

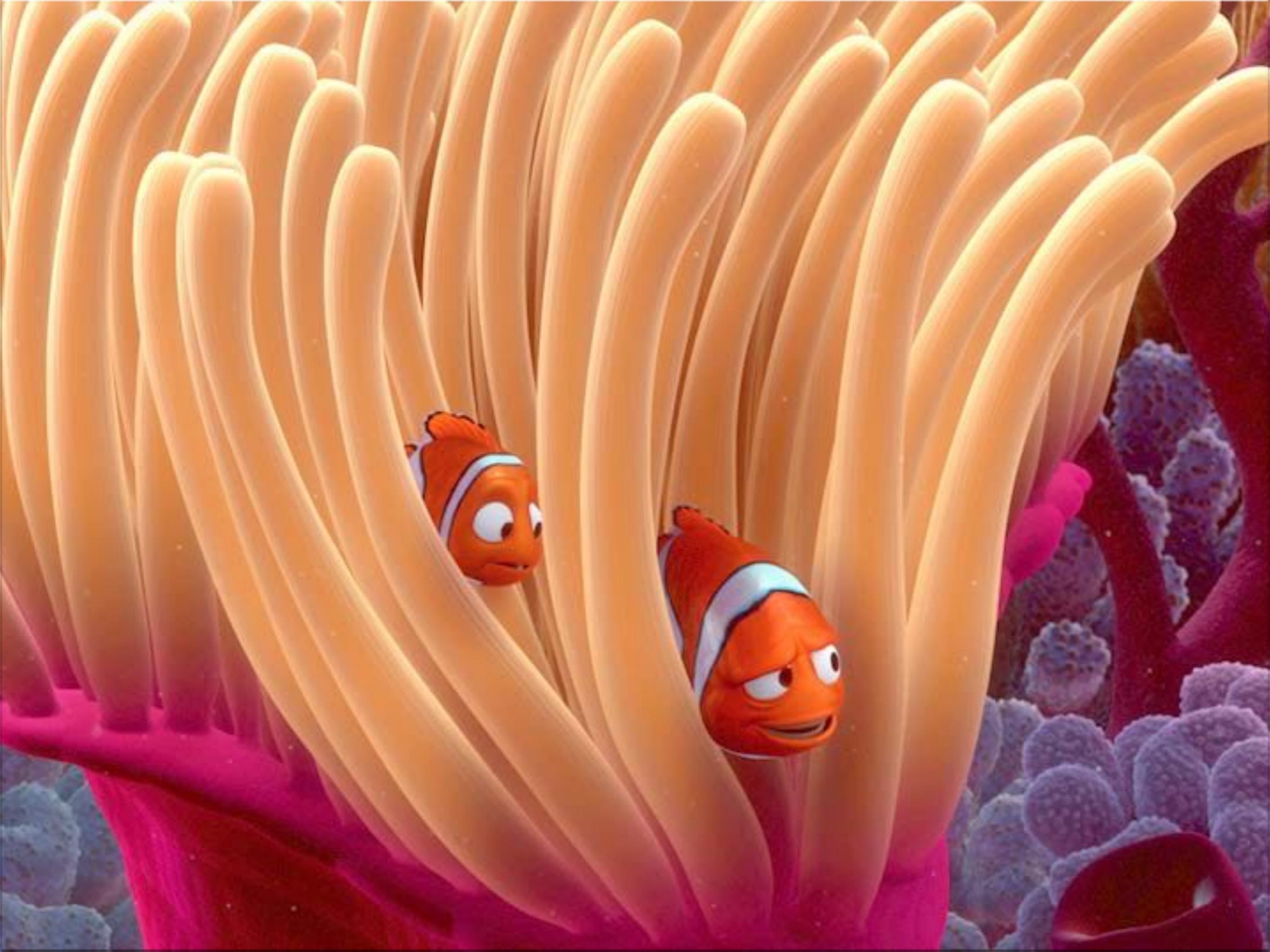
HACKATHON: STINGER-INSPECTOR CHALLENGE

Estefanía Rodríguez, Luciana Gusmão
Division of Invertebrate Zoology, AMNH

Luciana Gusmão



Estefanía Rodríguez



Boxer crabs



Deep-sea

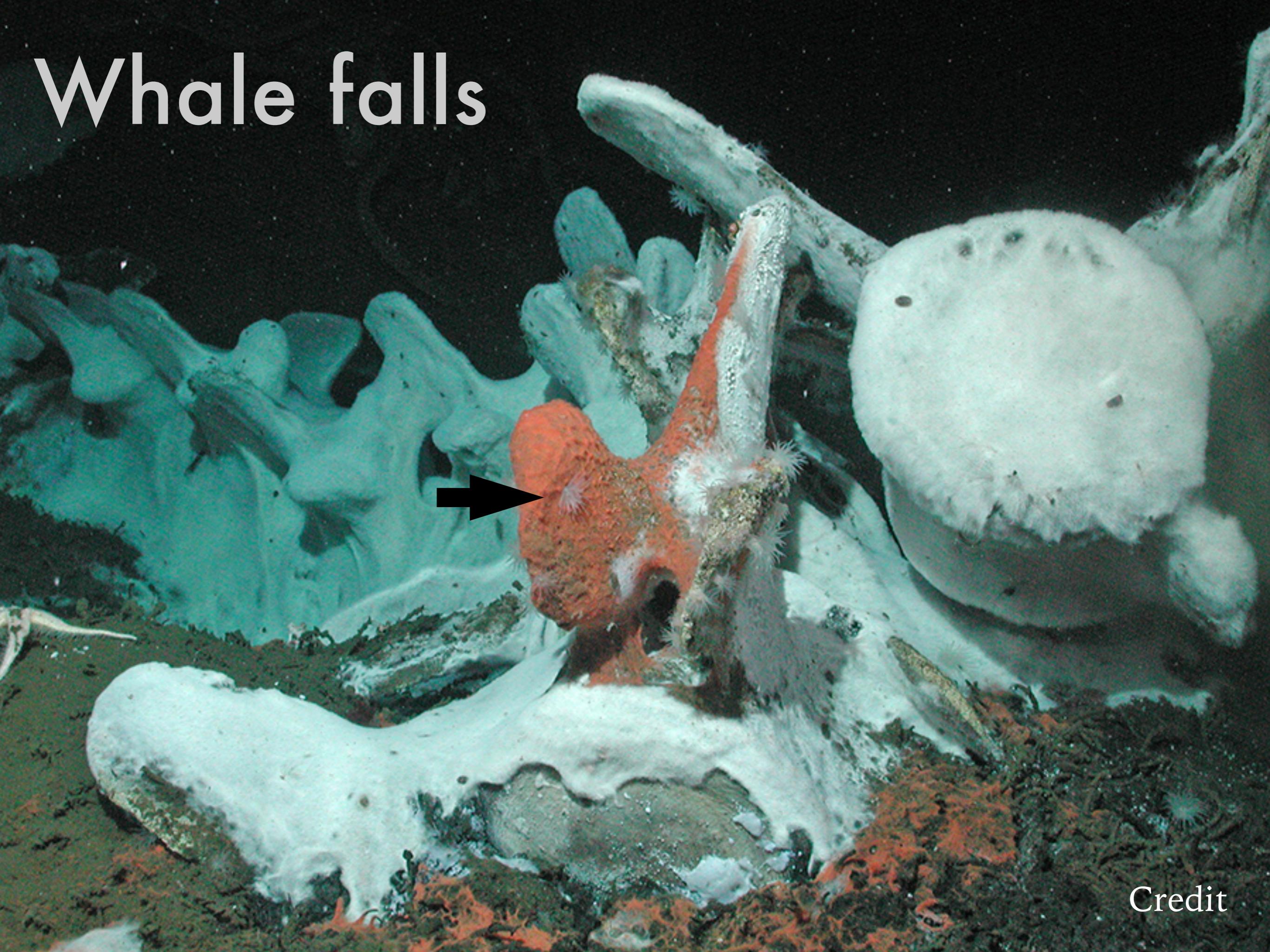


Venus fly-trap anemones

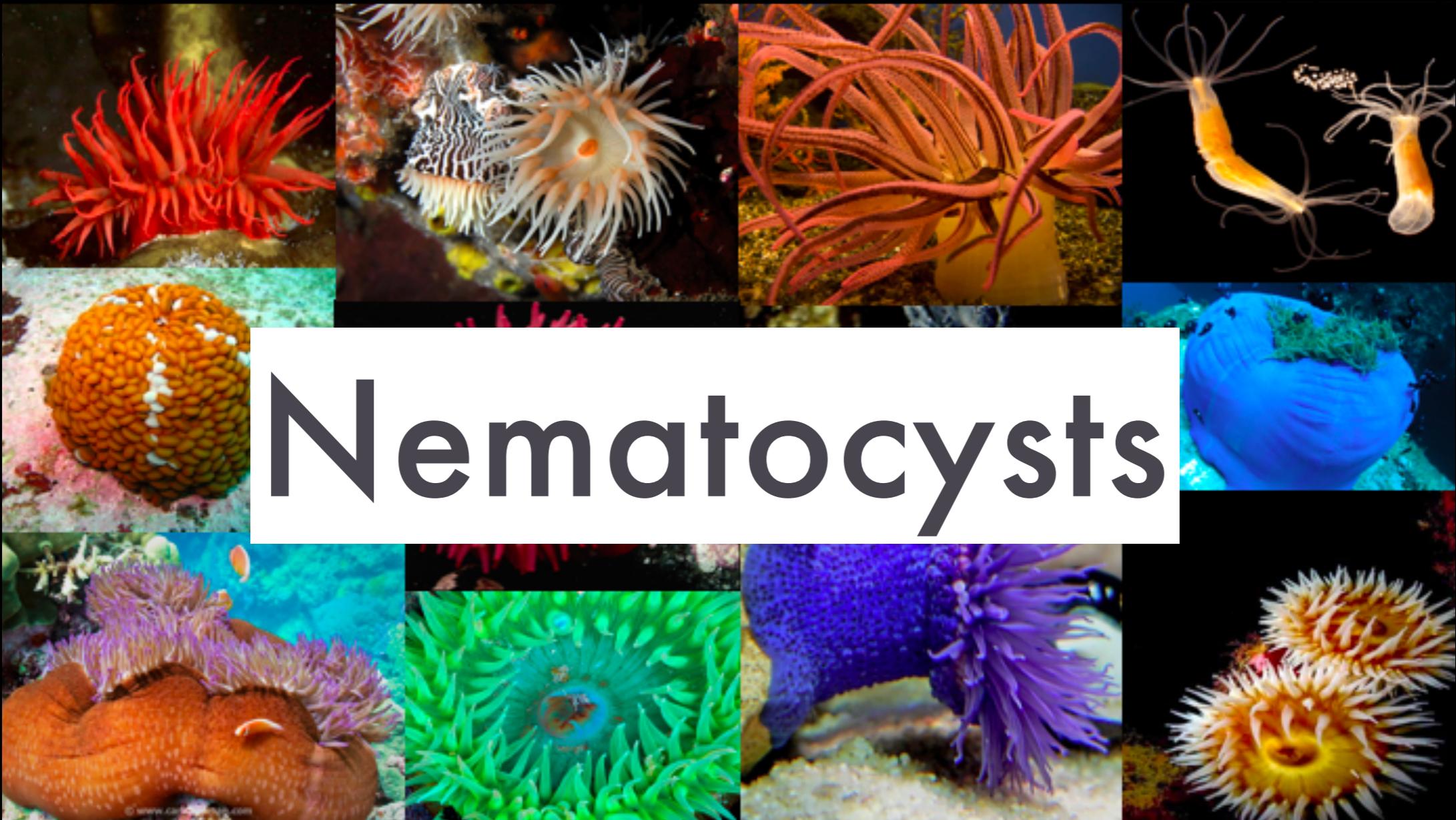


(NOAA)

