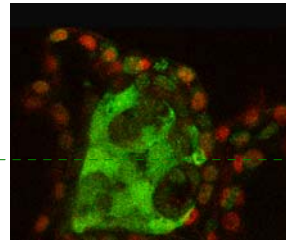


**Frontiers in Stem Cells and Regeneration  
Advanced Training Course  
October 2-7, 2011 • MBL • Woods Hole, MA**

**Course Directors:**

Gerald P Schatten, PhD  
Pittsburgh Development Center

Ken Muneoka, PhD  
Tulane University



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**Organizing Committee:** Alexa Bely, PhD; Diane Carlisle, PhD; [Cheng-Ming Chuong](#), Charles Easley, PhD; William Jeffery, PhD; Malcolm Maden, PhD; Maya Mitalipova, PhD; Kyle Orwig, PhD; In-Hyun Park, Ph.D.; Jan Pruszek, PhD; Jerry Shay, Ph.D.

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*All lectures are in Loeb G70 (south), unless otherwise specified. Lab exercises are held in Loeb 306, and vicinity labs.*

*Meals are in the Swope dining room, 2<sup>nd</sup> floor; Lunch n' Learn sessions are in the Swope Private Dining Room adjacent to the servery area. Coffee breaks will be served in the Loeb 3rd floor Lobby.*

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### Sunday, Oct 2

5:30 PM Dinner, Café Swope (first floor)

6:30 PM Welcome and Introductions  
**Lecture:** Challenges in Stem Cells and Regeneration  
Gerald Schatten, U. Pittsburgh

7:30 PM **Lecture:** [Physiological regeneration: An Ectodermal Organ Paradigm](#)  
[Cheng-Ming Chuong, USC](#)

8:30 PM Biosafety, Regulatory Restrictions, MOUs, and Team Assignments  
Diane Carlisle, U. Pittsburgh

[9:00PM](#) Stem cell translational/regulatory considerations; Kevin Whittlesey, Ph.D.; California Institute for Regenerative Medicine

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### Monday, Oct 3

8:30 AM **Lecture:** Overview of Regeneration/Regenerative Medicine  
Ken Muneoka, Tulane U.

9:30 AM Coffee Break

10:00 AM **Lecture:** Epigenetic changes in hES/iPS cells due to in vitro culture conditions  
Maya Mitalipova, MIT

11:00 AM **Lab Introductions:** David Gardiner – Salamander Ectopic Limb Regeneration  
Charles Easley, Carrie Redinger, Diane Carlisle – ESC basics and in vitro differentiation

Noon Lunch

1:00 PM **Lab 1:** *Instructors: Maya Mitalipova, Charles Easley, Cal Simerly; TAs: Carrie Redinger.* During this lab students will learn to identify healthy undifferentiated PSC colonies, passaging of colonies, and culture techniques. We will also be doing in vitro differentiation of PSC, as well as examining pluripotency assays.

**Lab 2:** *Instructor: David Gardiner; TA: Jason Lee.* Regeneration in Salamanders: induction of ectopic limb regeneration

6:00 PM Dinner

7:00 PM **Pioneer in Regeneration Award**  
Professor David Gardiner – UC-Irvine

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**Tuesday, Oct 4**

8:30 AM **Lecture:** Regeneration in the Urochordate *Ciona intestinalis*  
William Jeffery, U. Maryland

9:30 AM Coffee Break

10:00 AM **Lecture:** Induced Pluripotency  
In-Hyun Park, Yale U.

11:00 AM **Lab Introductions:** In-Hyun Park-iPS; William Jeffery-Ciona Regeneration

Noon Optional Commercial Lunch and Learn  
Feeder Free Pluripotent Stem Cell Maintenance and Differentiation  
Karam Takhar, STEMCELL Technologies; Charles Easley, U. Pittsburgh

1:00 PM **Lab 1:** *Instructor: In-Hyun Park; TAs: Eriona Hysolii, Carrie Redinger, Charles Easley.* iPS  
**Lab 2:** *Instructor: William Jeffery; TA: Spela Goricki.* Ciona Regeneration. We will study oral siphon regeneration in Ciona. Students will perform siphon amputations and assess the course of regeneration of pigmented ocelli.  
**Lab Prep:** *Instructor: Eran Meshorer; TA: Alva Biran.* Transfection and RA treatment of cells for tomorrow's laboratory.

