Cold Spring Harbor Laboratory
MEETINGS & COURSES PROGRAM

Cell & Developmental Biology of *Xenopus*: Gene Discovery & Disease
April 12 - 25, 2023   Applications Due: January 31

Instructors

Chenbei Chang, University of Alabama at Birmingham

Lance Davidson, University of Pittsburgh

Lecturers

Engin Deniz, Yale School of Medicine

Hironori Funabiki, The Rockefeller University

Douglas Houston, University of Iowa

Mustafa Khokha, Yale University

Rachel Miller, UTHealth Houston, McGovern Medical School

Anne-Helene Monsoro-Burq, Curie, France

Leon Peskin, Harvard University

Asako Shindo, Kumamoto University, Japan

Sarah Woolner, University of Manchester

Natalya Zahn, University of Vermont

Xenopus is increasingly being used as imaging test-bed to investigate the roles of cytoskeleton and intracellular trafficking in cell biological and morphogenetic contexts. The course maintains stock mRNAs for targeting fluorescent proteins to specific structures for studying cell shape and cytoskeletal dynamics but students are encouraged to bring or suggest additional tools, including fluorescent biosensors, tension-sensors, etc. The power of *Xenopus* can be leveraged when live-cell fluorescence imaging is combined with microsurgery, grafting, and dissociated cell culture.

Approaches covered will include microinjection and molecular manipulations such as CRISPR/Cas9 knockouts, antisense morpholino-based depletions, transgenics, and mRNA overexpression. In addition, students can combine these techniques with explant and transplant methods to simplify or test tissue level interactions.

Additional methods include mRNA in situ hybridization and protein immunohistochemistry as well as basic bioinformatic techniques for gene comparison and functional analysis. Biochemical approaches such as proteomics and mass spectrometry and biomechanical concepts will also be discussed.

Finally, to visualize subcellular and intercellular activities, we will introduce a variety of sample preparation and imaging methods including time-lapse, fluorescent imaging, optical coherence tomography and confocal microscopy. These are facilitated by state-of-the-art equipment from Nikon, Leica, Thorlabs, and Bruker.

For funding opportunities and additional course information, please go to: **meetings.cshl.edu/xeno**