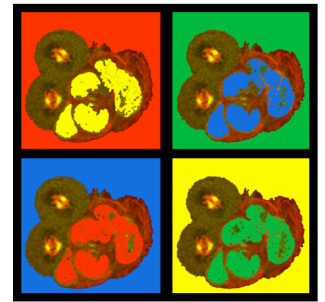


**2007 Frontiers in Human Embryonic Stem Cells
Advanced Training Course
October 22-27: MBL – Woods Hole, MA**



Program Organizers

Gerald P Schatten, PhD
Pittsburgh Development Center

Roger Pedersen, PhD
University of Cambridge

Organizing Committee: Christopher Navara, PhD; Calvin Simerly, PhD;
Diane Carlisle, PhD; Ahmi Ben-Yehudah, PhD; Maya Mitalipova, PhD;
Carrie Redinger, MS; David McFarland, BS; Jody Mich-Basso, BS; Stacie Oliver, BS;
Virginia Penascino, BS

Lectures may be audited [space-permitting], but please allow for priority seating by the course participants and faculty.

Unless otherwise noted, all meals are at Swope.

LAB MODULE A: Propagation, Passaging, and Characterization of Human Embryonic Stem Cells

Monday, October 22, 2007

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|----------------|--|
| 7:00-8:00 AM | Breakfast |
| 8:00-8:30 AM | Welcome and Introduction: Course Objectives and Schedule
Gerald Schatten |
| 8:30-10:00 AM | Lecture: “hESC Propagation, Characterization and Quality Control”
Christopher Navara |
| 10:00-10:30 AM | Coffee Break |
| 10:30-12:00 PM | Lab Introduction: “Biosafety, Regulatory Restrictions, hESC MTAs, and Team Assignments”
Christopher Navara & Maya Mitalipova |
| 12:00-1:15 PM | Lunch |
| 1:30 PM | Lab: During this lab students will learn to identify healthy undifferentiated hESC colonies, manual passaging of colonies, feeder cell isolation and preparation and feeder free culture. We will discuss the relative merits and indications for the different methods of propagation. The students will also learn the basic techniques of stem cell characterization. Immunocytochemistry for Oct-4, SSEA-4, Tra-1-60, |

Tra-1-81 and alkaline phosphatase. All Immunocytochemistry will be analyzed by laser scanning fluorescent confocal microscopy.

6:00-6:45 PM	Dinner
7:00-8:00 PM	Lecture: “NIH Stem Cell Programs” Tony Beck
8:00-9:00 PM	Lecture: “hESC Derivations and Culture” Maya Mitalipova
9:00 PM	Course Participant Presentations & Stem Cell Career Mentoring. <i>(Strict 15 minute, 5 PowerPoint slide maximum!)</i>

Tuesday, October 23, 2007

7:00-8:00 AM	Breakfast
8:00-9:30 AM	Lecture: “Nuclear Reprogramming and Pluripotency” Gerald Schatten
9:30-10:00 AM	Coffee Break
10:00-11:00 AM	Lecture: “Genomic Imprinting in hESC” Peter Rugg-Gunn
11:15-12:00 PM	Lab Introduction: “Nuclear Transfer and Chimera Formation” Calvin Simerly
12:00-12:45 PM	Lunch
1:00 PM	Lab: In this laboratory the students will learn some of the techniques of micromanipulation associated with embryonic stem cell research. We will enucleate bovine oocytes as used during somatic cell nuclear transfer and we will make both aggregation and injection chimeras using mouse embryonic stem cells and mouse embryos. We will also finish the necessary immunocytochemistry from Day 1.
5:00-6:00 PM	Lecture: “Real-time PCR for Cell Biologists” Mary Baltazar
6:00-6:45 PM	Dinner
7:00 PM	Lecture: “National hESC Stem Cell Bank”

Sue Carlson

8:00 PM Course Participant Presentations & Stem Cell Career Mentoring.

LAB MODULE B: Differentiation, in vitro and in vivo, germ, hematopoietic stem cells

Wednesday, October 24, 2007

7:00-8:00 AM Breakfast

8:00-10:00 AM **Lecture:** “Intra and Interspecific Chimeras for Assaying Stem Cell Potentials”
Calvin Simerly

10:00-10:30 AM Coffee Break

10:30-12:00 PM **Lab Introduction:** Chris Navara, Louie Kerr, and Rudy Rottenfusser

12:00-1:15 PM Lunch

1:30 PM **Lab:** In this lab students will learn the steps and considerations for performing high resolution, advanced imaging of hESC’s. We will discuss laser scanning confocal microscopy, multiphoton microscopy for live cell imaging of hESC’s and scanning electron microscopy of pluripotent and differentiated cells. We will also discuss the differentiation of hESC’s into neural progenitors and neural precursors.

6:00-6:45 PM Dinner

7:00 PM **Lecture:** “Islets Differentiated from Human Embryonic Stem Cells”
Douglas Melton: *Pioneer in Stem Cell Research*

8:30 PM Course Participant Presentations & Stem Cell Career Mentoring.

Thursday, October 25, 2007

7:00-8:00 AM Breakfast

8:00-10:00 AM **Lecture:** “Neuroprogenitor Stem Cells”
Lorenz Studer

10:00-10:30 AM	Coffee Break
10:30-12:00 PM	Lab Intro: Ahmi Ben-Yehudah and Naftali Kaminski
12:00-1:15 PM	Lunch
1:30 PM	Lab: In this lab students will learn some of the techniques for bioinformatics and molecular biology of hESC's. Students will analyze data sets for statistical significance and pathway formation. We will also isolate RNA and prepare cDNA for several different samples followed by real-time PCR and analysis.
6:00-6:45 PM	Dinner
7:00 PM	Lecture: "Embryonic Stem Cell Bioinformatics" Naftali Kaminski
8:00 PM	Course Participant Presentations & Stem Cell Career Mentoring.

Friday, October 26, 2007

8:00-9:00 AM	Breakfast
9:00-10:30 AM	Lecture: "Hematopoietic Stem Cells" Elias Zambidis
12:00-12:45 PM	Lunch
1:00 PM	Lab Introduction: Elias Zambidis and Carlos Castro
1:45 PM	Lab: In this laboratory students will learn the steps of differentiation of hematopoietic stem cells from hESC's and also learn the techniques for analysis of teratomas to test for pluripotency.

PIONEER IN STEM CELL RESEARCH AWARDS

4:00 PM	Lecture: "Fostering Human Embryonic Stem Research by the National Institutes of Health" James Battey
Banquet dinner	Participant Awards: Gerald Schatten and Christopher Navara

8:30 PM **Lecture:** Rudolph Jaenisch

Saturday, October 27, 2007

7:00-8:00 AM Breakfast

9:00-Noon Complete Laboratory projects; Mentoring