6:00 PM Dinner

7:00 PM **Lecture:** NICHD and Stem Cell Research  
Stuart Moss, NICHD/NIH

8:00 PM Career Mentoring  
Participants and Faculty

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**Wednesday, Oct 5**

8:30 AM **Lecture:** Chromatin Plasticity in Embryonic Stem Cells  
Eran Meshorer, Hebrew U. of Jerusalem

9:30 AM	Coffee Break
10:00 AM	<b>Lab Introductions:</b> Kyle Orwig – Germ Cell isolation and transplantation; Eran Meshorer – Chromatin Plasticity
11:00 AM	<b>Lab 1:</b> <i>Instructor: Kyle Orwig; TAs: Meena Sukhwani, Chih-Cheng Lin, Kathrin Gassei</i> <b>Lab 2:</b> <i>Instructor: Eran Meshorer; TA: Alva Biran</i>
Noon	Optional Commercial Lunch and Learn: ICC and ChIP Alison Becker, Cell Signaling
1:00 PM	<b>Continuation of Labs</b>
6:00 PM	Dinner
8:00 PM	<a href="#">Lecture: Germ Stem Cells</a> <a href="#">Kyle Orwig</a>

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Introductions with Five Minute  
Research Overview

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### Thursday, Oct 6

8:30 AM	<b>Lecture:</b> Evolution of Regenerative Ability Alexa Bely, U. Maryland
9:30 AM	Coffee break
10:00 AM	<b>Lecture:</b> Neural Regeneration with Pluripotent Stem Cells Jan Pruszak, Harvard U
11:00 AM	<b>Lab Introductions:</b> Alexa Bely – Regeneration; Jan Pruszak – Neural stem cells
Noon	Lunch
1:00 PM	<b>Lab 1:</b> <i>Instructors: Alexa Bely; TA: Ed Zattara.</i> This lab will focus on head regeneration in annelid worms. Students will set-up and carry out time-lapse imaging of head regeneration, perform amputations on anesthetized animals, and observe the main stages of regeneration in annelids. <b>Lab 2:</b> <i>Instructor: Jan Pruszak; TA: Carrie Redinger.</i> In this laboratory, trainees will learn the techniques for isolating specific PSC-derived subsets of therapeutic and scientific relevance using flow cytometry.
6:00 PM	Banquet, Café Swope
7:30 PM	Awards and Closing
8:00 PM	<b>Pioneer in Stem Cells Award Lecture</b> <b>George Q Daley</b>

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**Friday, Oct 7**

- 8:30 AM            **Lecture:** Retinoic Acid and Stem Cells  
Malcolm Maden, U. Florida
- 9:30 AM            Coffee Break
- 10:00 AM           **Lecture:** Cancer Stem Cells; Role of somatic stem cells in Regenerative Medicine  
Jerry Shay, U. Texas Southwestern Medical Center
- 11:00 AM           **Lab Introductions:** Chas Easley – Continuing in vitro differentiation  
David Gardiner – Continuing salamander regeneration
- Noon                Lunch
- 1:00 PM            **Workshop Lectures:**  
2:00 PM            **Lab 1:** *Instructor: Ken Muneoka.* Murine Digital Regeneration  
**Lab 2:** *Instructor: David Gardiner; TA: Jason Lee.* Observe blastema formation on  
regenerating salamanders from Monday's lab.
- 6:30 PM            [Course Participant Five Minute Research Overviews](#)

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Ken Muneoka and David  
Gardiner

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**Saturday, Oct 8**

Check out of rooms before 10:00 AM