

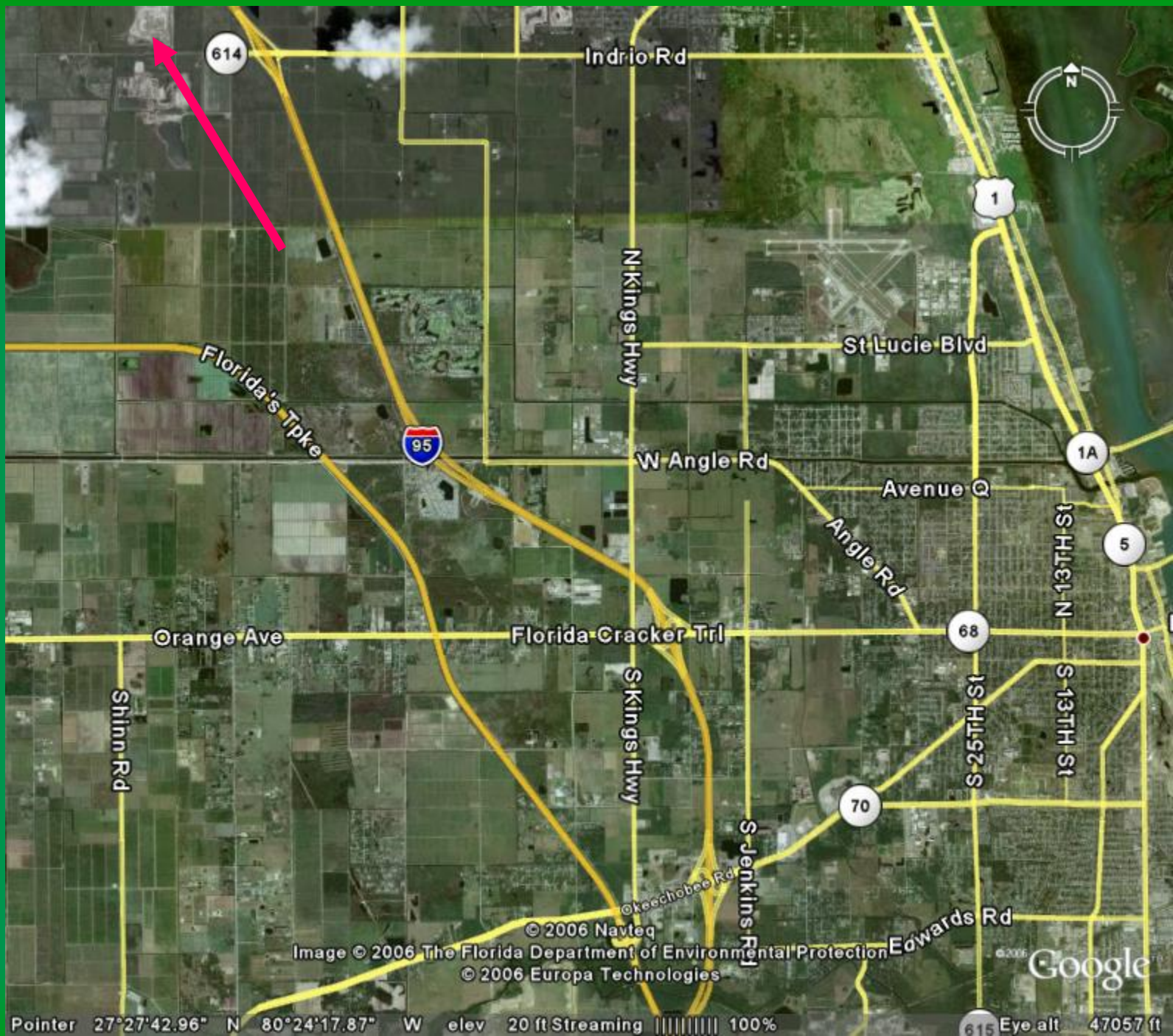
**Some Microfossils From the
Ft. Thompson Fm., Late
Pleistocene Eustatic High
Stand (Sangamonian
Interglacial), Indrio, Fl.; An
Ancient Hyposaline Estuary to
Lagoonal Facies Eroded by
Strong Tidal Currents**

John E.B. Baker

Mi rogeo



mikrogeo.com



Pointer 27°27'42.96" N 80°24'17.87" W elev 20 ft Streaming 100% Eye alt 47057 ft



Pointer 27°31'14.33" N 80°27'42.67" W elev 19 ft Streaming ||||| 100%

Eye alt 7425 ft

MY	POLARITY	EPOCH	AGE	LARGE MET IMPACTS
0			Holocene	<10,000
0.1			Late	
0.2		Late		
0.3		Pleistocene	Middle	
0.4				
0.5				
0.6				
0.7				
0.8				
0.9		Early Pleistocene	Early	
1				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8		Late	G a l i e s i a n	
1.9				
2				
2.1				
2.2				
2.3				
2.4				
2.5			Eltanin Impact	

BRUNHES

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A

← ***Ft. Thompson***



2000
FLORIDA GEOLOGICAL SURVEY
WALTER SCHMIDT, STATE GEOLOGIST
AND CHIEF








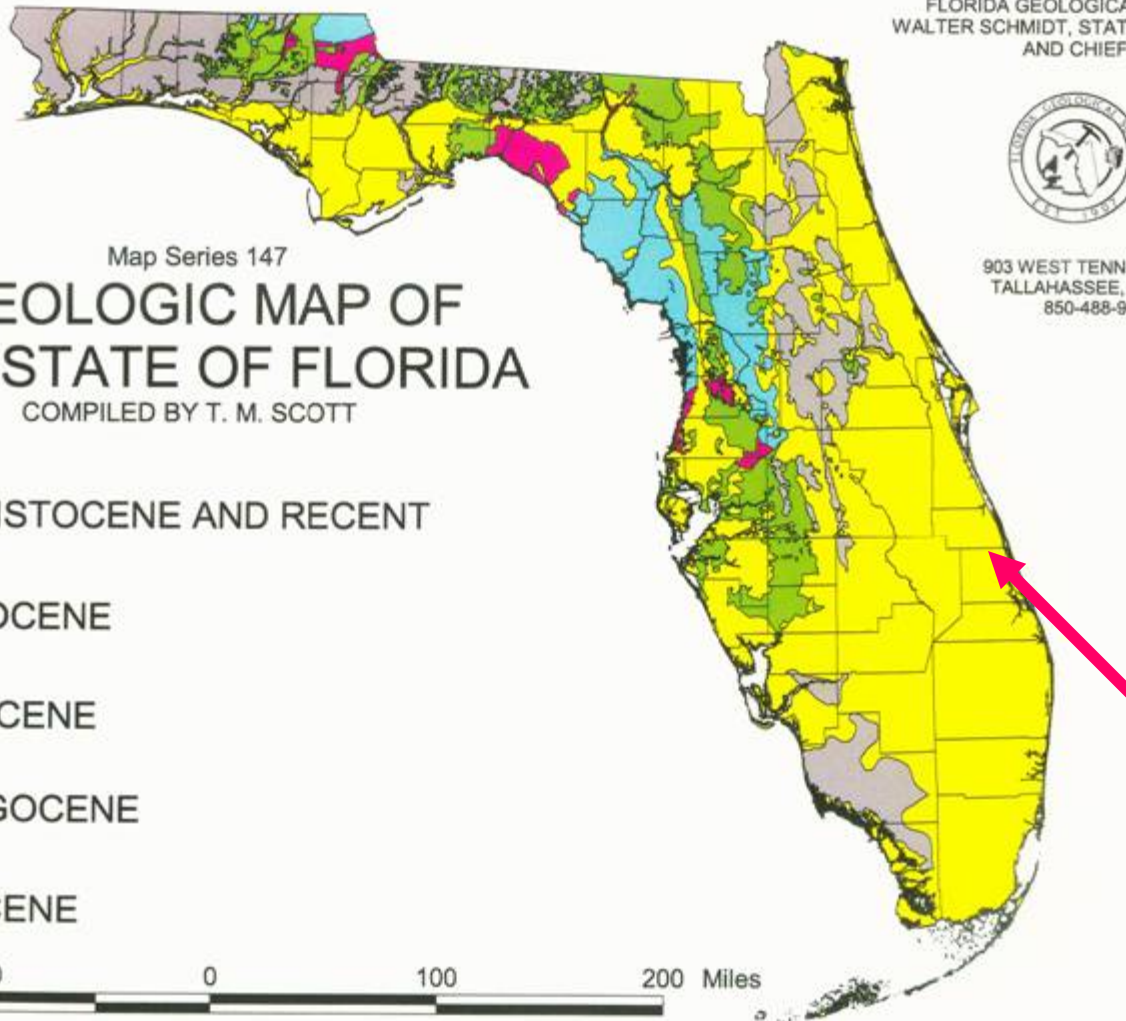
903 WEST TENNESSEE ST.
TALLAHASSEE, FL 32304
850-488-9380

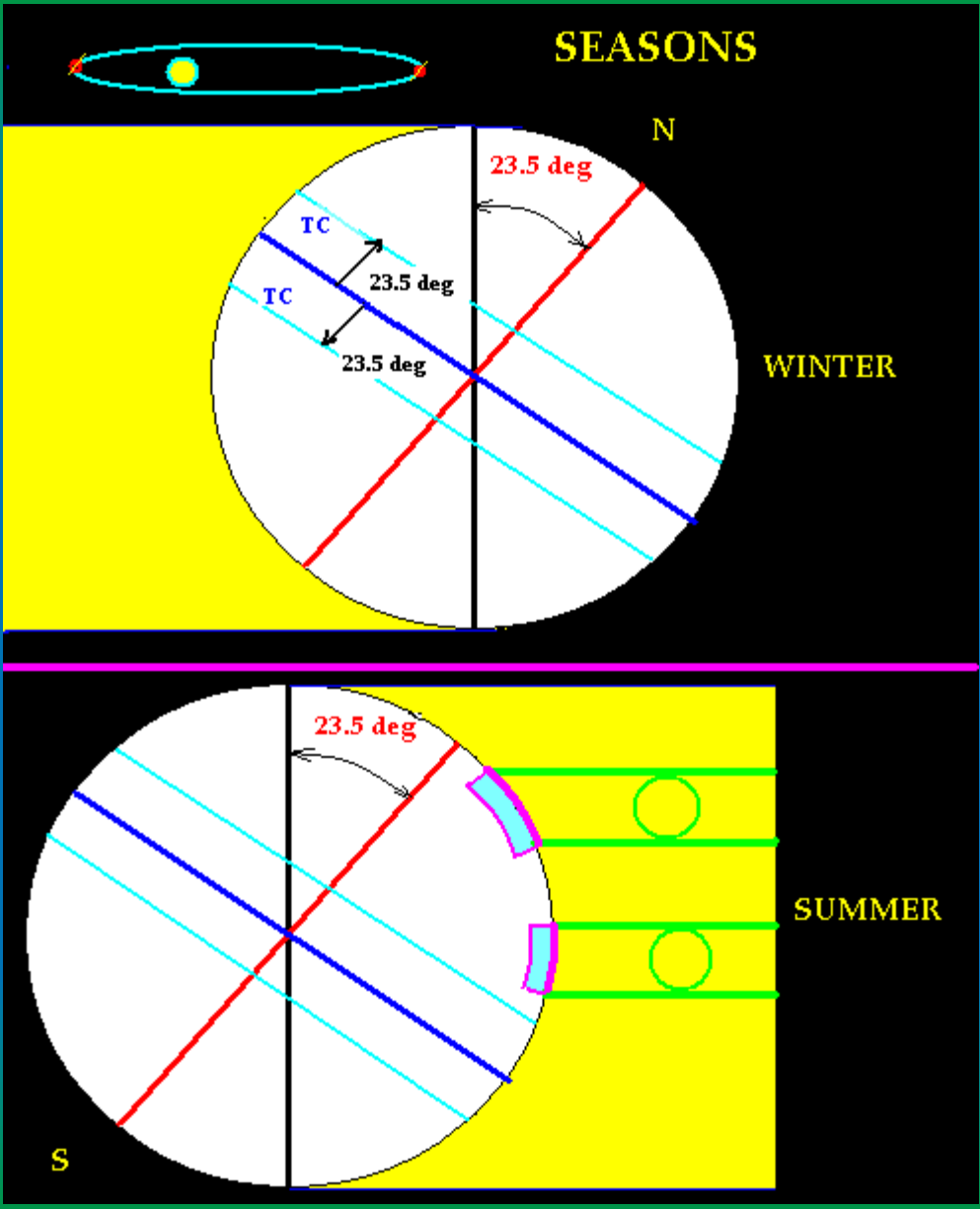
Map Series 147

GEOLOGIC MAP OF THE STATE OF FLORIDA

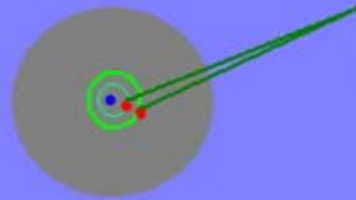
COMPILED BY T. M. SCOTT

-  PLEISTOCENE AND RECENT
-  PLIOCENE
-  MIOCENE
-  OLIGOCENE
-  EOCENE

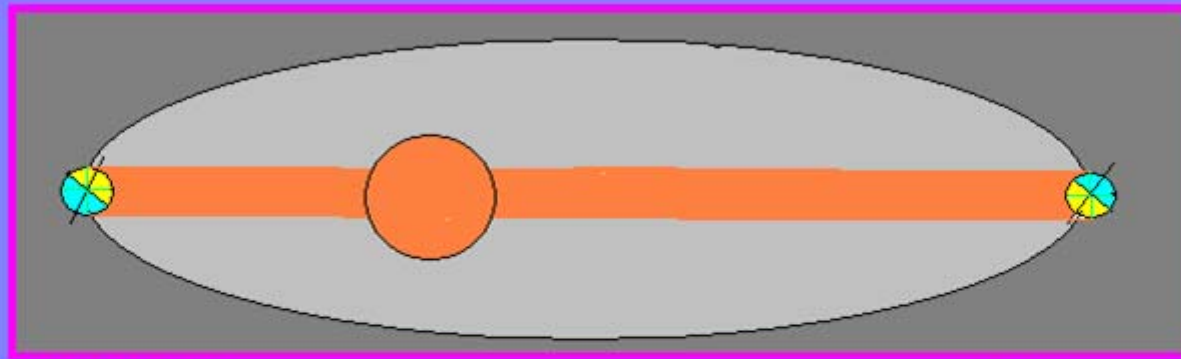




40,000

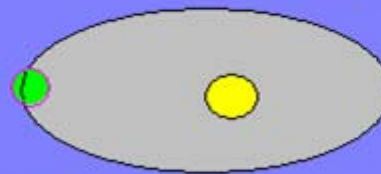
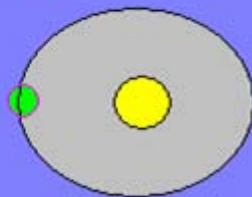


obliquity



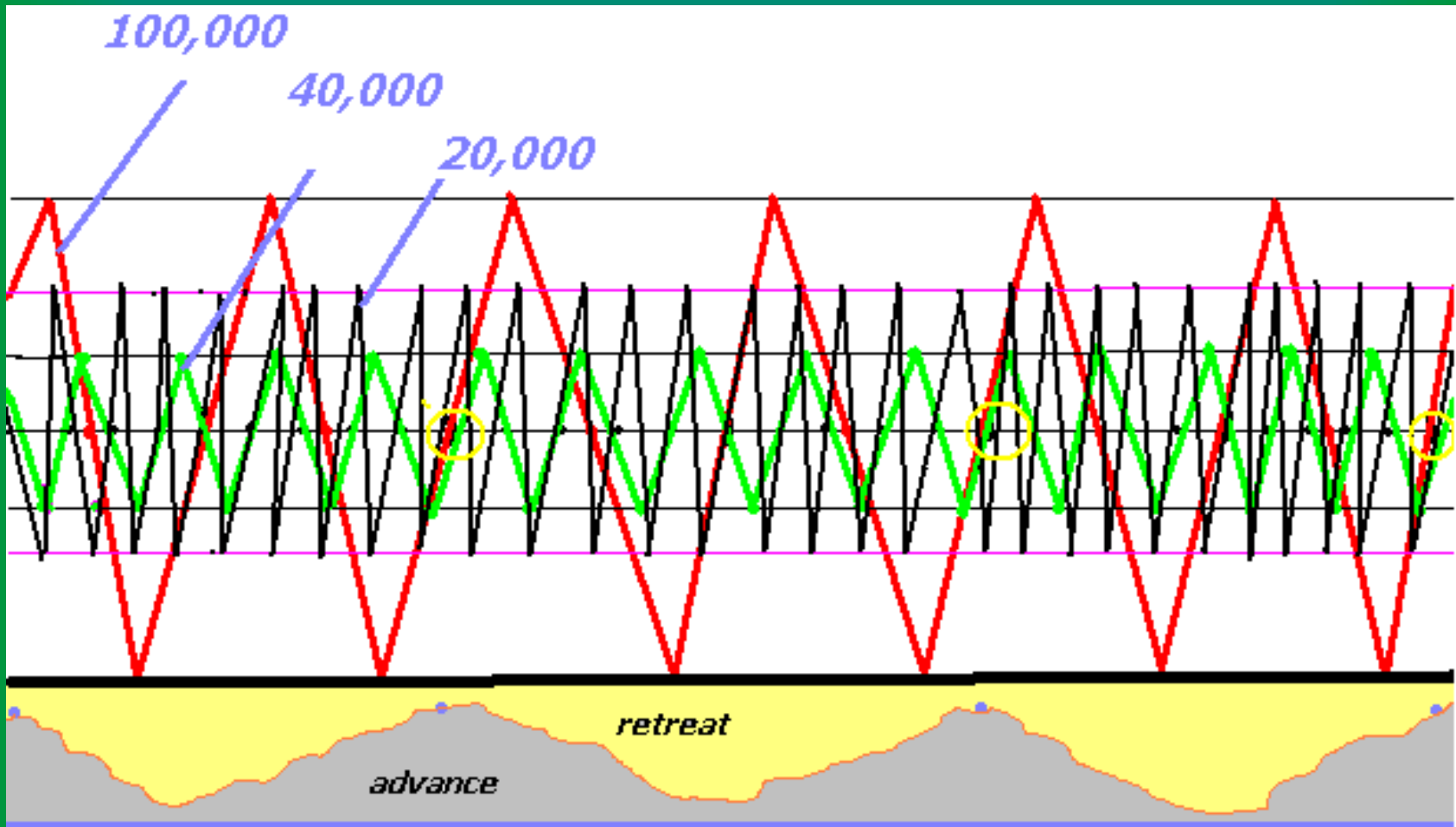
100,000

eccentricity

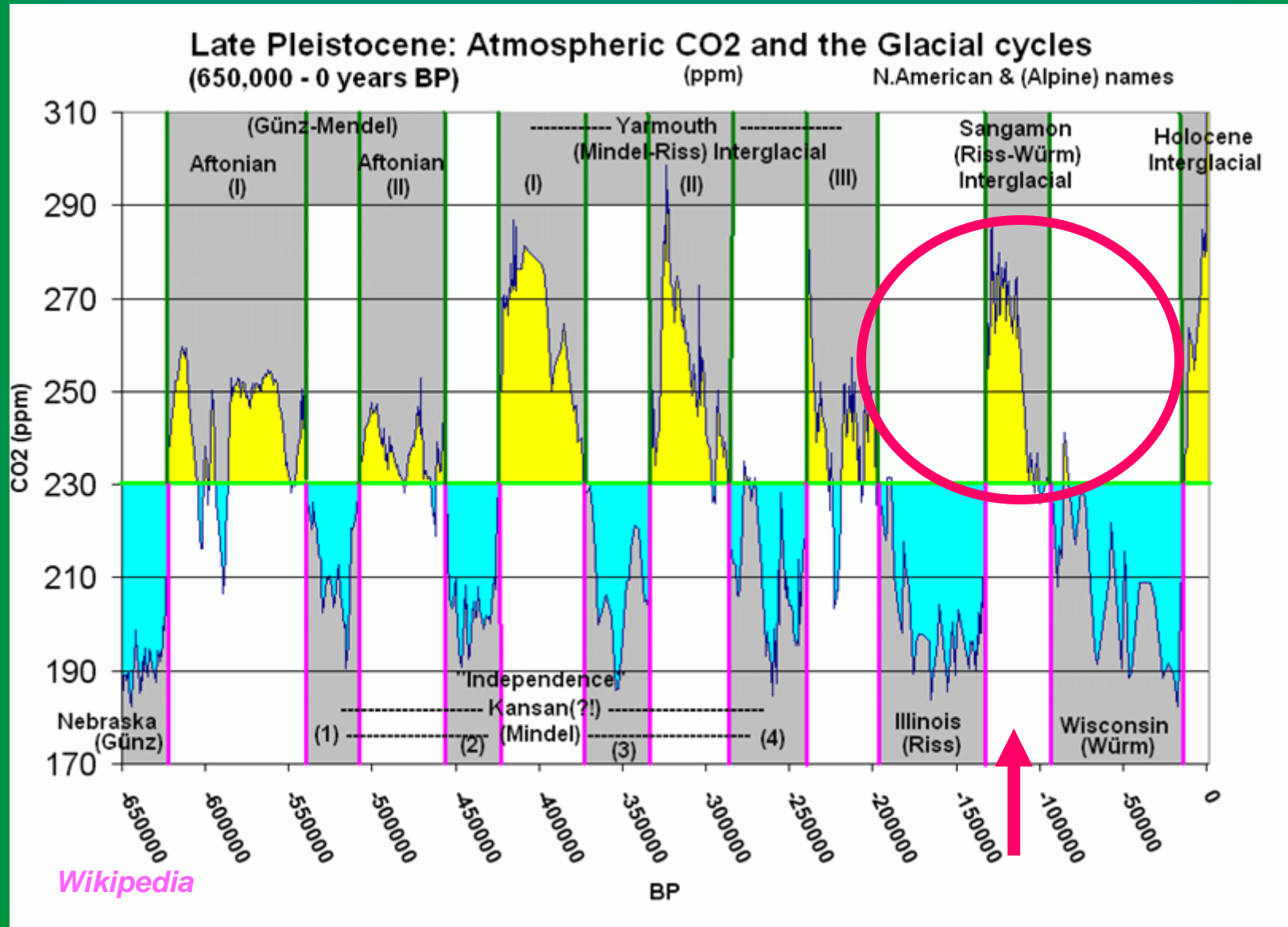


20,000

precession



Age of Ft. Thompson Beds



Late Pleistocene Fort Thompson Formation, Indrio, FL Abundance●●

Forams: Planktonic-

<i>Globorotalia menardii</i>	R
<i>Orbulina universa</i>	R
<i>Neogloboquadrina pachyderma</i>	R
<i>Globigerina bulloides</i>	R
<i>Globigerinoides rubra</i>	C
<i>Globigerinoides sacculifer</i>	R

Forams: Benthic

<i>Ammonia parkinsoniana tepida</i>	A
<i>Elphidium discoidale</i>	A
<i>Elphidium fimbriatum</i>	A
<i>Elphidium gunteri</i>	A
<i>Criboelphidium poeyanum</i>	C
<i>Amphistegina lessonii</i>	A
<i>Quinqueloculina sp</i>	A
<i>Triloculina sp</i>	A
<i>Heterostegina depressa</i>	R
<i>Hauerina sp</i>	C
<i>Gyroidina sp</i>	C
<i>Hanzawaia concentrica</i>	A
<i>Planulina exorna</i>	C
<i>Textularia agglutinans</i>	C
<i>Archais angulata</i>	R
<i>Discorbis rosea</i>	R
<i>Asterigerina carinata</i>	R
<i>Bulimina sp</i>	R
<i>Guttulina australis</i>	C
<i>Nonion grateolupi</i>	R

Ostracods

<i>Besonocythere whitei</i>	R
<i>Puriana mesacostalus</i>	C
<i>Bairdopillata sp</i>	R
<i>Peratocythereida setipunctata</i>	C
<i>Paracythereida altita</i>	C
<i>Pontocythere</i>	C
<i>Pellucistoma magniventra</i>	C
<i>Hulingsina semicircularis</i>	C
<i>Hulingsina sp</i>	C
<i>Loxoconcha matagordensis</i>	C
<i>Cytherura elongata</i>	C
<i>Neocaudites atlantica</i>	R

other microfossils

Bryozoa: *Membranipora*, *Crisia*, *Schizoporella*, *Cryptosula*,
Conopium, *Bugulopsis*, *Discoporella*.

Ophiuroidea arm 'vertebrae'

Echinodea: plates and spines

micromolluscs- *Caecum*, *Ringicula*, "dove" shells

Amphineura (chitons)

Barnacles- *Balanoid*, *Crab dactylii*

Fecal Pellets- micritized

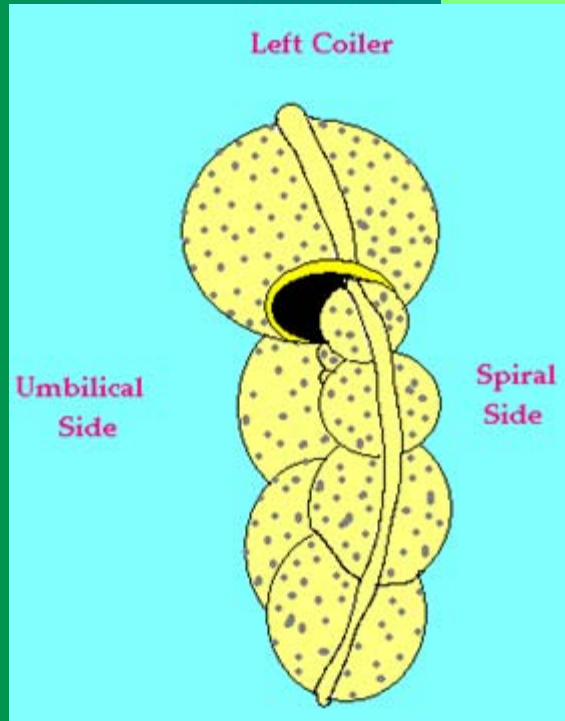
Fish teeth (pinfish) and otoliths (cuskeels, flounders-left eye-, gobies,
 Sea Robins, White Perch), *vertebrae*, *Shark teeth and placoid scales*.

