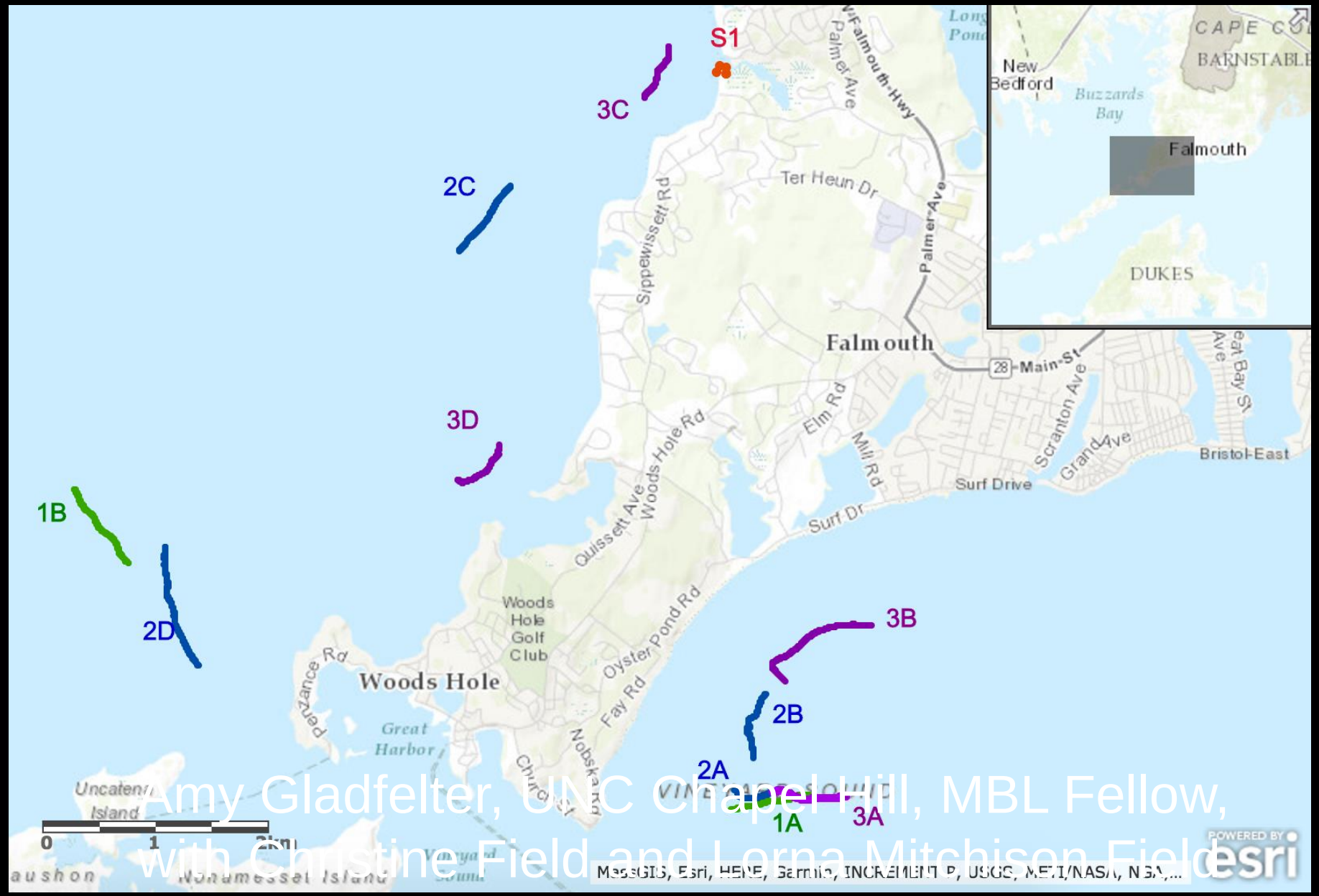
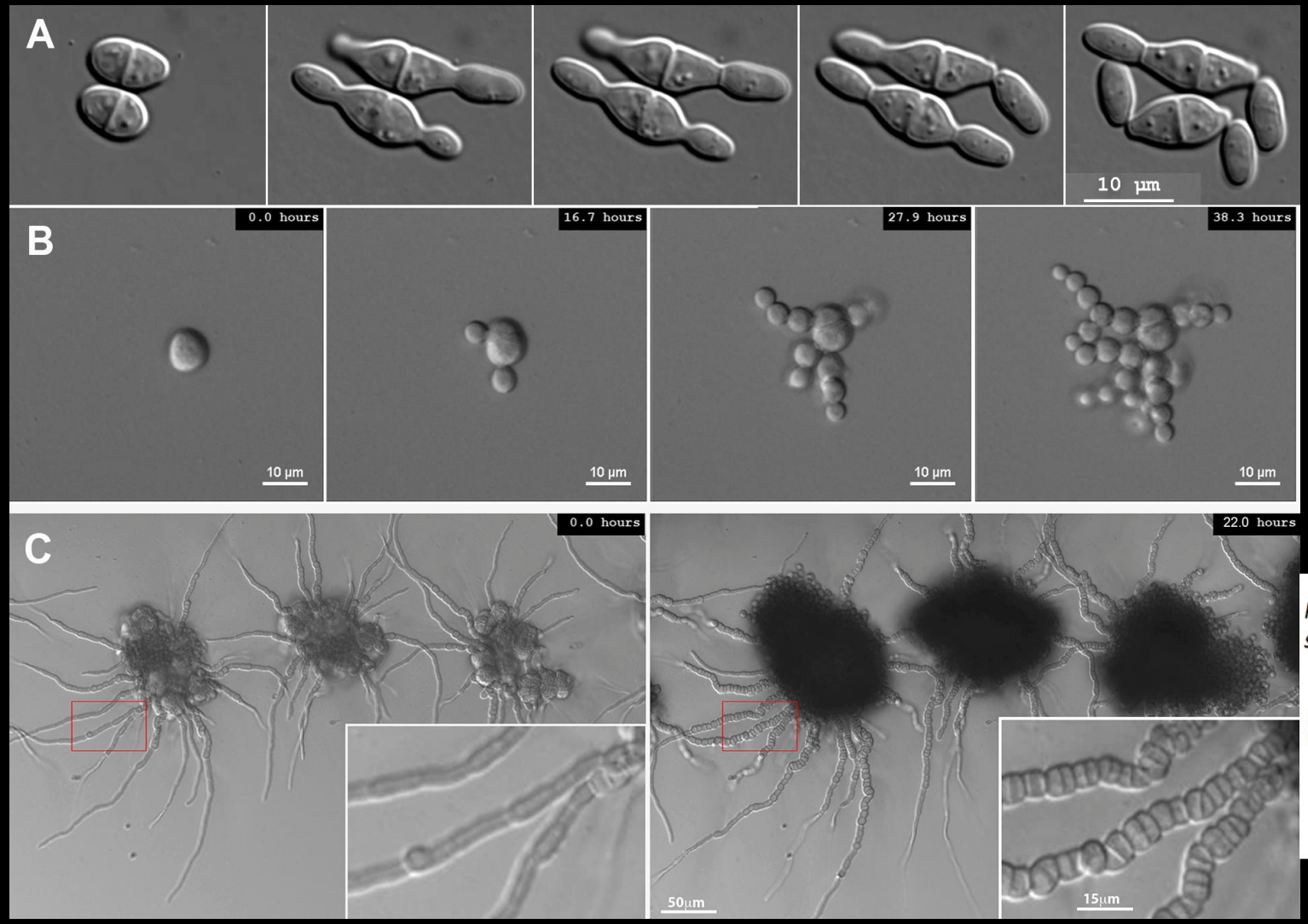
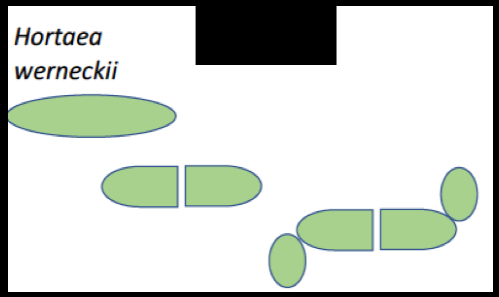
Searching for new fungal model systems in the ocean

