

Institution: Centre for Bone and Periodontal Research
 Program: Training Program in Skeletal Health Research
 Course: Skeletal Training Course
 Duration: 10 weeks
 Start Date: July 31, 2006
 End Date: Oct 8, 2006

SCHEDULE

Week	Topic	Lecturers
1. July 31	Structure and Development of Skeletal System - Cells - Membraneous Bone - Endochondral Bone - Tooth Structure and Development - Joint Structure and Development - Histology and Histomorphometry	Dr. B. St. Jacques ▪ Anna Mourskaia
2. Aug 7	Pre-Clinical Models in Mineral Tissue Research - Genetic-based (transgenic and knockouts) - Cell-Based (In vitro) - Surgical	Dr. R. St. Arnaud Dr. R. Hamdy ▪ Sophia Cheon
3. Aug 14	Non-invasive Methods to Assess Skeletal Function - X-rays, scans, DEXA, CT, MRI	Dr. A. Papaioannou Dr. C. Webber ▪ Annie Doan ▪ Xiaoming (Jason) Xie
4. Aug 21	Clinical and Population Health Research - Clinical Trials - Epidemiology	Dr. S. Morin ▪ Hassanali Vatanparast
5. Aug 28	Mineral Homeostasis and Non-Osteoporotic Metabolic Bone Disease - Paget's Hyperparathyroidism, Rickets/OM, Renal - osteodystrophy	Dr. D. Goltzman ▪ William Addison
6. Sept 4	Osteoporosis	Dr. S. Morin Dr. G. Duque ▪ Kareen Letellier
7. Sept 11	Periodontal Disease	Dr. S. Komarova ▪ Diana Trebec
8. Sept 18	Cancer and Bone	Dr. P. Siegel ▪ Kristina Szabo ▪ Jiarong Li
9. Sept 25	Disorders of Joints	Dr. J. DiBattista ▪ Houda Jallal
10. Oct 2	Tissue Engineering, Biomaterials, Biomechanics	Dr. J. Henderson Dr. C. Hoemann Dr. A. Hacking ▪ Damien LeNihouannen ▪ Ziyad Haidar

COURSE INTRODUCTION:

Chronic skeletal diseases cost the taxpayer upward of \$4 billion in direct healthcare costs and \$17 billion in indirect costs and are projected to rise with the “graying” of the population. Furthermore, important pediatric genetic bone diseases are also being researched and great strides have been made in therapy to improve the quality of life and longevity of afflicted children. Consequently children with these disorders are now capable of living well into adult life. To help prevent the rising costs in the health care system, innovative approaches to prevent and treat these disorders are needed and this requires research. The Skeletal Training program aims to prepare the next generation of researchers who will contribute to reducing the burden of skeletal disease. In addition, it will stimulate the development of strategic partnerships between future investigators in the field of musculoskeletal research with emphasis in translational research and application of knowledge in patients and communities.

COURSE GOAL:

To develop core knowledge and understanding of the principles of skeletal biology and the main laboratory and population-based approaches to assessing alterations of skeletal biology leading to disease. The course should facilitate translation of the mechanisms of basic skeletal biology and animal physiology to disease of the skeleton.

LEARNING OUTCOMES:

- To provide trans-disciplinary skeletal health training to trainees
- To expose trainees to mentors whose research expertise extends from molecular biology to population health
- To develop trans-disciplinary skills to address complex questions related to skeletal health research that will be in demand by academic institutions and the private sector alike.
- To develop course design skills

EXPECTATIONS

Trainees are expected to gain basic course design skills. Trainees are also expected to gain basic knowledge in each of the following 10 skeletal areas:

- Structure and Development of Skeletal System
- Pre-Clinical Models in Mineral Tissue Research
- Non-invasive Methods to Assess Skeletal Function
- Clinical and Population Health Research
- Non-osteoporotic Metabolic Bone Disease
- Osteoporosis
- Periodontal Disease
- Cancer and Bone
- Disorders of Joints
- Tissue Engineering, Biomaterials, Biomechanics

GENERAL STRUCTURE OF THE COURSE

The Skeletal Training Course is composed of ten (10) units. Each unit addresses one of the skeletal training disciplines treated in the course. In each unit, the trainee will read and article/background text, take a pre-test, watch a Flash lecture presentation, complete a post-test and interact with other trainees on the bulletin board during the week.

Each student will be responsible for completing one (1) unit per week for ten (10) weeks. Unit weeks run from Monday to Sunday. Each unit must be completed by the Sunday of that week (by midnight). No student will be allowed to advance to the next unit without completing the previous unit.

Step 1: Background Article

For each unit there is a background text that the trainee must read before completing any other aspect of that week's unit. The background article serves to equalize basic knowledge in each discipline among the trainees. After reading the background article, the trainee may proceed to the next step.

Step 2: Pre-Test

Each trainee must complete a 5-question pre-test before watching the Flash lecture presentation.

Step 3: Flash Lecture Presentation

Each lecture consists of a 30-minute flash presentation. Trainees may watch the presentation as many times as they wish before proceeding to the next step. For each lecture, there is a PDF of the PowerPoint presentation that you will be able to download, print and use to take notes.

Step 4: Post-Test

Each trainee must complete a 10-question post-test after watching the Flash lecture presentation.

Step 5: Bulletin Board Interaction

During the week, each trainee is expected to interact with the other trainees about the material of the current unit. Additionally, the mentor and trainee responsible for developing that week's unit must set aside time each day to interact with the other trainees. In order to stimulate interaction, that unit's mentor/trainee should prepare three (3) discussion questions and post them on the bulletin board at the beginning of the week. Trainees should use those questions as a starting point to engage in reflective discussion on that week's subject matter.

ASSESSMENT

Assessment for this course will consist of:

- (1) Pre/Post Test
- (2) Mentoring

(1) PRE/POST TESTS

Each lecture is preceded by a pre-test and followed by a post-test. All tests are multiple choice. The tests serve to gauge the knowledge transferred to the student as well as the student's grasp on the subject matter before and after watching the lecture.

(2) MENTORING

Mentoring will be accomplished in two ways:

- (1) Course development: During the course development phase, each trainee will be guided by the mentor in creating course content for 1 unit week. Both mentors and trainees will be responsible for creating content, with the primary responsibility for creating the presentation resting with the trainee. The mentor is expected to impart to the trainee the principles behind creating course content and the trainee is expected to use that guidance to familiarize him/herself with creating a course.
- (2) Bulletin board interaction: Trainees will pose questions and demonstrate knowledge about that week's content on the bulletin board. Mentors will interact with students about the subject matter.

FINAL SURVEY

In order to receive credit for having completed the course, each trainee must complete the final survey. The final survey will gauge the effectiveness of different elements of the course as well as evaluate how well the course has been received by trainees. This information is vital to measuring the impact of the course from a research and training standpoint, providing opportunities to improve the course for future participants. The feedback report will be circulated to trainees, who have been involved in creating course content. Thus, this final survey feedback will also help trainees assess the success of their lectures and improve their course design skills for the future. Therefore, completing the final survey is a mandatory component of the course.