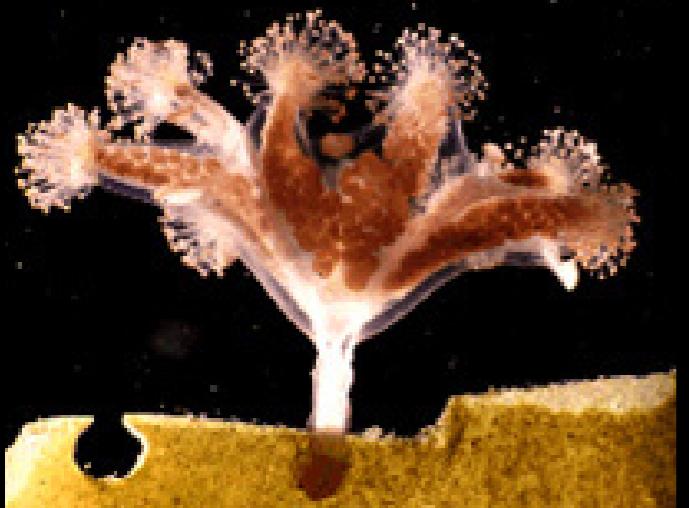
Whale falls



Credit



Nematocysts



Cnidaria

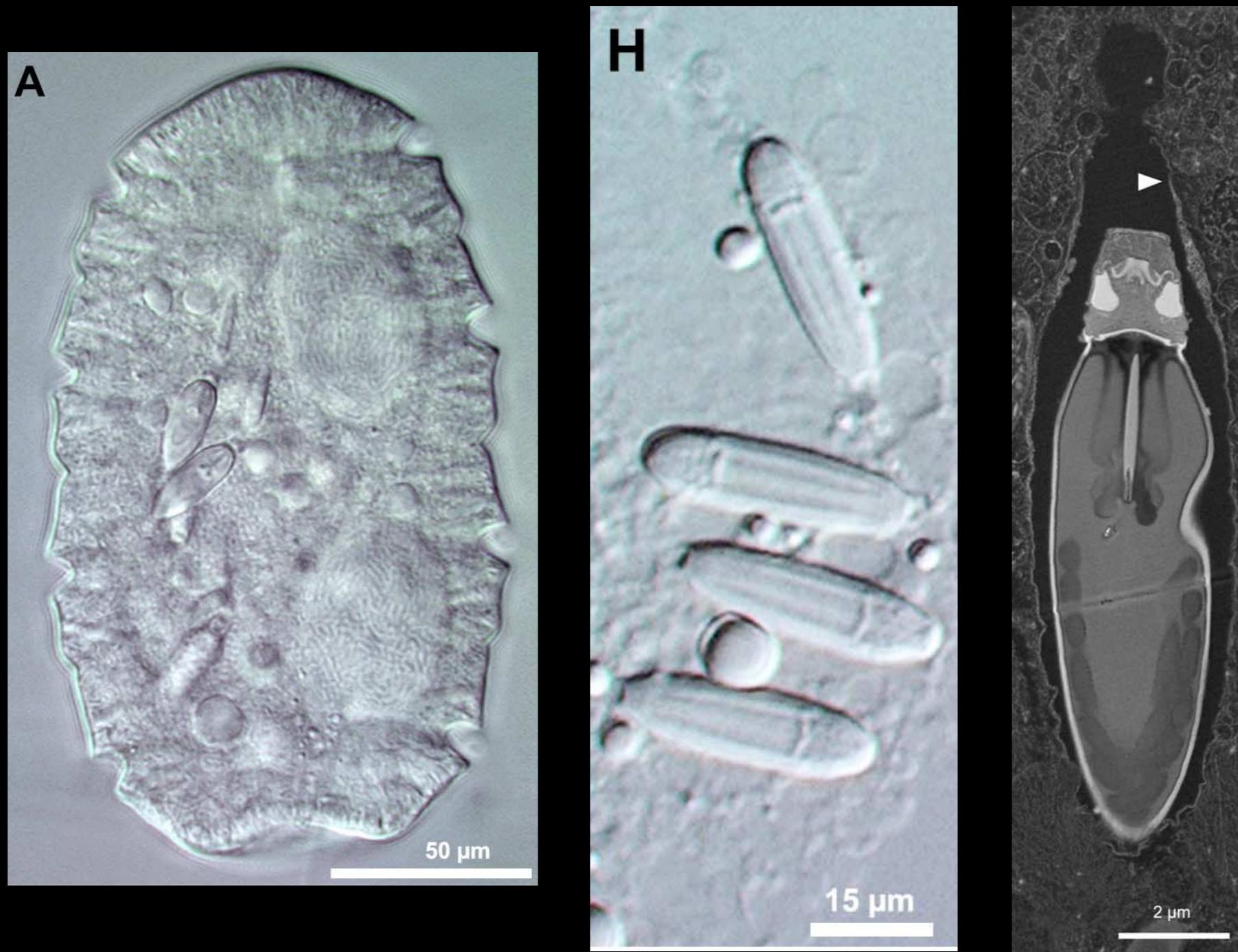
~10,000 spp



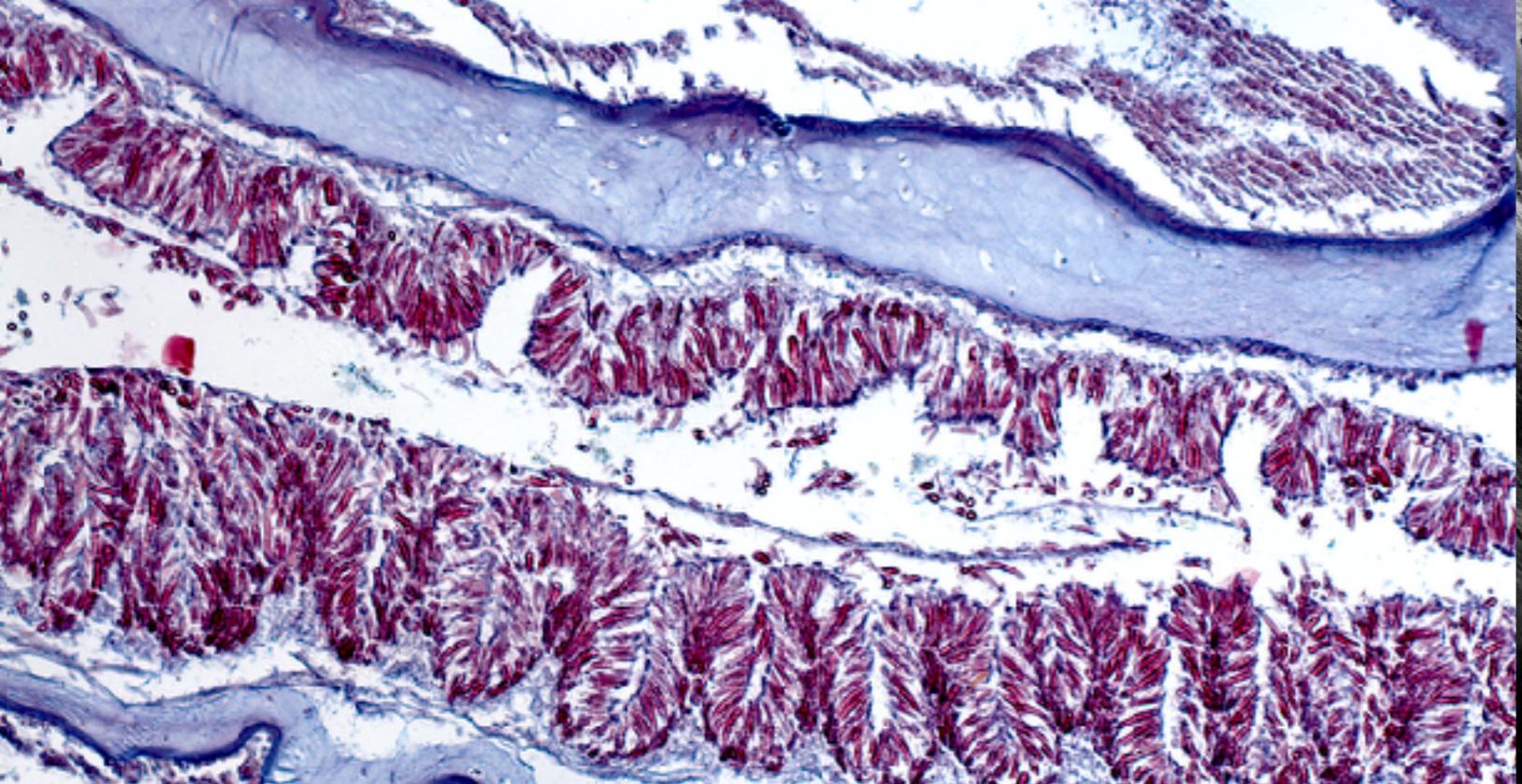