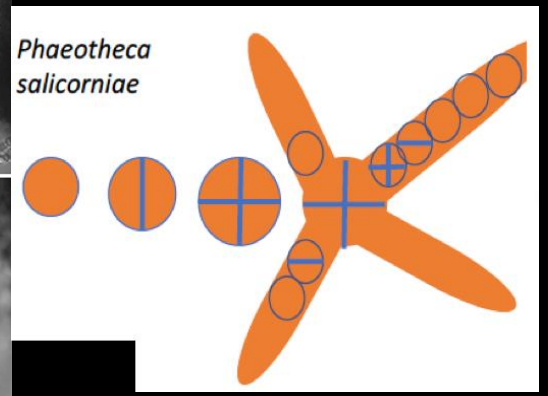


Amy Gladfelter, UNC Chapel Hill, MBL Fellow,
with Christine Field and Lorna Mitchison Field

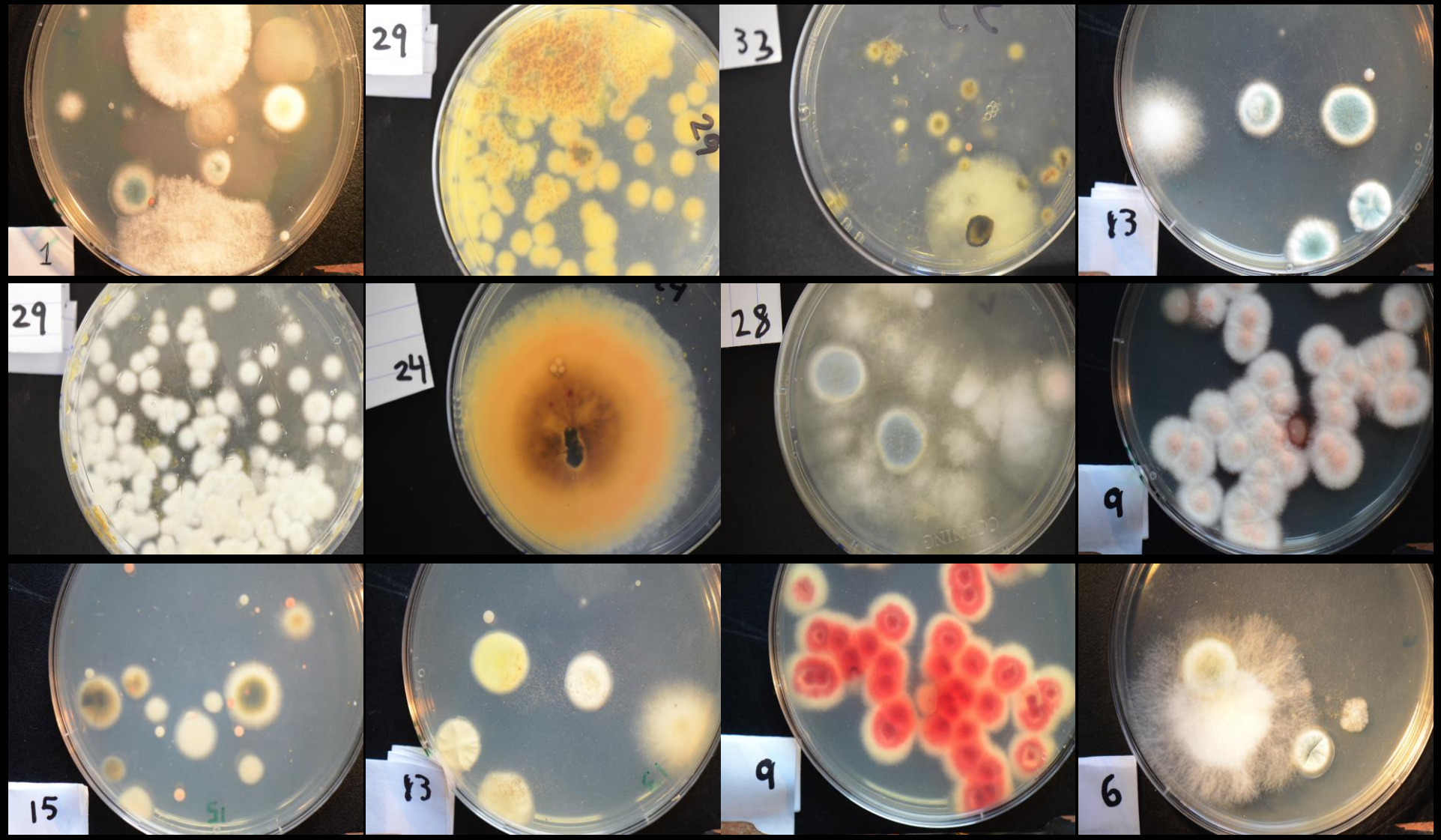
Searching for new fungal model systems in the ocean





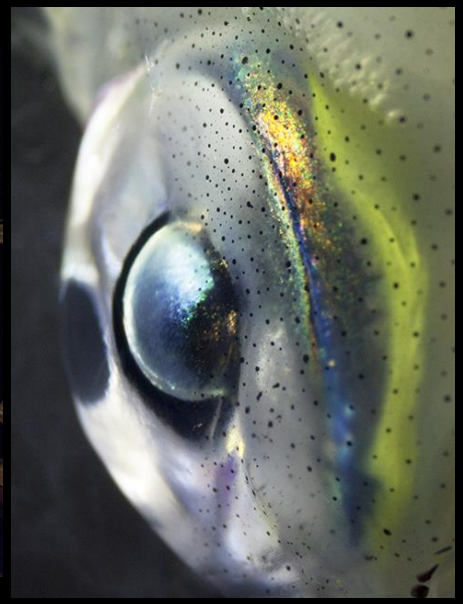


Searching for new fungal model systems in the ocean



Amy Gladfelter, UNC Chapel Hill, MBL Fellow,
with Christine Field and Lorna Mitchison Field