●●A=ABUNDANT, C=COMMON, R=RARE

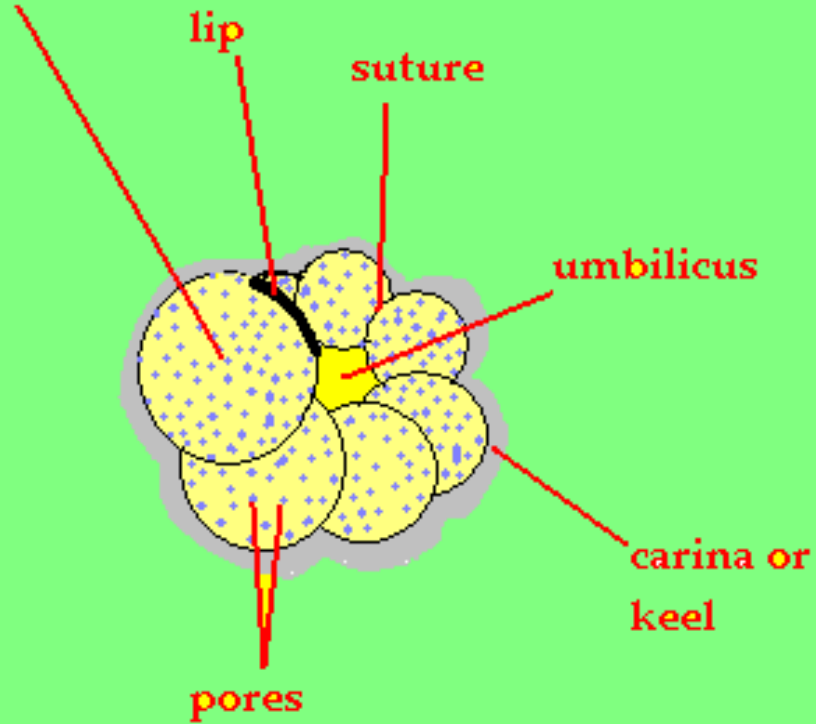
Benthic Foraminifera

Basic 'Foram' Anatomy

chamber



aperture &

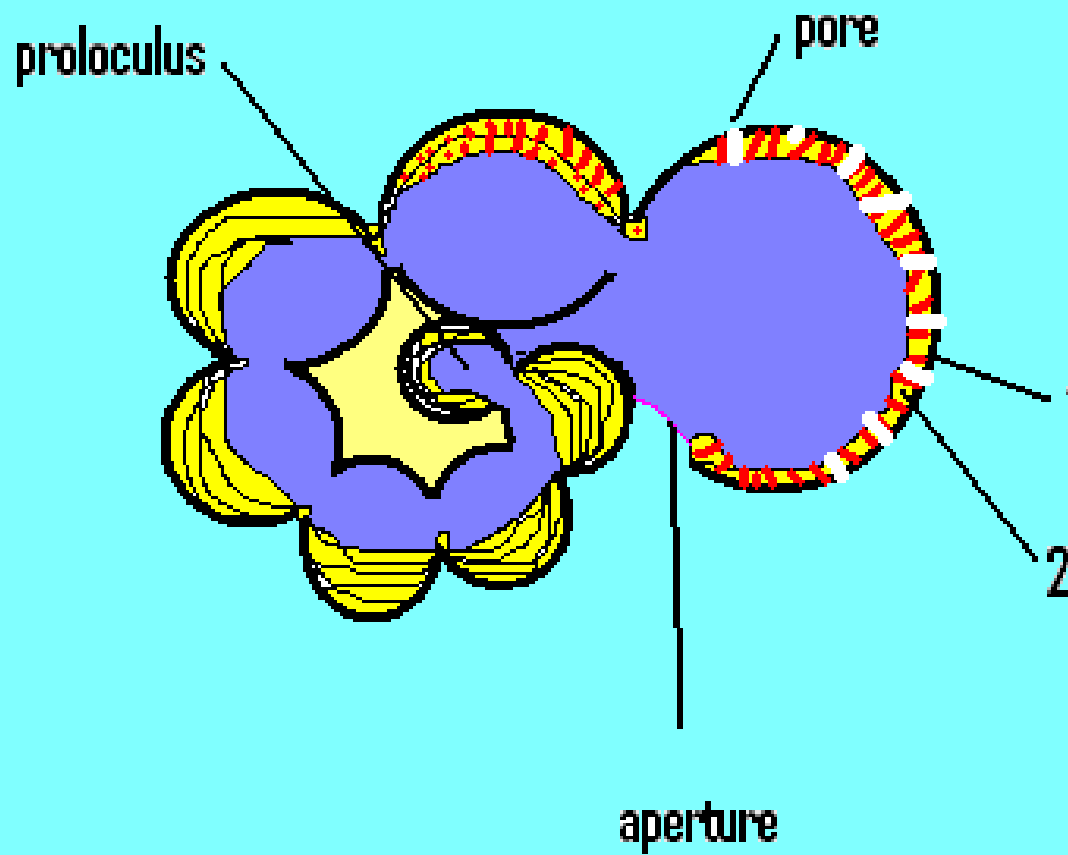


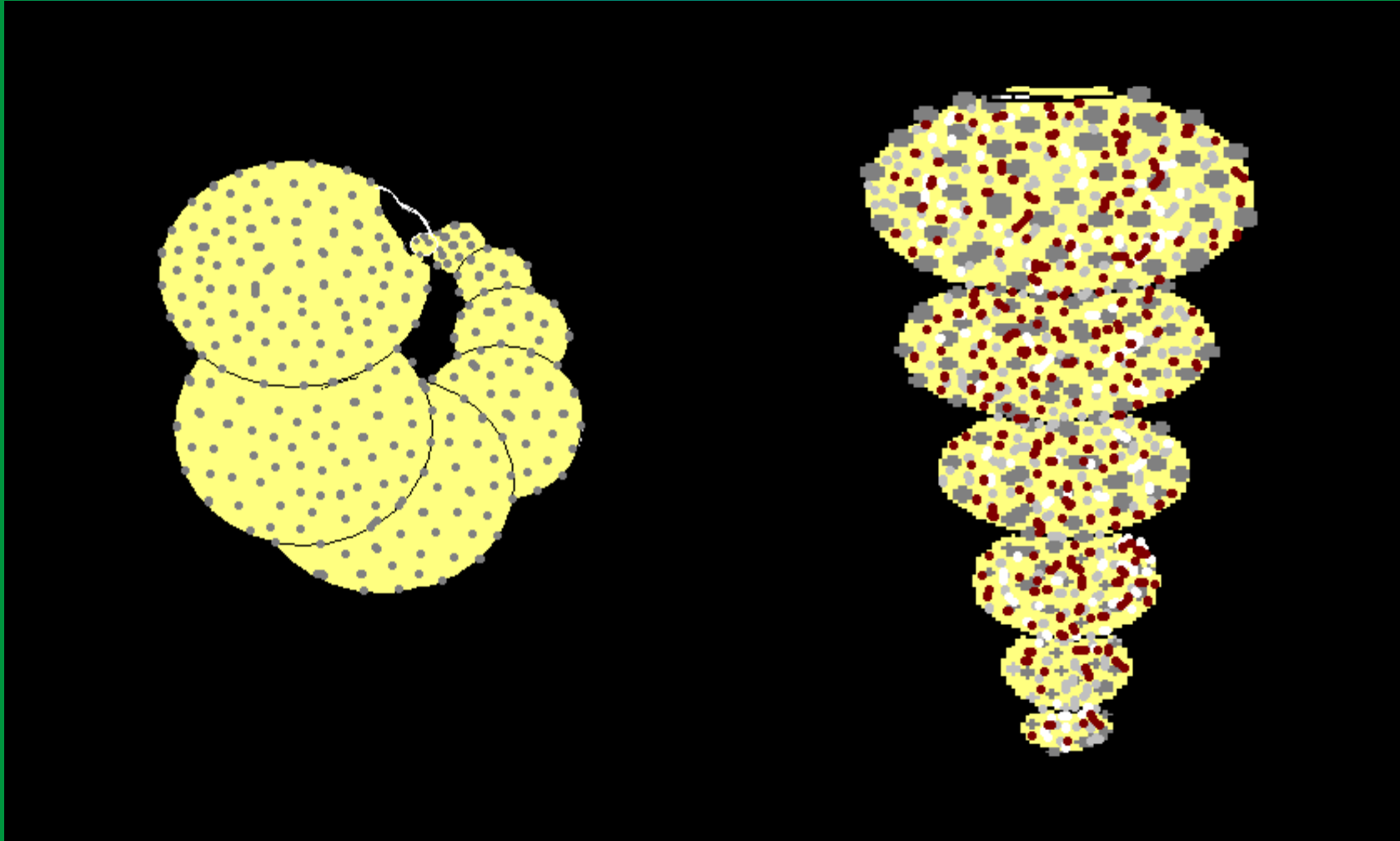
Test Composition & Classification

- **Organic-walled** (protein/mucopolysaccharide)-*Allogromia*
- **Agglutinated** (particles cemented by CaCO₃)-Textulariids
- **Secreted**- 3 types: 1) **Microgranular**-Fusuliniids
2) **Porcelaneous** (imperforate)-Miliolinnids
3) **Hyaline**- new layer added to test with each new chamber-Globigerinnids & Rotaliids

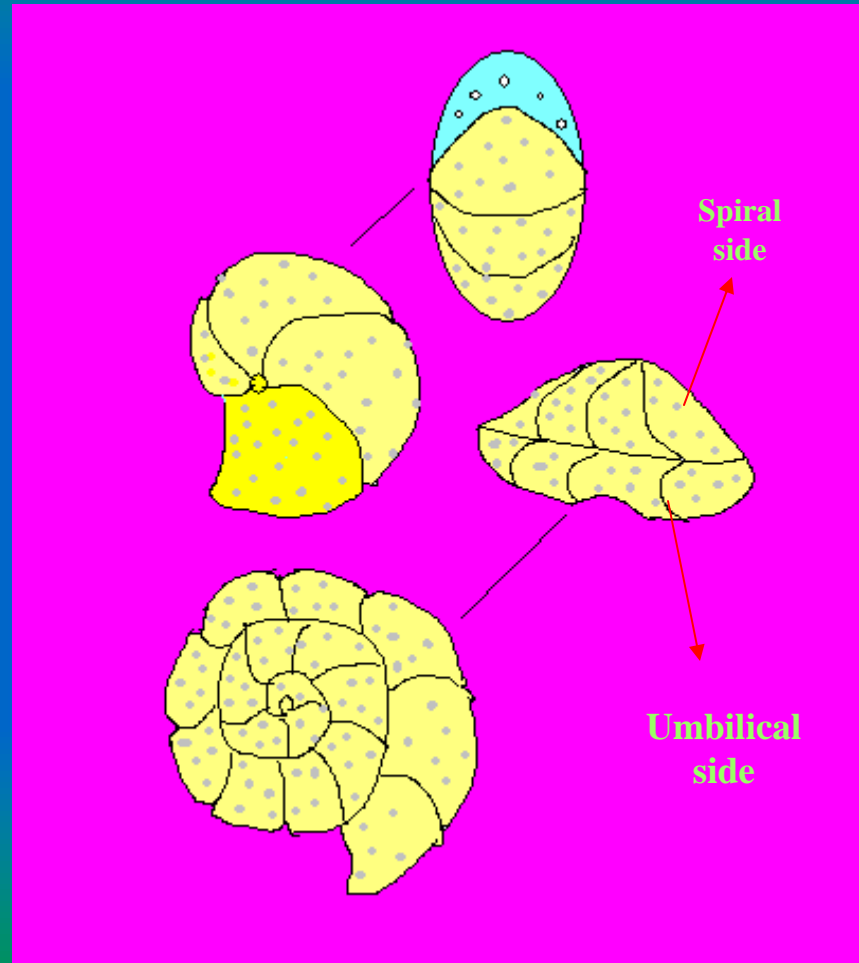


Hyaline perforate: lamellar-radial CaCO_3 xls

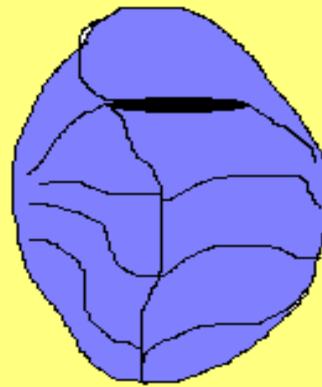




Forams: Planispiral v. Trochospiral, Evolute v. Involute



Apertural View

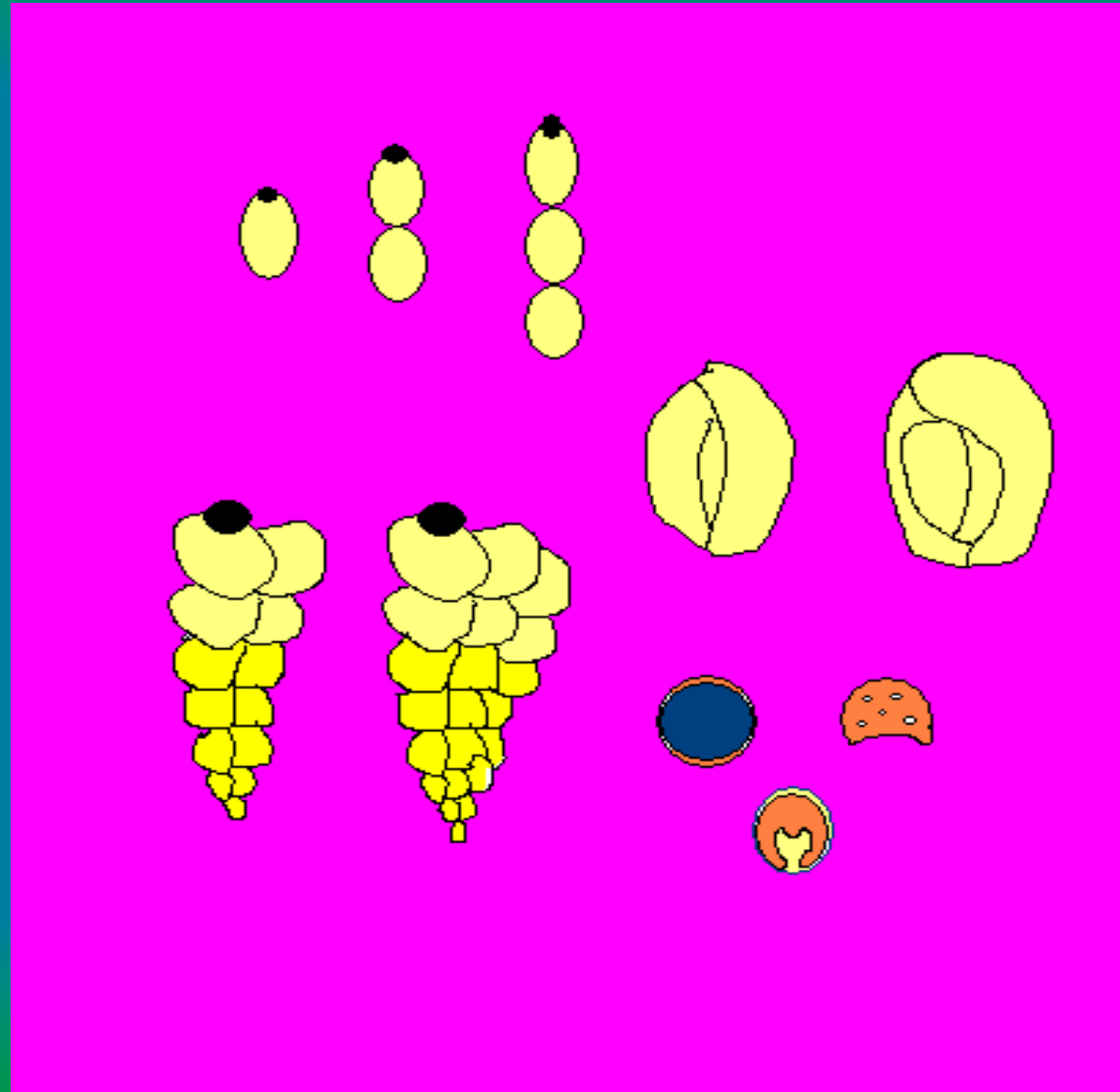


Biconvex

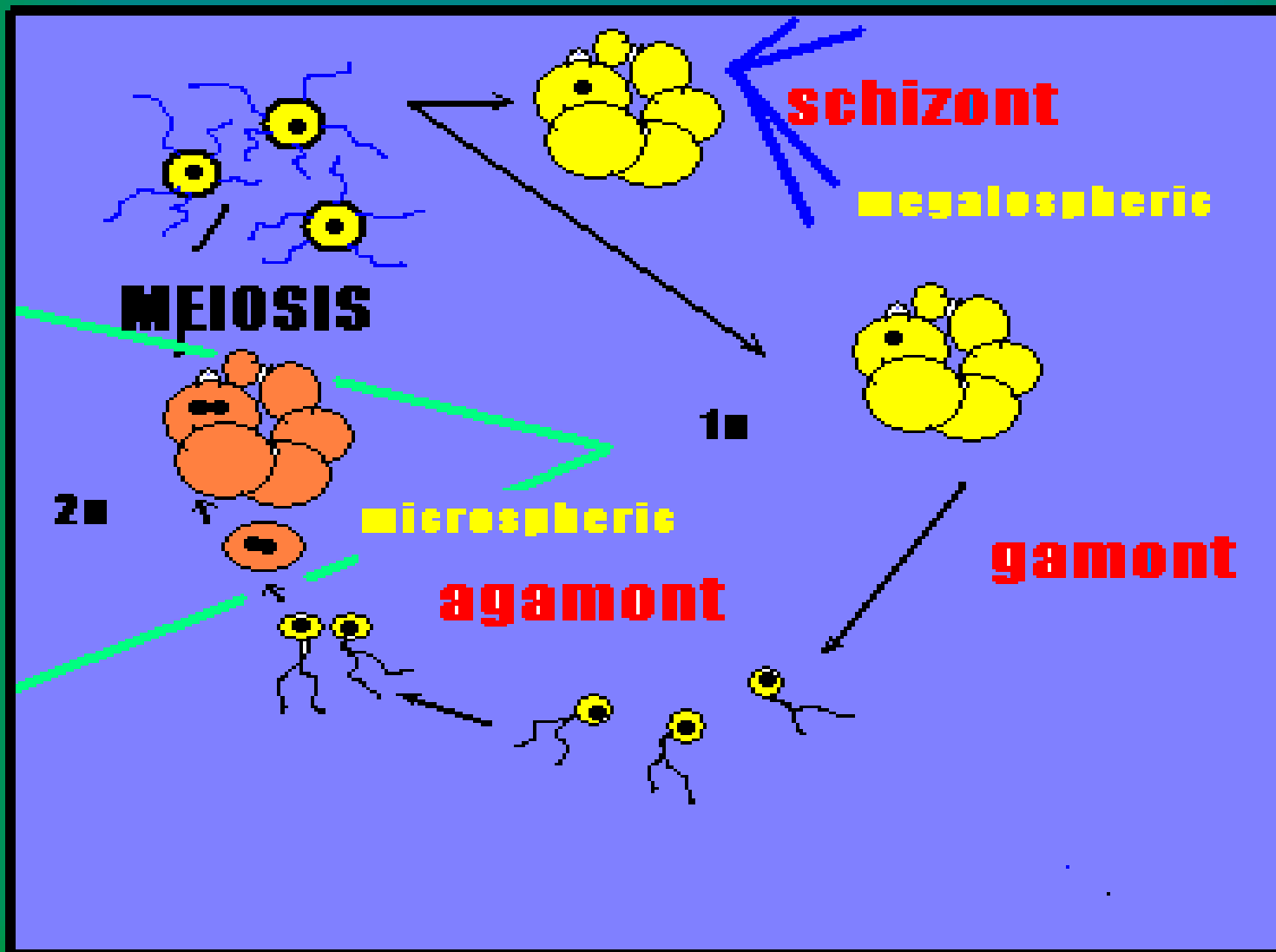


Planoconvex

Chambers: Uniserial, Biserial, Triserial; Unilocular, Bilocular, Trilocular; Leptospiral. Apertures: Cribriform, Toothed, Lipped

