancy Clinic Review, once/week, Thursdays 08:00-9:00 MFMC – TRW building 2nd floor
2. Lymphoma Tumour Board, once/month, third Tuesday of month, 1130-1230
3. Leukemia Tumour Board, once/month, second Tuesday of month, 11:30-12:30
4. Paediatric Grand Rounds or Developmental Padiatric Rounds- as appropriate, Wednesdays 11 am – noon or 8:30 – 9:30 am
5. Pathology Rounds, once/week, Thursdays 16:30-17:30 (when on Cancer rotation)
6. Residents Review Month – September/October (see above (B))
7. Other special lectures/presentations - ad hoc
8. Clinical Genetics Ward Rounds
9. Genes and Development/Molecular and Medical Genetics Journal Club – Mondays 11:00 – 12:00 HSC G500
10. Genes and Development/Molecular and Medical Genetics – Research in Progress Wednesdays 2:00 – 3:00 HSC G500
11. Telehealth session for Genetics Residents (Nationally) montly – 3rd Friday

D. Professional Meetings and Regional Genetics Meetings (as funding permits)

CCMG AGM and Scientific meeting
American Society of Human Genetics or American College of Medical Genetics/March of Dimes Annual meeting
Great Lakes Chromosome conference – Toronto, third week of May
ACHRI Theme Research Retreat and Research Days
Other relevant meetings as appropriate

E. Research Experience

Undertake a research project during the two years, with the goal of publication upon completion. A detailed proposal will be submitted to the supervisory committee for approval. The project may be done as a horizontal rotation throughout the training or as a dedicated research block, equivalent to 6 months.

F. Laboratory Experience

Under the supervision of the cytogeneticists at each of the sites (J. Chernos, B. Argiropoulos and M.A. Thomas at ACH and F. Rashid-Kolvear and J. A. van den Berghe at CLS) the trainee will become competent in all aspects of culture, staining and interpretation of routinely performed cytogenetic analyses on peripheral blood, amniotic fluid, CVS, tissues, bone marrow and solid tumors. Specific skills to be mastered are outlined in the CCMG Training Guidelines. By the completion of training, a candidate should be capable of analyzing chromosomes from G-banded microscope slides or prints and identifying normal and abnormal chromosomes. A logbook must be kept describing the laboratory protocols and indicating the number of procedures performed and observed.

G. Clinical Experience

The trainee will obtain clinical experience through the Department of Medical Genetics under the supervision of the clinical geneticists. This may include observation during ward rounds, chart and literature reviews, participation in genetic counseling sessions, and attendance at case review sessions. The candidate will also attend group prenatal counseling sessions for patients undergoing the prenatal screening or considering prenatal testing. A minimum of 25 sessions must be documented in the trainee's logbook. While the fellow in training will attend as many clinical/counseling session over the course of a one month block, clinical experience will be gained throughout the two year training program.

H. Management Skills

The trainee will gain experience in all aspects of laboratory management including personnel management, selection of supplies and equipment, budget preparation, laboratory safety procedures (including universal blood precautions) and laboratory record keeping. The trainee will participate in quality assurance and quality control procedures and will review accreditation requirements.

I. Consultative Skills

The trainee will be required to interpret normal and abnormal cytogenetic results (acquired and constitutional) arising in the clinical cytogenetics laboratories at ACH and CLS. The trainee will develop the necessary skills to provide a clear and accurate interpretation of results to referring physicians or patients, both in the written report and orally. Based on the CCMG training guidelines, the trainee will interpret and report a minimum of 200 cases covering a broad range of indications and anomalies. All tissue types should be represented including a nimimum of 30 cases from each of prenatal, tissue, oncology and peripheral blood and all current cytogenetic technologies should be covered. At least 120 cases should be abnormal or illustrative with no more than two cases of each type of abnormality or scenario. A more detailed summary of clinical history, cytogenetic procedures and literature review will be prepared for a minimum of 50 patients (10 cancer and 40 constitutional). The trainee will see all the abnormal results that are reported by the two labs in the 2-year training period.

J. Teaching Skills

The trainee will present at departmental rounds once or twice during their training and will participate in clinical review, journal clubs and laboratory continuing education sessions. The trainee will also assist in teaching of medical students and other students rotating through the labs.

K. Rotations

Mandatory rotations in the Cancer Cytogenetics laboratory under Dr. Janette van den Berghe / Dr F. Rashid-Kolvear (3 months) and the Molecular Diagnostics Laboratory under Dr. Jillian Parboosingh (3 months).
Elective rotations in other areas, such as biochemical genetics, hematopathology or clinical genetics specialties may be undertaken to broaden the trainee's experience. Elective rotations may be taken in other centers.

L. Evaluation and Committee Meetings

Regular evaluation and verbal feedback will be provided during the core cytogenetic training (laboratory techniques interpretive skills and teaching). Trainees will carry out an analysis on all external quality assurance (CAP/ACMG) specimens received (sample permitting for wet specimens) for evaluation of bench-work and analysis skills. The trainee will be formally evaluated at six-month intervals or at the end of each rotation, by the person responsible for supervising the candidate. A verbal review of his or her progress will be given at the mid-point of each rotation. An In Training Evaluation form will be completed at the end of the rotation or 6-month period.
The Local Fellowship Training Committee will review the candidate's progress and In Training Evaluations at quarterly meetings.

M. CCMG Examinations

May - Written examinations: general genetics - multiple choice; cytogenetics - essay
Fall - Practical/Oral examination: cytogenetics subspecialty