Imaging and DNA Barcoding the Marine Life of Woods Hole

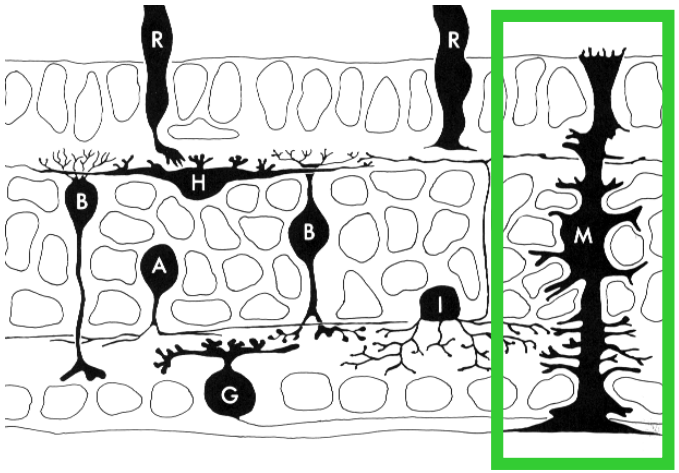


Flash

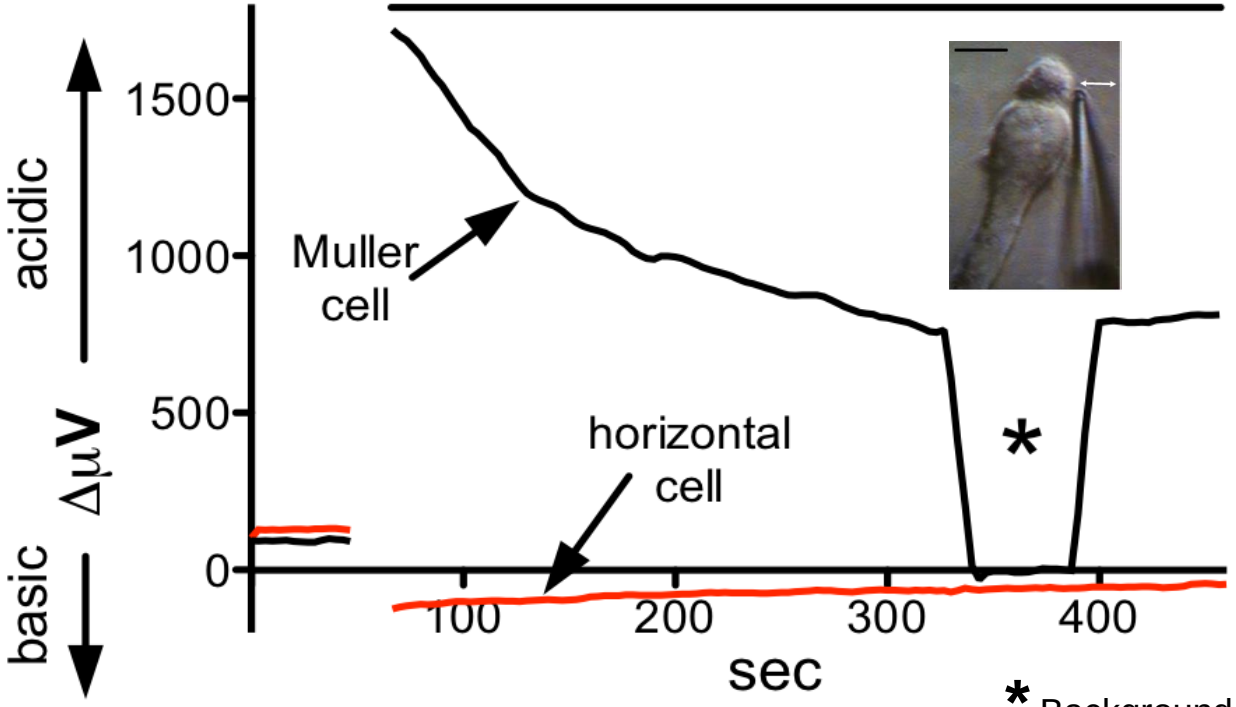
Talks MBL 2018

Joe DeGiorgis
Lillie 109, Library 402
508.292.4605
jdegiorg@providence.edu

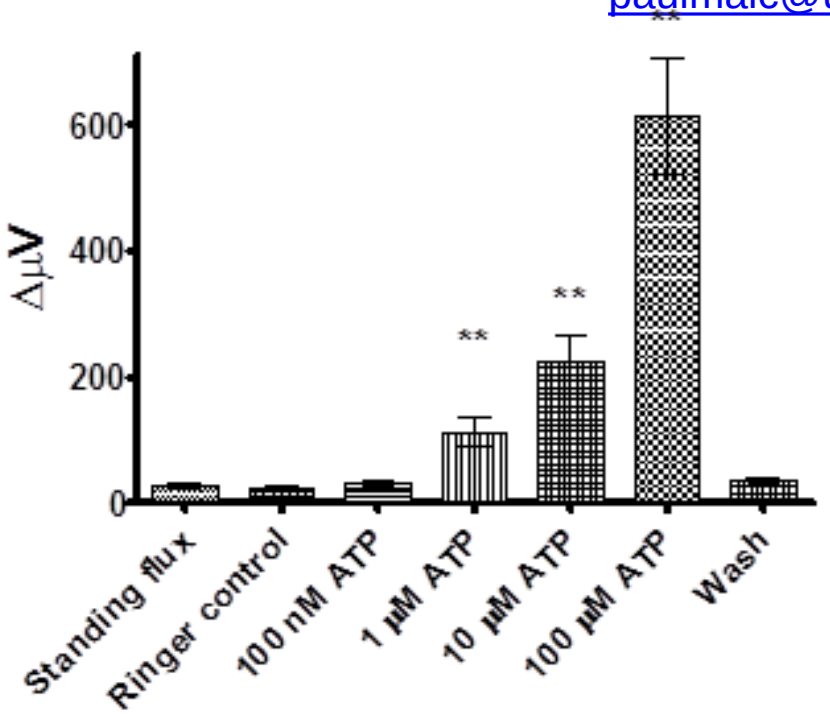
Glial cell modulation of neuronal activity in the retina / nervous system



Robert Paul Malchow
Rowe 205
paulmalc@uic.edu

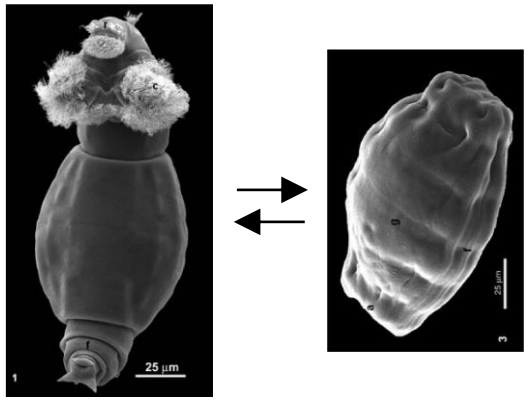


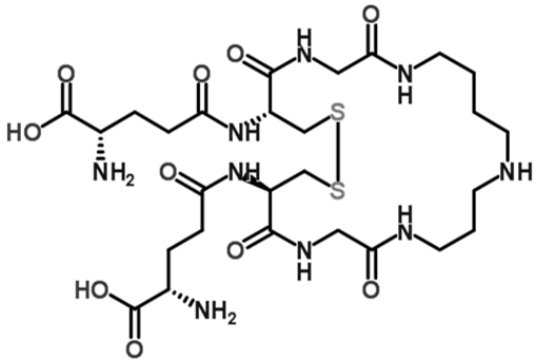
* Background control



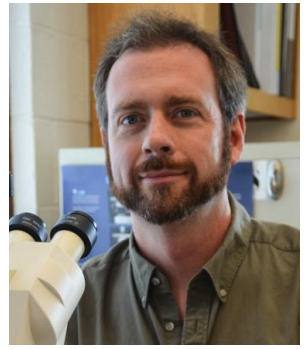
Evolution of Genetic Novelty in Stress Resistance