Kleptocnidae



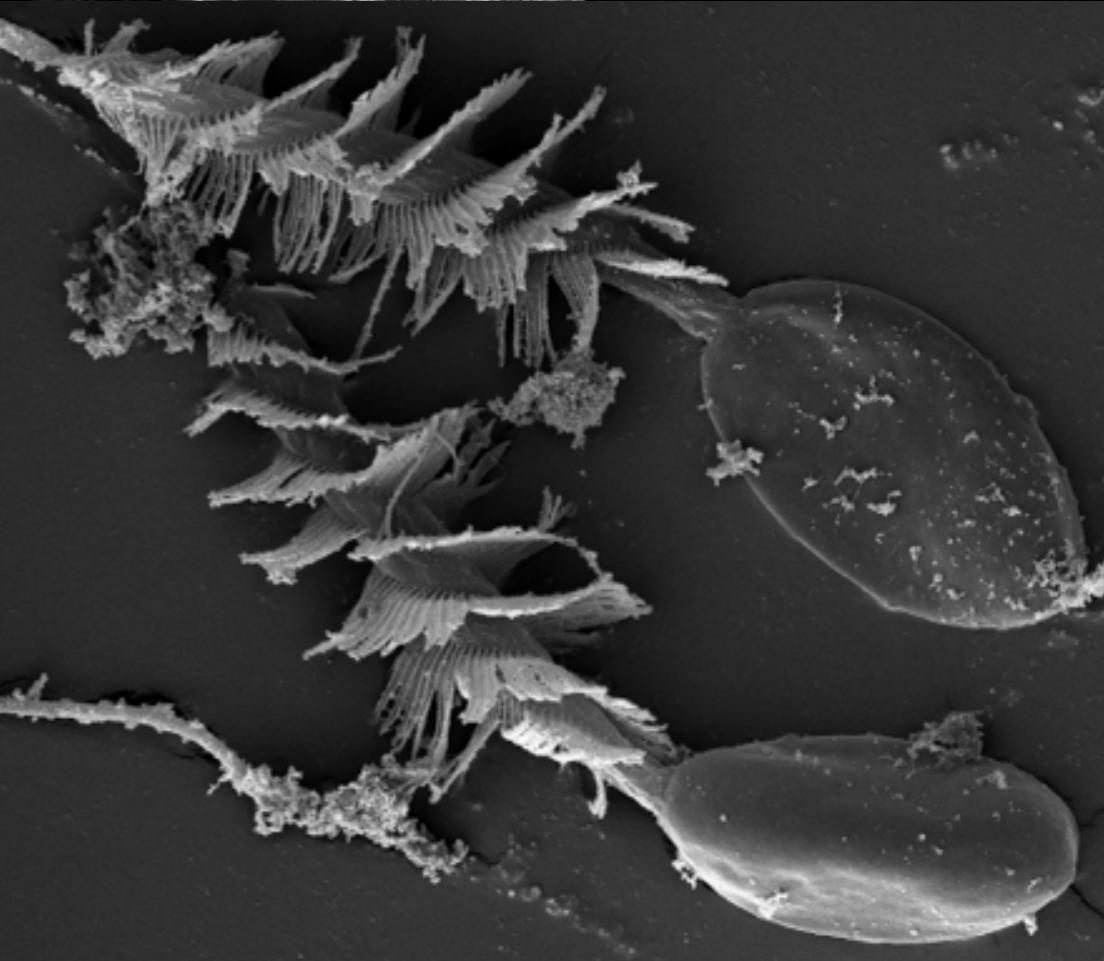
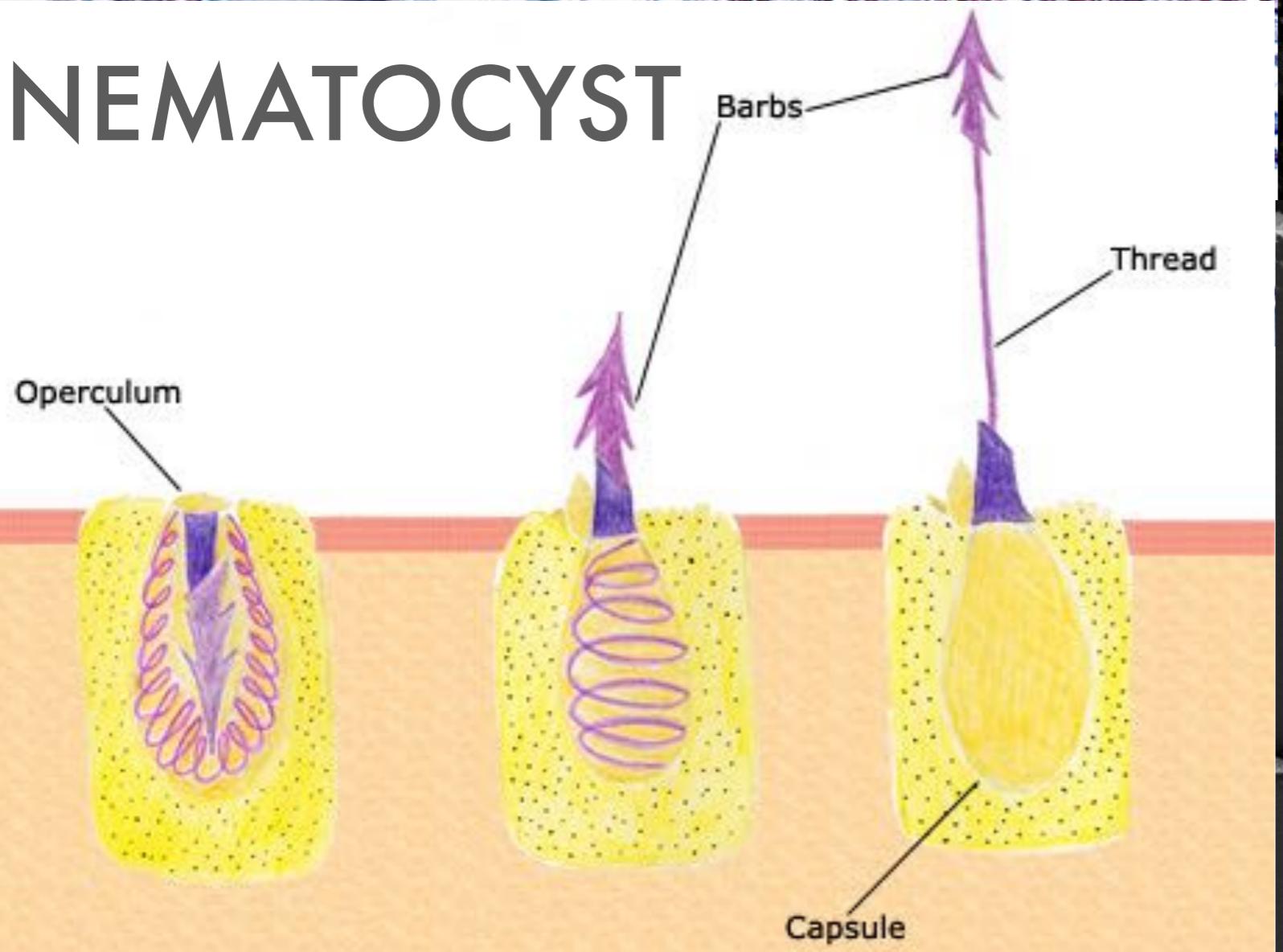
Ballistic “nematocysts” in protists



Gavelis et al. (2017)