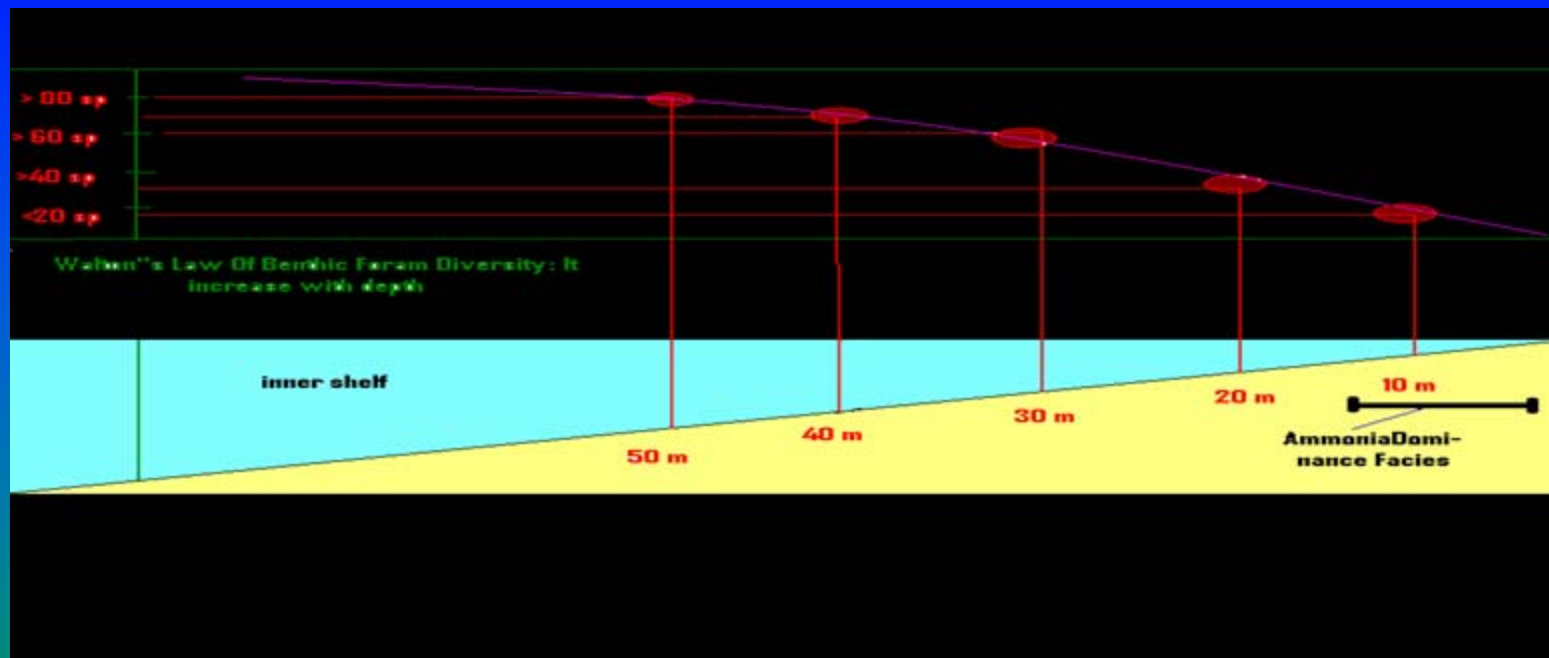


Simple Life Cycle of FORAMINIFERA



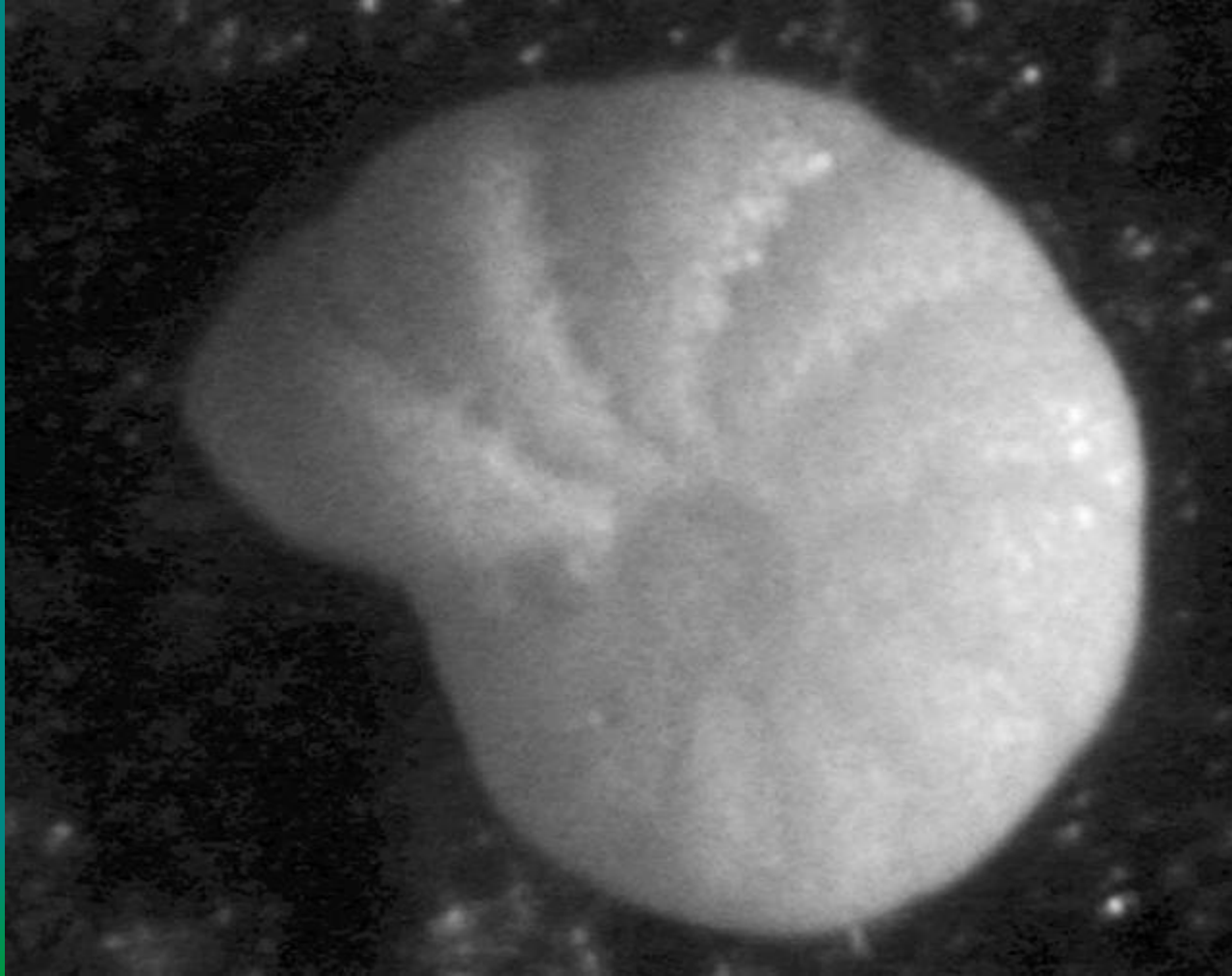
Diversity versus Large Population

- Low Foram Diversity

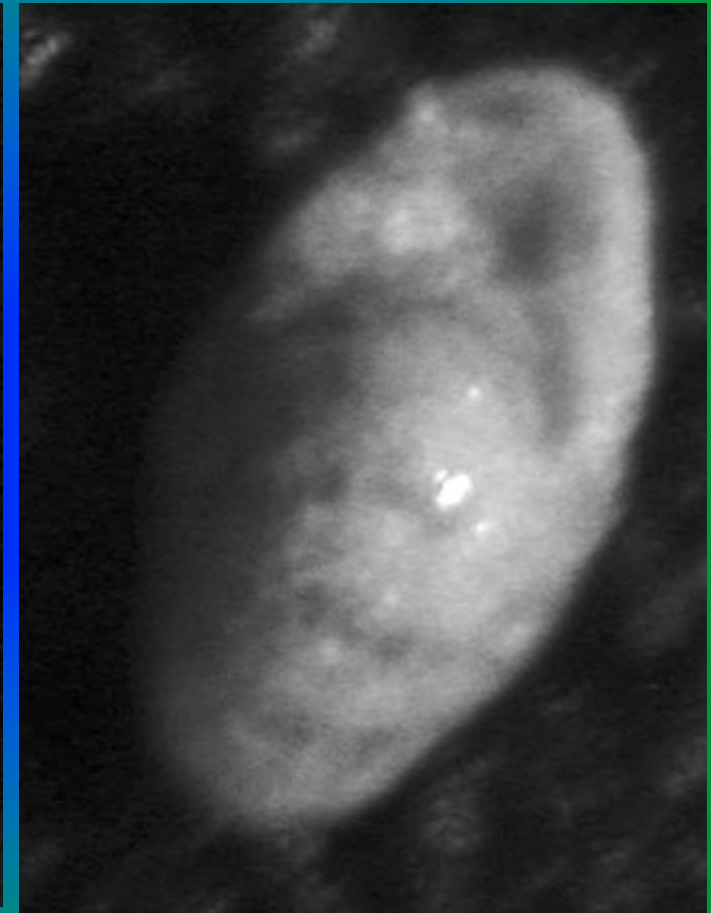
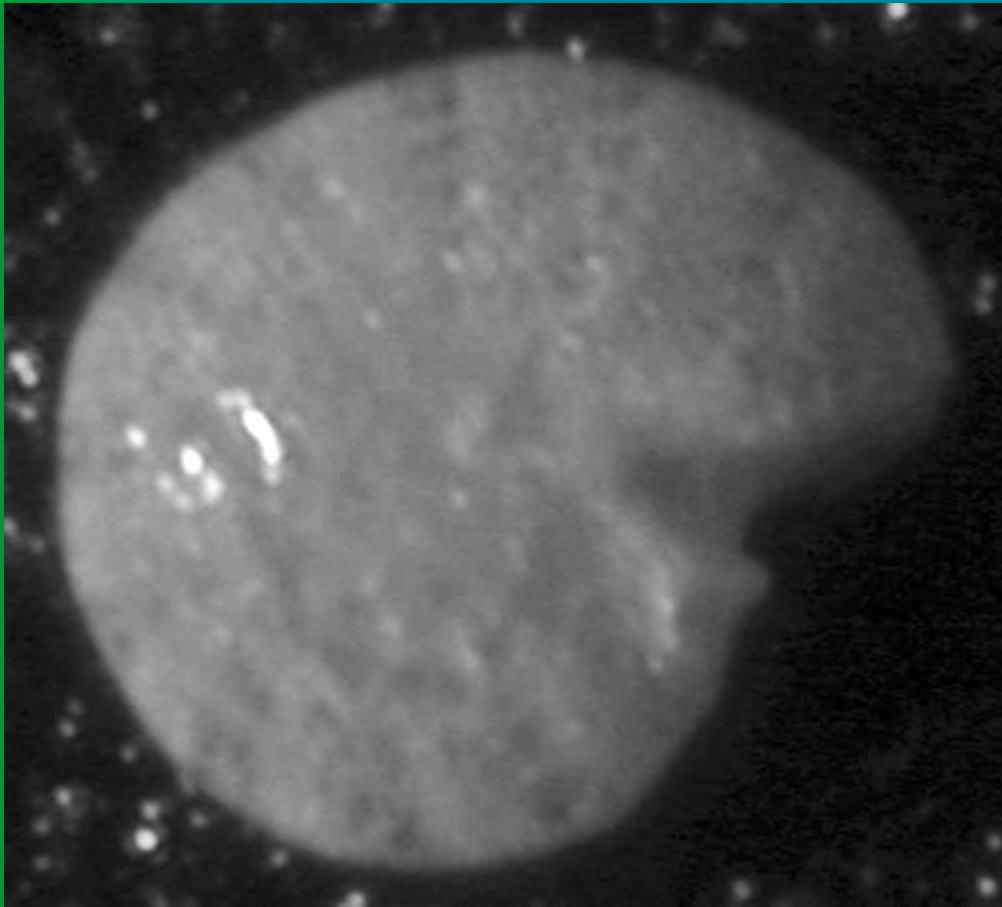


- High Population Density

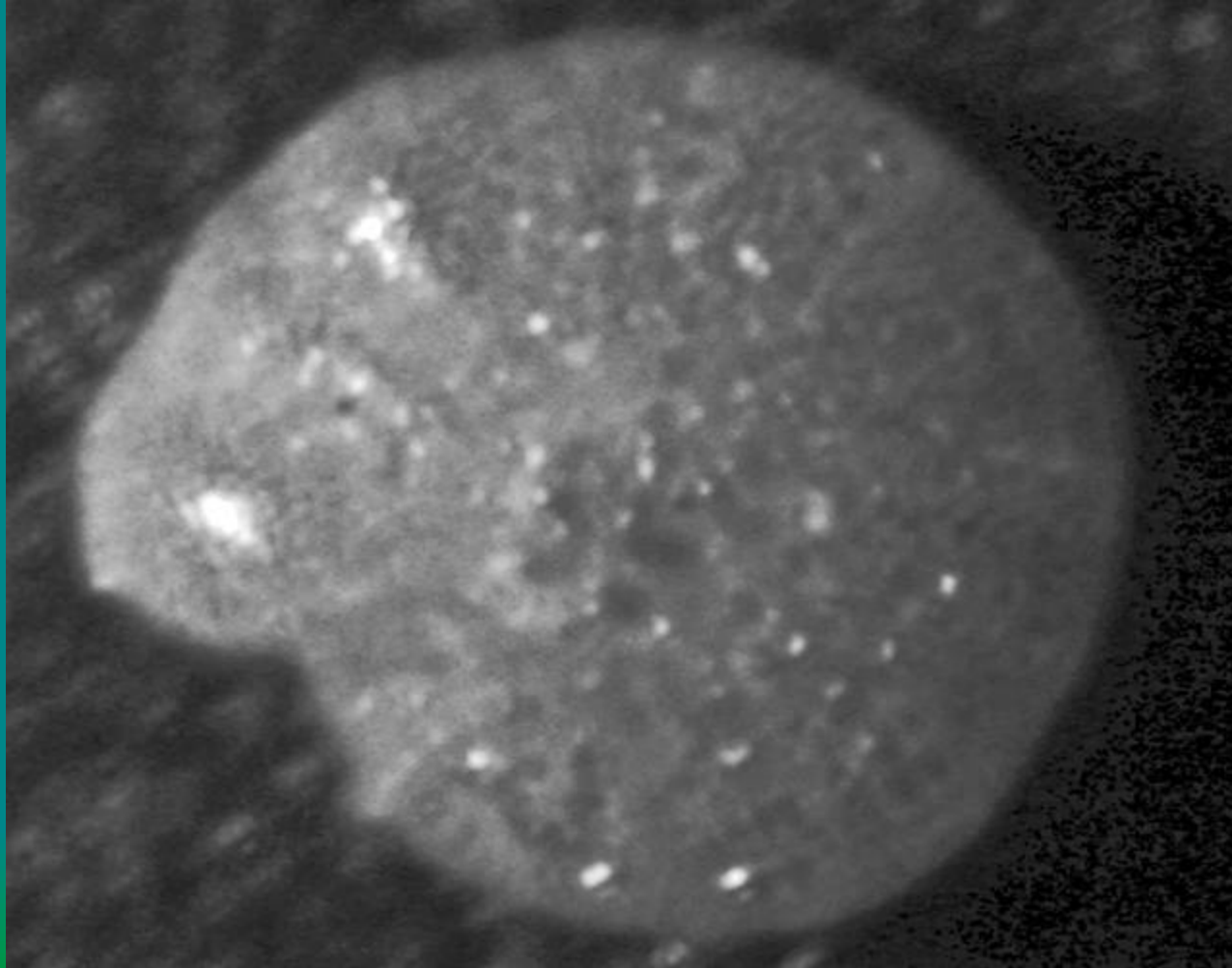
Cribroelphidium poeyanum



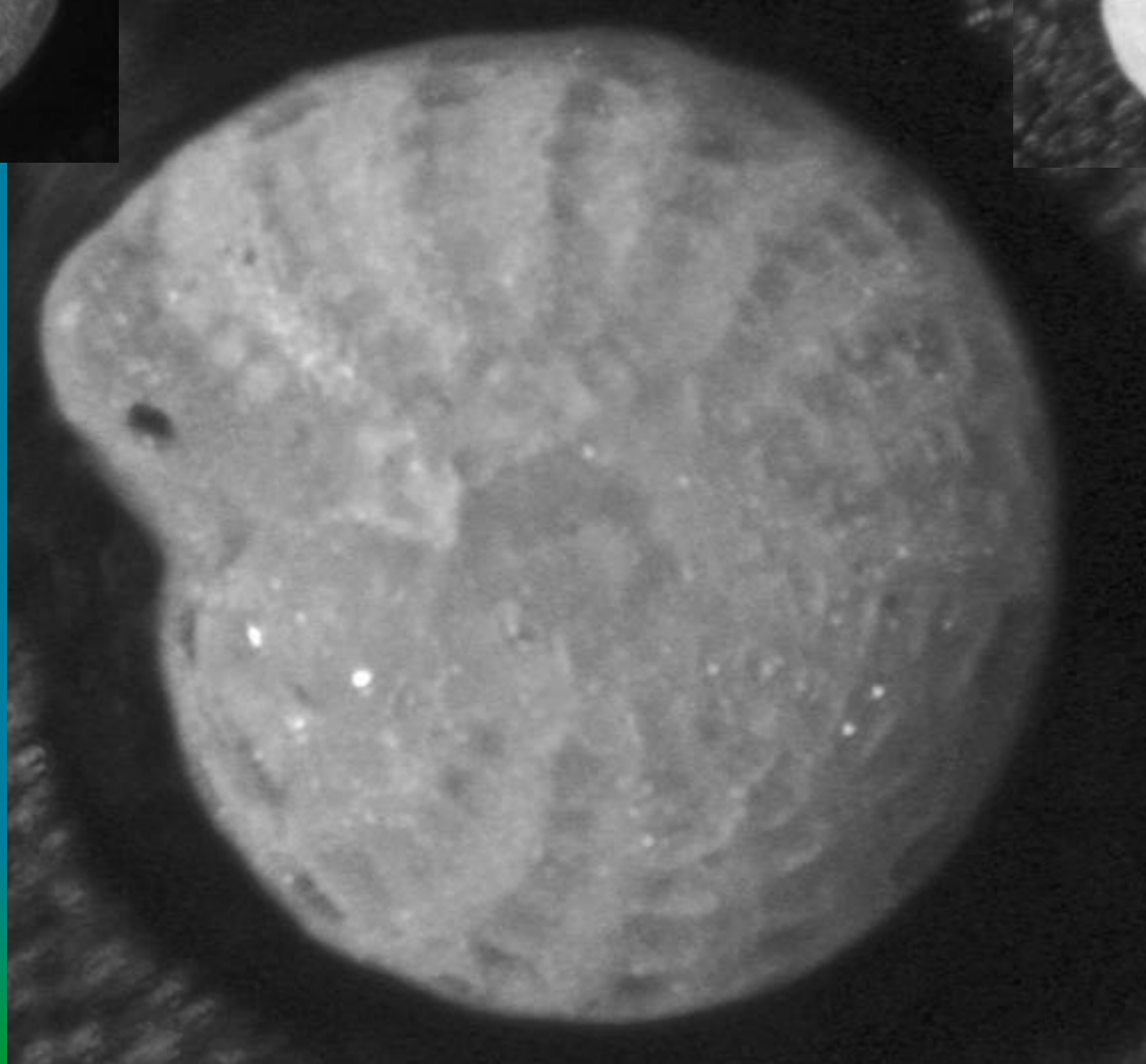
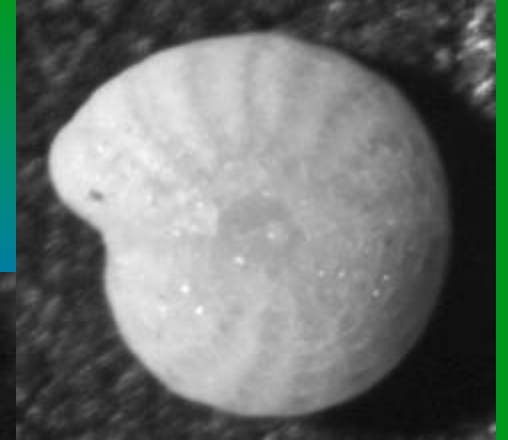
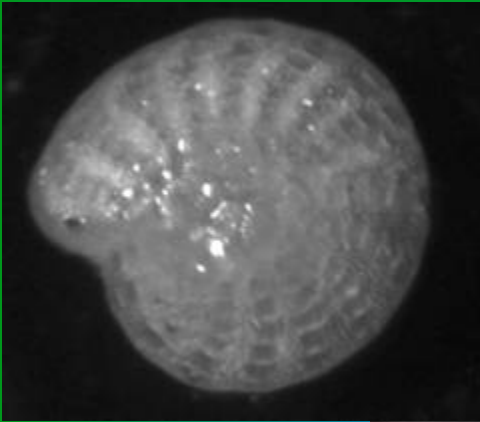
Elphidium gunteri



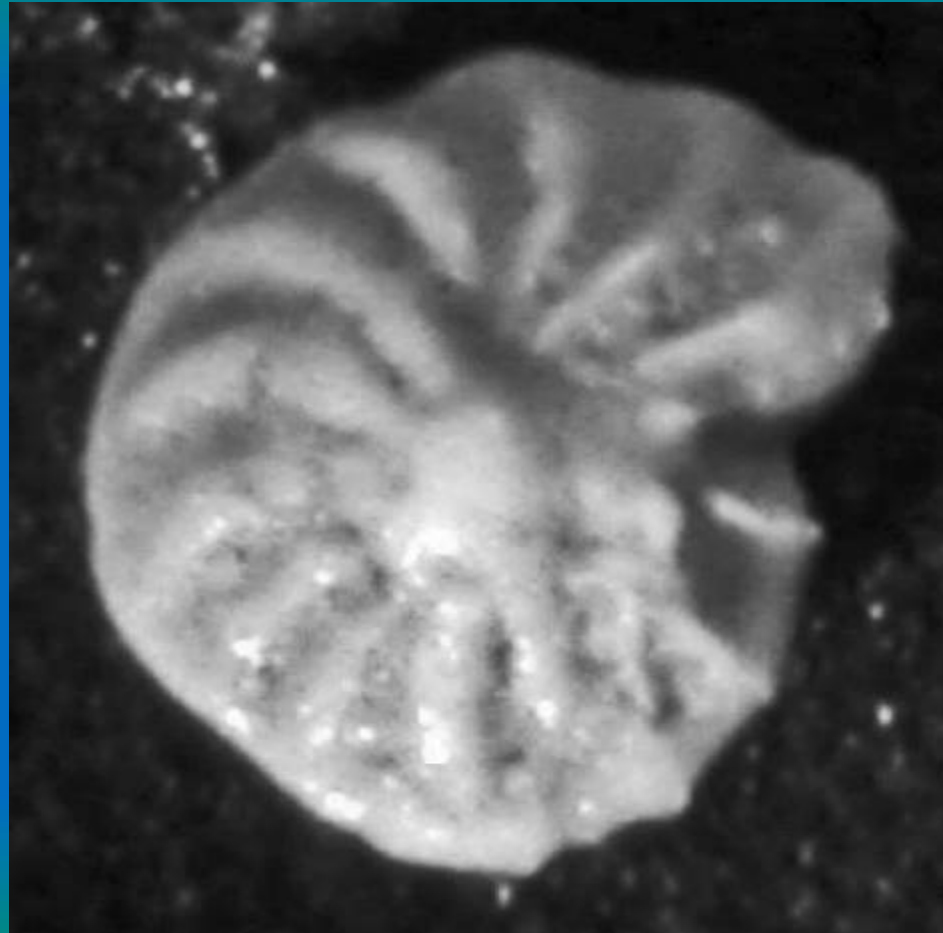
Elphidium gunteri



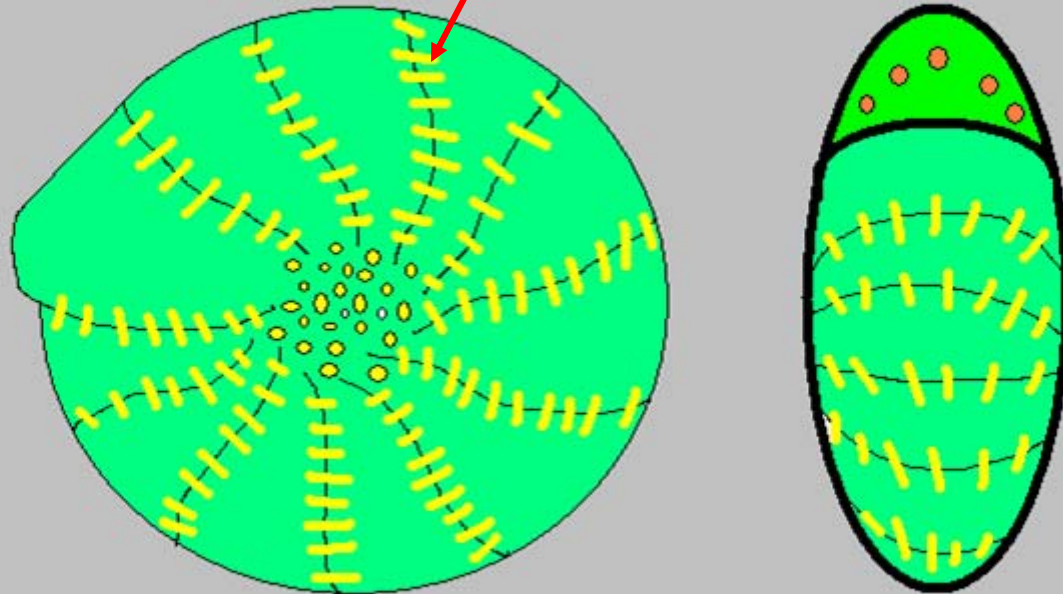
Elphidium discoidale



Elphidium fimbriatulum

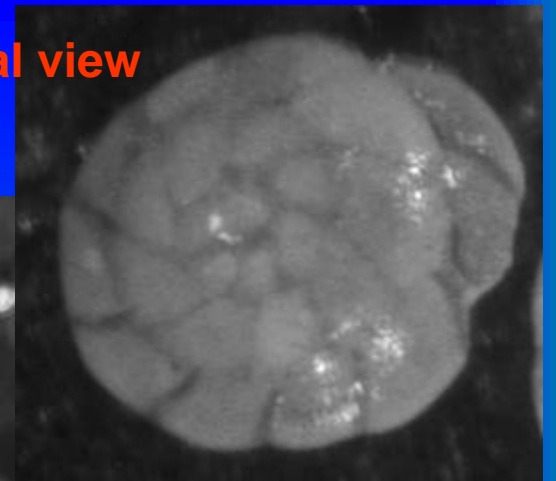


Elphidium: retral processes

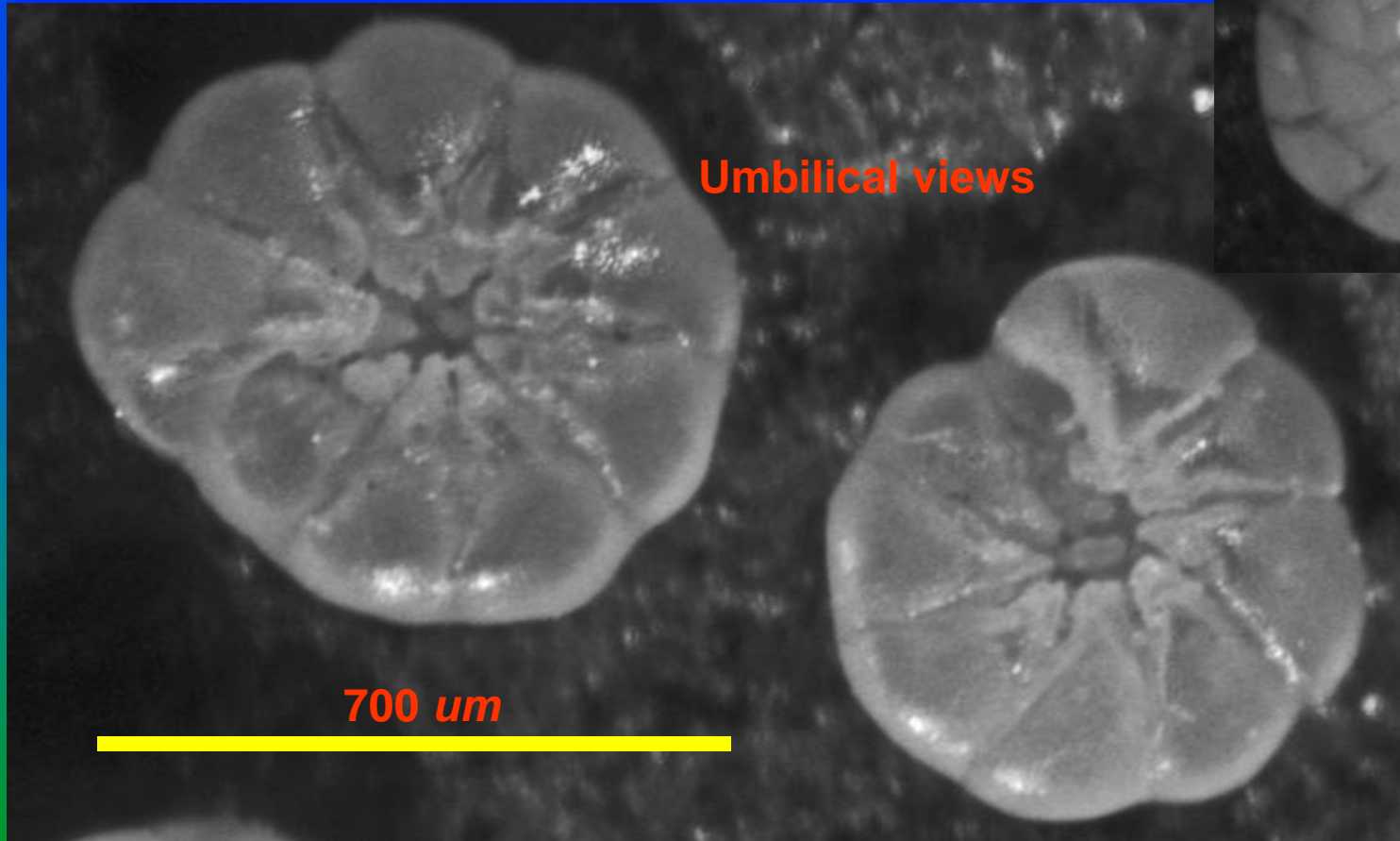


Ammonia parkinsoniana var. *typica*

Spiral view



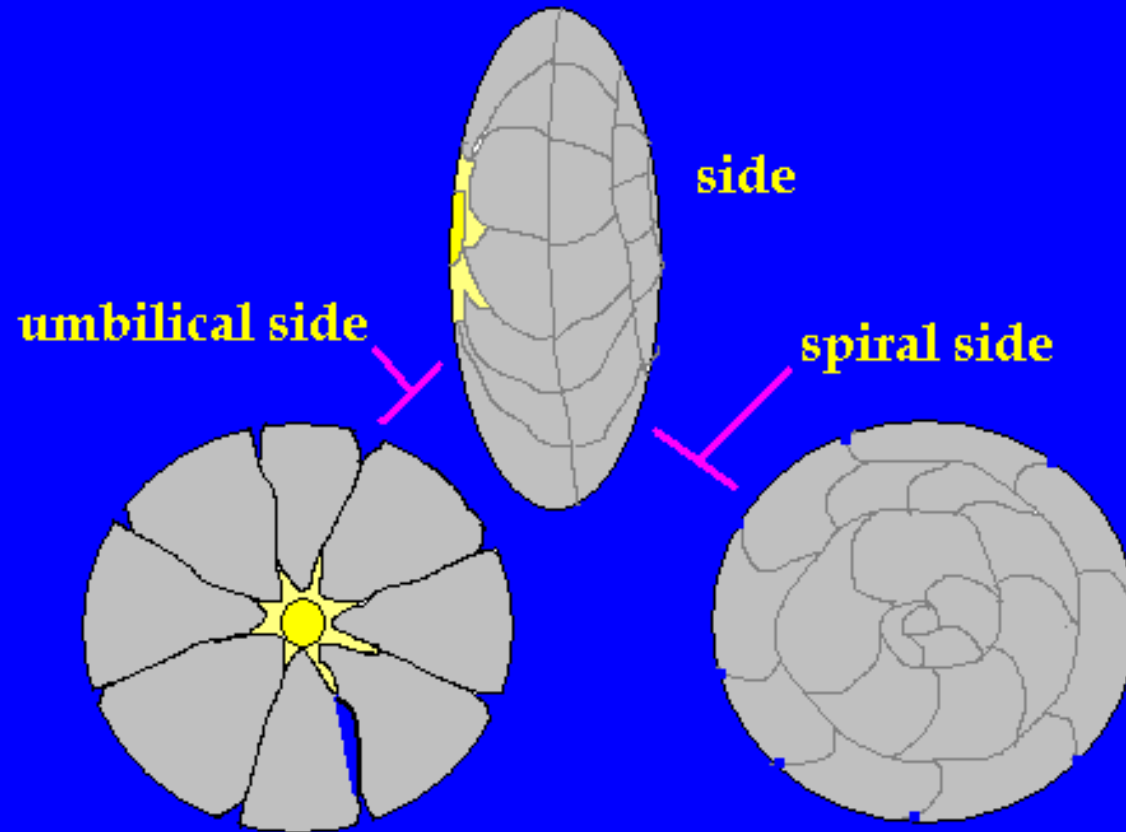
Umbilical views



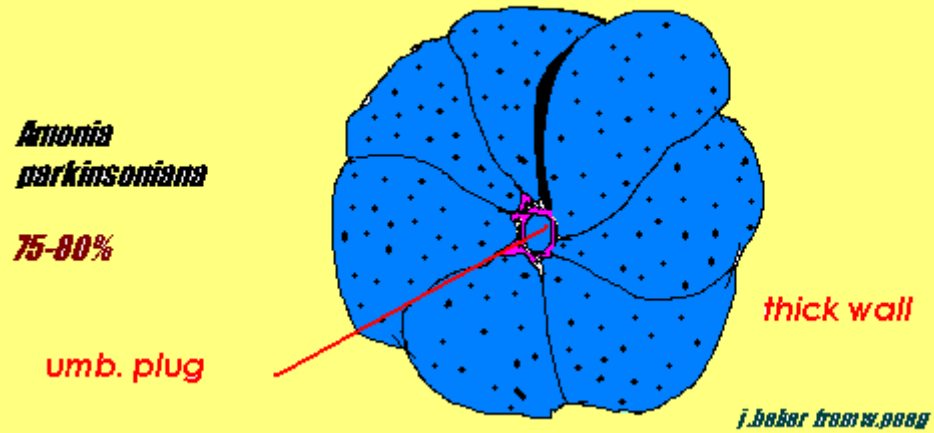
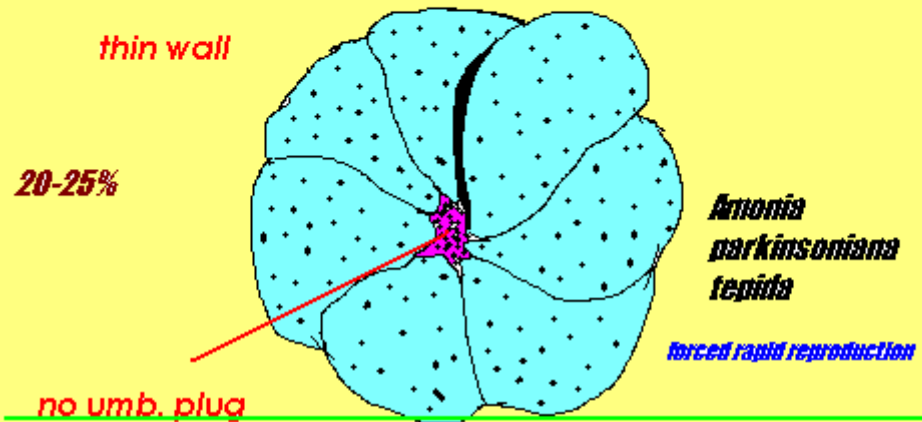
700 um