Trypanithione Synthase-Admidase in Bdelloids Rotifers

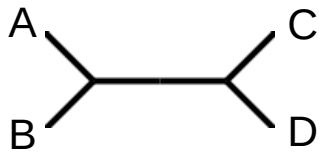


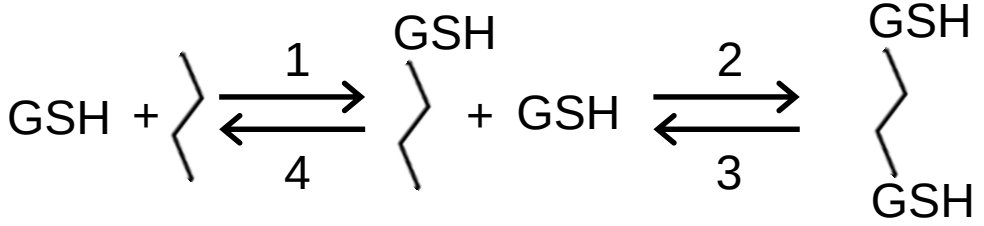


Trypanothione

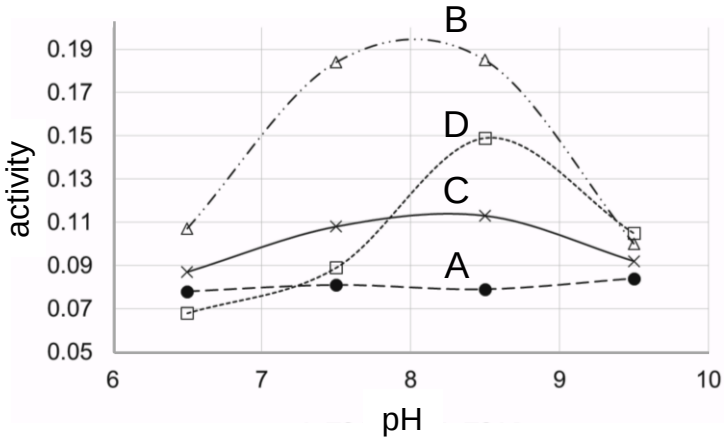


David Mark Welch
Lillie 319





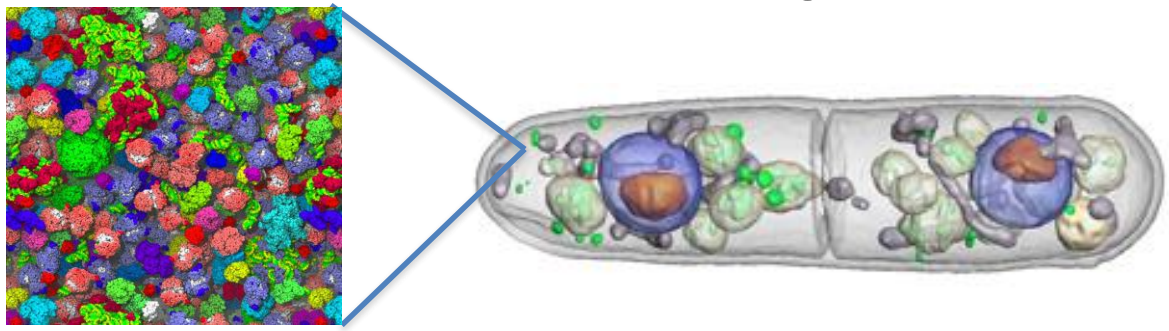
GSH → → $T[SH]_2$



	Reaction				DE	
	1	2	3	4	Ent	Rec
A			✓			↑
B	✓	✓	✓	✓		↓
C	✓		✓		↑	↑
D	✓	✓	✓		↓	

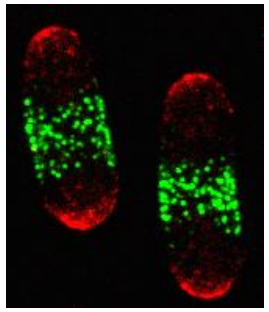
Morphogenesis of a Cell

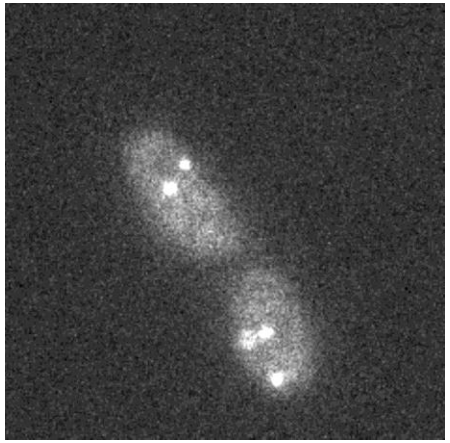
Fred Chang UC San Francisco



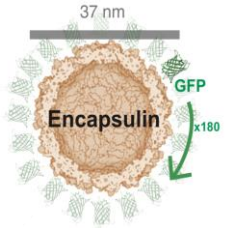
Fred Chang
Whitman Investigator
223 Lillie
fred.chang@ucsf.edu

fission yeast
S. pombe

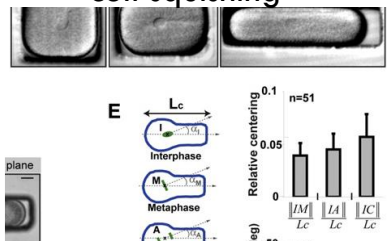




GEMS



cell squishing



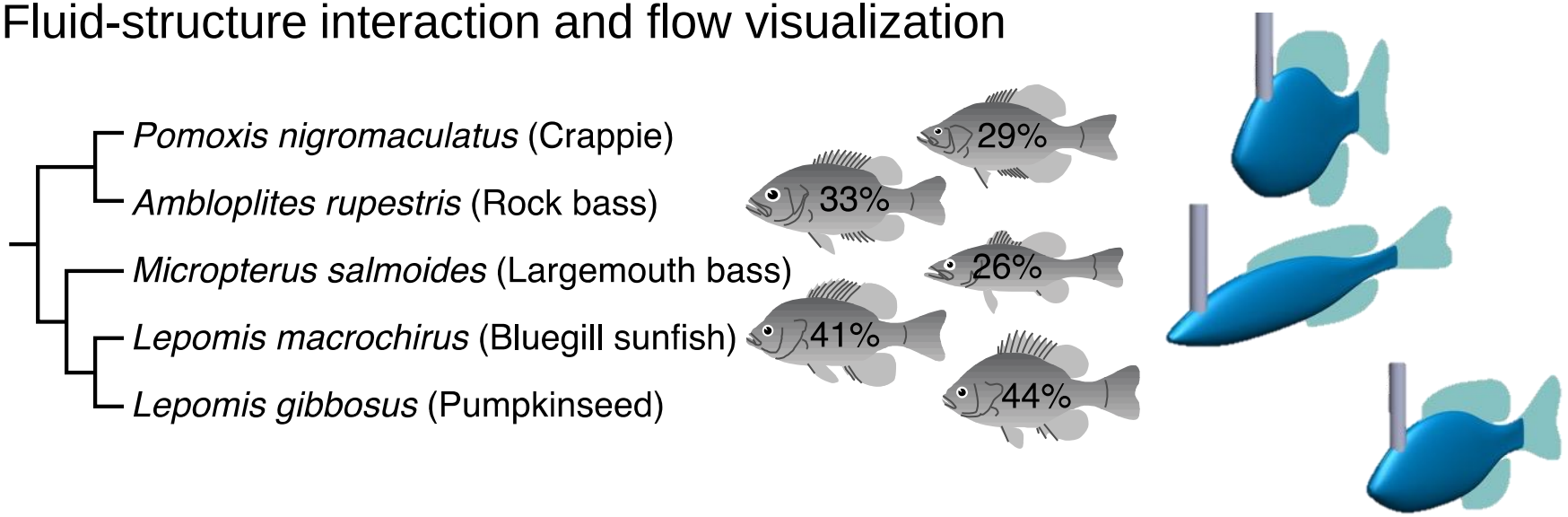
How do molecules and cellular mechanical properties specify cell shape and size?

