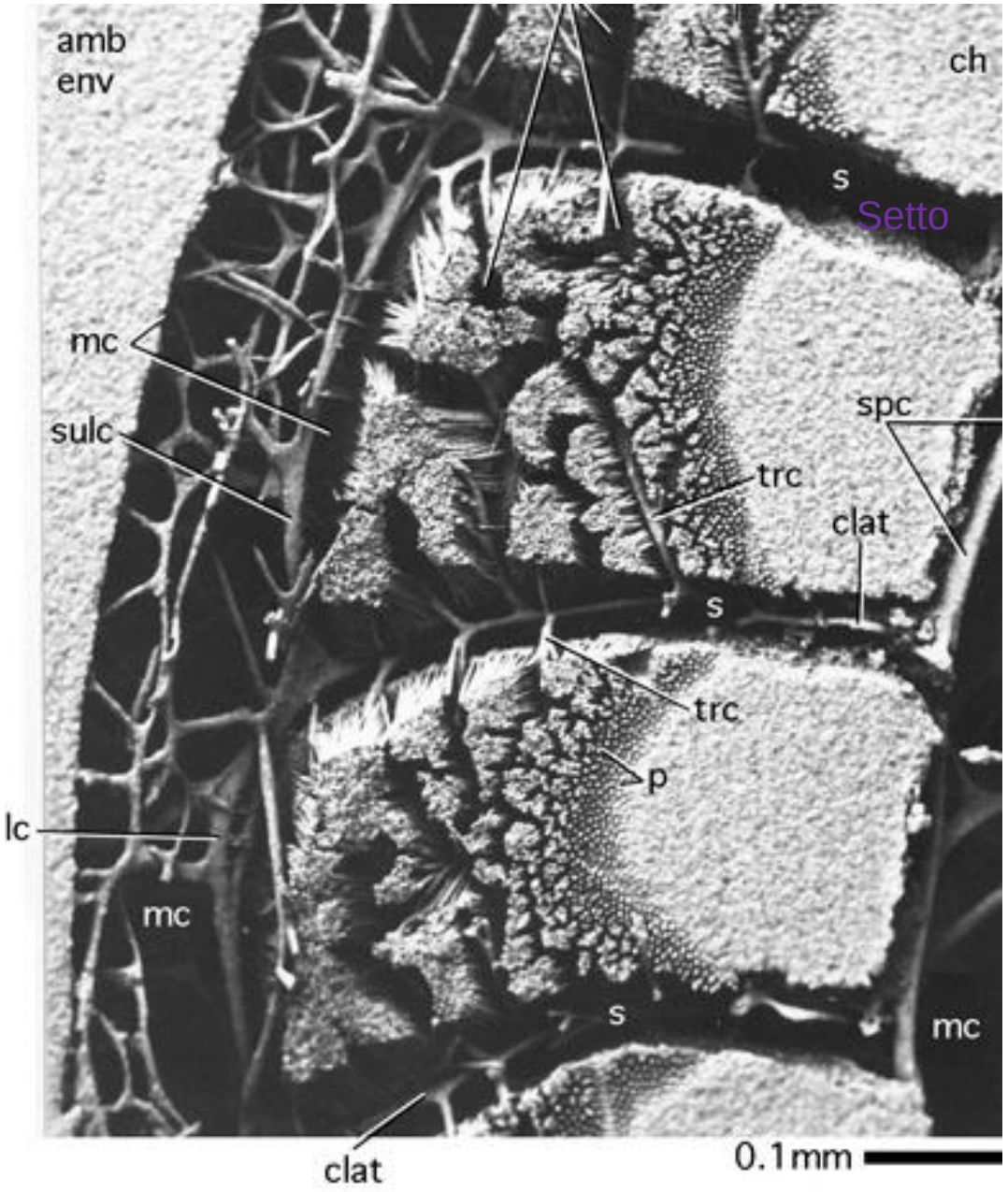