j baker 2007

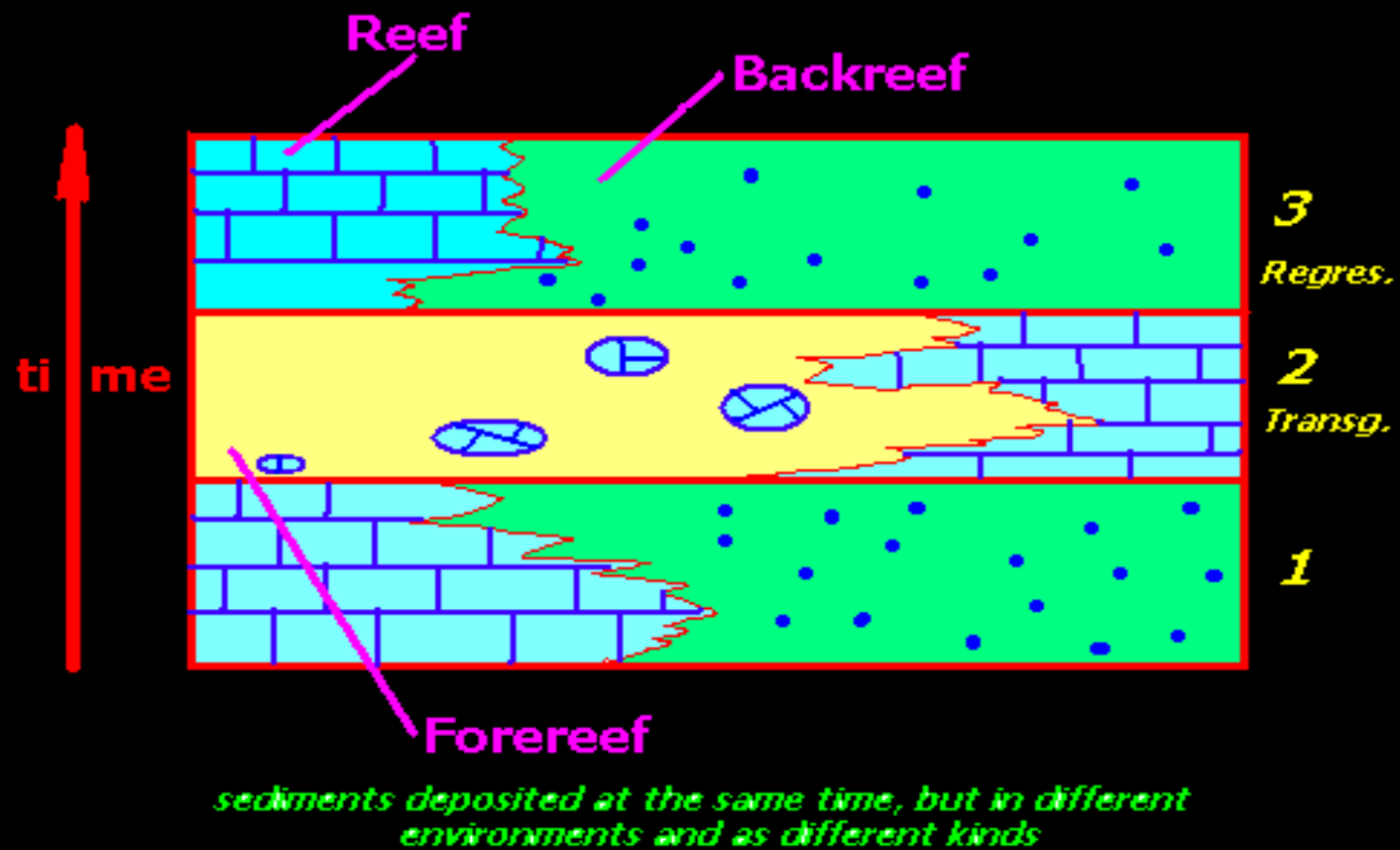
Ammonia parkinsonia var. *tepida*



Concurrent Ecophenotypes



The "Facies Concept"

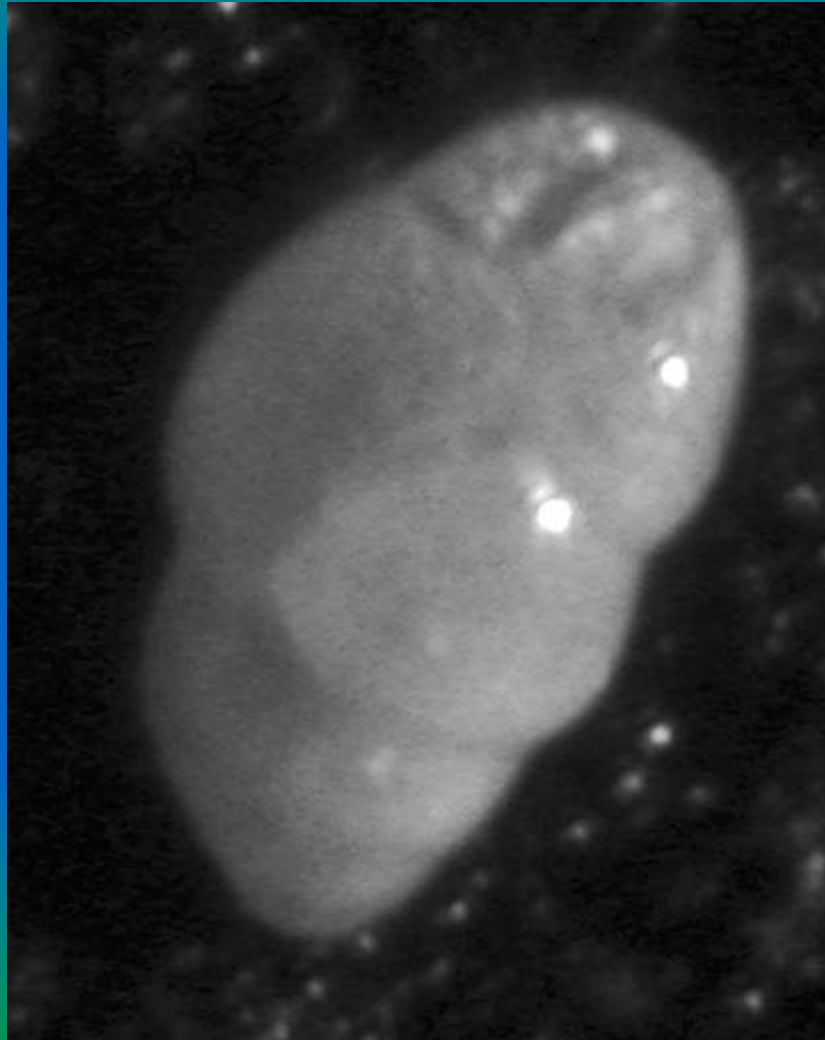


Inferred Environment

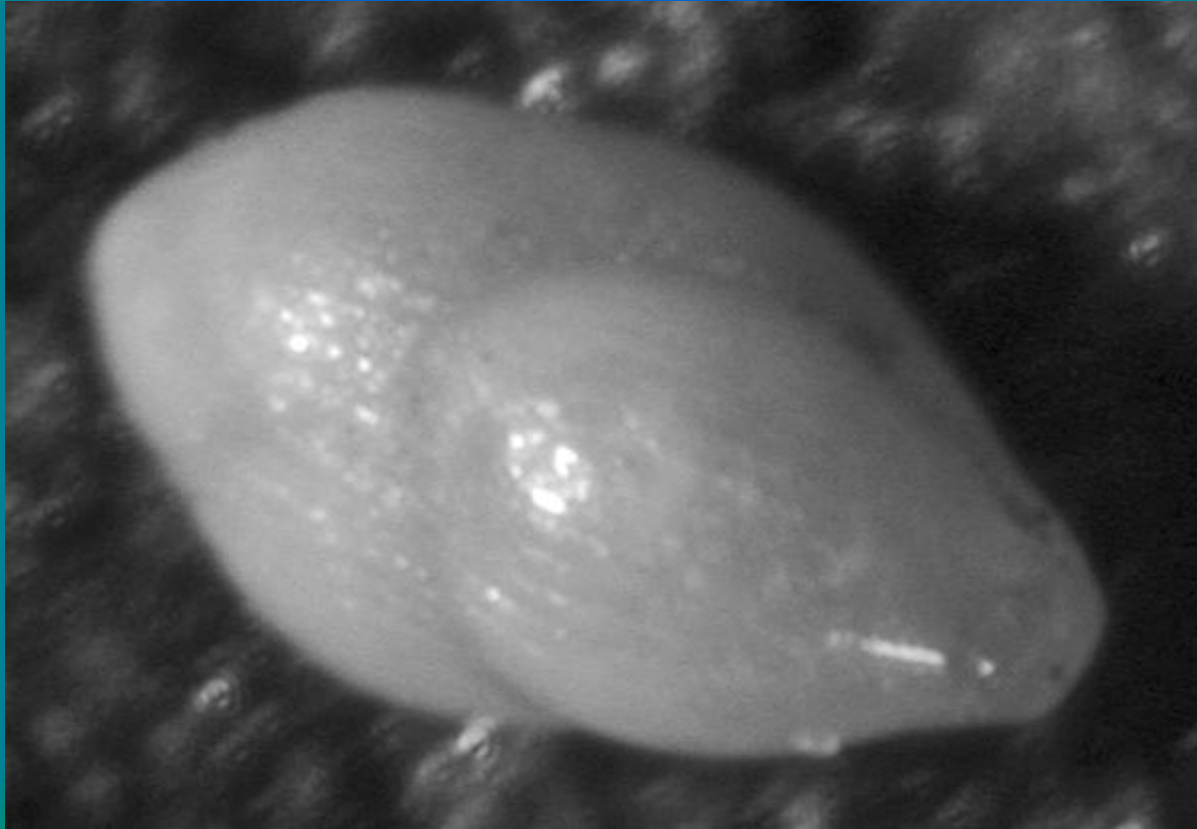
~1:5 Ratio of *Ammonia parkinsoniana* to *Elphidium* spp. (*gunteri*, *discoideale*, *poeyanum*)

- A&E together: 85-95% of foram population
- marine, but medium salinity
- near shore, <1- 3 Meters, but subtidal, some current
- high nutrient levels (organics, PO₄, nitrates)
- subtidal lagoon to estuary facies- **no** marsh forams such as *Ammonoastuta* or *Trochammina*
- Interbeds of caliche crust (now limestone) w/ land snails.

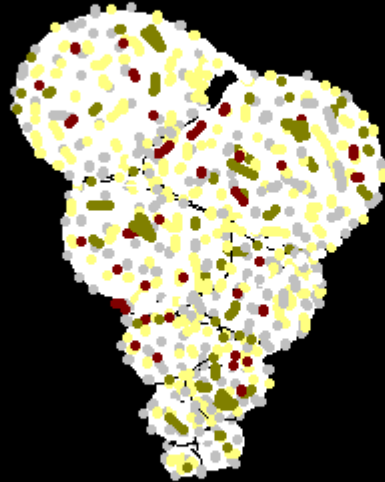
Bulimina sp.



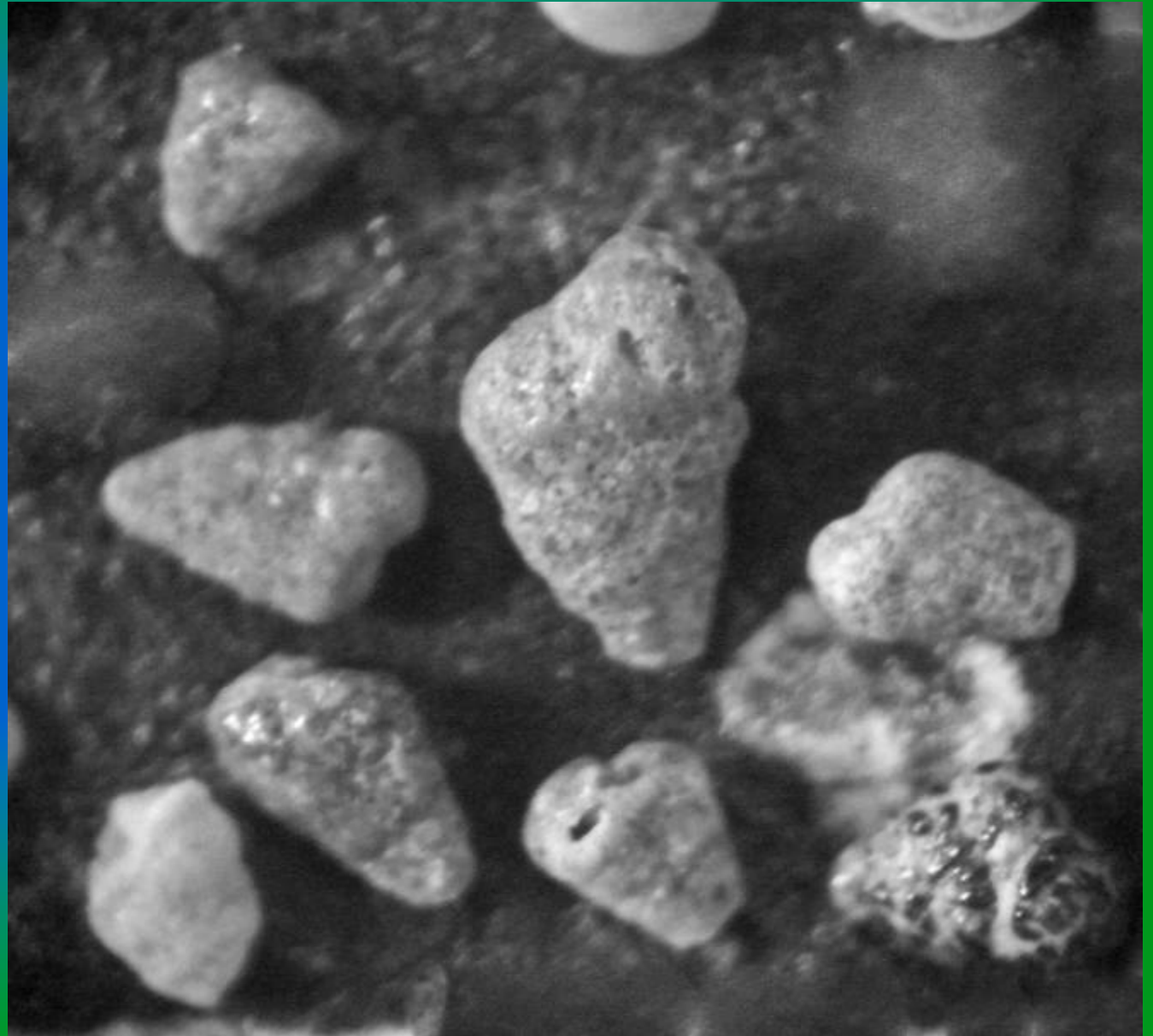
Guttulina sp.



Textularia sp.



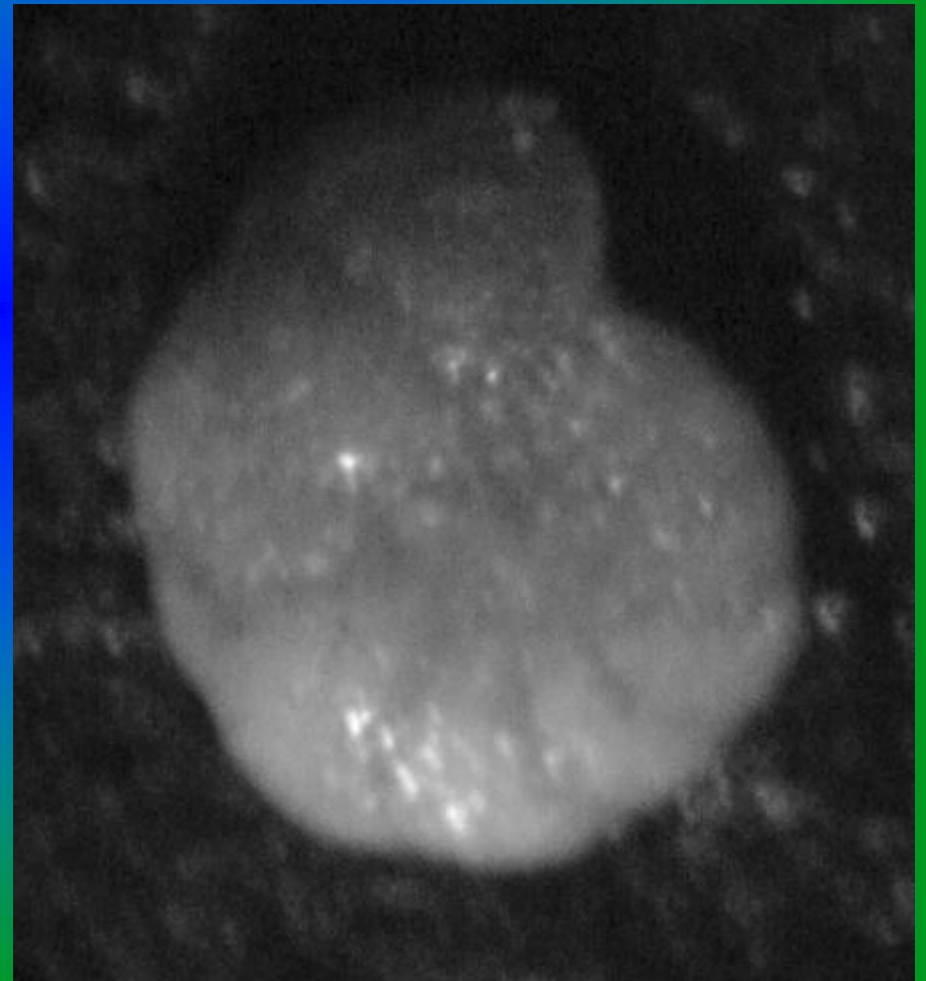
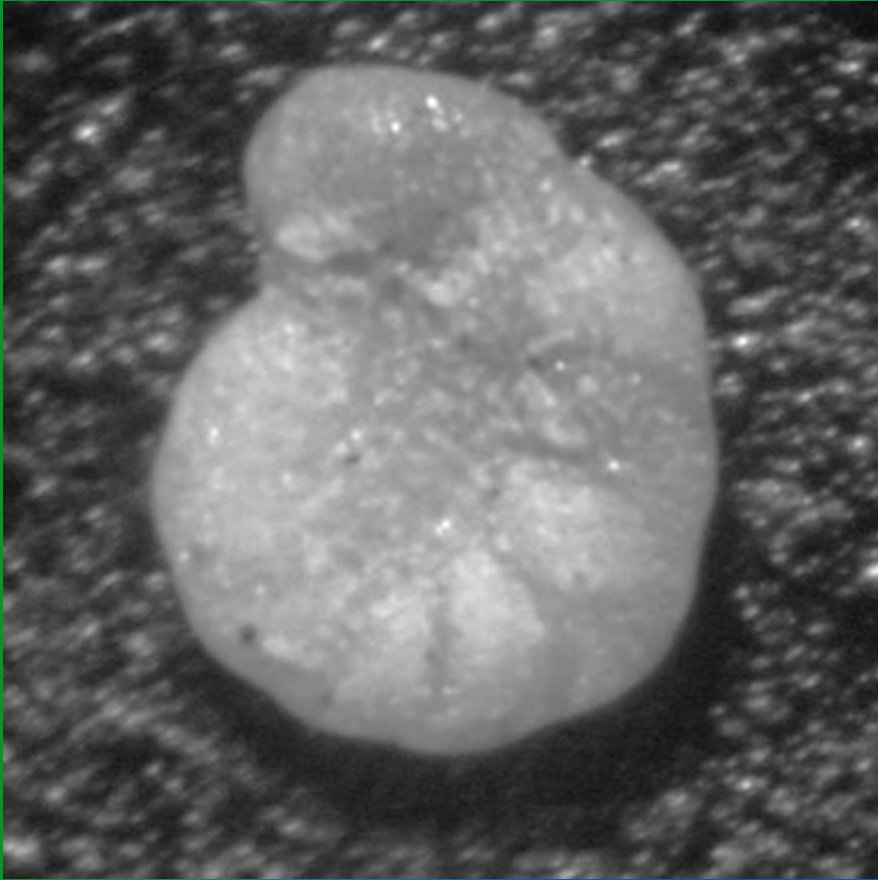
Textularia agglutinans



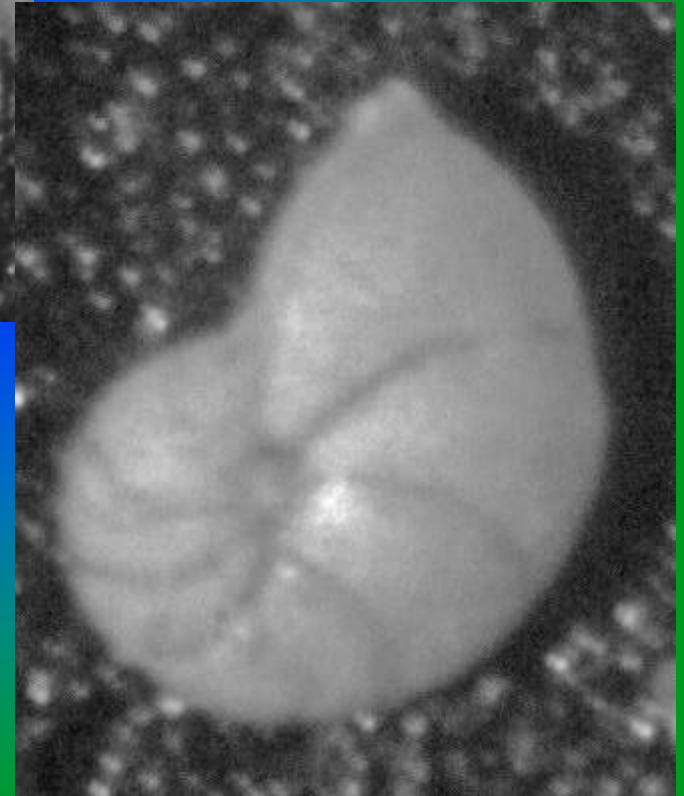
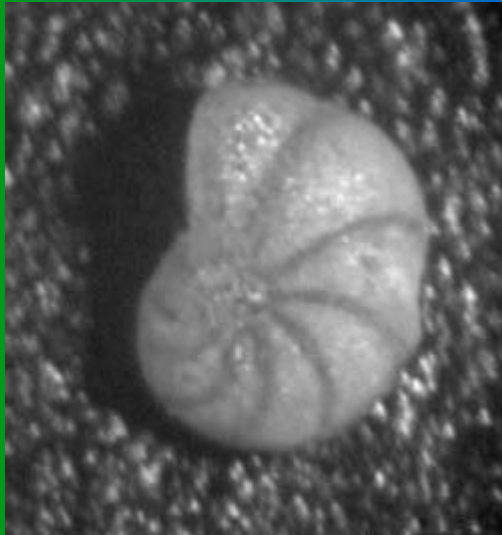
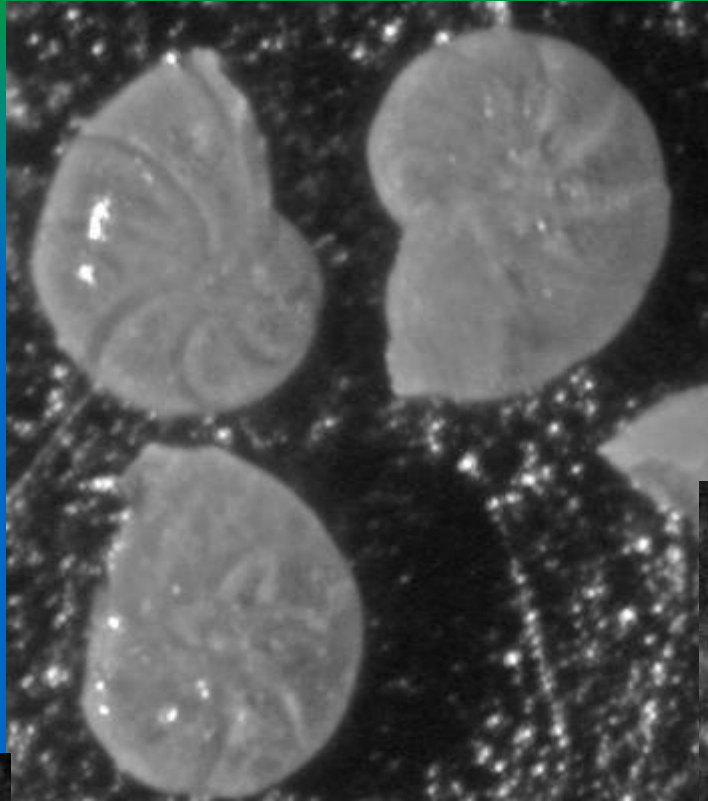