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

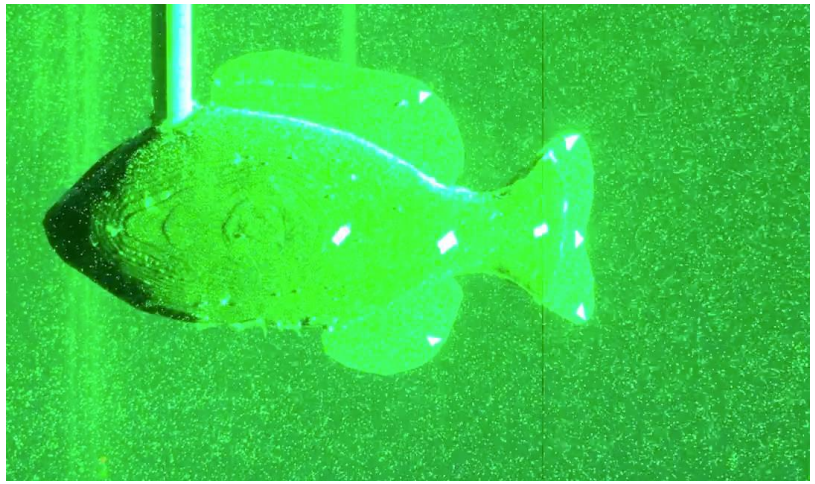
Arthur Molines, Joel Lemiere, Catherine Tan
with Liam Holt, Amy Gladfelter, Gohta Goshima, Morgan Delarue and labs

How does body shape and stiffness affect swimming performance in fishes?

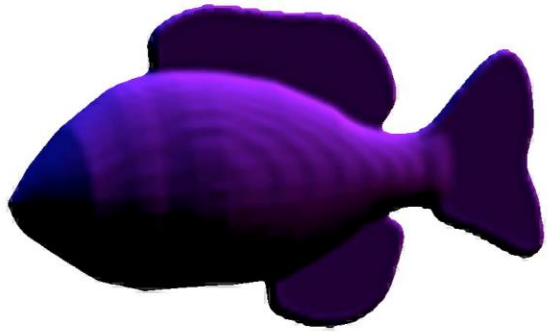
Fluid-structure interaction and flow visualization



volumetric flow visualization



computational fluid dynamics



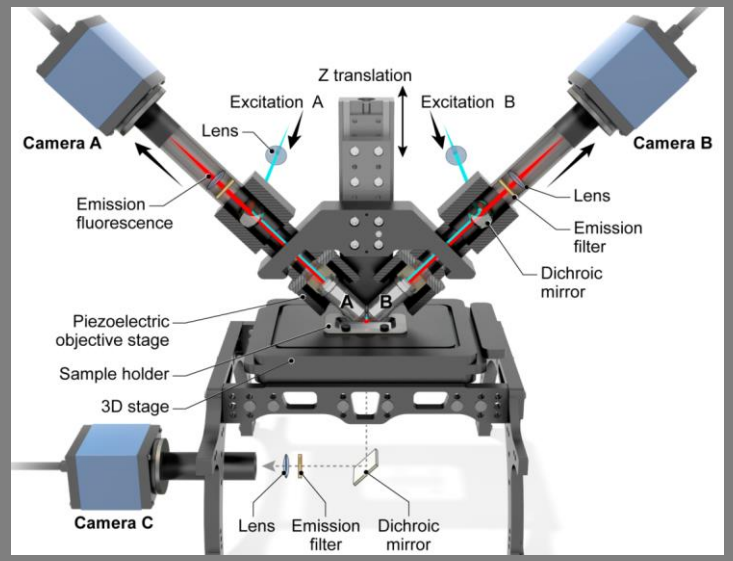
Eric Tytell
Rowe 301
eric.tytell@tufts.edu

Toward four-dimensional molecular orientation imaging

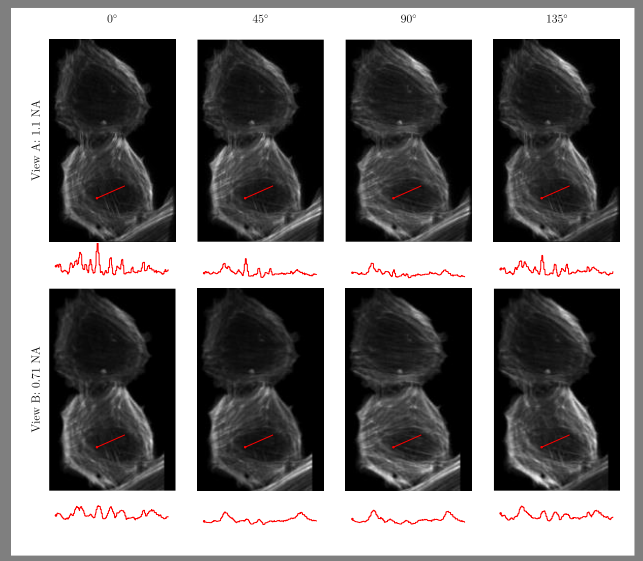
Patrick La Riviere, University of Chicago

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

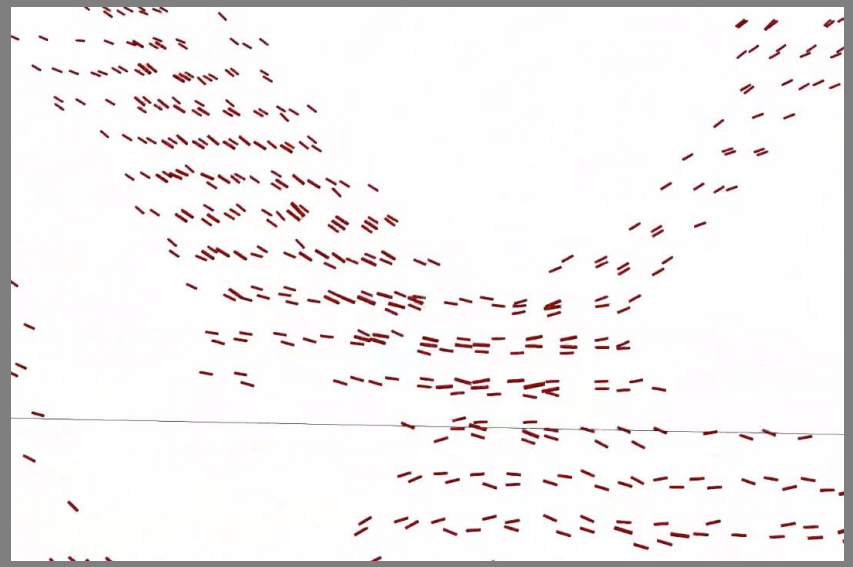
Goal: To capture a dynamic series of three-dimensional volumes of fluorescent molecules reporting both the position AND orientation of target molecules of interest (eg, actin).



We have added polarization filters to the excitation channels of a diSPIM dual-view light-sheet microscope



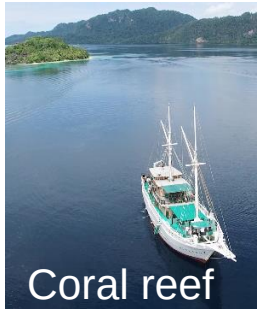
It captures four polarization-sensitive stacks from each of two orthogonal directions.