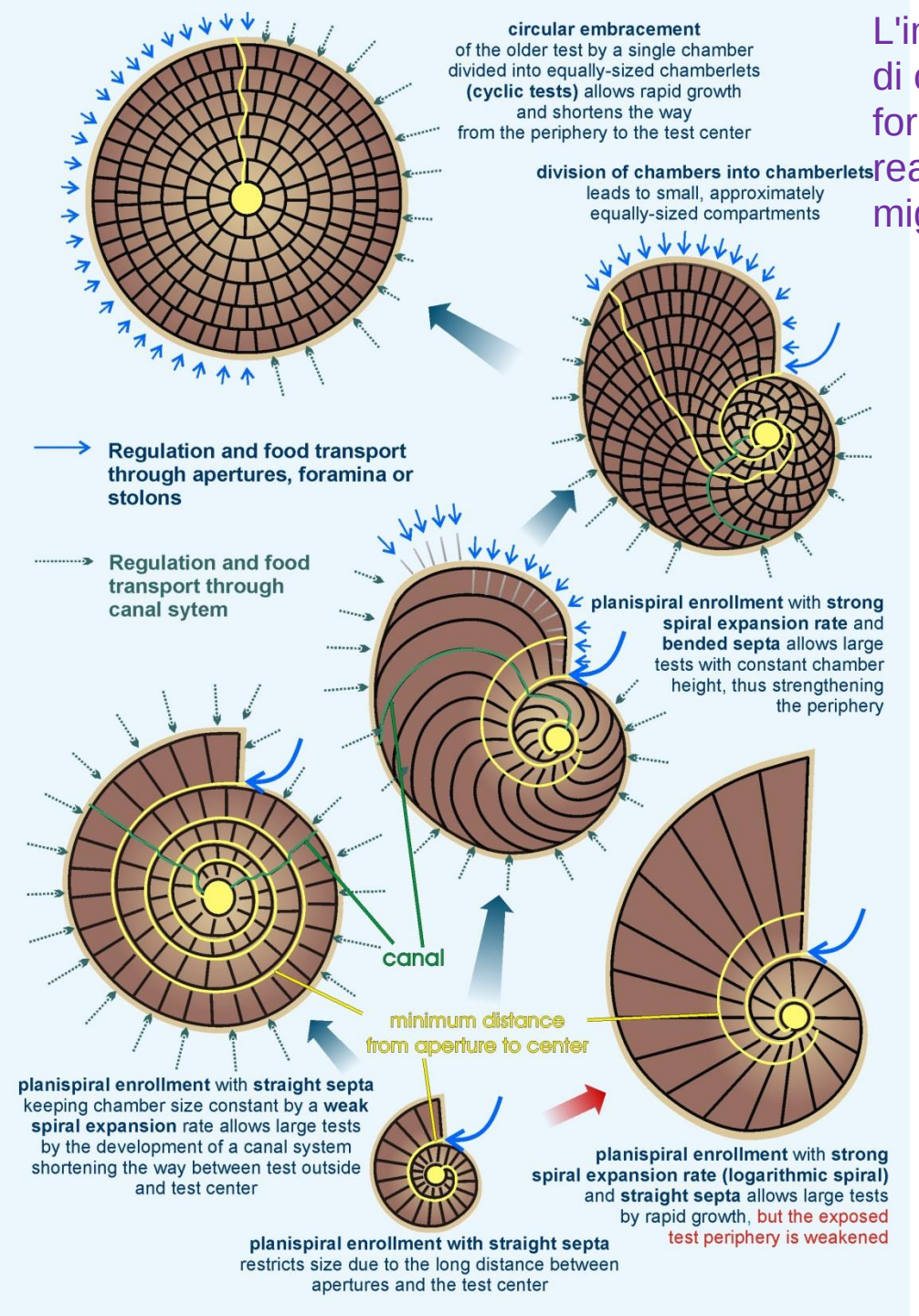