Planulina exorna

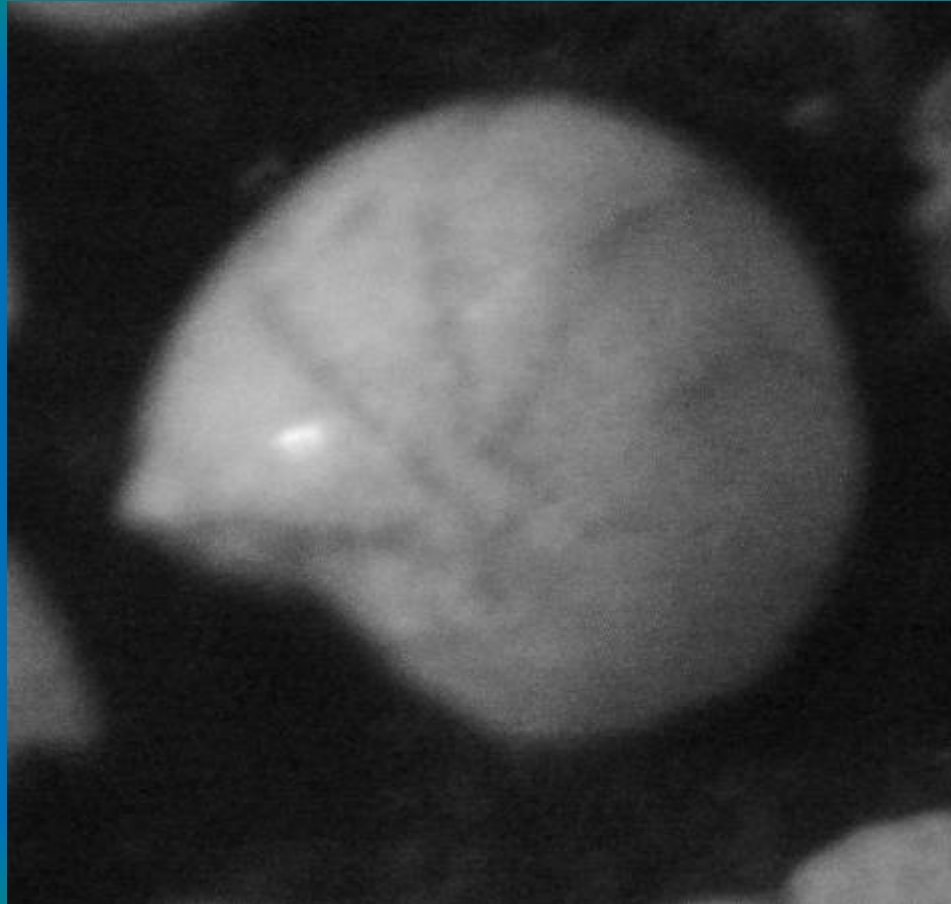
Planulina exorna



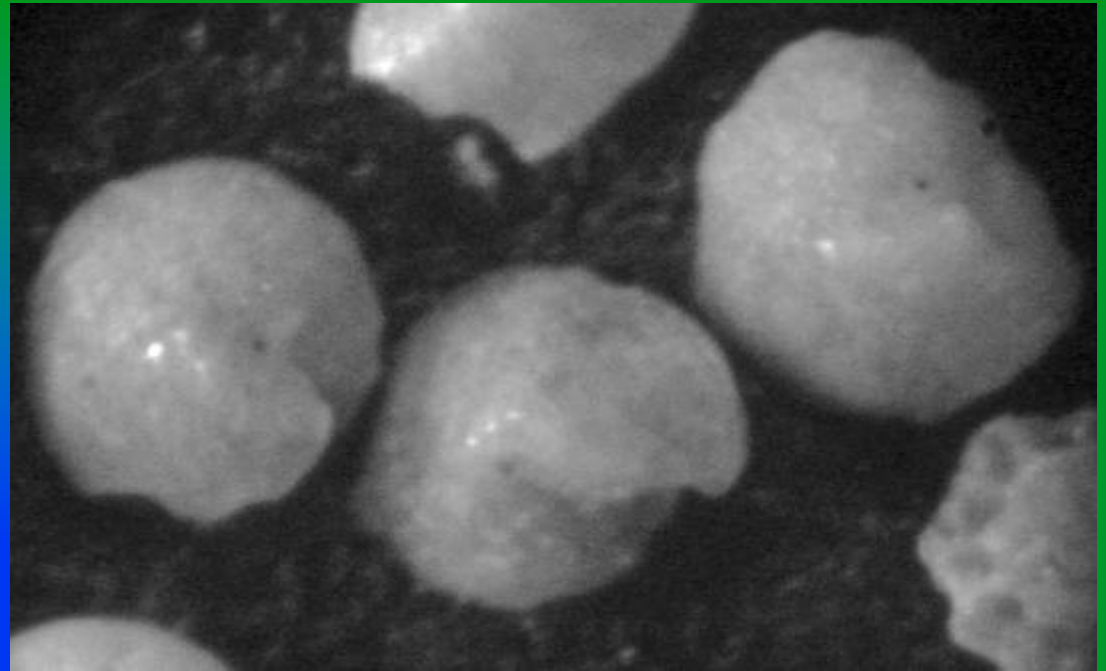
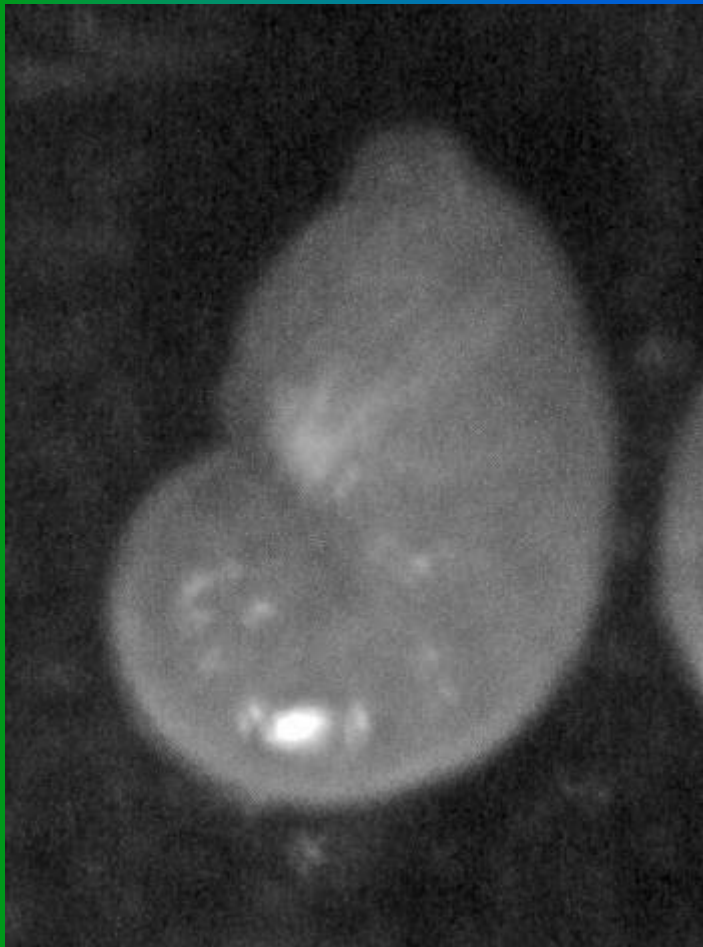
Hanzawaia concentrica



***Gyroidina*... a slope dwelling
foram**

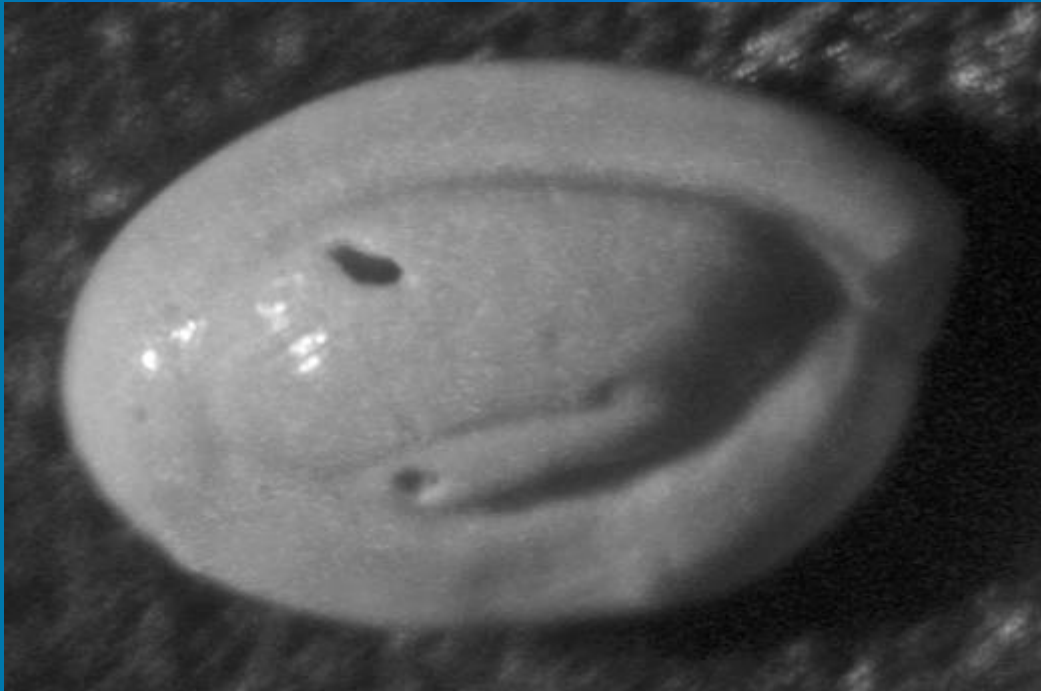


Nonion grateloupi



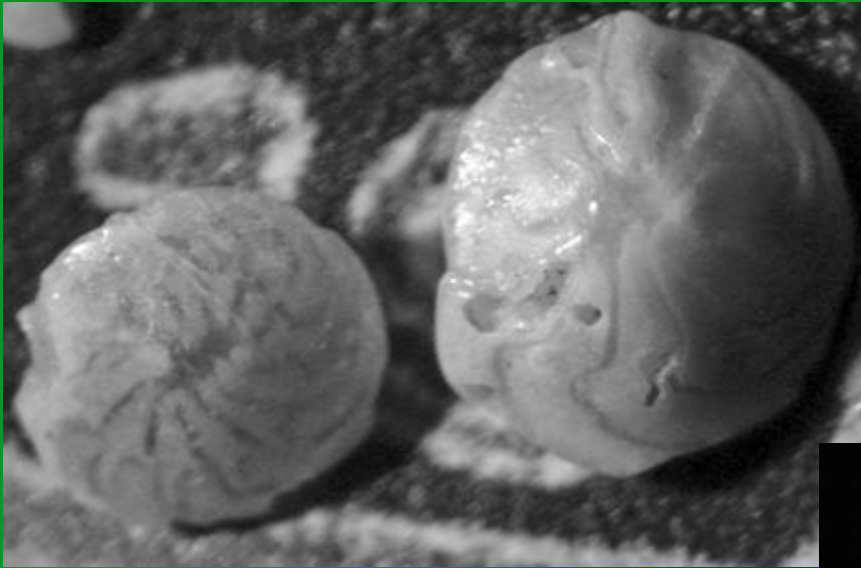
Asterigerina carinata

Quinqueloculina sp.



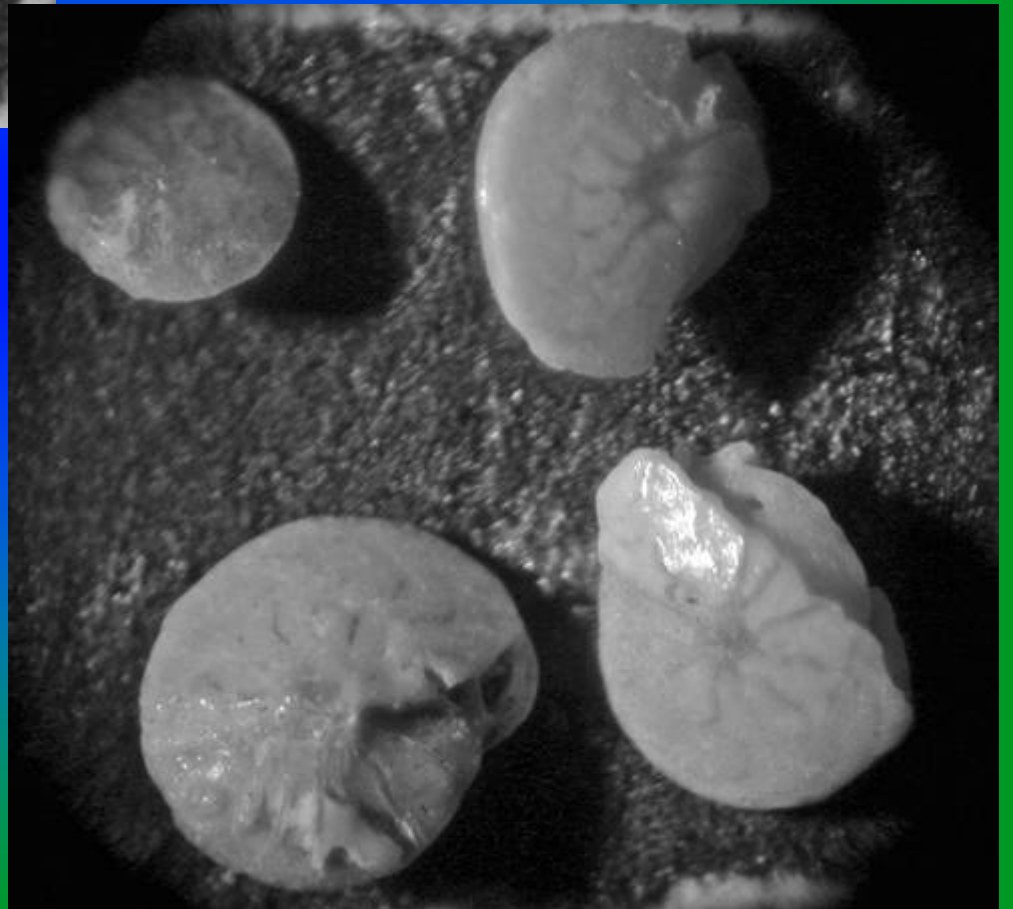
Hauerina bradyi



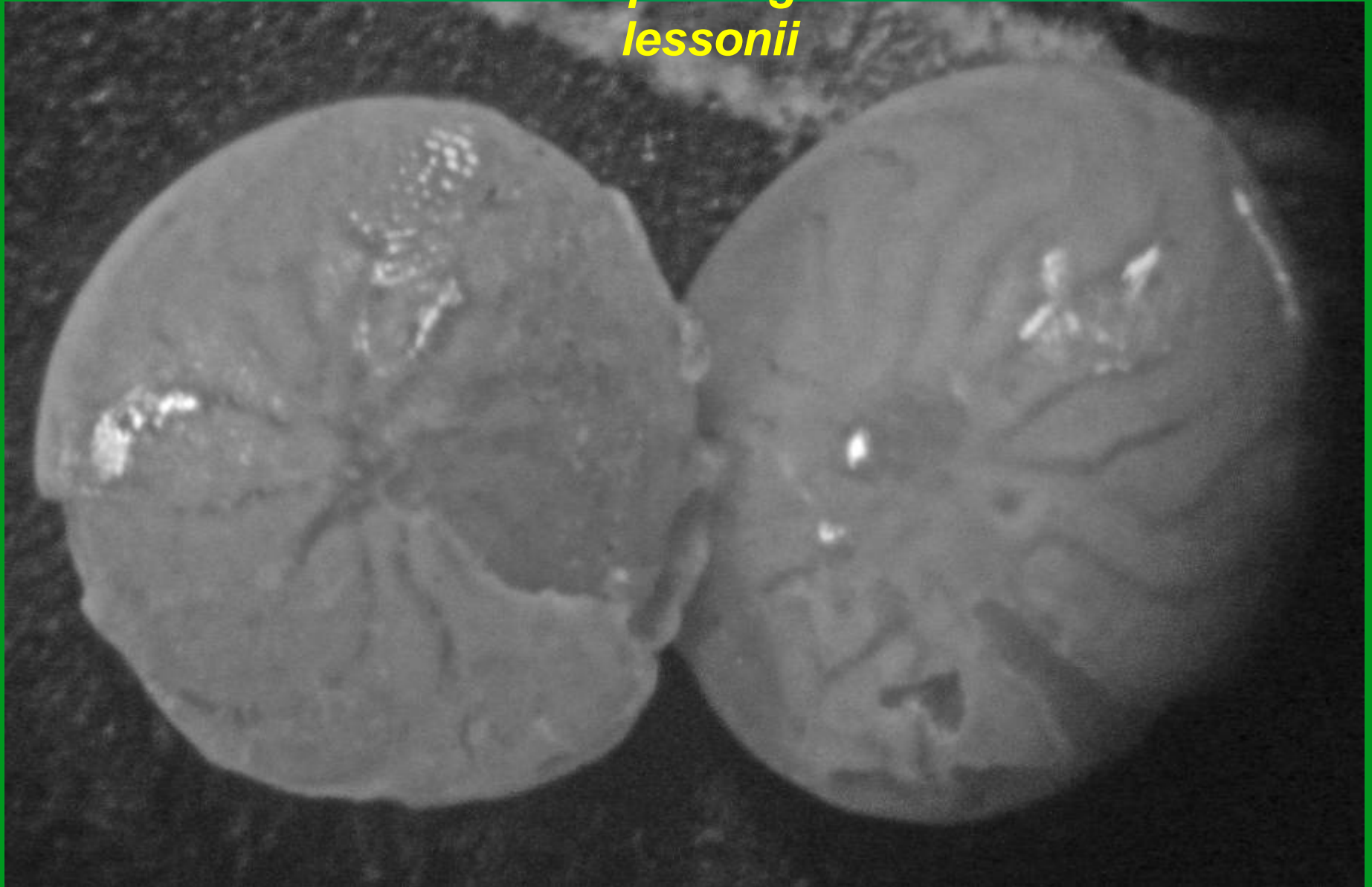


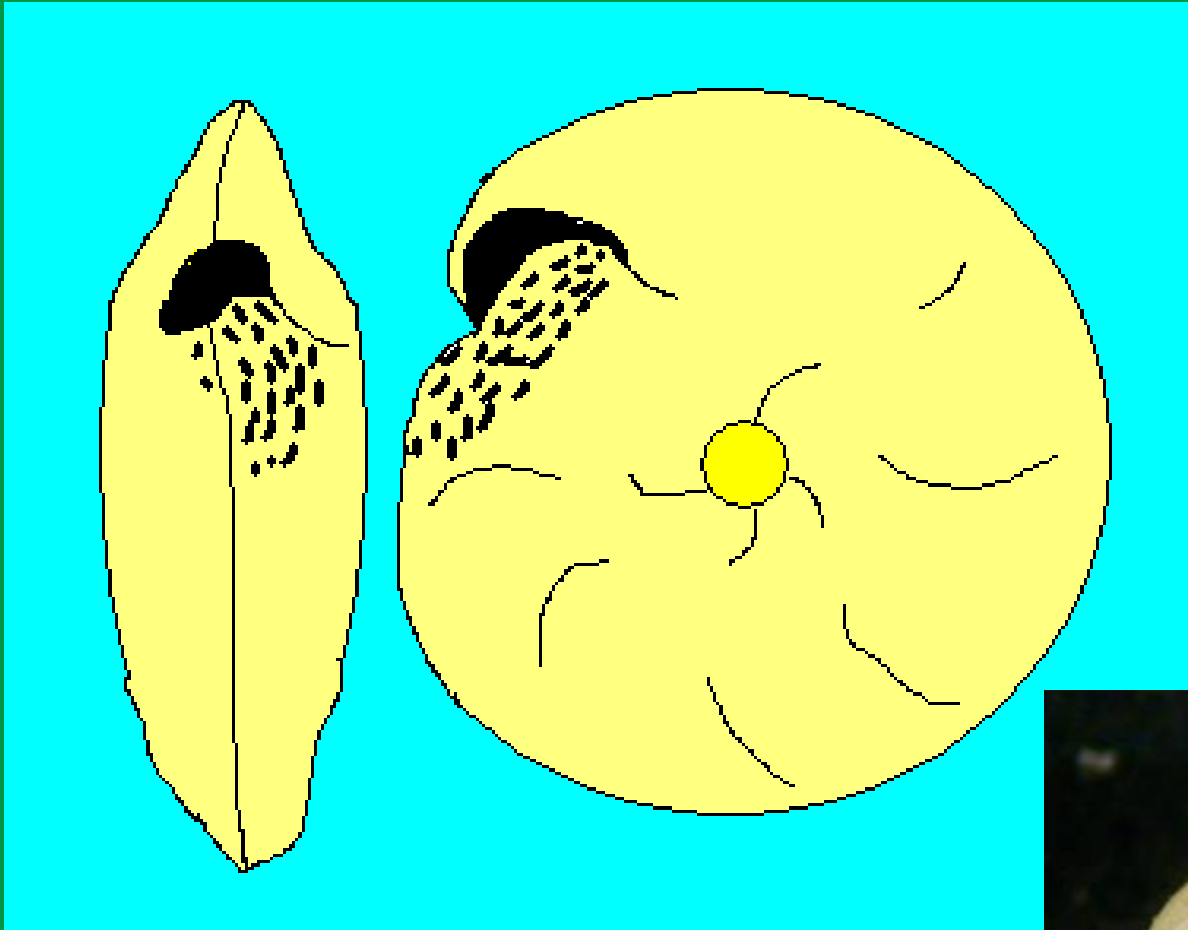
*Amphistegina
lessonii*

*Had photosynthetic
zooxanthellae*



Amphistegina
lessonii





*Amphistegina
lessonii*

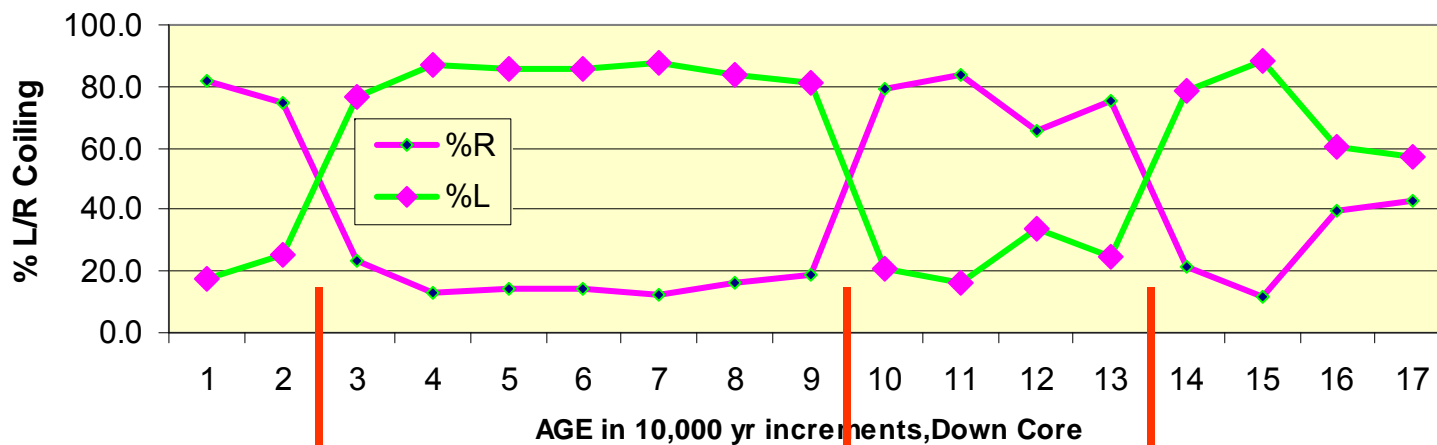


PLANKTONIC FORAMS



Left coiling *Neoglobobulimina pachyderma*- COOLER than now! (a planktonic foram)