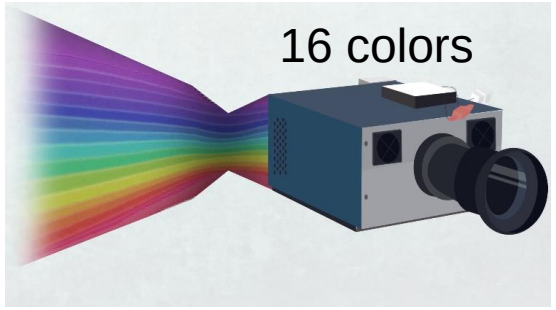


Physics and math implemented on a computer gives us this: spatially resolved images of major molecular orientation in each voxel.

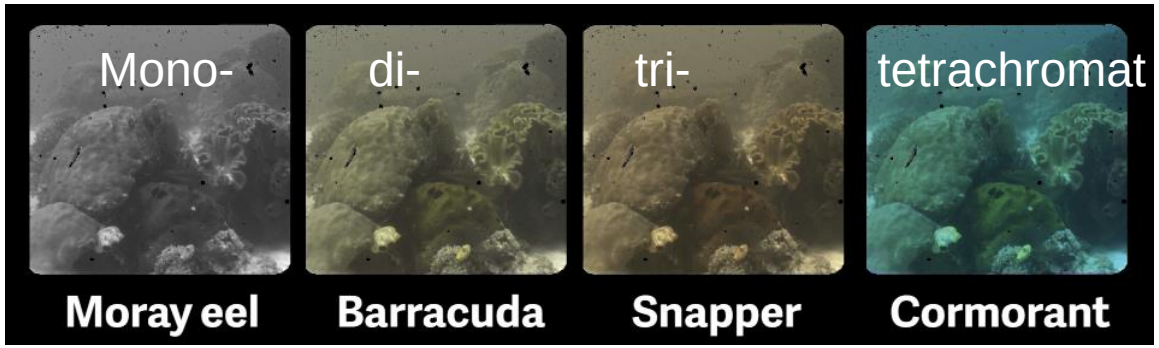
HyperSpectral Imaging of camouflage

seeing color in the visual world of multiple predators





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

Roger Hanlon
MRC 215
rhanlon@mbl.edu

Collaborators:
C.C. Chiao
Stephanie Palmer
Derya Akkaynak

José Luis Gomez-Skarmeta, CABD (Seville, Spain), jlgomska@upo, Rowe 420

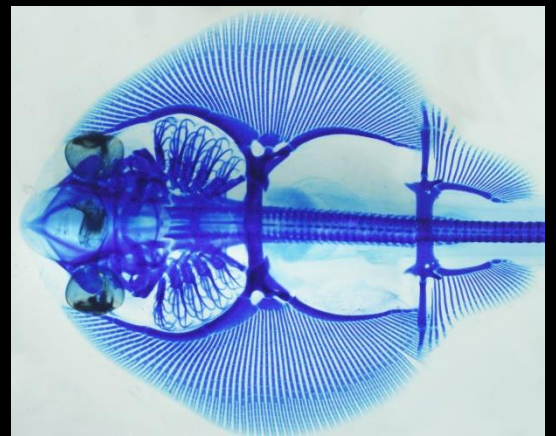
How different body shapes are generated during deuterotome evolution?

What is the contribution of regulatory regions to evolution?

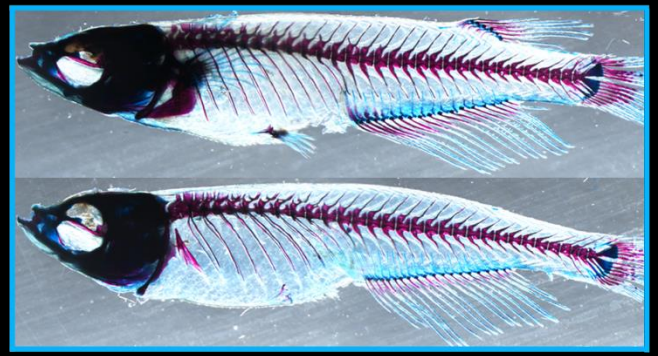
Epigenomics: ChIP-seq, ATACseq

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

Functional studies in zebrafish/medaka/Xenopus



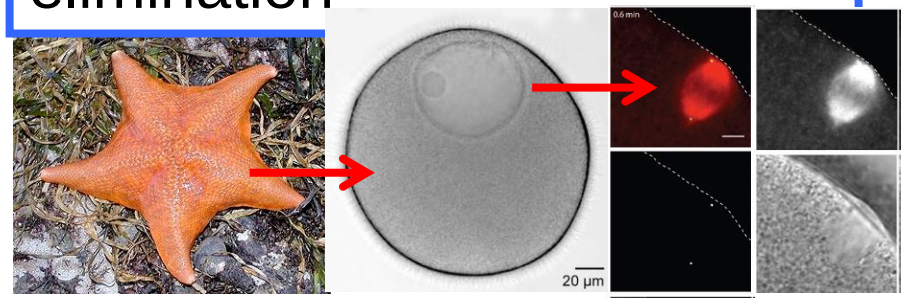
nature genetics



Pierre Gönczy
Whitman fellow, Lillie 104
pierre.gonczy@epfl.ch

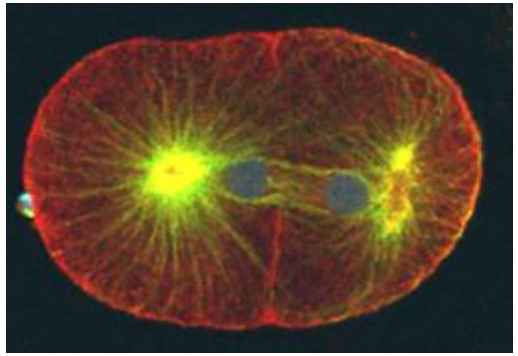
Swiss Federal Institute of Technology
Lausanne, Switzerland (EPFL)

