

Cell Morphology determines How Light-Interactive Organs Evolved

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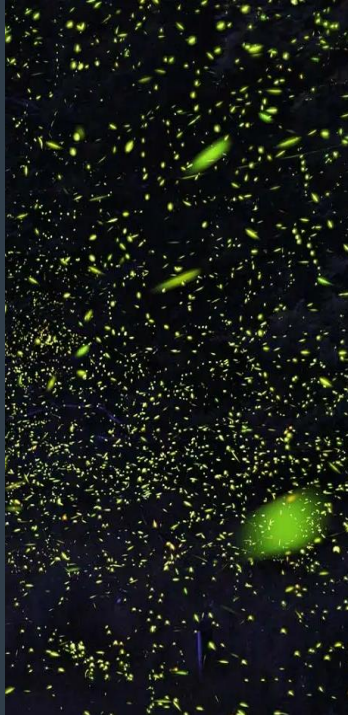
Complex traits and their evolution is still unknown

HUMAN



Celeste Myatoz

FIREFLY



s58y

MILLIPEDE



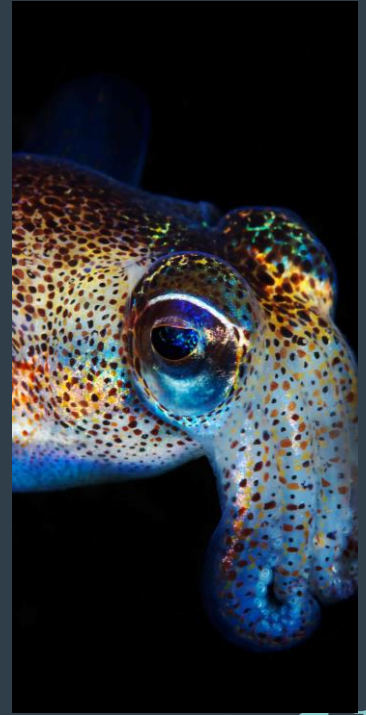
Eden, Janine and
Jim / Flickr

ANGLERFISH



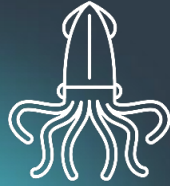
David Shale

SQUID



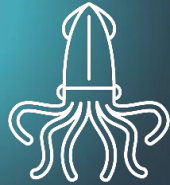
VCG

Not all Cephalopods share light-emitting traits

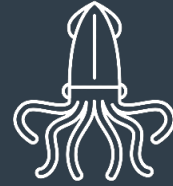


ARMS

Vampire Squid

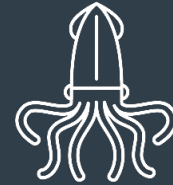


Humboldt squid



EYES

Purple back flying squid



Roundear Enope Squid

Tissues are embedded in paraffin

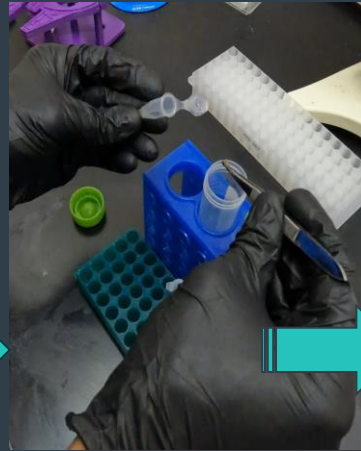
Dissection



Tissue



Tissue wash



Pouring Paraffin

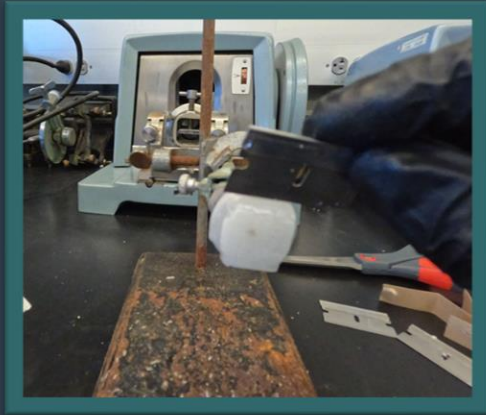