% Coiling Direction: *N.pachyderma*



*Sangamonian-
Ft. Thompson
time*

Interglacial

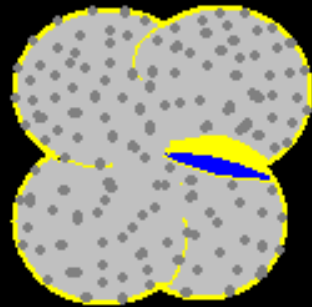
Glacial

Interglacial

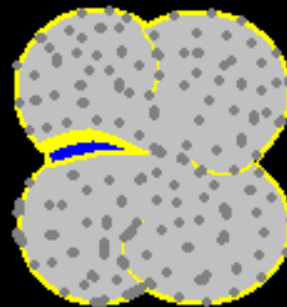
Glacial

Neogloboquadrina pachyderma

umbilical view



L/S
COOLER

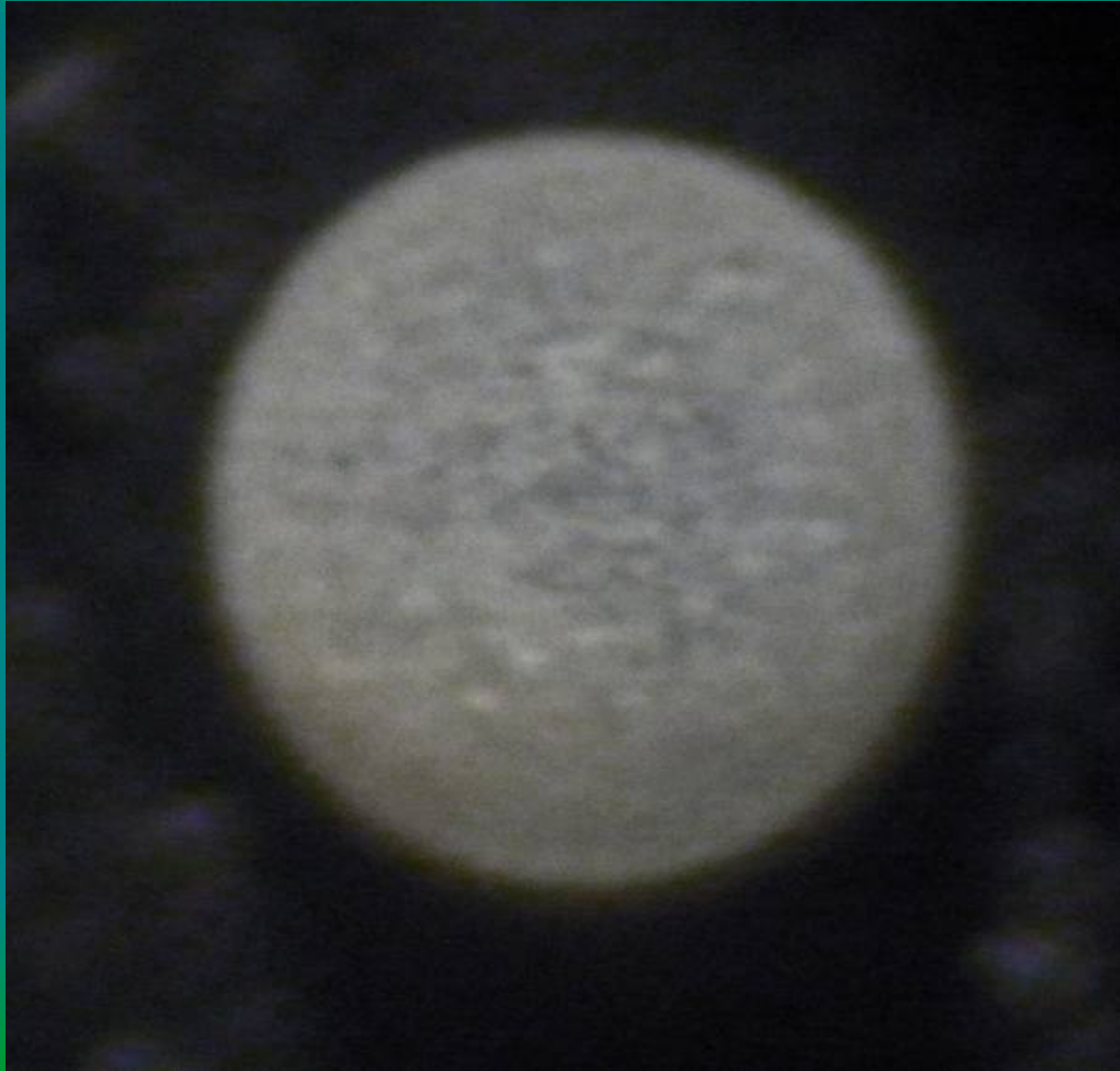


R/D
WARMER



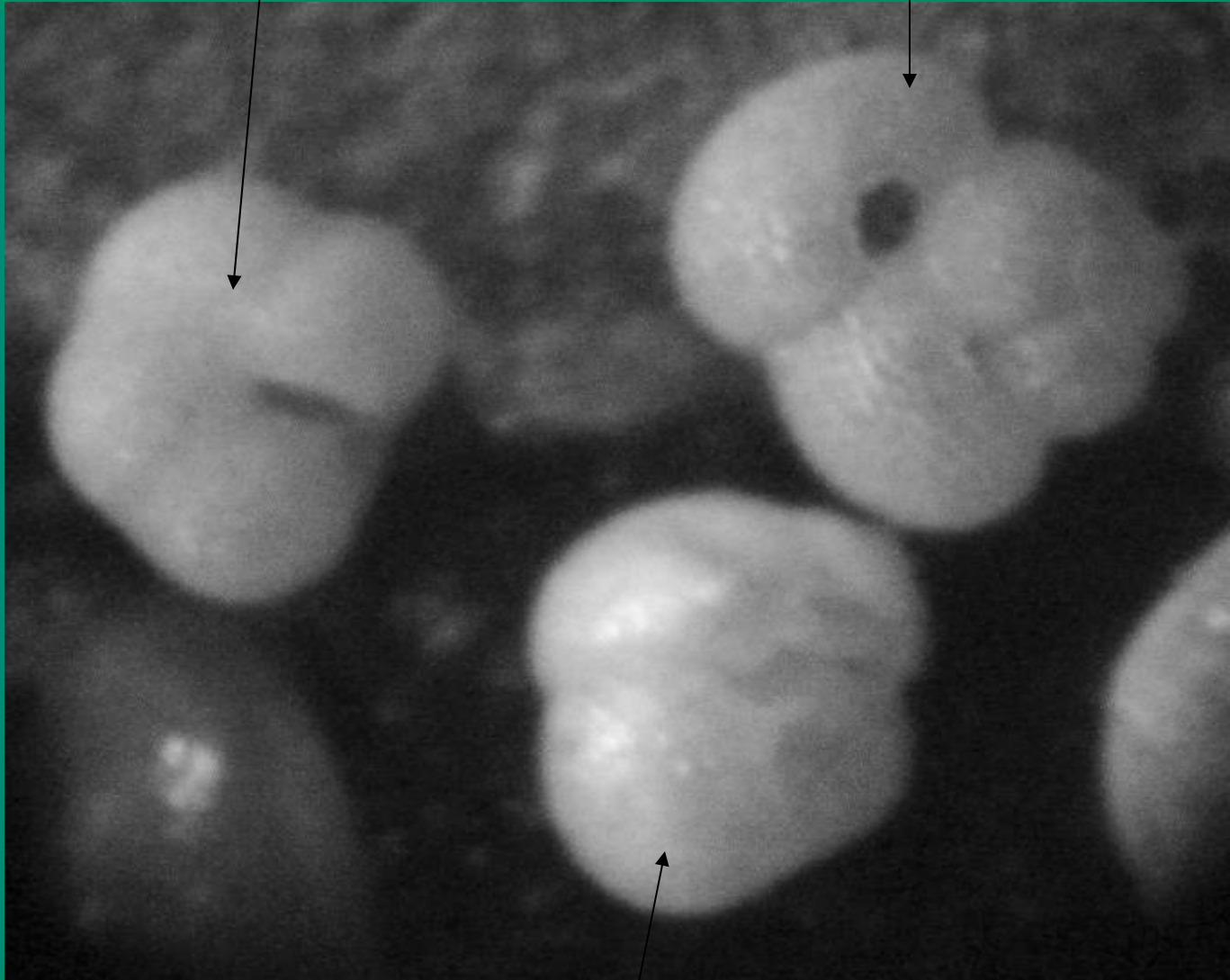
side view L/S

***Orbulina universa* (a planktonic foram)**



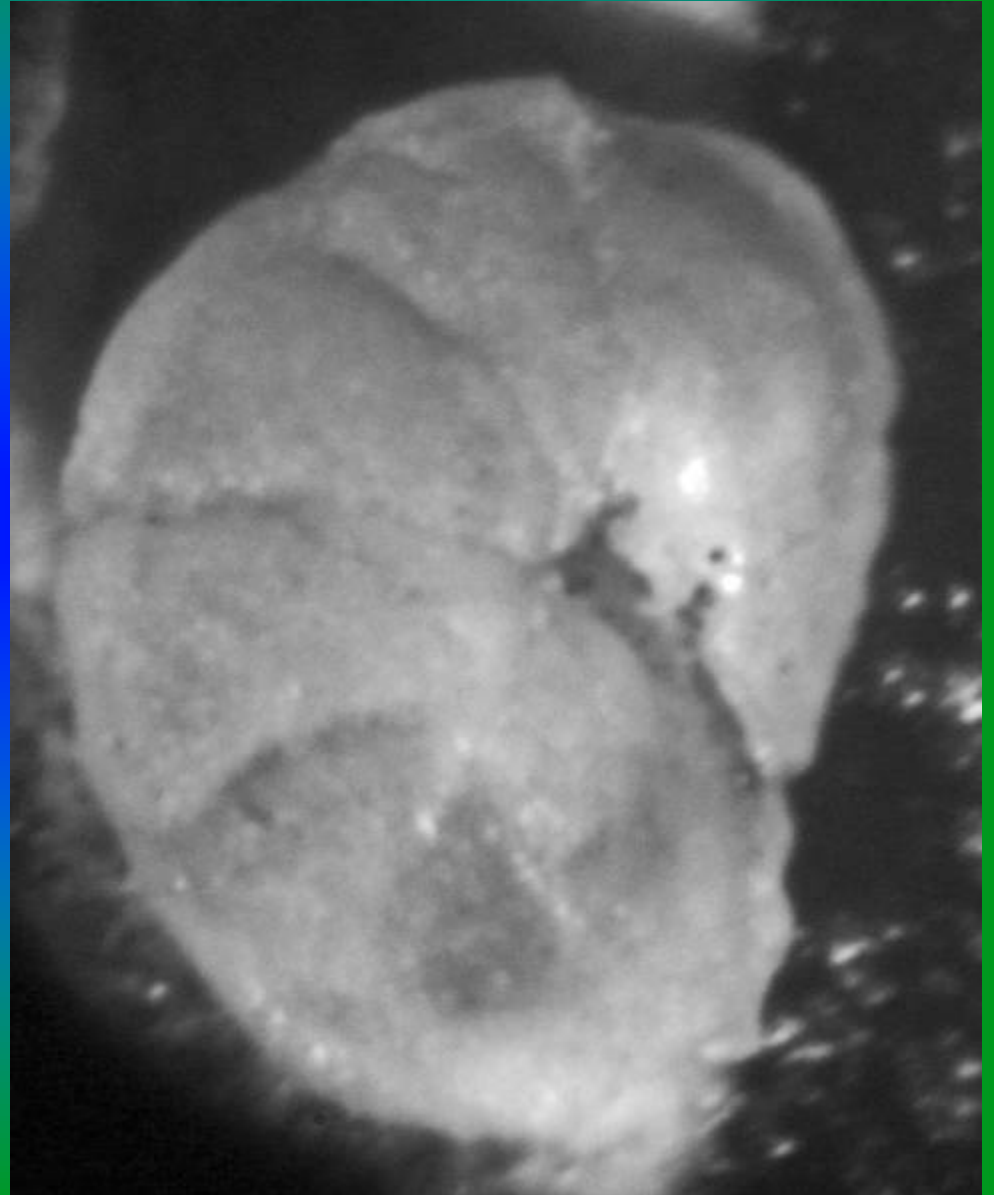
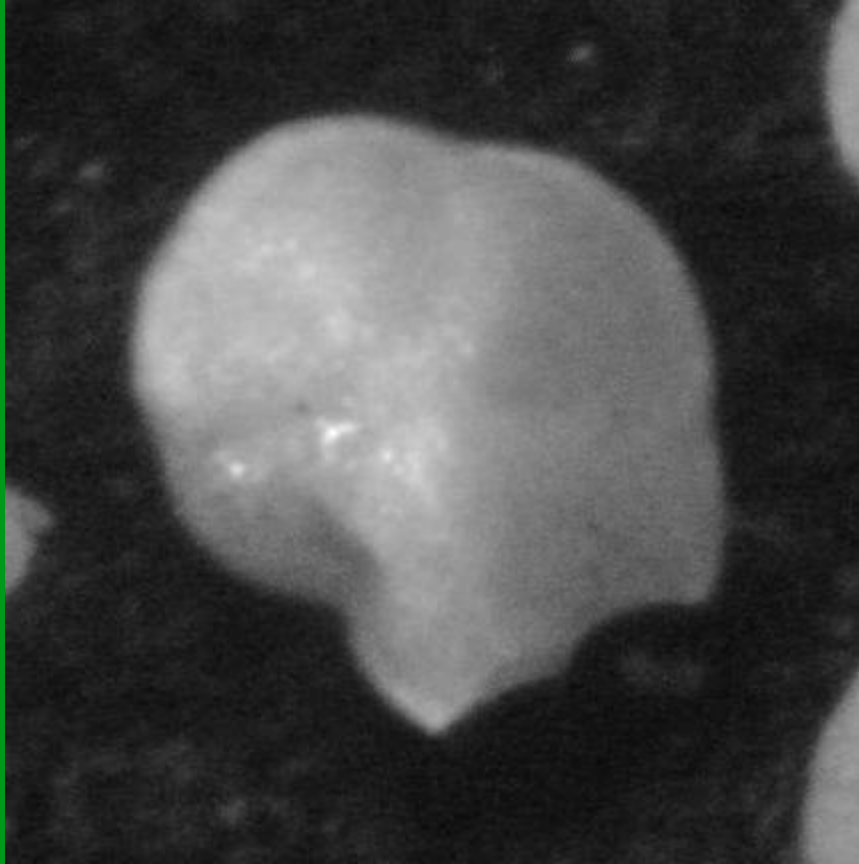
N. Pachyderma

Globigerinoides ruber (still pink)