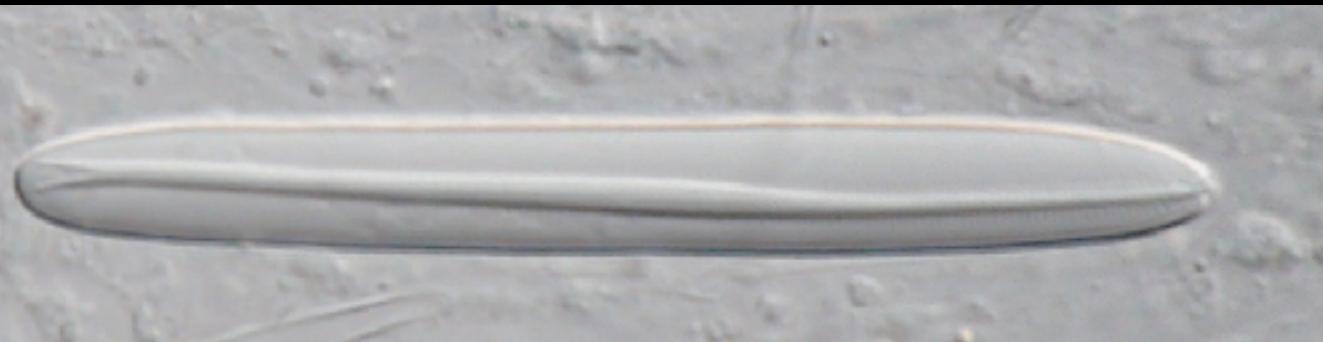
NEMATOCYST



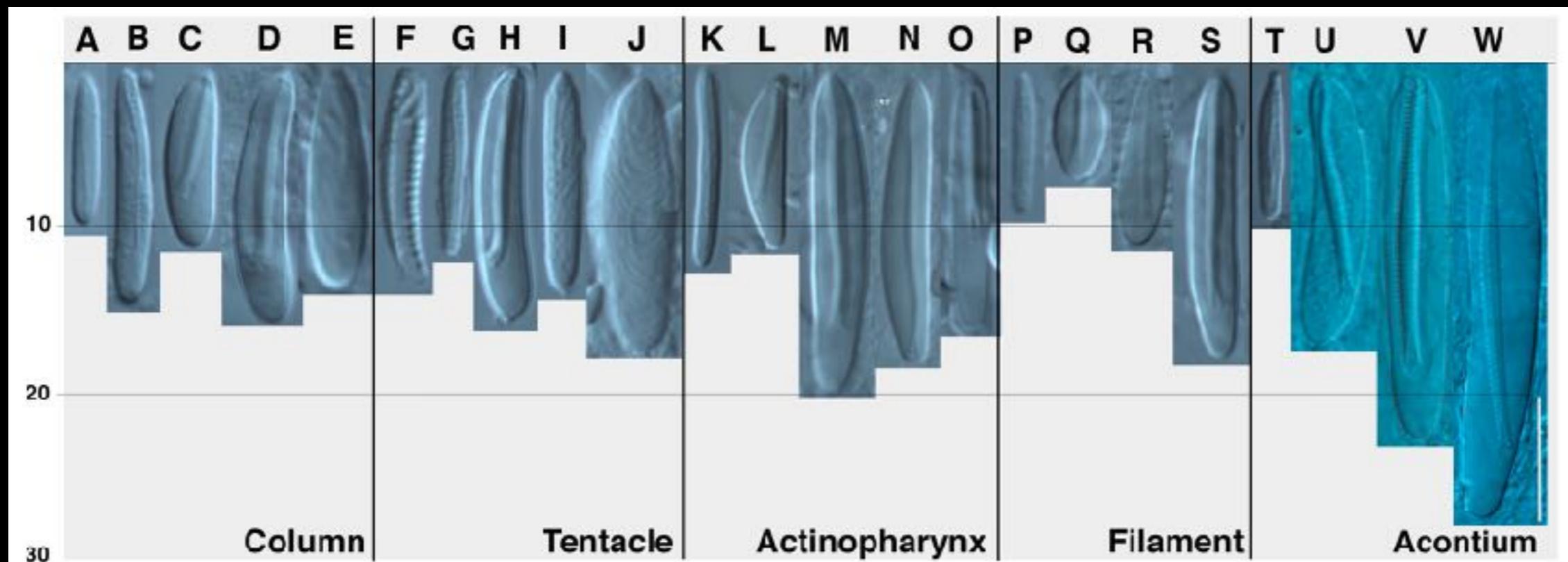
©Reft

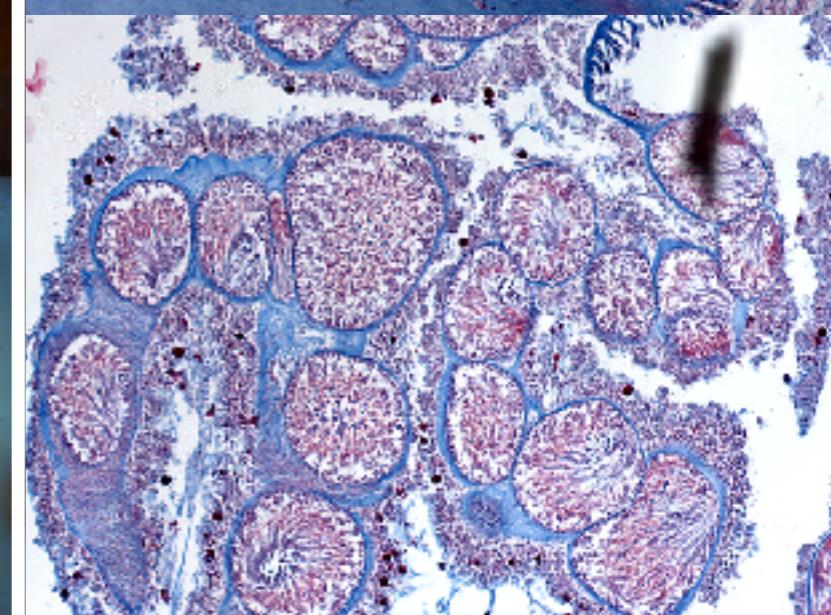
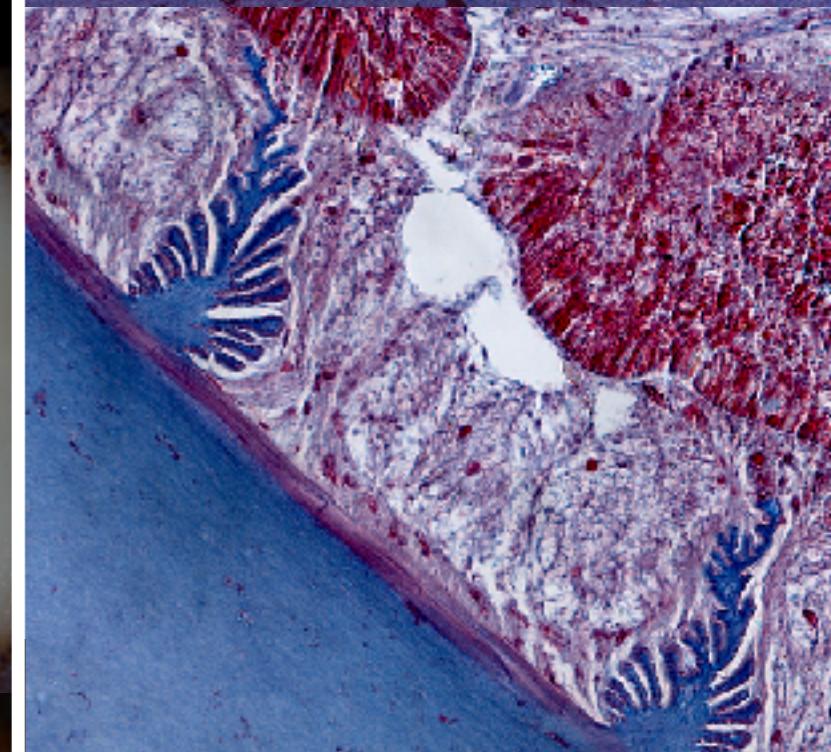
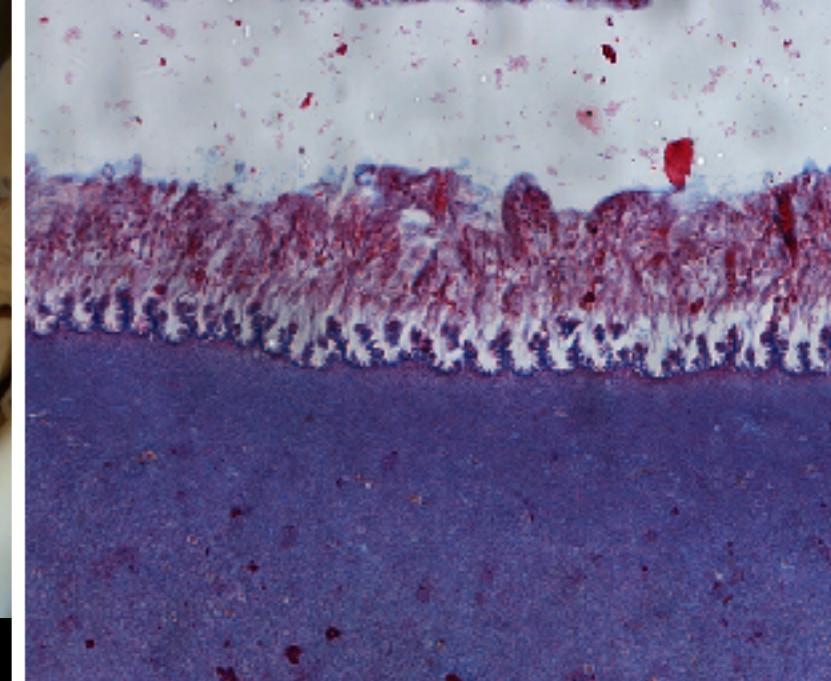
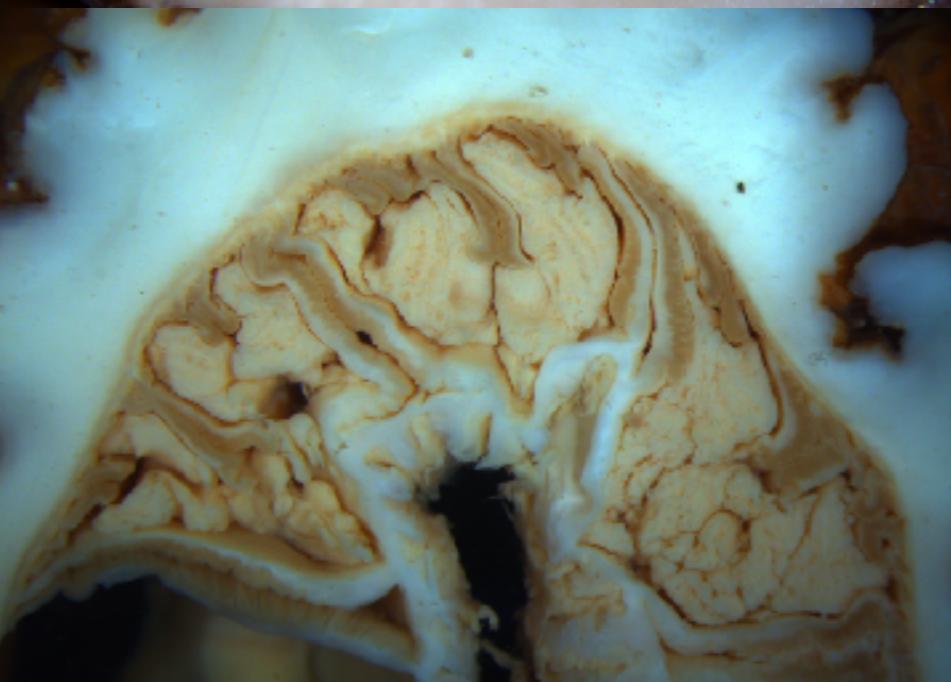
Fastest cellular mechanism in nature