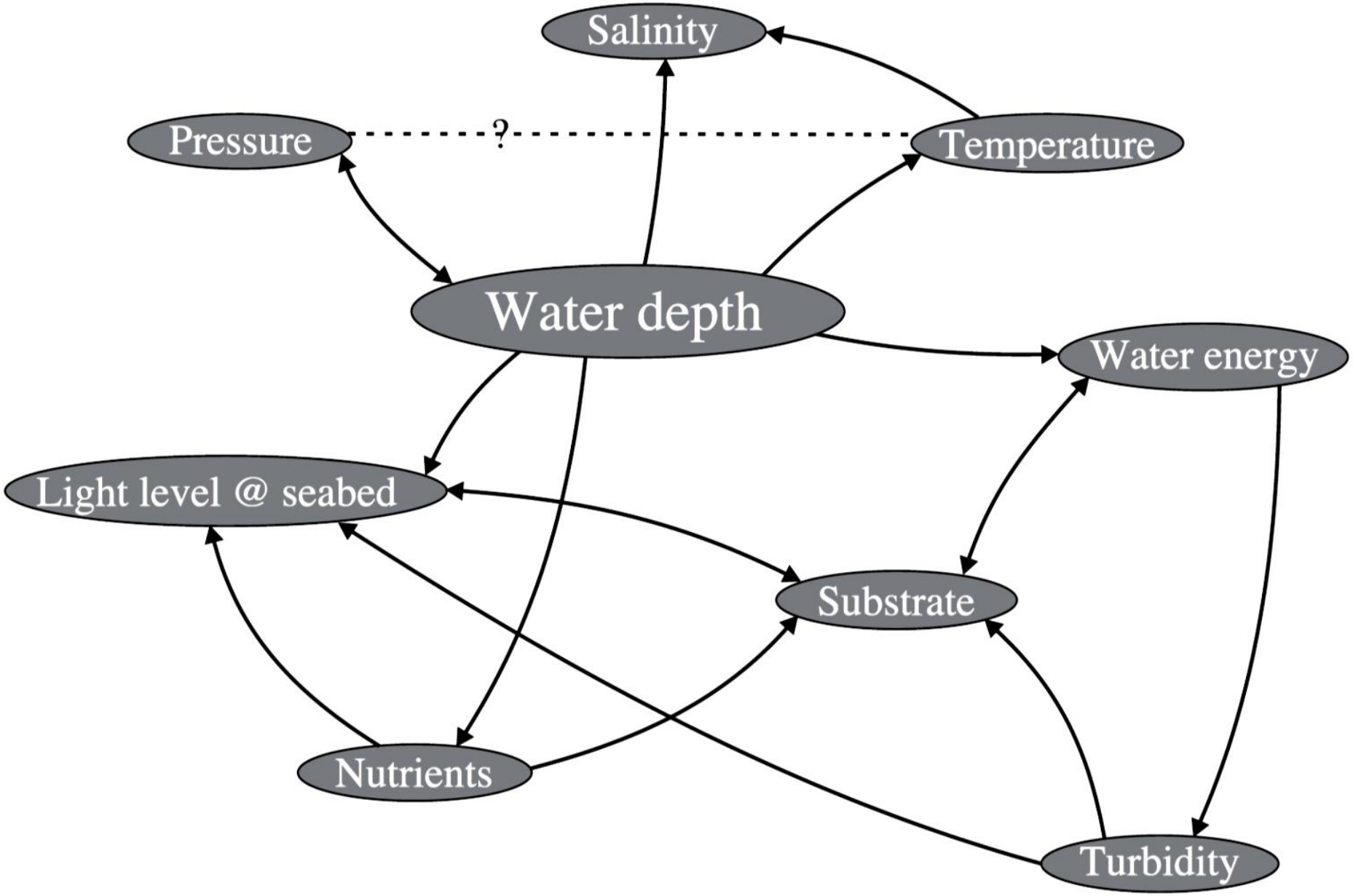
Canal system