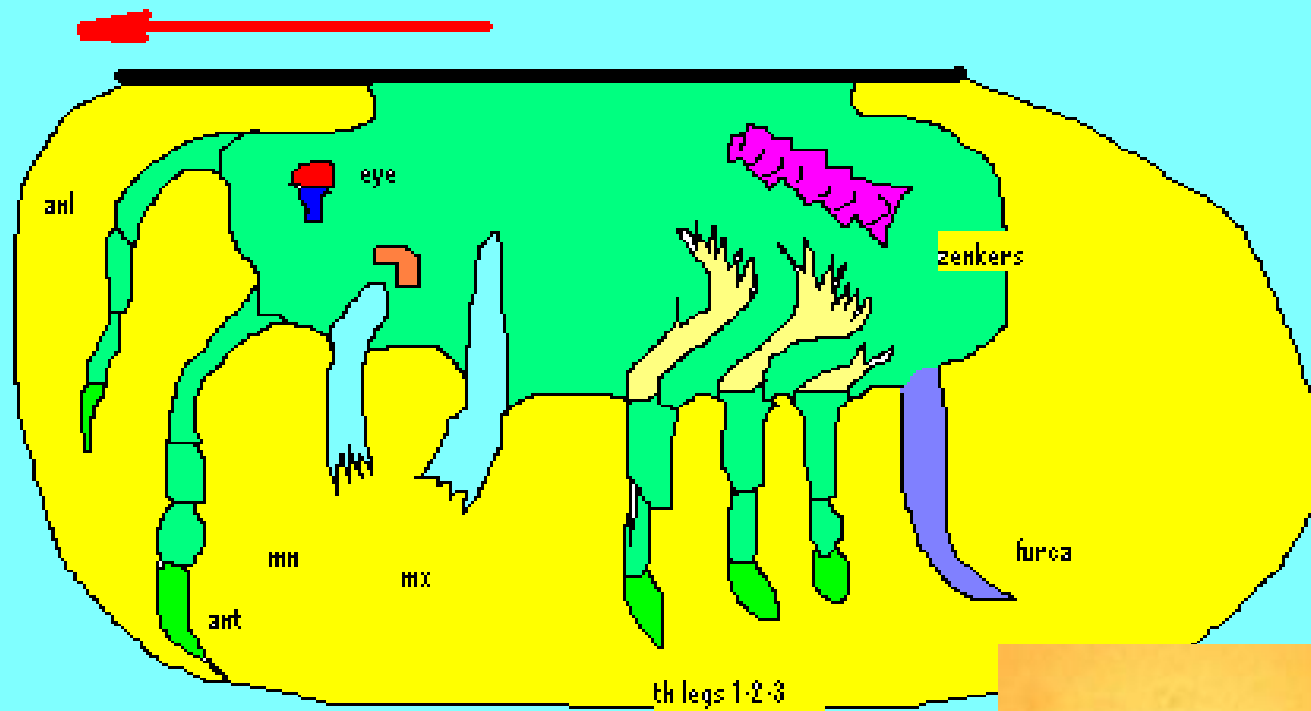
Pulleniatina obliquiloculata

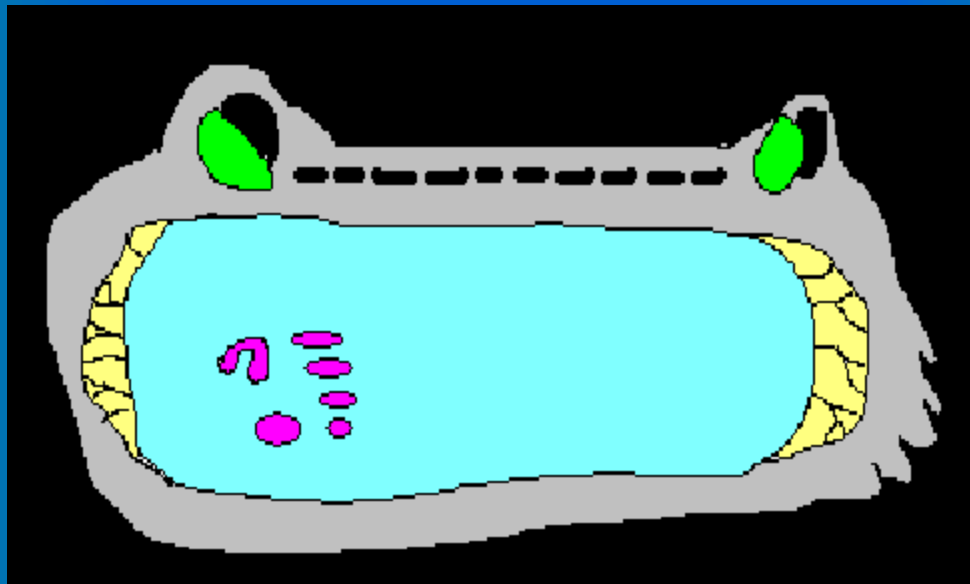
Globorotalia menardii



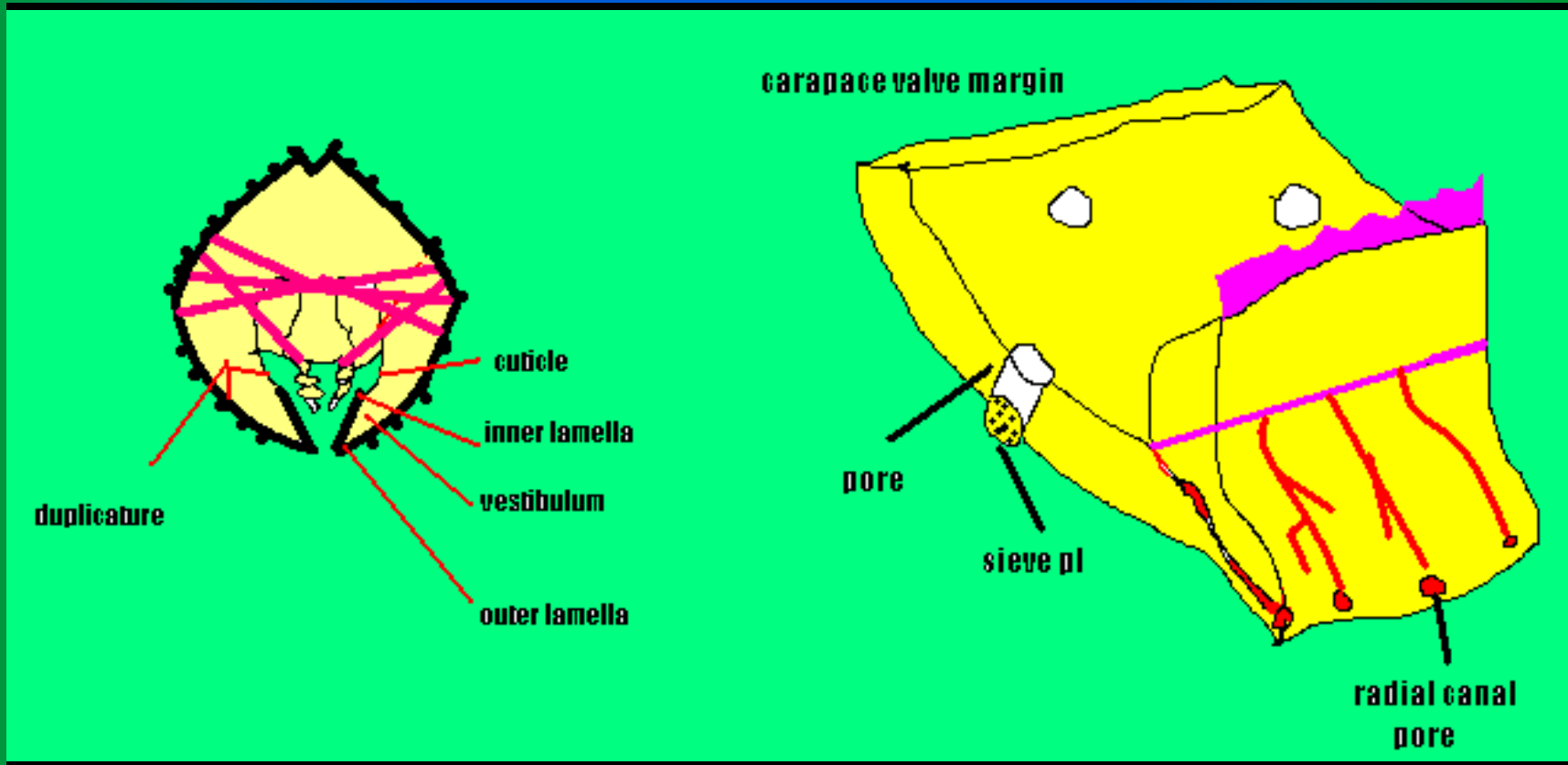
Some Ostracods

Ostracode Guts

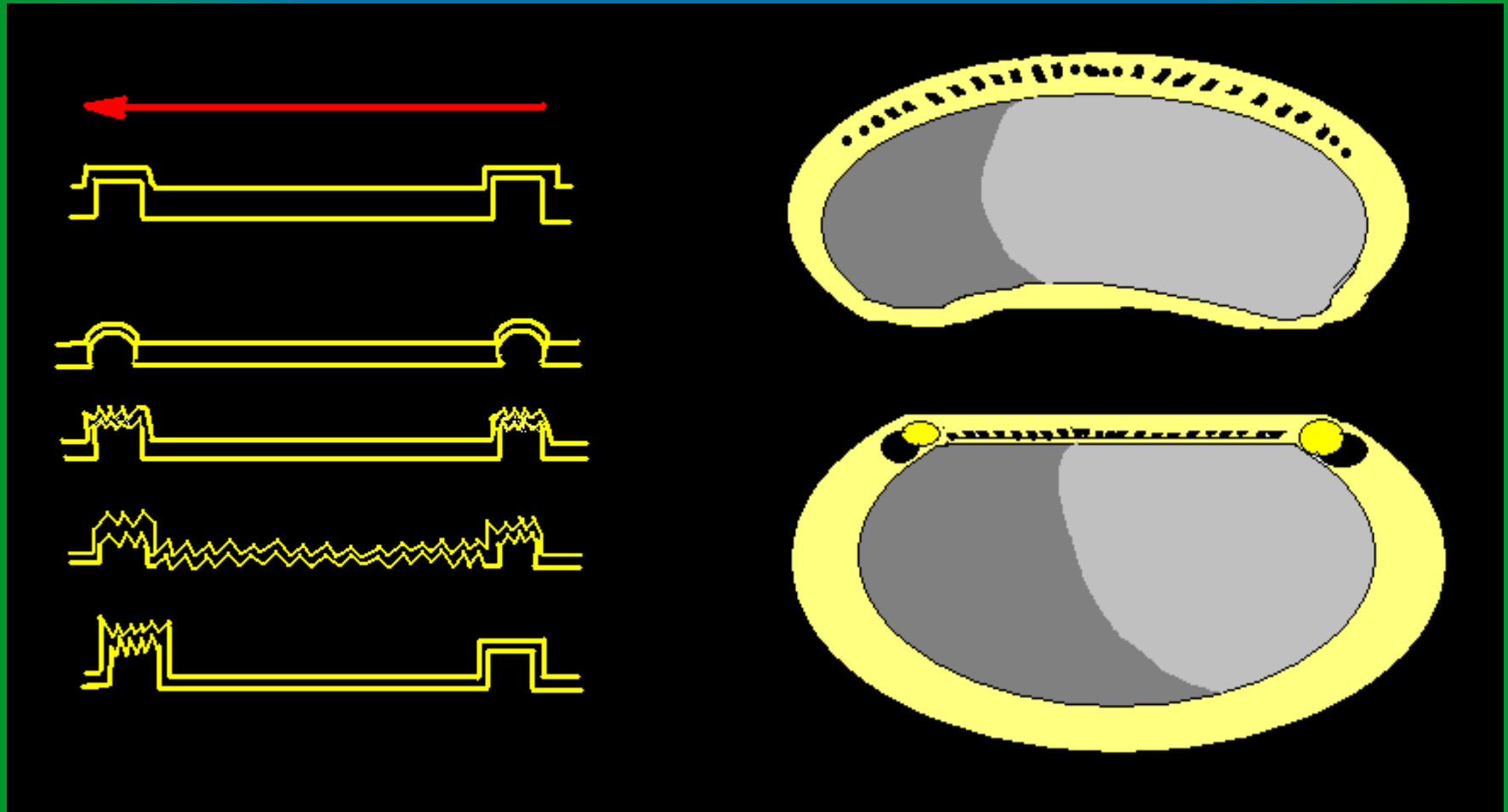




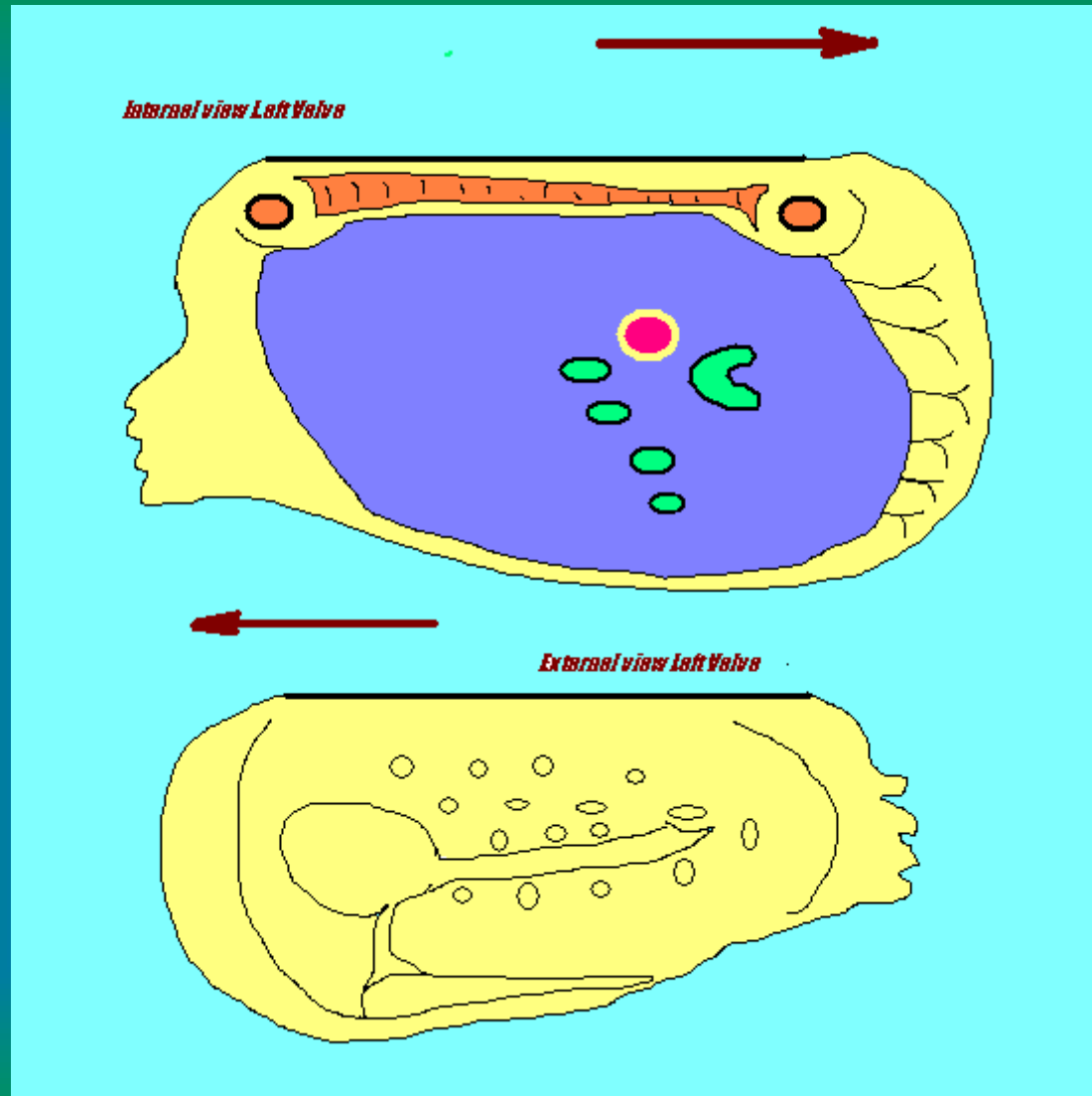
Cross Section and Duplication



Hinges & Classification

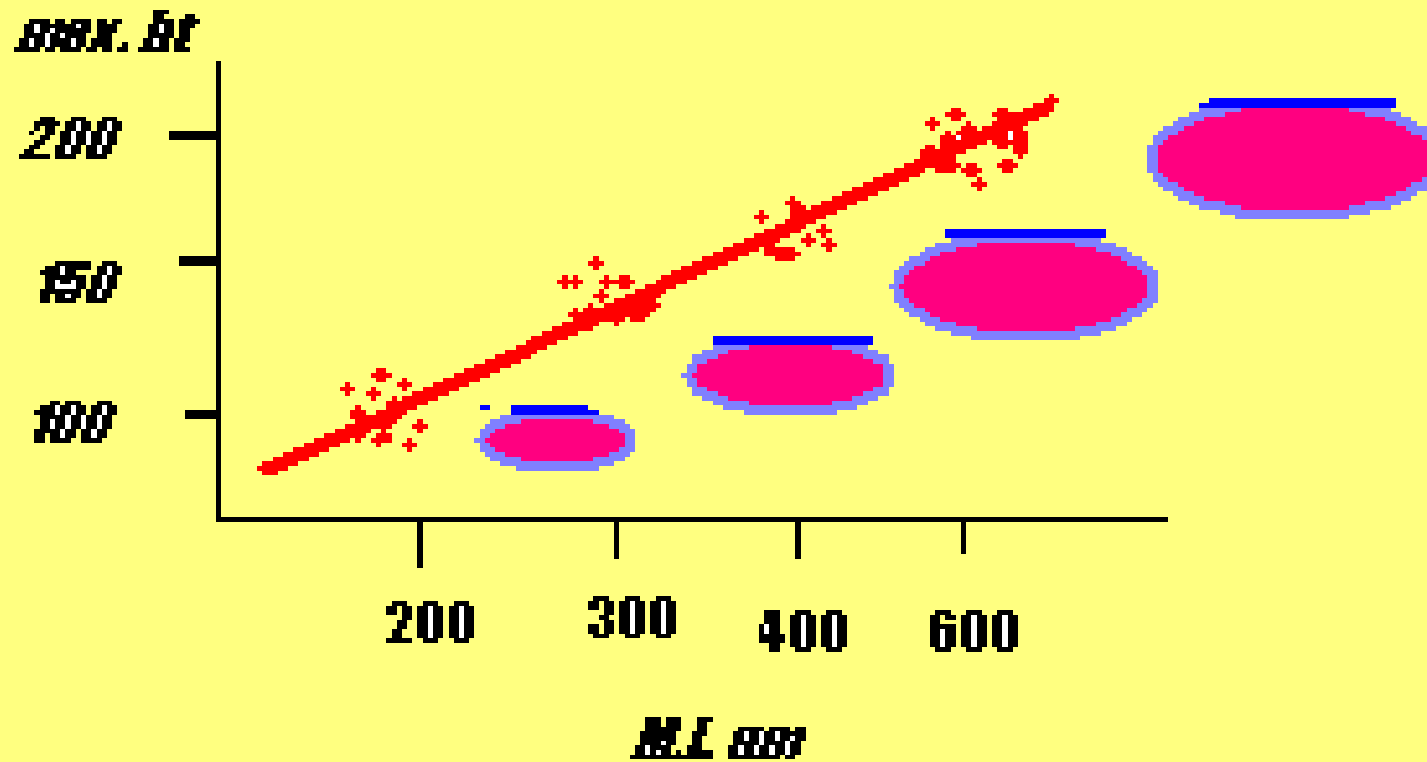


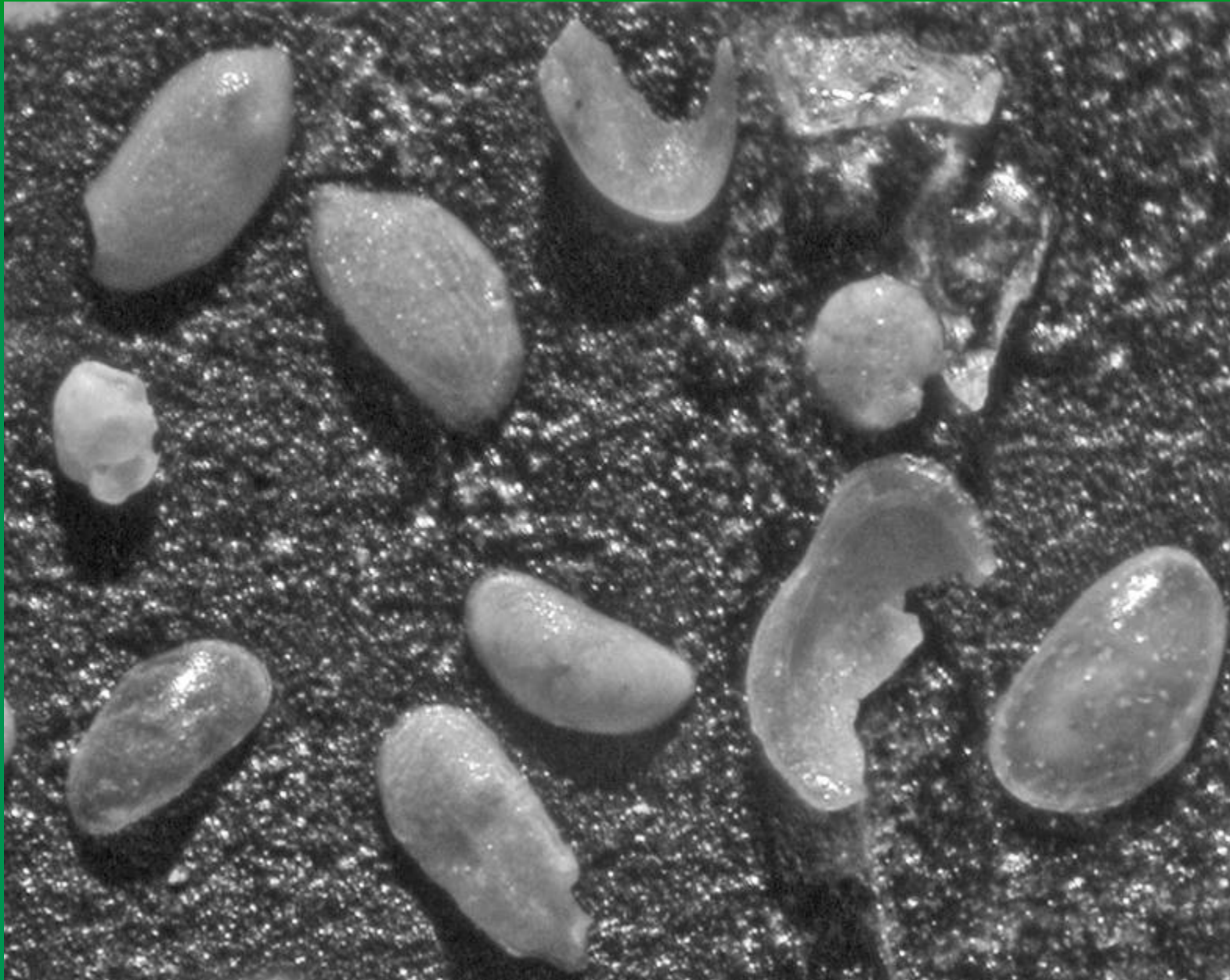
Crustacea: Ostracodes



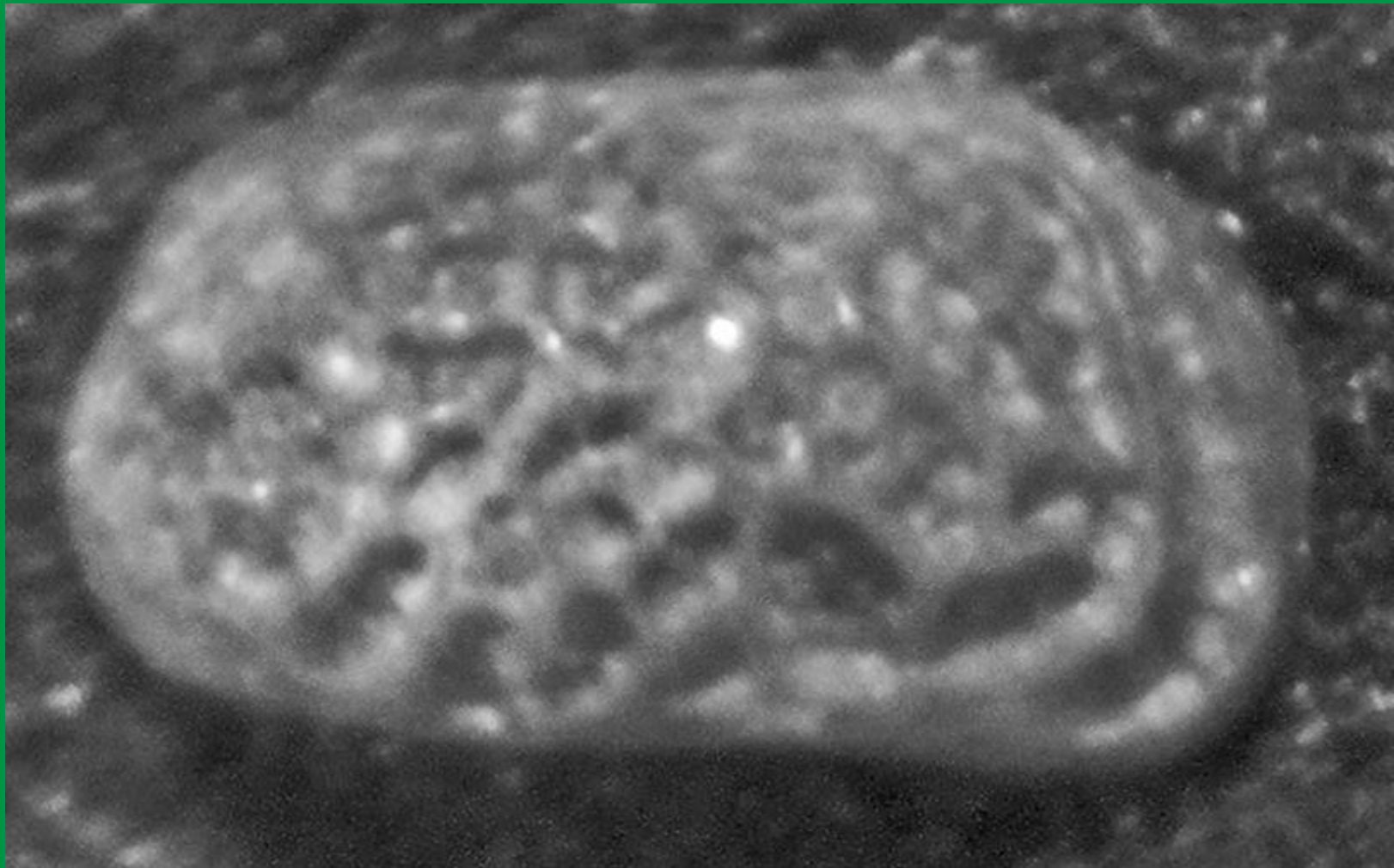
INSTARS

Ecdysis = Molting = Larva to Adult



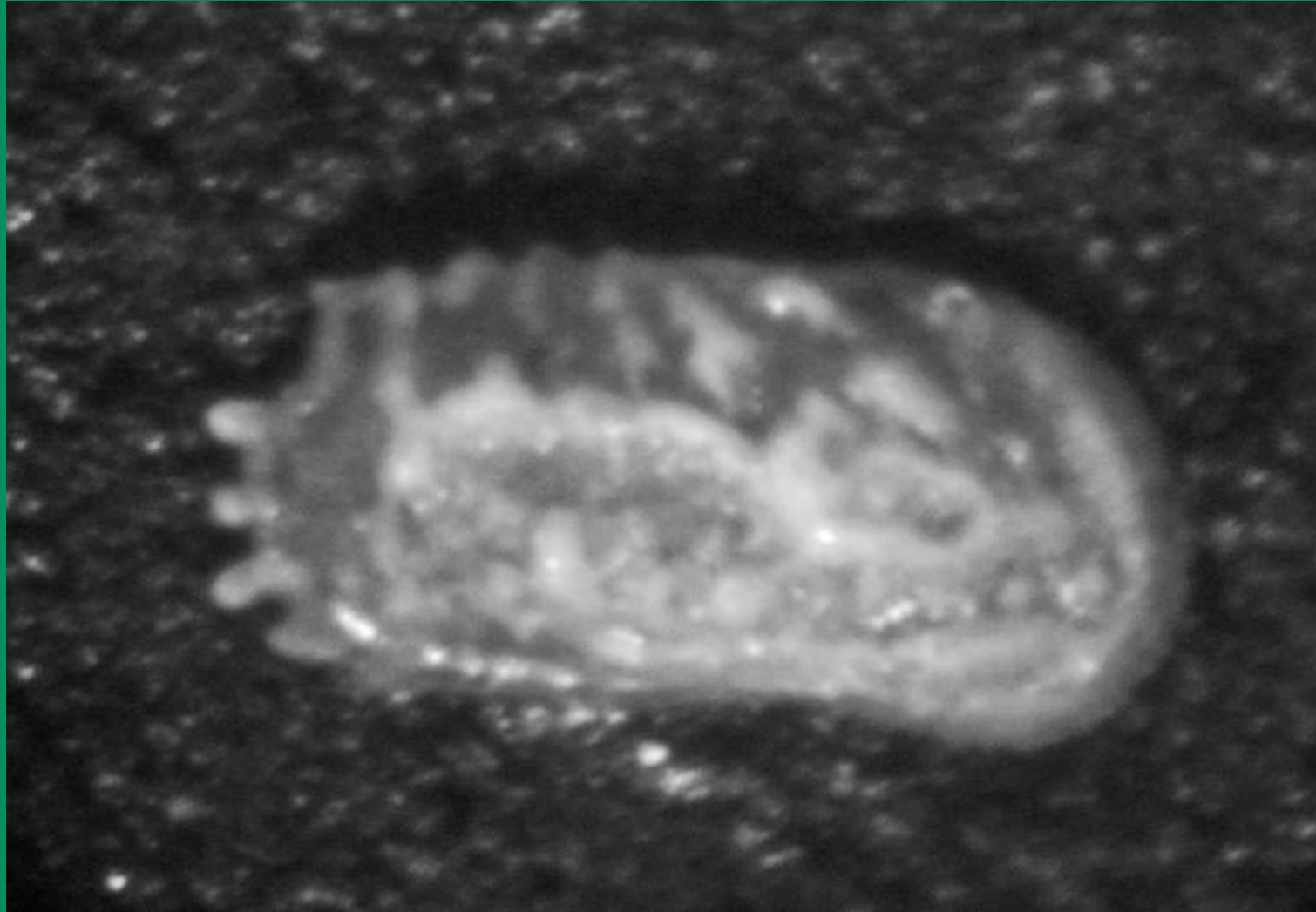


Cytherura, Peratocytheridia, Paracytheridia, Loxoconcha



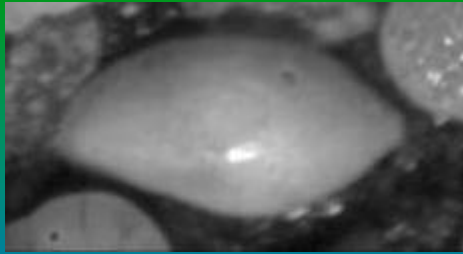
Bensonocythere whitei (r. valve)

Puriana mesacostalus (r.valve)