~700 nanoseconds

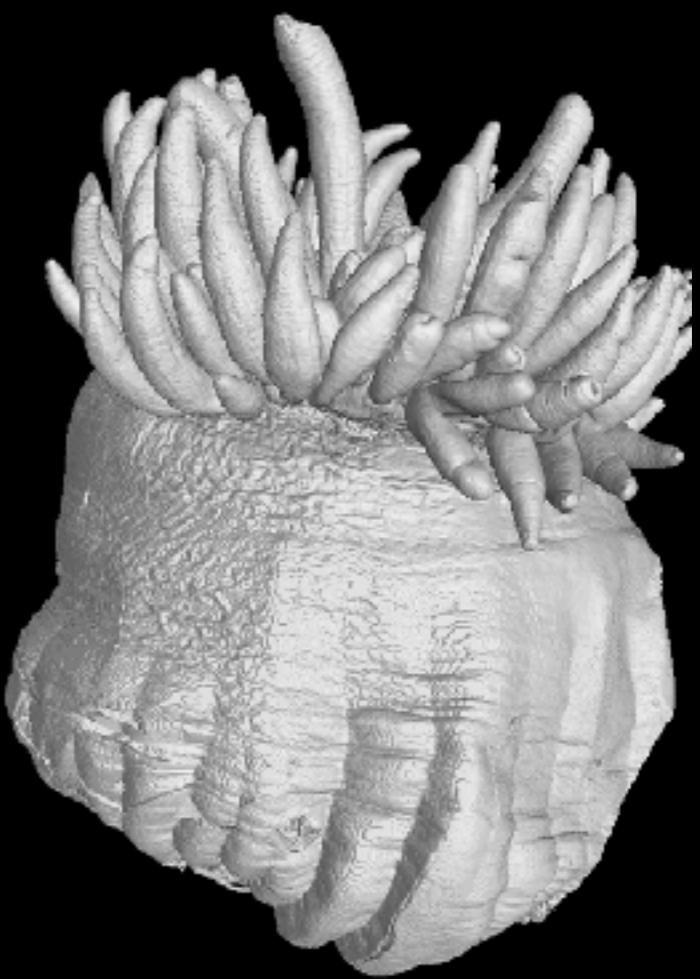
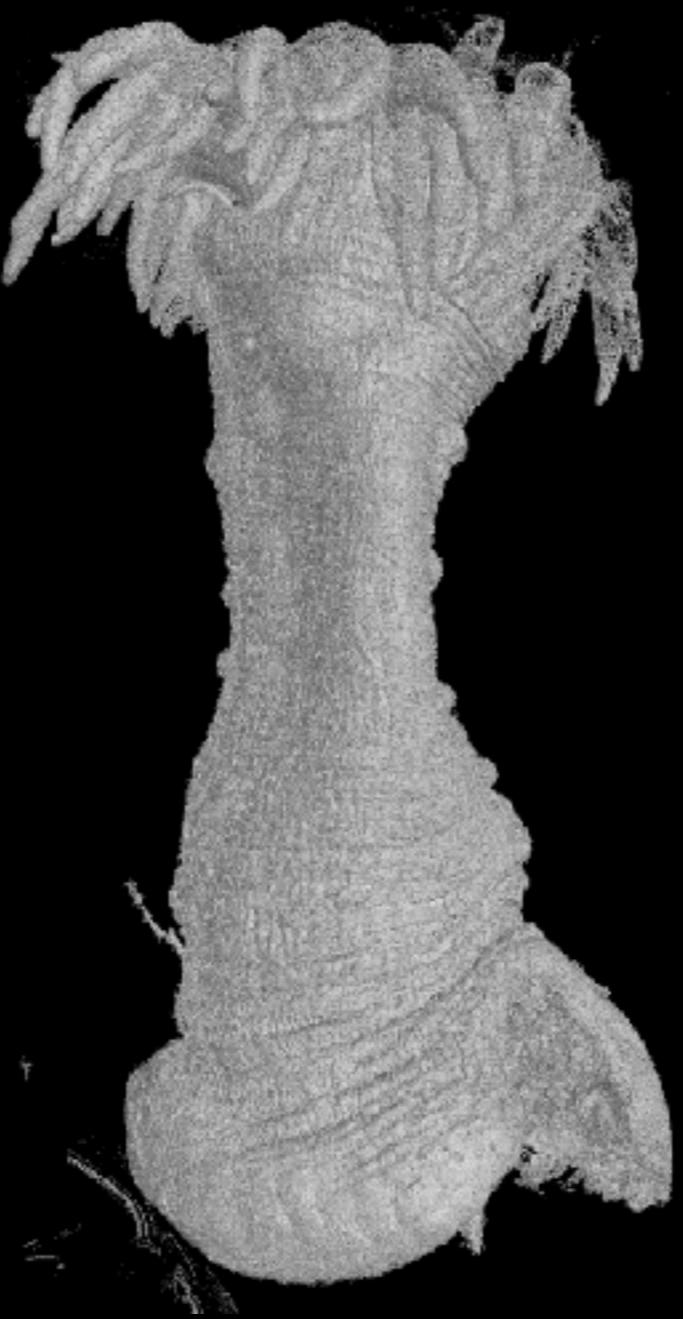