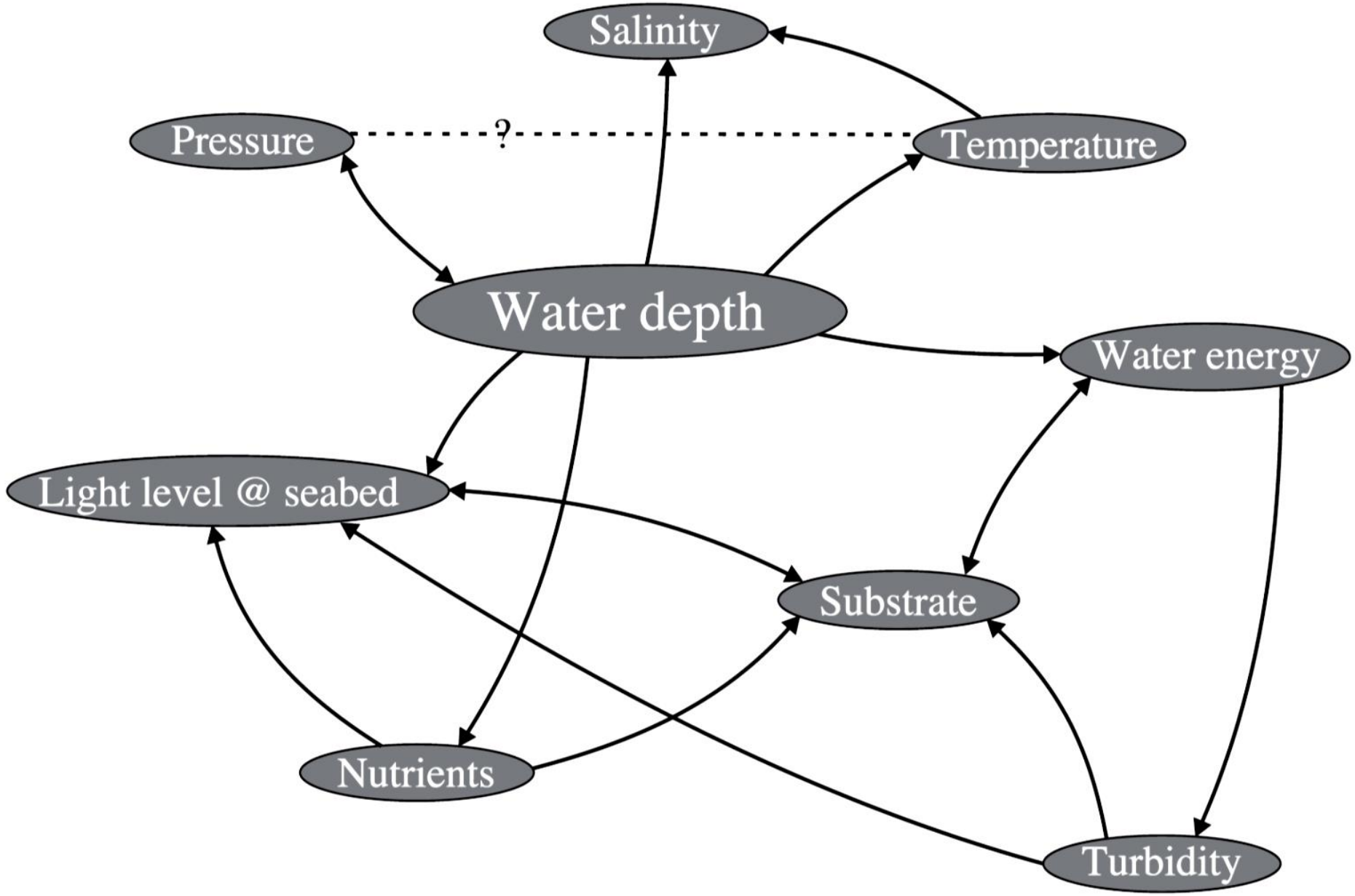




L'implementazione di canali rende il foraminifero più reattivo, grande, migliore



I macroforaminiferi hanno un'enorme differenza tra forma A e forma B perché una è molto grande anche 10 cm, la forma A invece è piccola