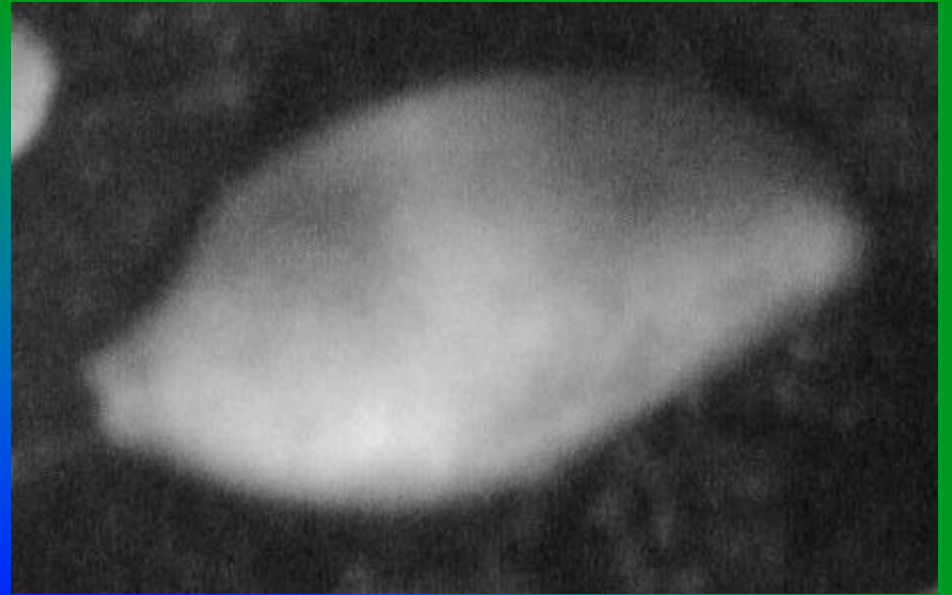


Neocaudites atlantica

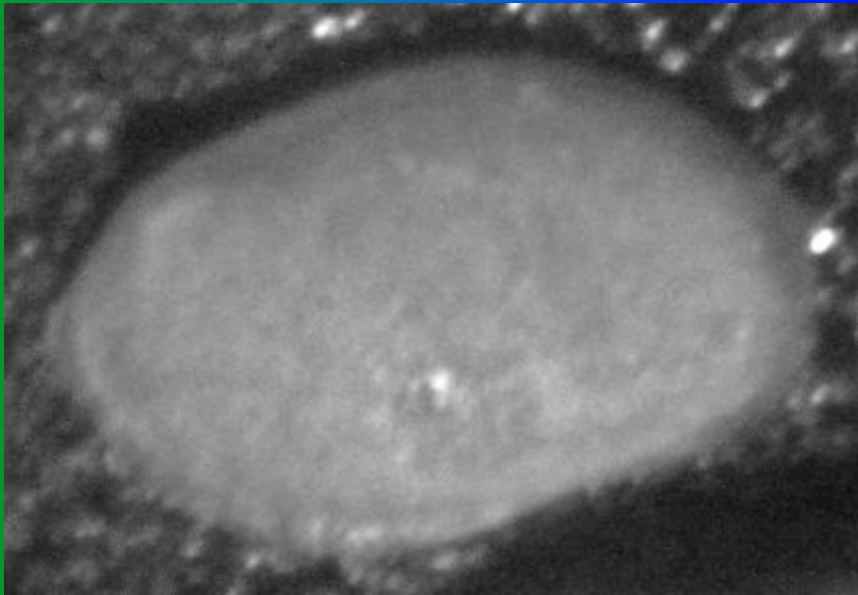




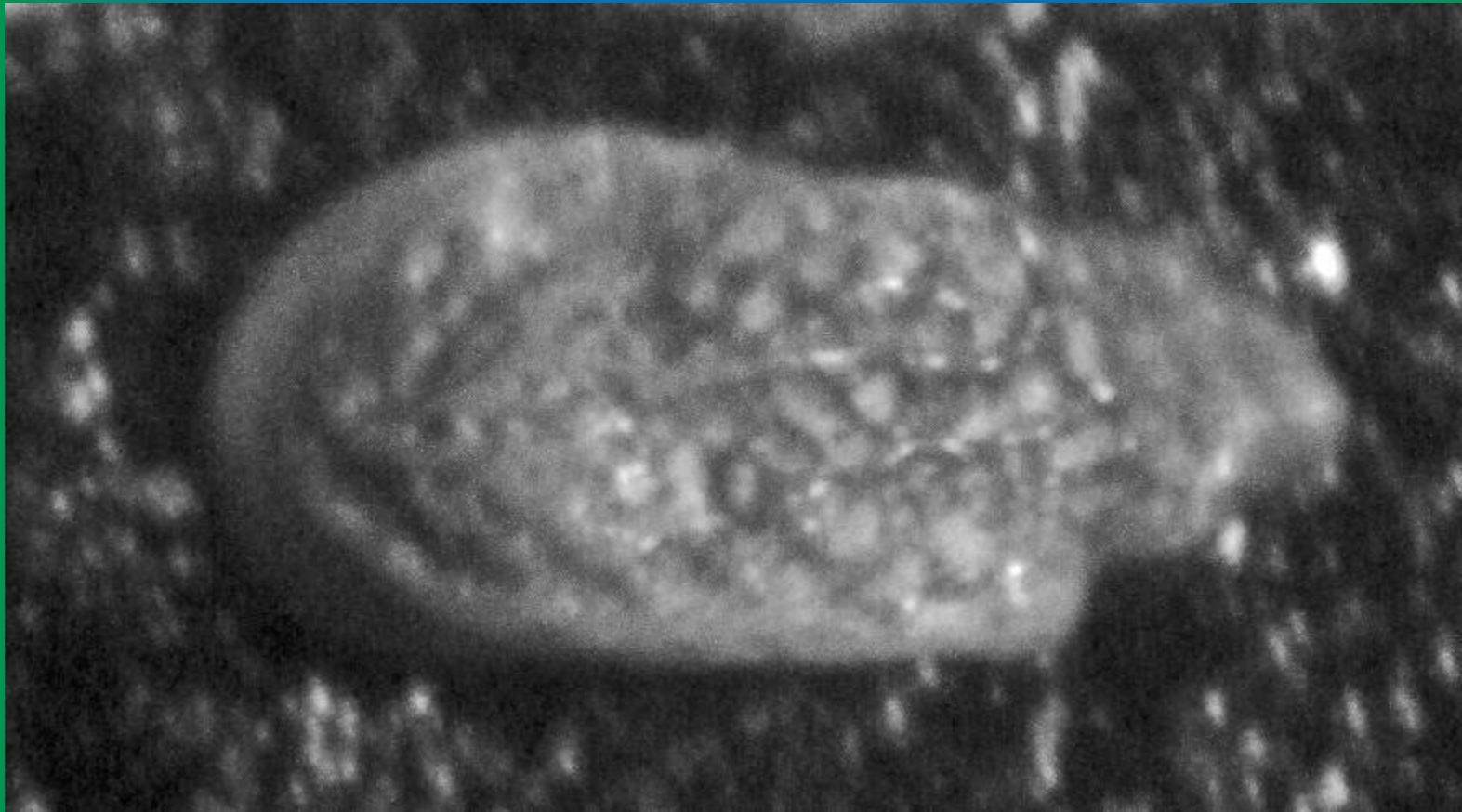
*Loxoconcha
matagordensis*



*Pellucistoma
magniventra*



Paracytheridea altila

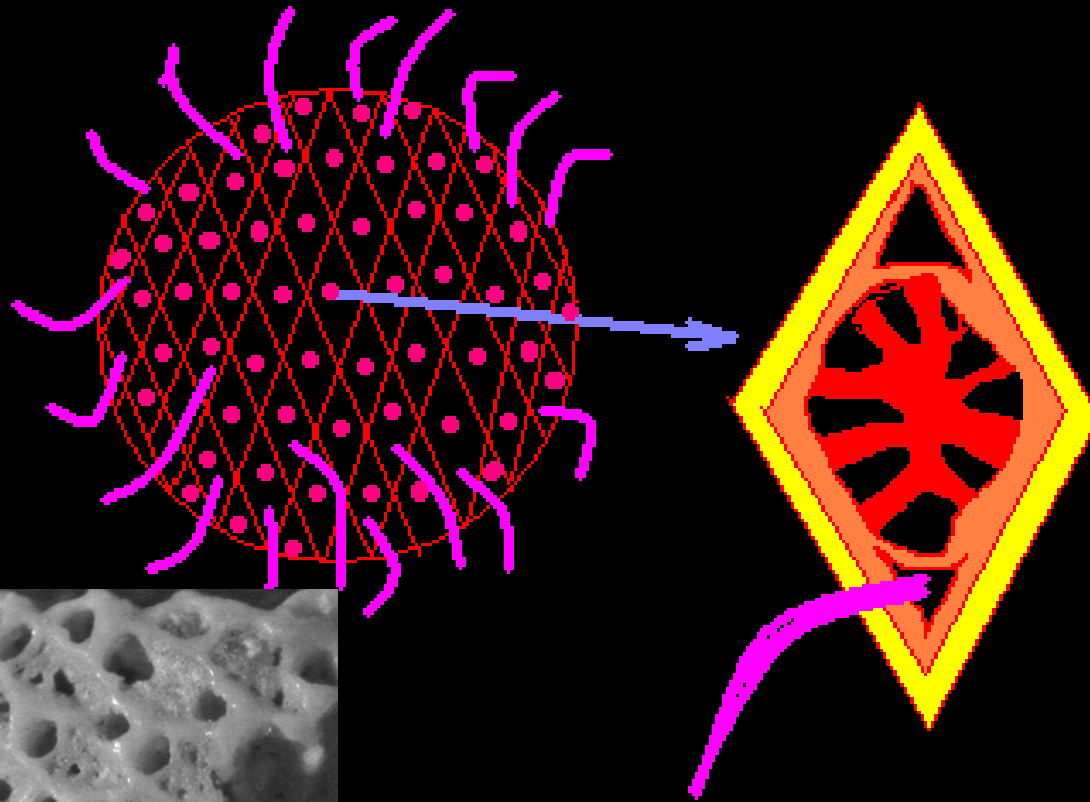


*A benthic vagile
Cheilostome Bryozoa*

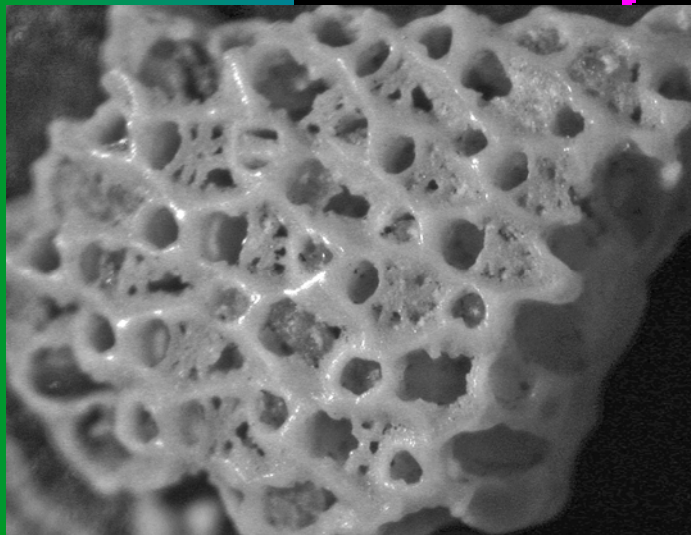
Discoporella sp.



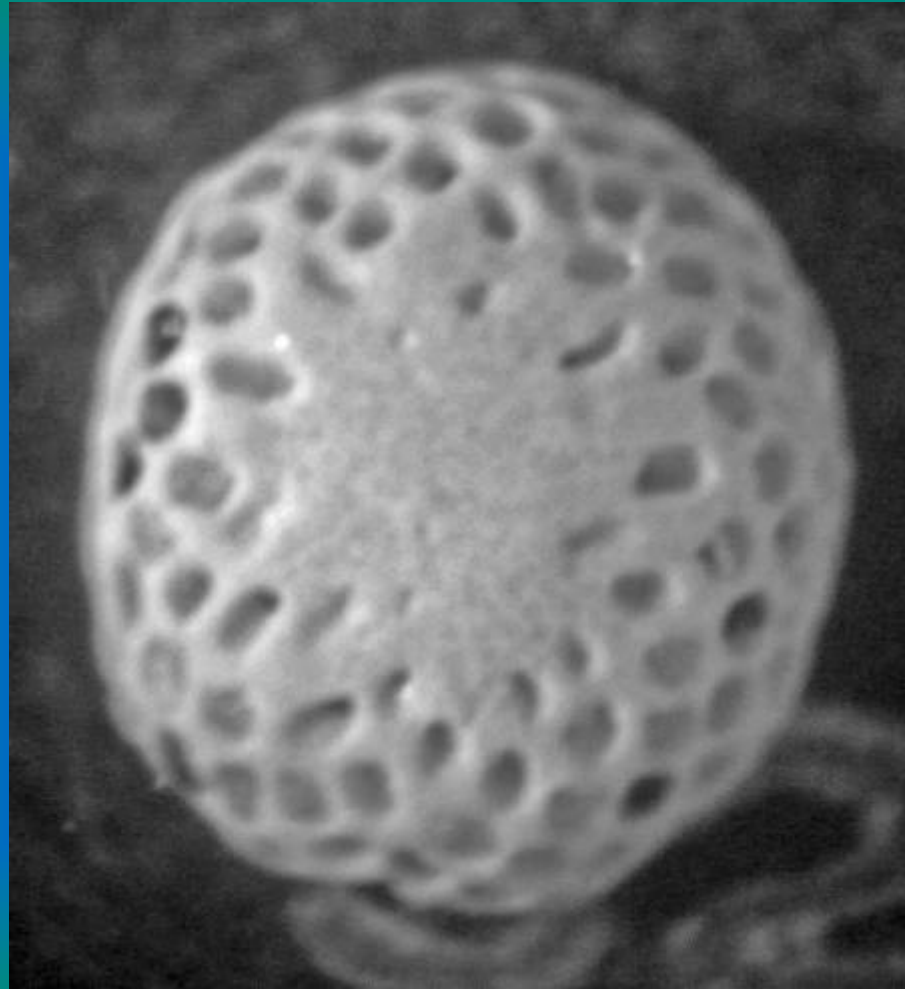
2 mm



setae

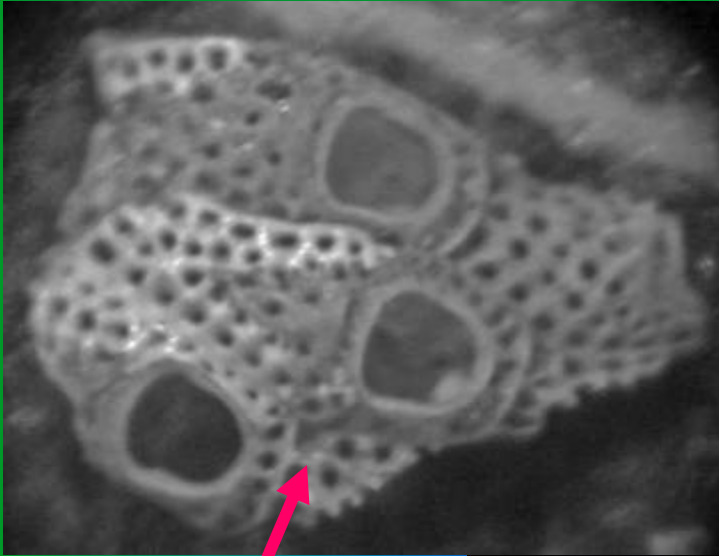


Discoporella sp.



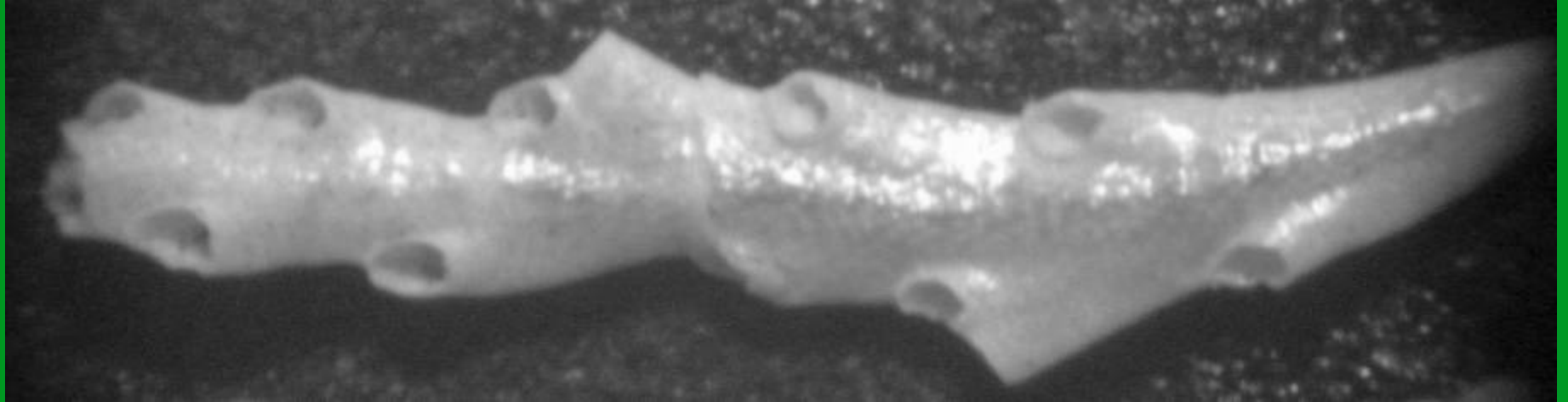
Bugulopsis

Conopium?

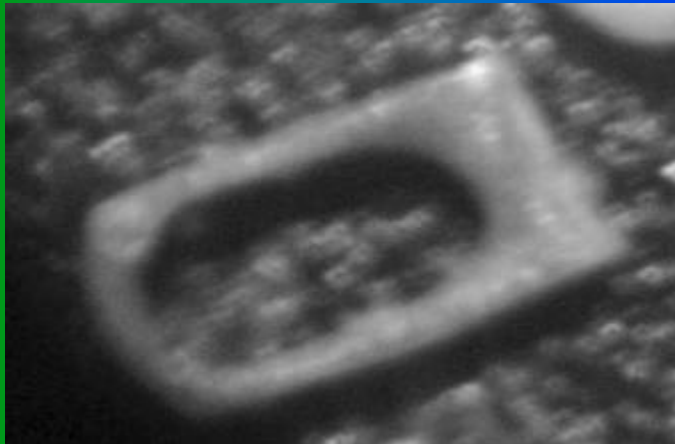


Cryptosula

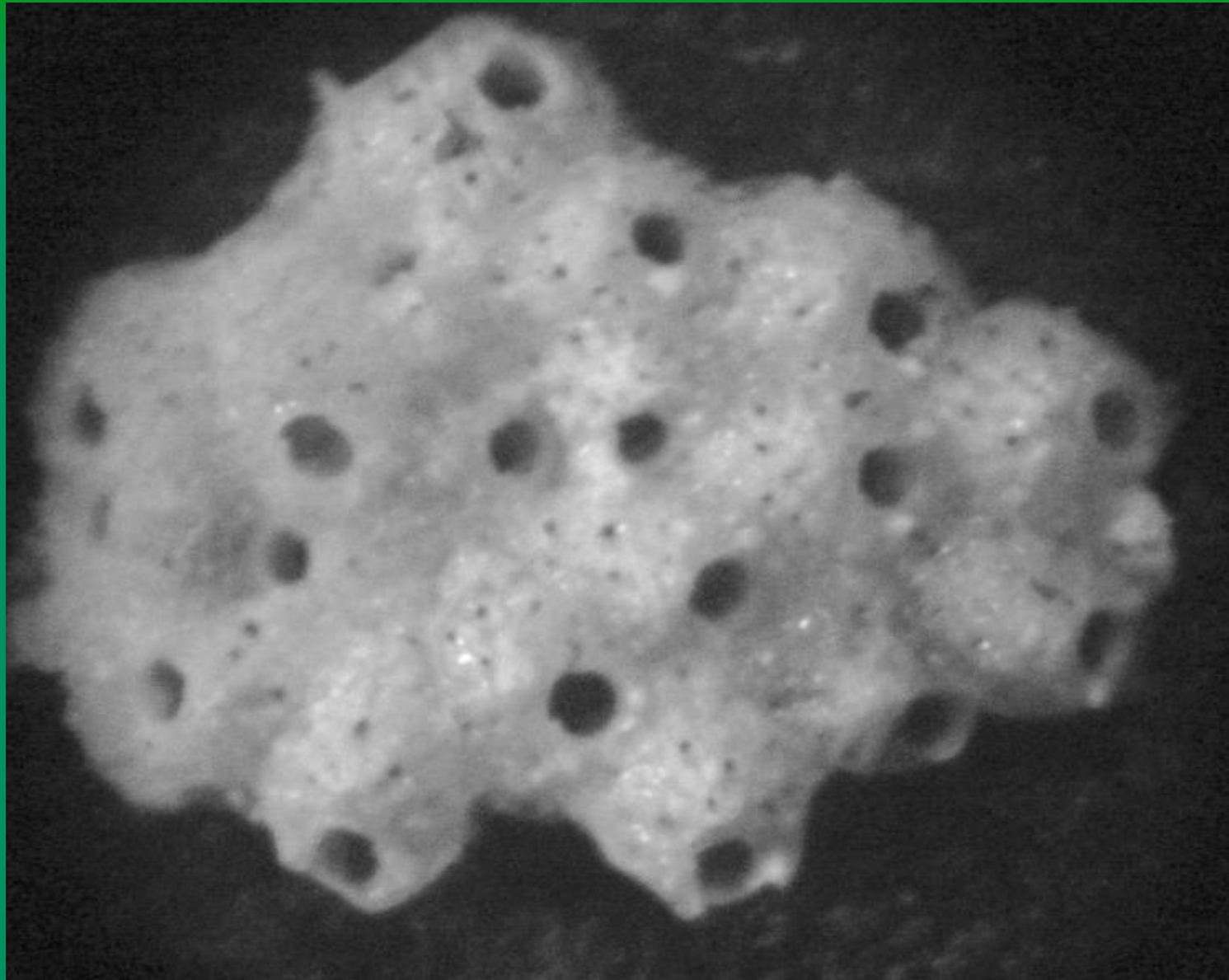




***Crisia-fairly
rapid currents
(tidal)!***



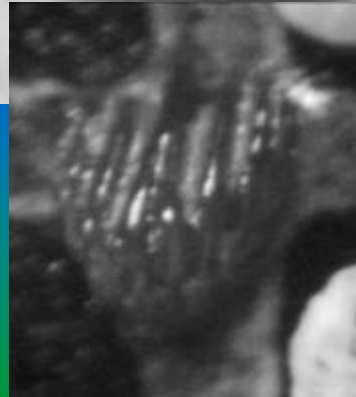
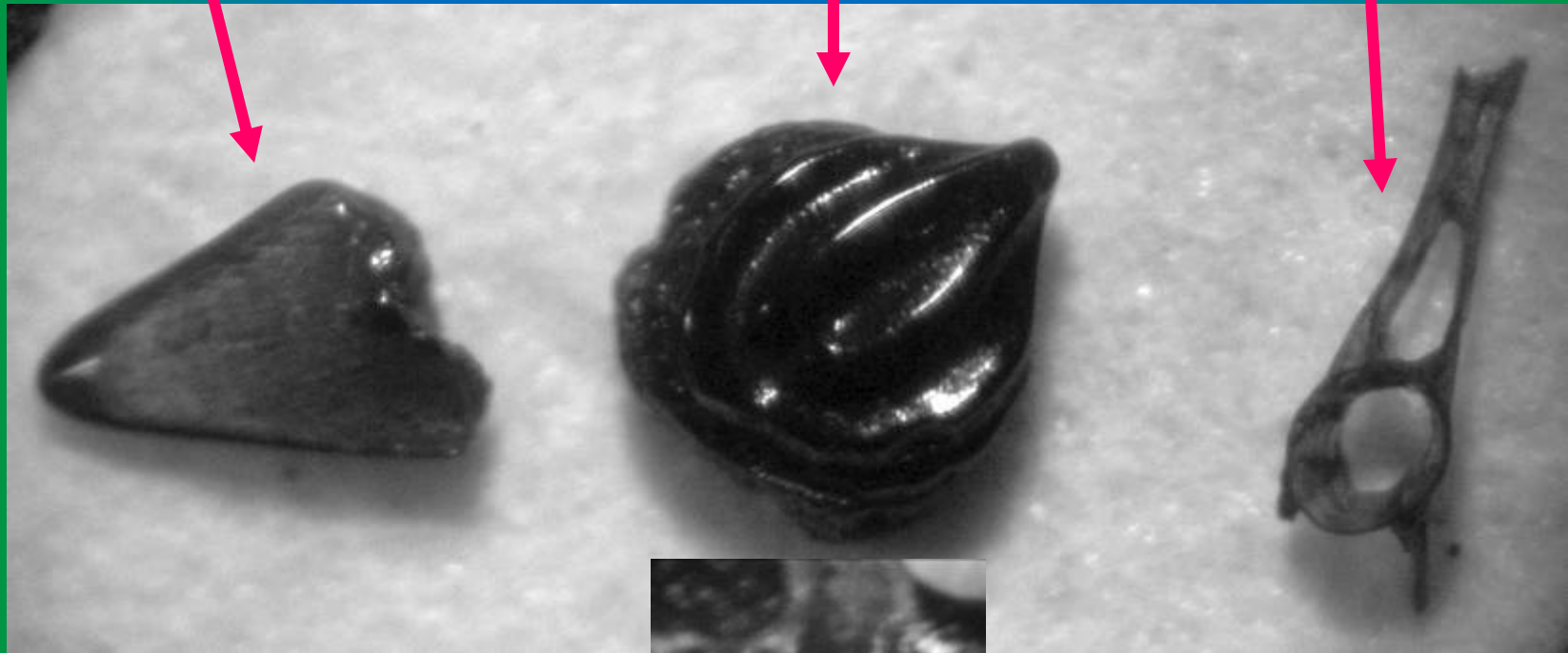
***Membranipora – probably came
in on sargassum***

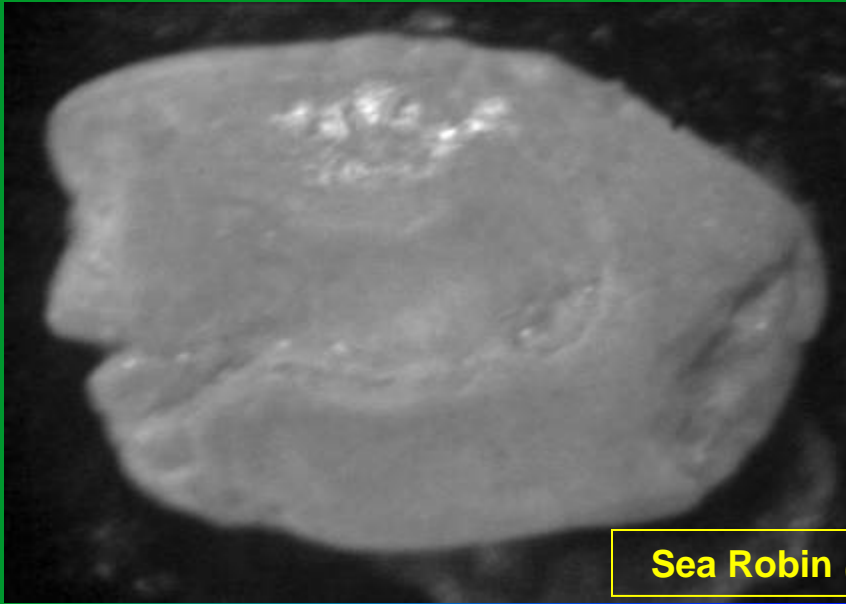


Another bryozoan zooarium

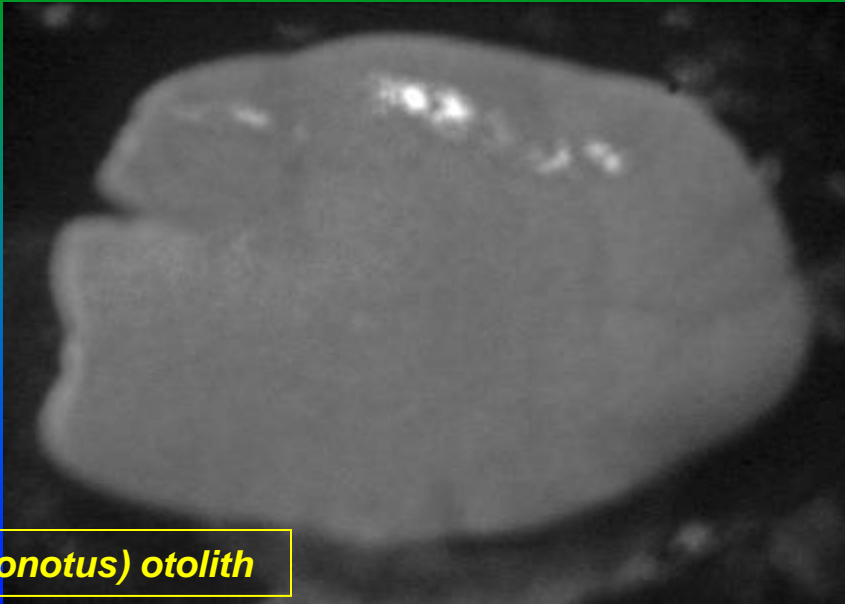
Vertebrate fossils:

Shark teeth Shark Placoid Scales Teleost vertebrae

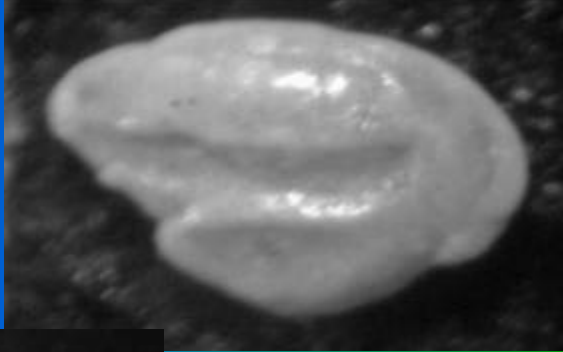




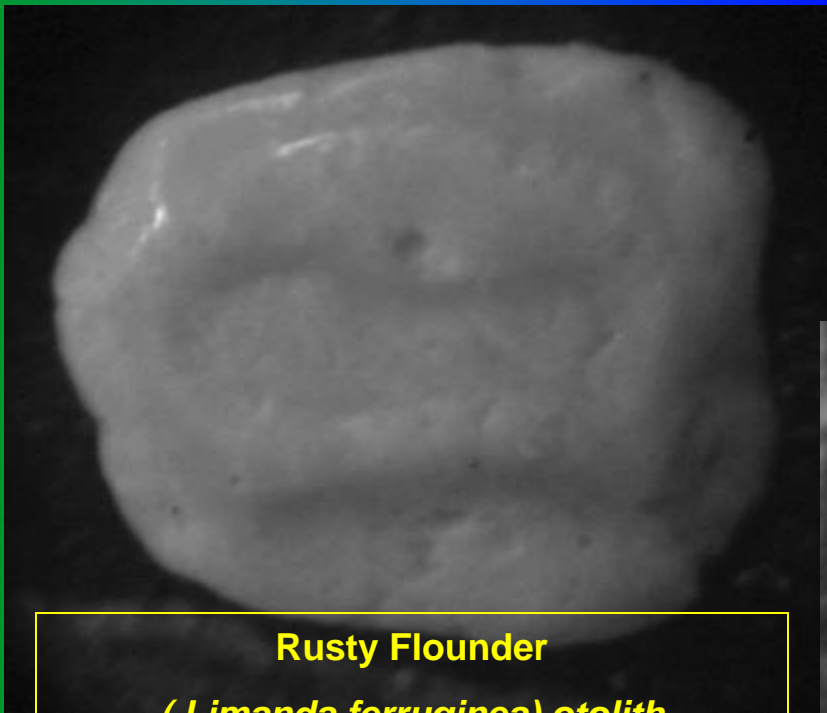
Sea Robin (*Prionotus*) otolith



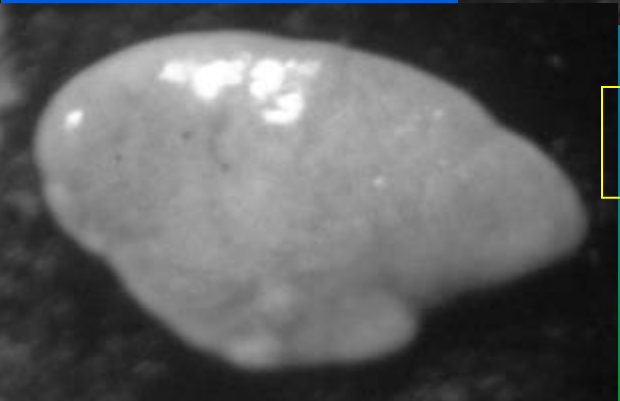
Virginian
Province
fish =
cooler



Morone americana:
White or Sea Perch



Rusty Flounder
(*Limanda ferruginea*) otolith



***Transported sand grain of calcite
cemented "Miami" Oolite- note round to
oval ooids: contemporaneous facies
further south***