CNIDOM: all cnidocysts present in a species

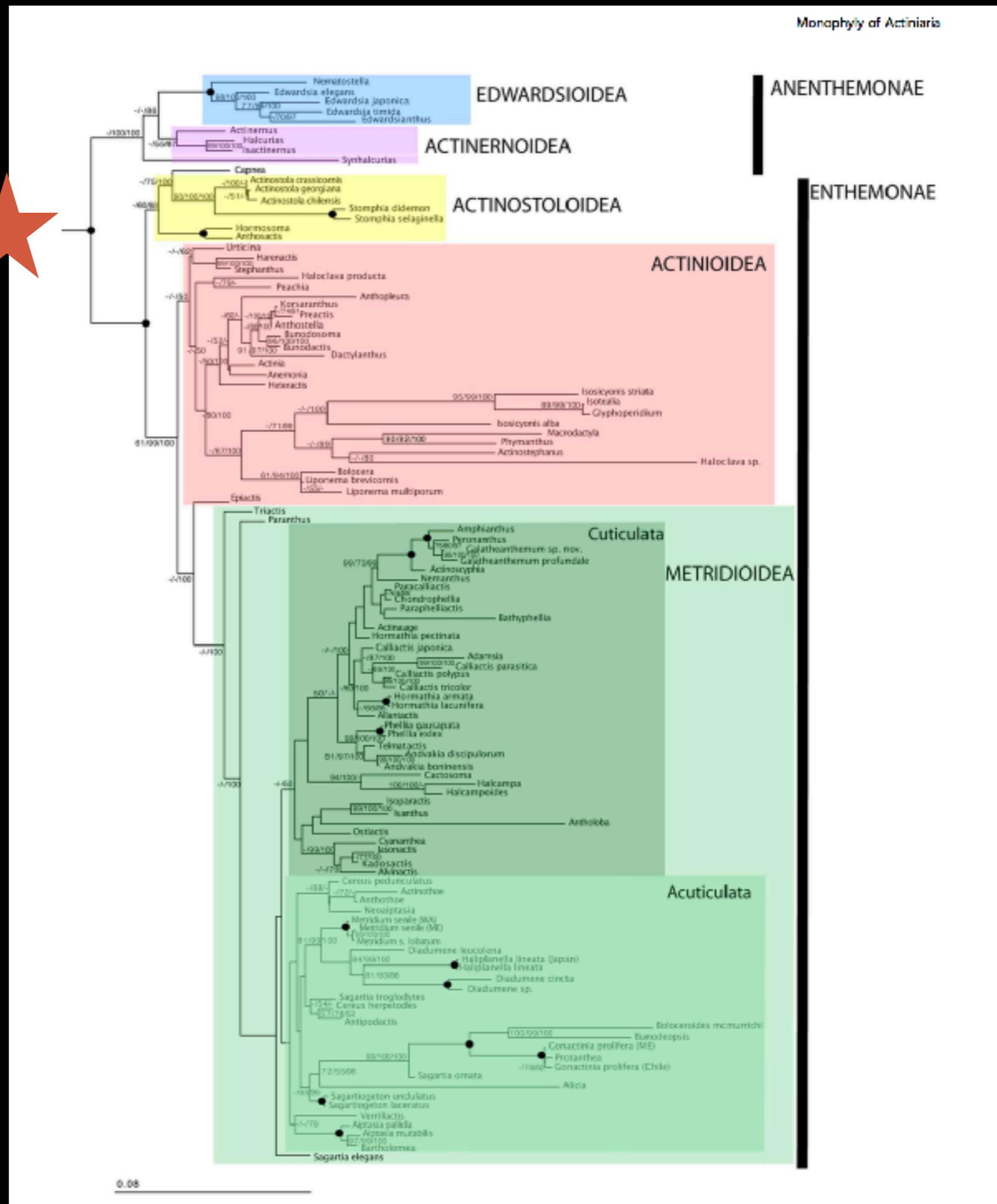


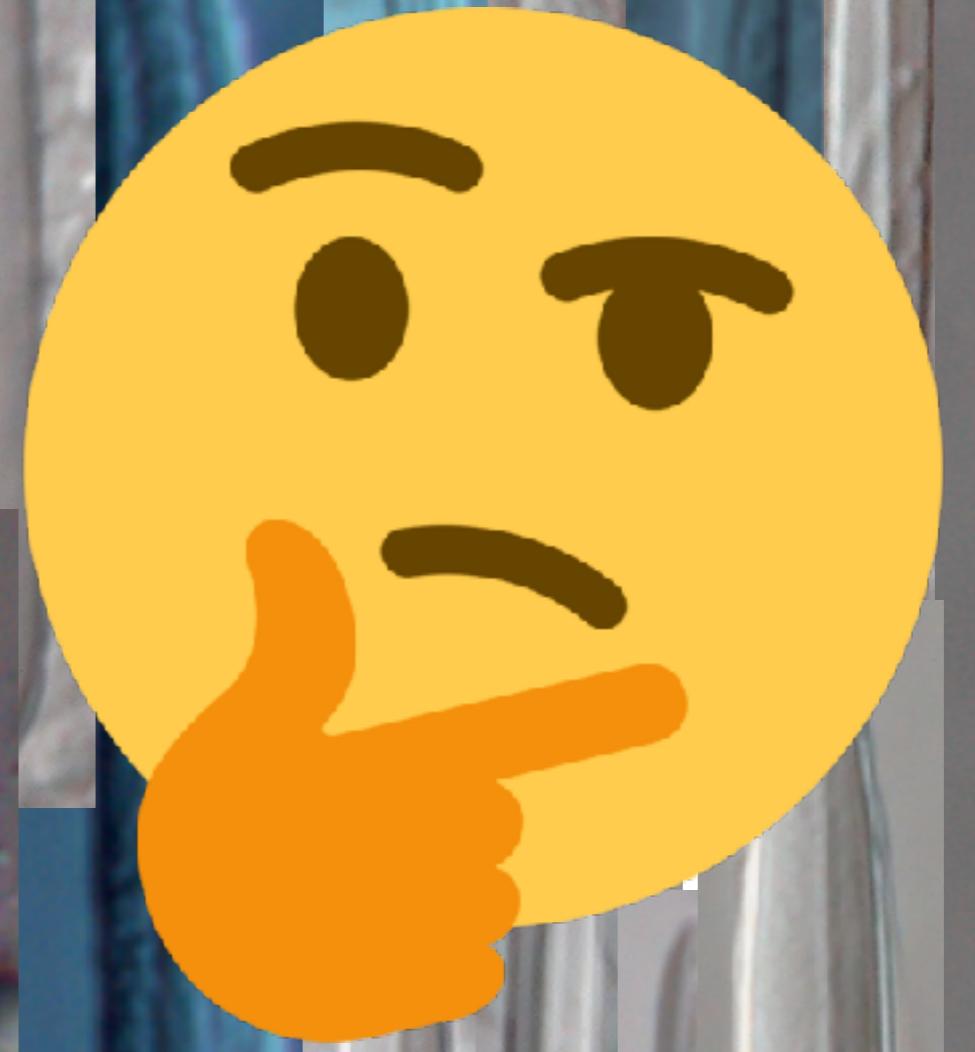


Micro CT-scanning



Single origin 





Nematocyst classifications

Table 3.2. Morphologies described in monograph, their distribution in cnidarian body tissues, and their categorization under previous classifications.

Morphology	Weill (1930, 1934; Carlgren 1940; Mariscal 1970)	Schmidt (1969, 1974)	den Hartog (1980, 1987, 1995, 2011)	Body Structure
acanthoneme	basitrich	<i>b</i> -rhabdoid	Spirula	A, Ac, C, MF, T
colloponeme	<i>b</i> -mastigophore/ basitrich	<i>b</i> -rhabdoid	Spirula	Ac, T
hadroneme	<i>b</i> -mastigophore	<i>b</i> -rhabdoid	Spirula	C, MF, T