@MBL: Centriole elimination



Nils Kalbfuss and Marie Pierron

Asymmetric division

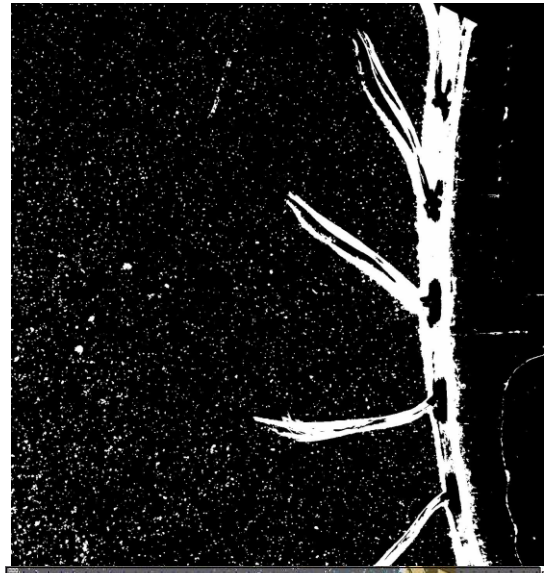


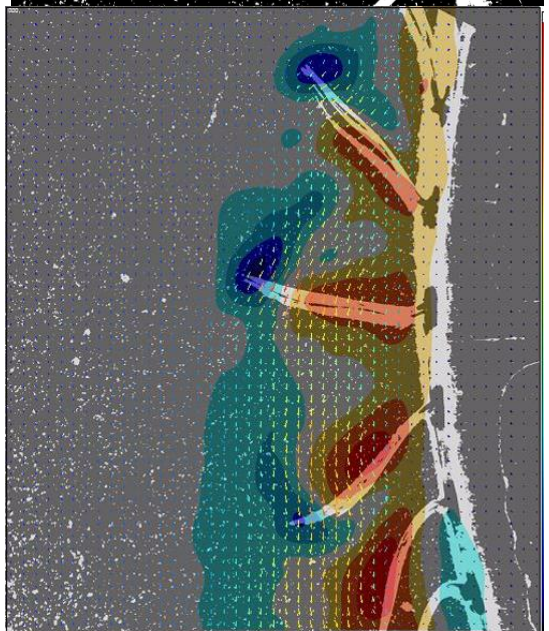
C. elegans embryo

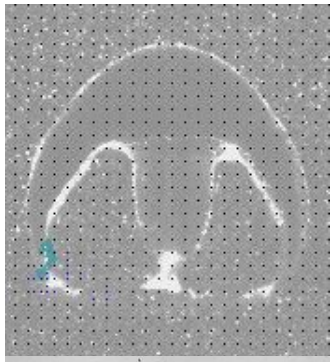
Centriole assembly

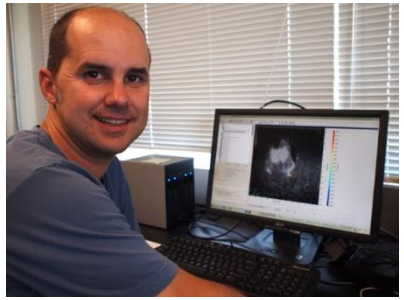
Animal-Fluid Interactions

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



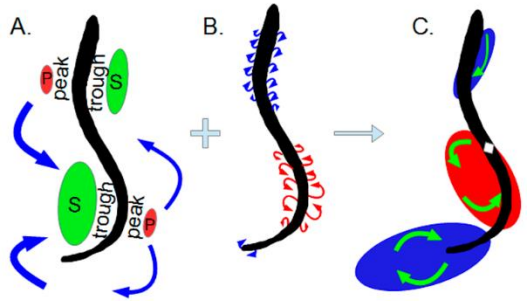


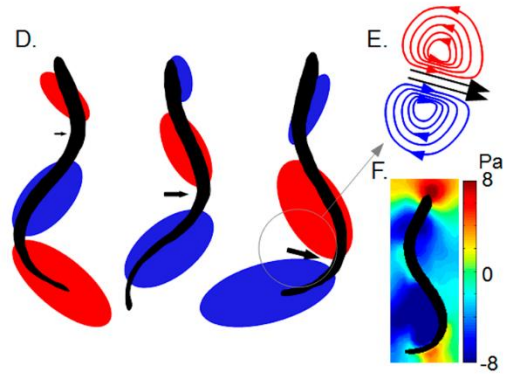


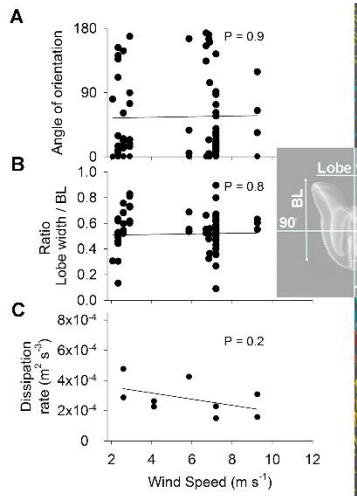


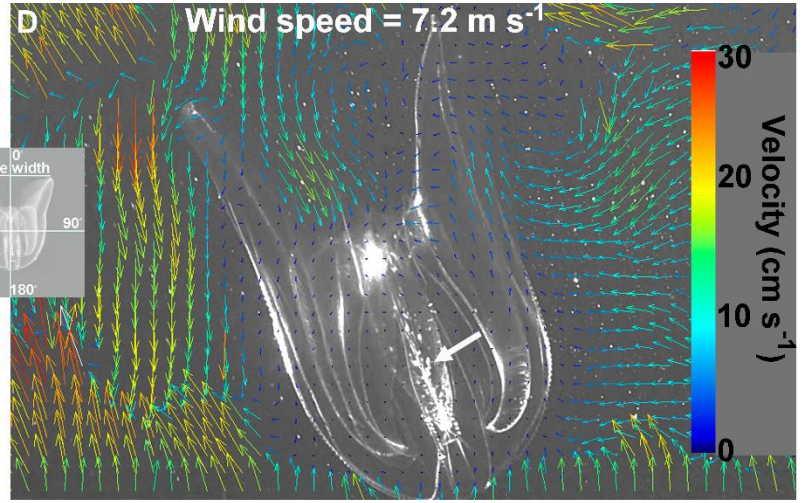
Sean Colin,
scolin@rwu.edu

Rowe 301



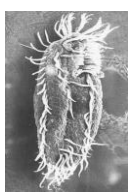




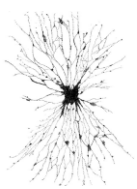


Cell Geometry

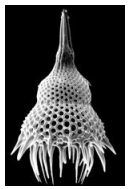
Organelle size and cellular morphogenesis