Molds

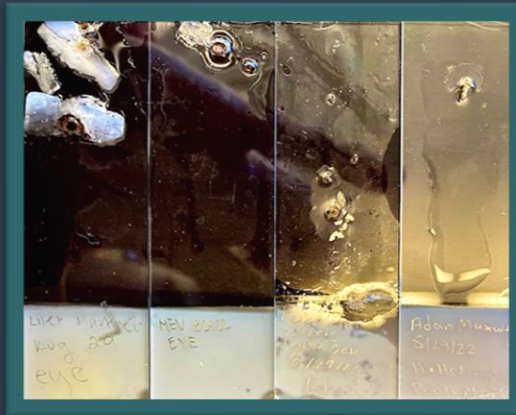


Samples are thinly sliced for imaging

Sectioning



Mounting

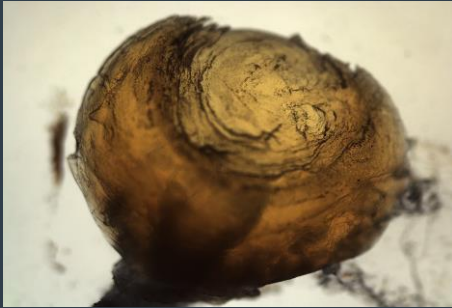


Imaging



Light-interactive organs share similar morphology in different species (EYES)

Roundear Enope

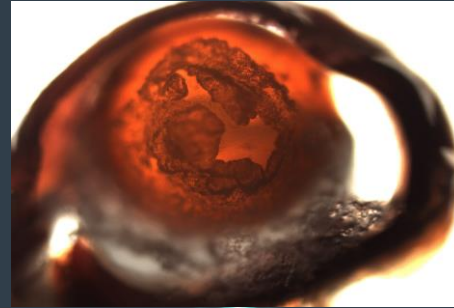


Fluorescence
microscopy
(colorized)

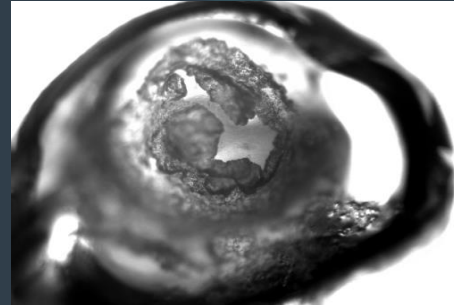


Grayscale
Image Analysis

Purple back Flying



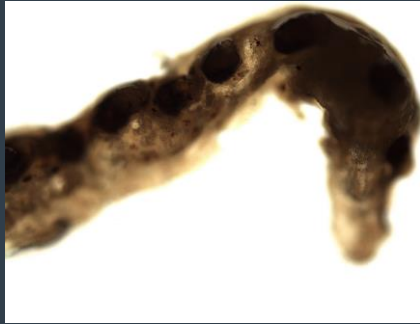
Fluorescence
microscopy
(colorized)



Grayscale
Image Analysis

Light-interactive organs share similar morphology in different species (ARMS)

Humboldt Squid



Fluorescence
microscopy
(colorized)

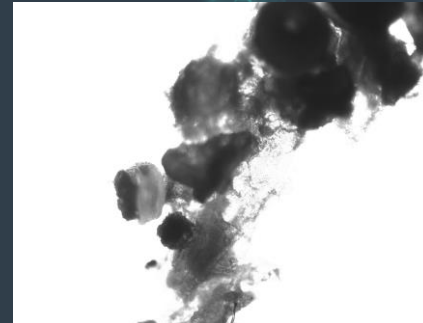


Grayscale
Image Analysis

Vampire Squid

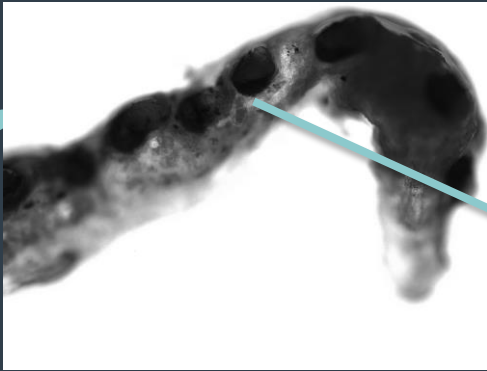


Fluorescence
microscopy
(colorized)