<i>p</i> -rhabdoid A	<i>p</i> -mastigophore	<i>p</i> -rhabdoid A/D	Penicilli A	C, MF, T
<i>p</i> -rhabdoid B1a	<i>p</i> -mastigophore	<i>p</i> -rhabdoid B1a	Penicilli B1	MF, T
<i>p</i> -rhabdoid B2d	<i>p</i> -mastigophore/ amastigophore	<i>p</i> -rhabdoid B2a	Penicilli B2a	C, MF, T
<i>p</i> -rhabdoid B2s (var. a and b)	amastigophore	<i>p</i> -rhabdoid B2a/b	Penicilli B2a/b	Ac, C, MF, T
diakaneme	<i>p</i> -mastigophore	<i>p</i> -rhabdoid B1a?	Penicilli B1	MF
aphylloneme	basitrich	<i>p</i> -rhabdoid B1a?	Penicilli B1?	MF

(Reft, 2012)

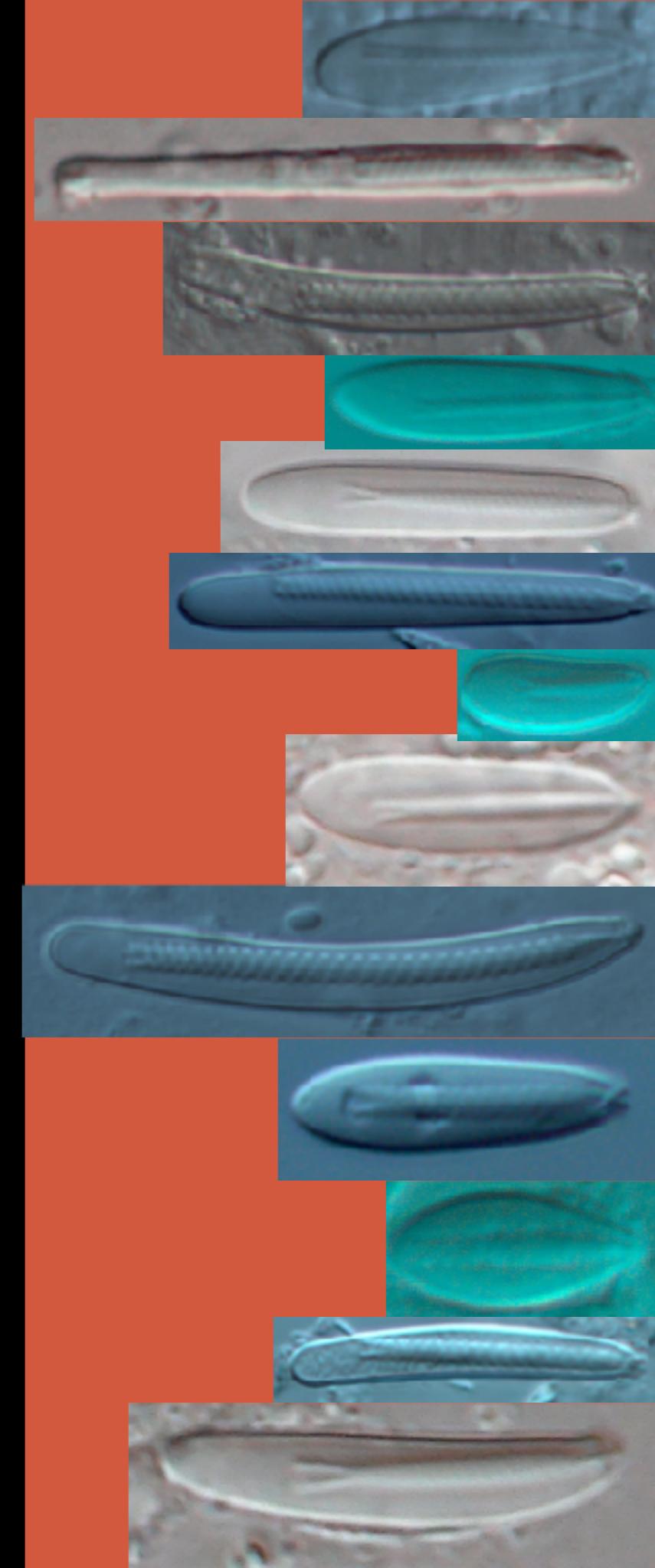
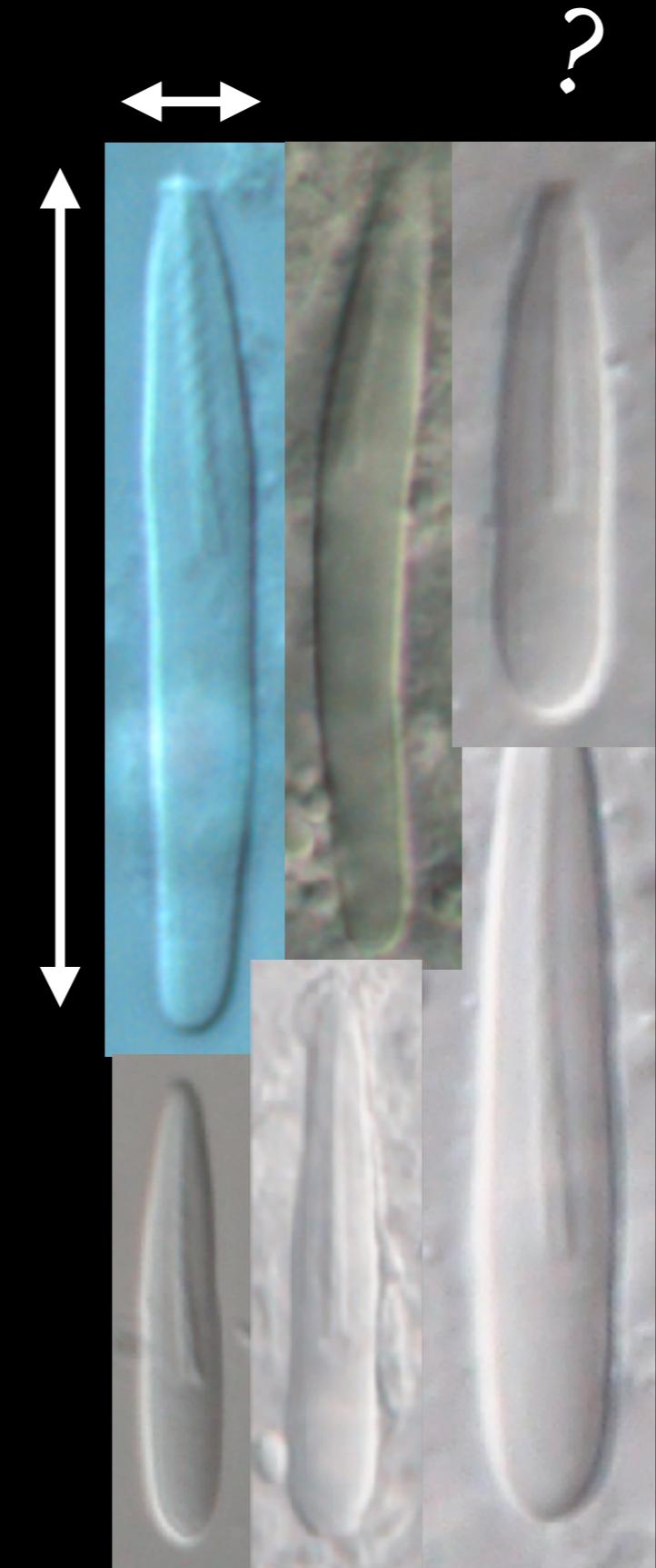
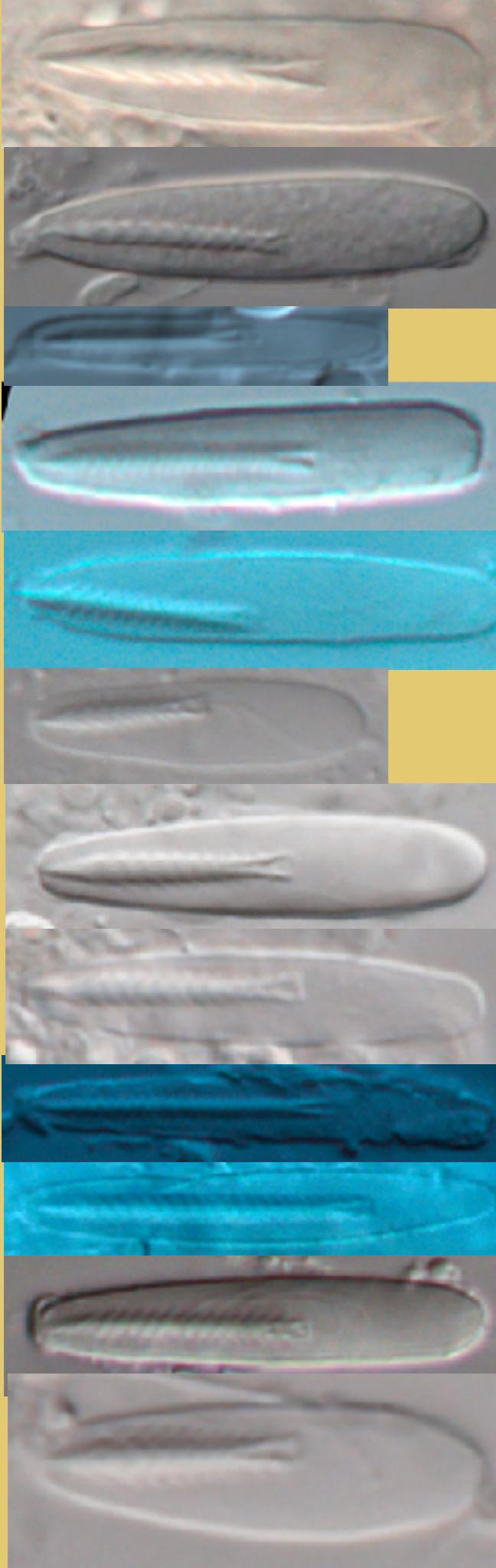