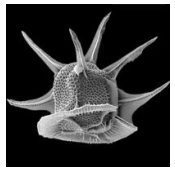
ciliate



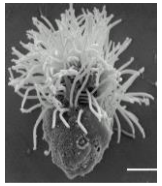
reticulomyxa



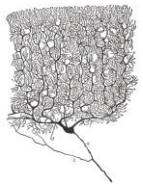
radiolarian



dinoflagellate

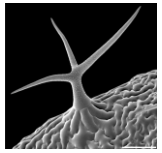


airway ciliated epithelial cell

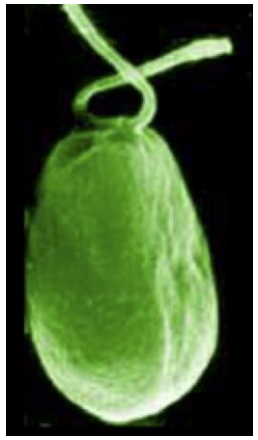


Purkinje neuron

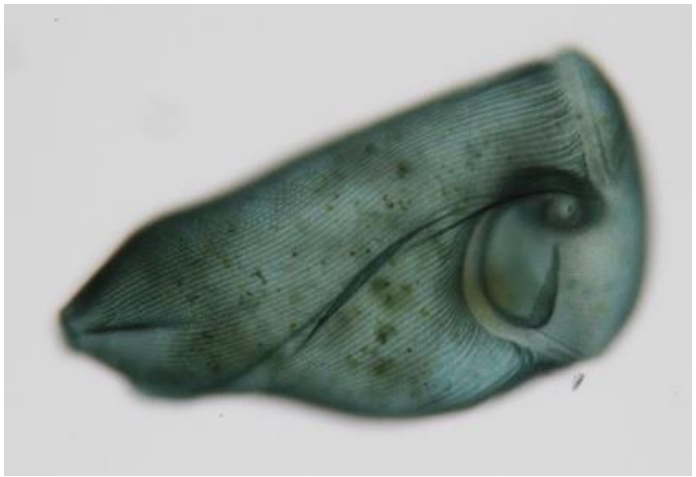
hair cell

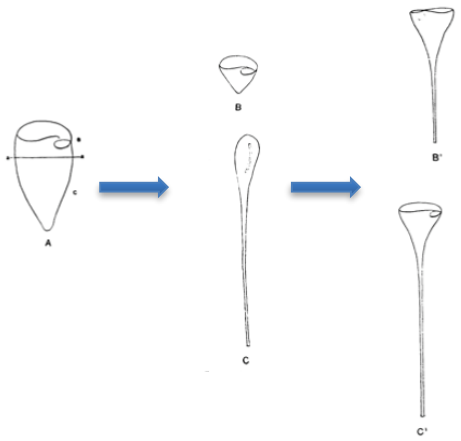


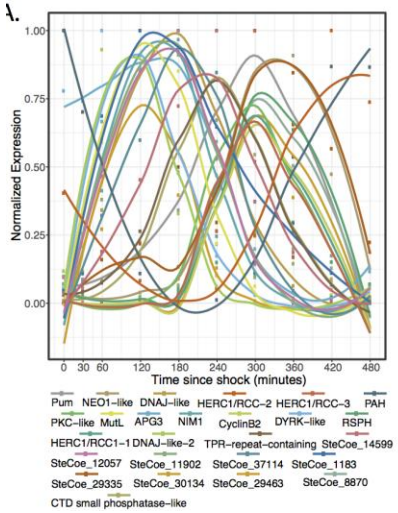
trichome



Wallace Marshall
3rd floor Loeb bldg
Wallace.ucsf@gmail.com

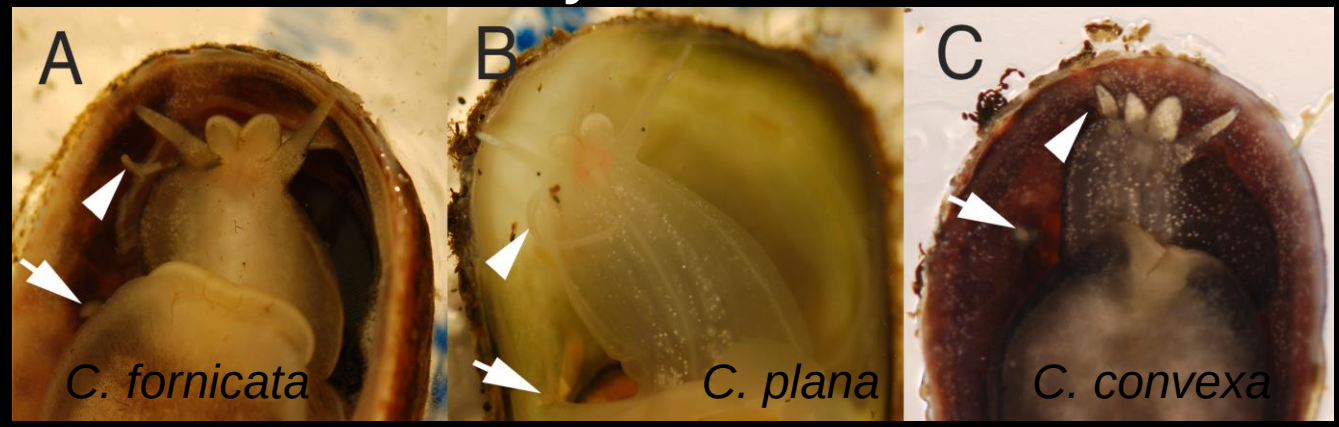


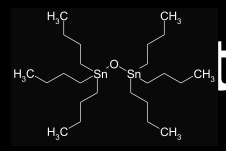




Understanding sex change in marine snails:
leveraging ecotoxicology to identify developmental mechanisms

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



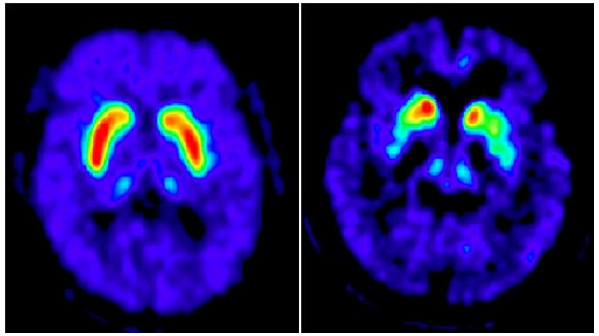


tributyltin (TBT)

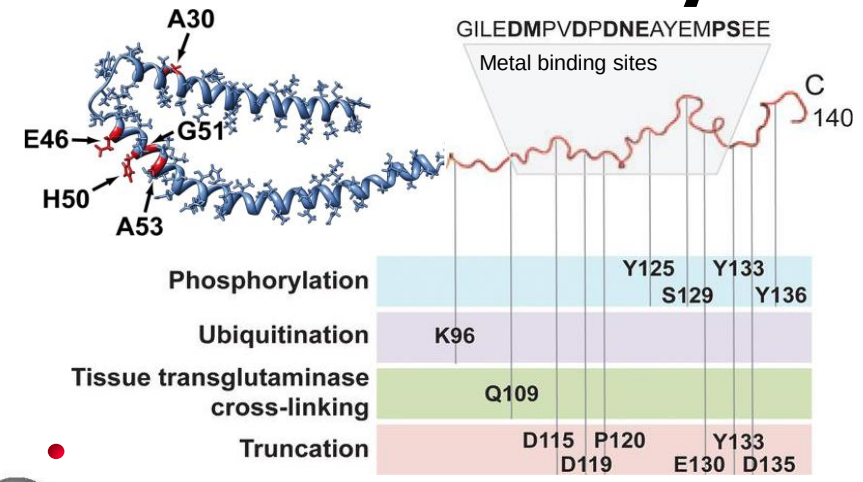
CRISPR/Cas9 Knock-in
Vasa:mCherry

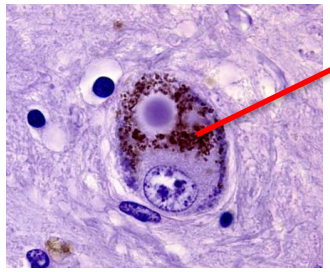
α-Synuclein Affects Synaptic Viability by Disturbing Synaptic Vesicle Endocytosis

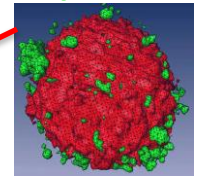
Karina Vargas, PhD
Morgan lab, Rowe 408



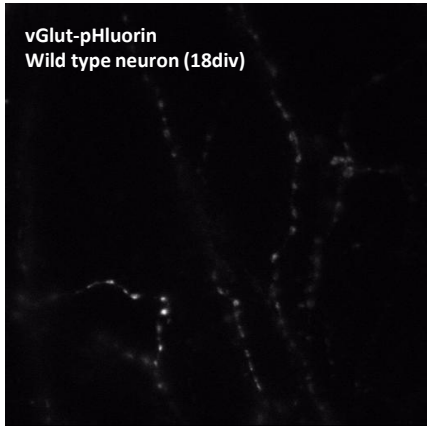
Normal Brain PD's Brain

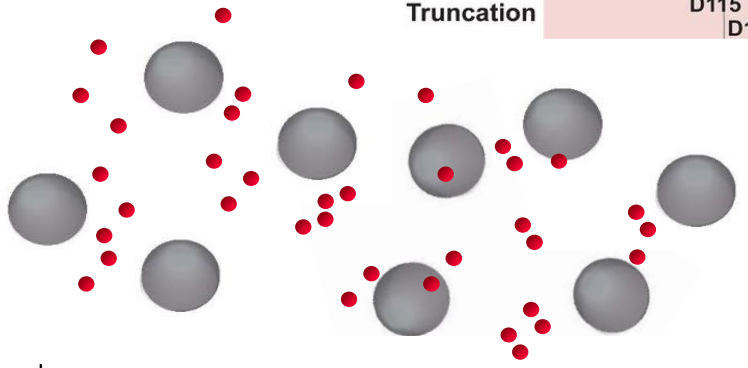






Lewy Body





mouse α-Synuclein