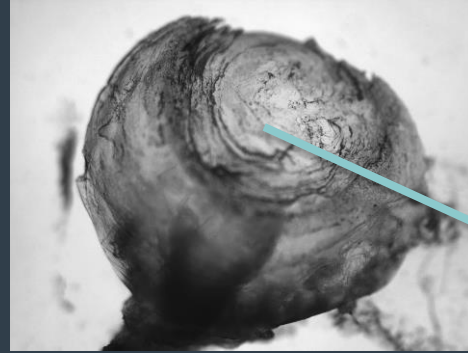


Grayscale
Image Analysis

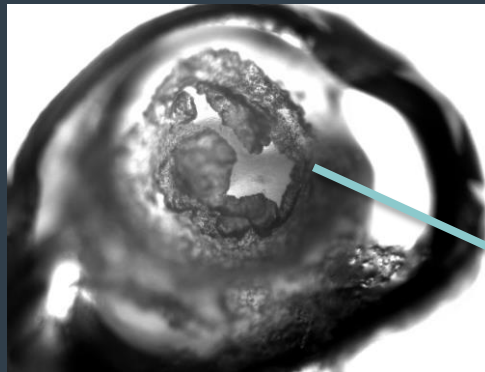
These results raise questions about how traits evolve differently



Arm
Photophore



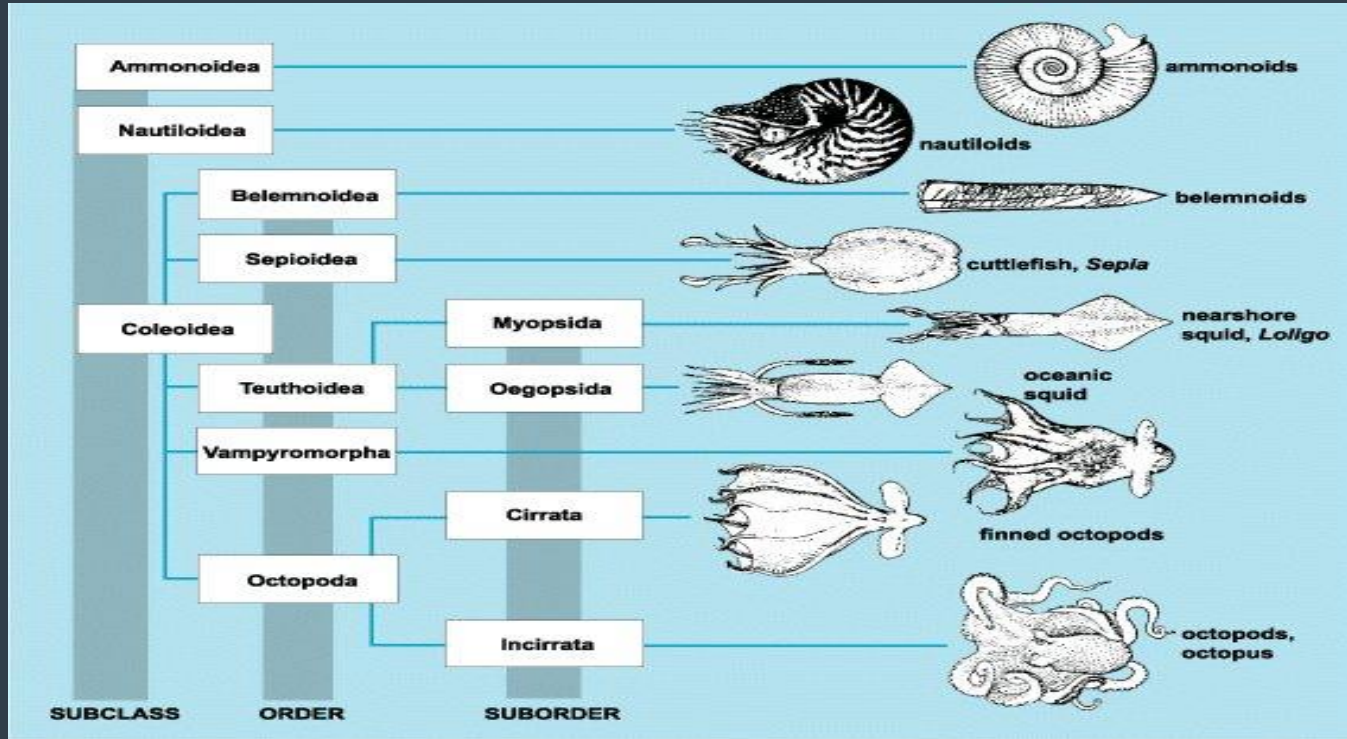
Eye with a
possible
Photophore



Eye Lens



Researching evolution lets us piece together biological sciences



Acknowledgements



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SIMS
OAKLEY

EVOLUTION LABORATORY
UC SANTA BARBARA



*winners for most aesthetically pleasing boat