Searching for new fungal model systems in the ocean

Amy Gladfelter, UNC Chapel Hill, MBL Fellow, with Christine Field and Lorna Mitchison Field
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Imaging and DNA Barcoding the Marine Life of Woods Hole

Joe DeGiorgis
Lillie 109, Library 402
508.292.4605
jdegiorg@providence.edu
Glial cell modulation of neuronal activity in the retina / nervous system

* Background control
Evolution of Genetic Novelty in Stress Resistance

Trypanithione Synthase-Admidase in Bdelloids Rotifers

David Mark Welch
Lillie 319

Trypanothione

GSH + $\leftrightarrow$ GSH + GSH

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Morphogenesis of a Cell
Fred Chang  UC San Francisco

How do molecules and cellular mechanical properties specify cell shape and size?

Probing physical properties of the cytoplasm – micro-rheology, cell squishing

Arthur Molines, Joel Lemiere, Catherine Tan
with Liam Holt, Amy Gladfelter, Gohta Goshima, Morgan Delarue and labs
How does body shape and stiffness affect swimming performance in fishes?

Fluid-structure interaction and flow visualization

- Pomoxis nigromaculatus (Crappie)
- Ambloplites rupestris (Rock bass)
- Micropterus salmoides (Largemouth bass)
- Lepomis macrochirus (Bluegill sunfish)
- Lepomis gibbosus (Pumpkinseed)

volumetric flow visualization
computational fluid dynamics

Eric Tytell
Rowe 301
eric.tytell@tufts.edu
Toward four-dimensional molecular orientation imaging

Patrick La Riviere, University of Chicago

with Talon Chandler (Uchicago), Hari Shroff, Min Guo (NIH), Rudolf Oldenbourg (MBL)

Goal: To capture a dynamic series of three-dimensional volumes of fluorescent molecules reporting both the position AND orientation of target molecules of interest (e.g., actin).

We have added polarization filters to the excitation channels of a diSPIM dual-view light-sheet microscope. It captures four polarization-sensitive stacks from each of two orthogonal directions. Physics and math implemented on a computer gives us this: spatially resolved images of major molecular orientation in each voxel.
HyperSpectral Imaging of camouflage
seeing color in the visual world of multiple predators

Roger Hanlon
MRC 215
rhanlon@mbl.edu

Field + lab; 350-650nm range; acquire natl light images

Some prelim results:
Tetra- can see more color than trichromat
*in some cases, tri- can see more than tetrachromat
Clouds, time of day, depth affect who sees color best
REMINDER: baby step- measuring retina only; no perception
there is a huge amount yet to learn about color perception

Collaborators:
C.C. Chiao
Stephanie Palmer
Derya Akkaynak
How different body shapes are generated during deuterotome evolution?

What is the contribution of regulatory regions to evolution?

Epigenomics: ChIP-seq, ATAC-seq

3D Chromatin structure: 4C-seq, HiChiP, HiC

Functional studies in zebrafish/medaka/Xenopus
Pierre Gönczy
Whitman fellow, Lillie 104
pierre.gonczy@epfl.ch

Swiss Federal Institute of Technology
Lausanne, Switzerland (EPFL)

@MBL: Centriole elimination
Nils Kalbfuss and Marie Pierron

Asymmetric division

C. elegans embryo

Centriole assembly
Animal-Fluid Interactions

Use of high-speed imaging and fluid analysis to quantify how animals function in fluid environments

Sean Colin, scolin@rwu.edu
Rowe 301
Cell Geometry
Organelle size and cellular morphogenesis

Wallace Marshall
3rd floor Loeb bldg
Wallace.ucsfc@gmail.com
Understanding sex change in marine snails: leveraging ecotoxicology to identify developmental mechanisms

Maryna Lesoway
Whitman Early Career Researcher
FRQNT Postdoctoral Fellow
University of Illinois
Rowe 205/Loeb 257A
mlesoway@illinois.edu

Crepidula, the slipper limpet

Vasa:mCherry

CRISPR/Cas9 Knock-in

tributyltin (TBT)

C. fornicata
C. plana
C. convexa
**α-Synuclein Affects Synaptic Viability by Disturbing Synaptic Vesicle Endocytosis**

Normal Brain  
PD's Brain  

*Karina Vargas, PhD  
Morgan lab, Rowe 408*  

**Metal binding sites**

**Lewy Body**

**vGlut-pHluorin**  
Wild type neuron (18div)  

**AP180**  
FCHO, Eps15  

**AP2, Clathrin, Epsin**  

**Amphiphisin**  

**Dynamin**  
**PI4P**  

**Normal Brain**  
**PD's Brain**  

**α-Synuclein**  

**Karina Vargas, PhD**  
Morgan lab, Rowe 408