Basitrichs

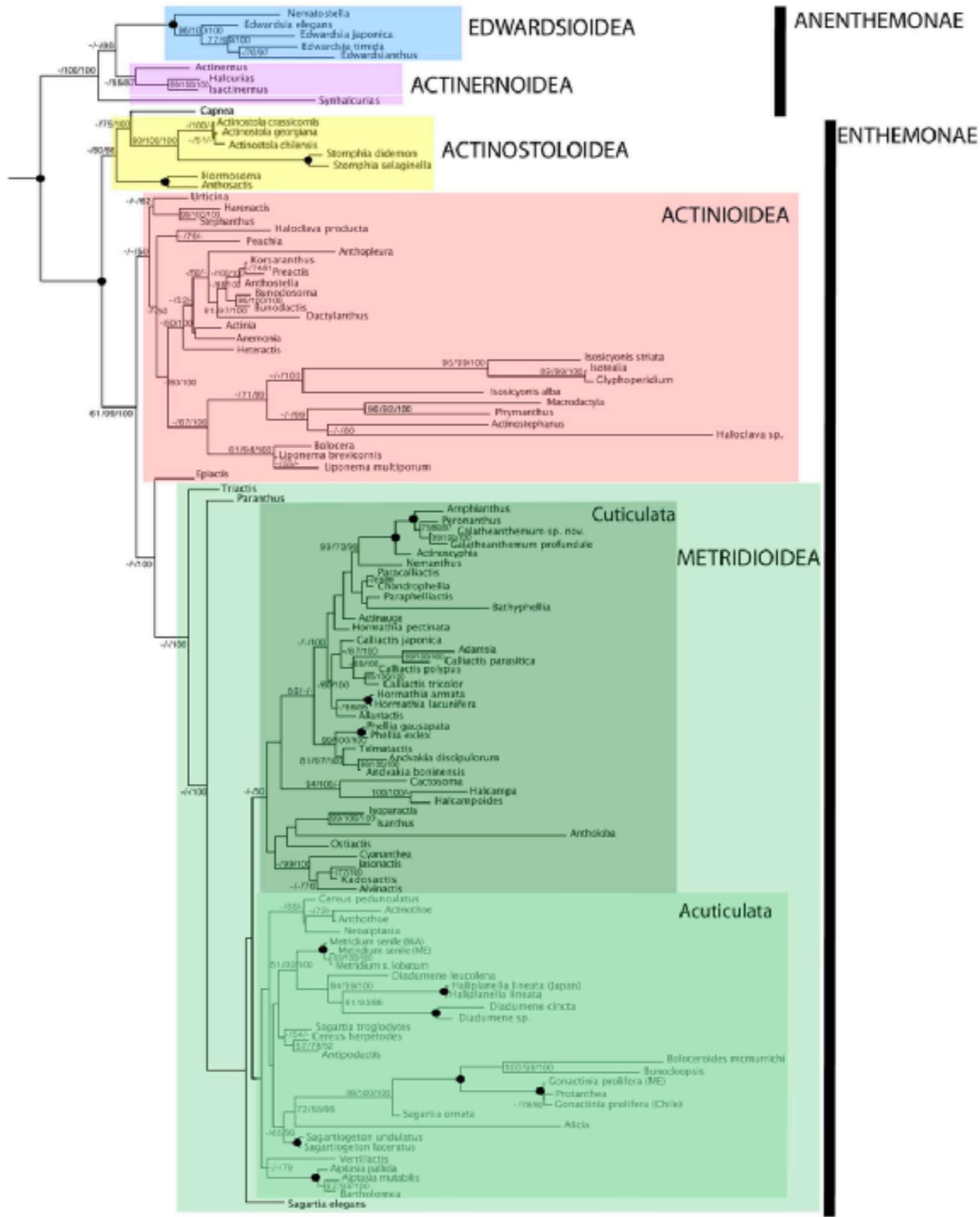
B-mastigophores

Basitrichs

P-mastigophores A



P-mastigophores B1

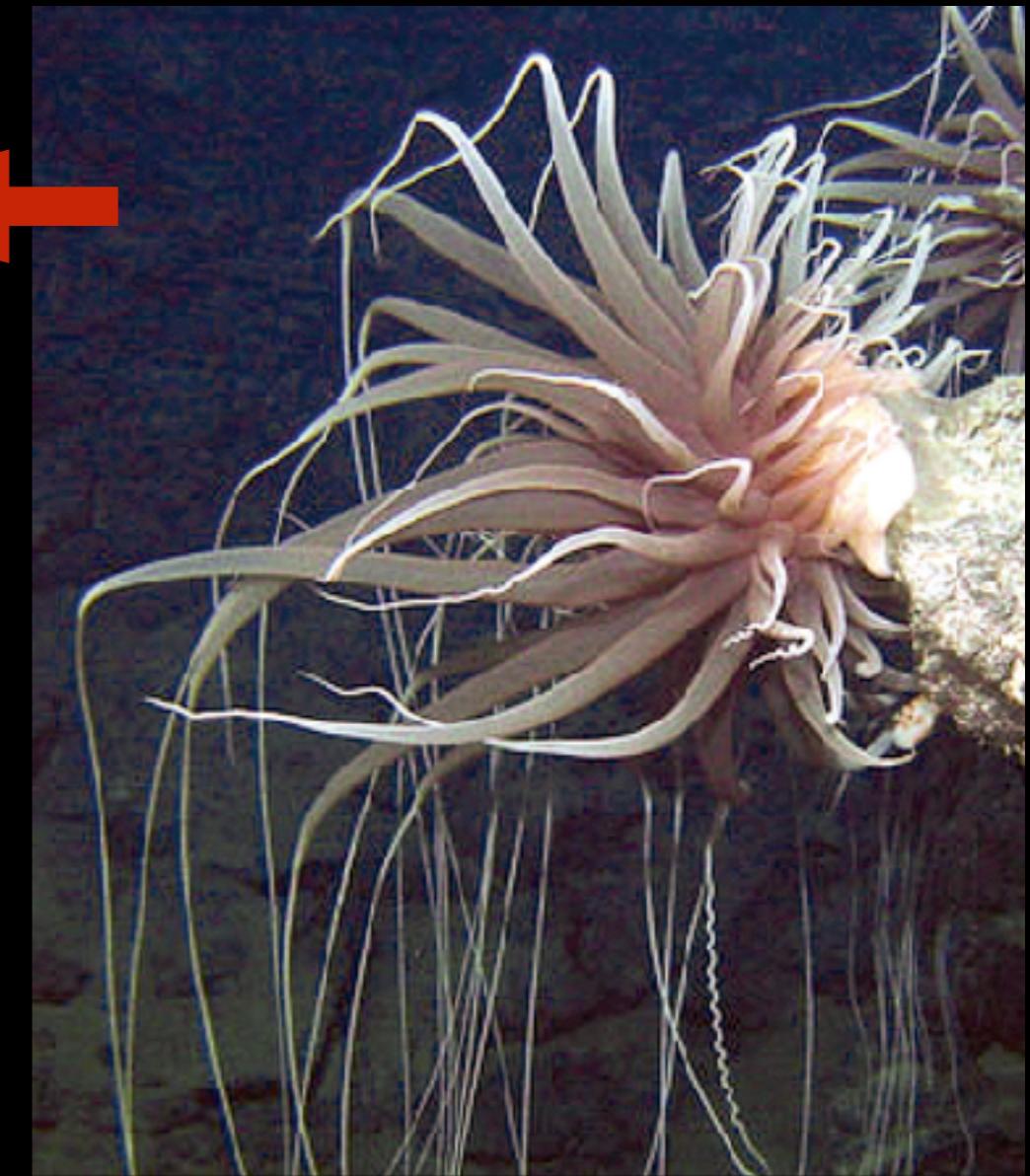
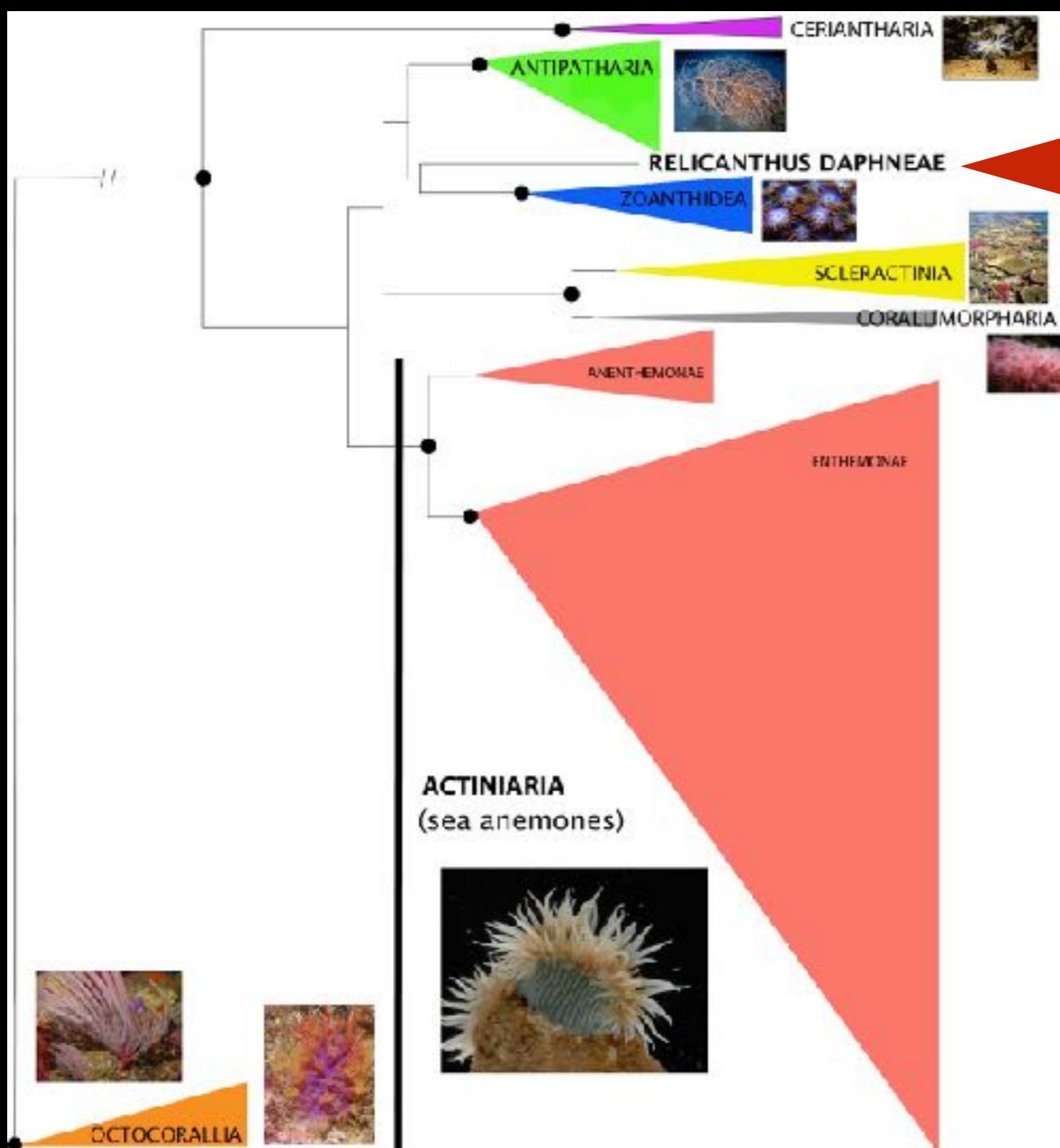


1 million photos

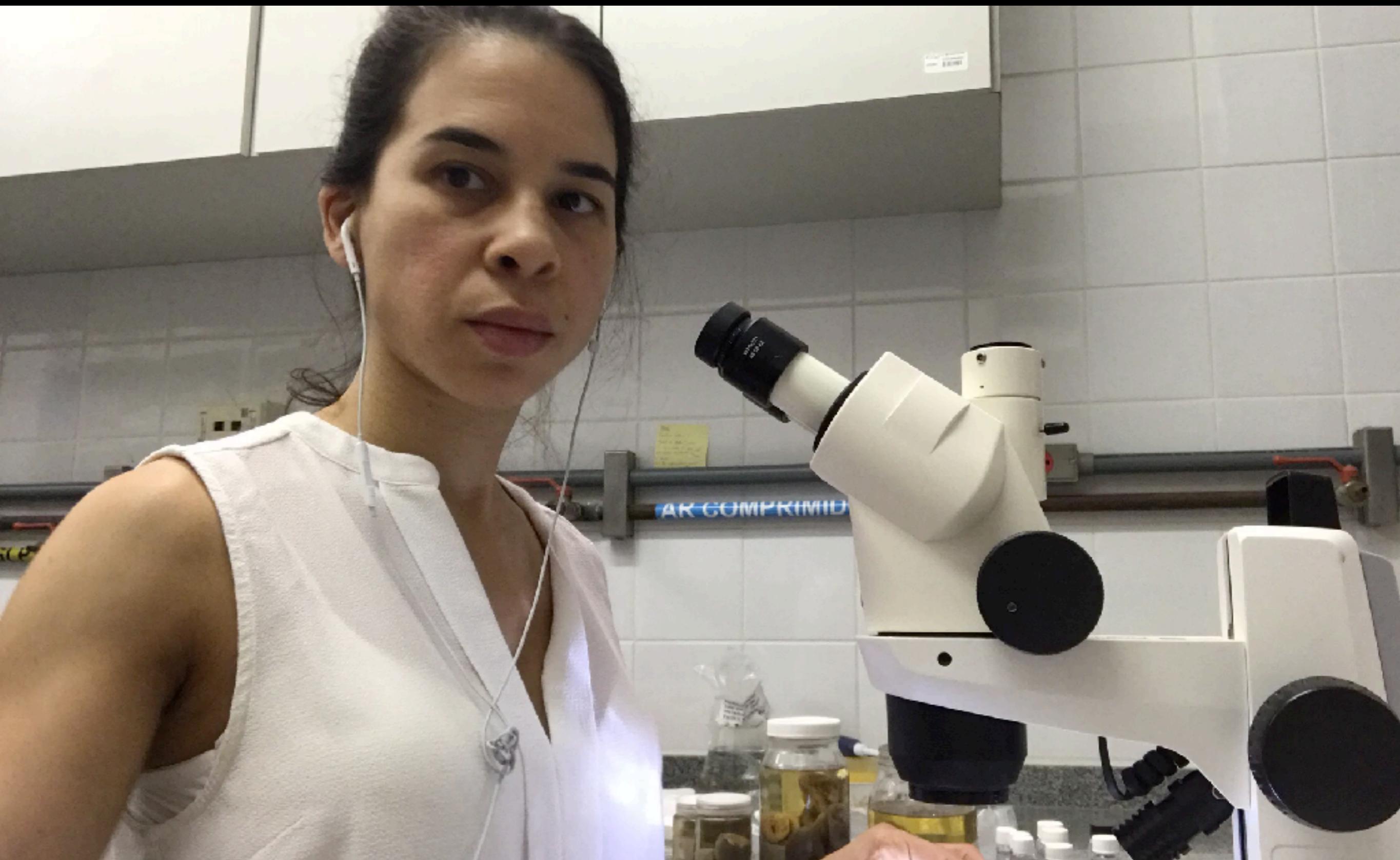
Estimate variation
in types/other
features?

Find distribution
patterns across the
group

NEW ORDER?!



Relicanthus daphneae
incertae ordis



Acknowledgements

Education department, AMNH: Louise Crowley and Michael Caprio

Many many colleagues around the world

Funding sources: National Science Foundation, AMNH, The Brazilian National Council for Scientific and Technological Development



Abby Reft, Smithsonian Institute