Salinity
Pressure
?
Temperature
Water depth
Water energy
Light level @ seabed
Substrate
Nutrients
Turbidity

Profitto del foraminifero dalla simbiosi

- Totale indipendenza dal cibo grazie ai lipidi e agli zuccheri prodotti dall‘organismo simbionte.

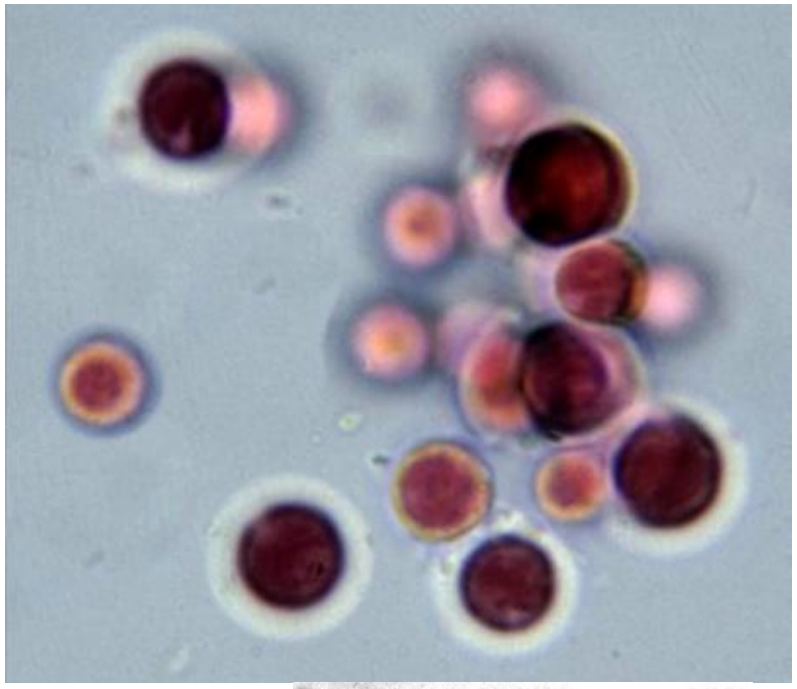
Profitto del simbionte

- Ottenere nutrienti inorganici (Azoto e Fosforo) in ambienti oligotrofici dagli scarti dell‘host.
- Ottenere carbonio inorganico in ambienti a scarsa quantità di CO_2 dallo scarto del processo di calcificazione del foraminifero.

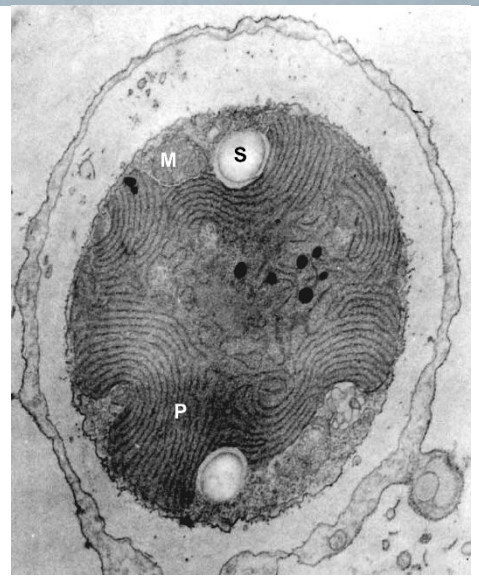
Bentonici di bassa profondità, altrimenti il simbionte muore

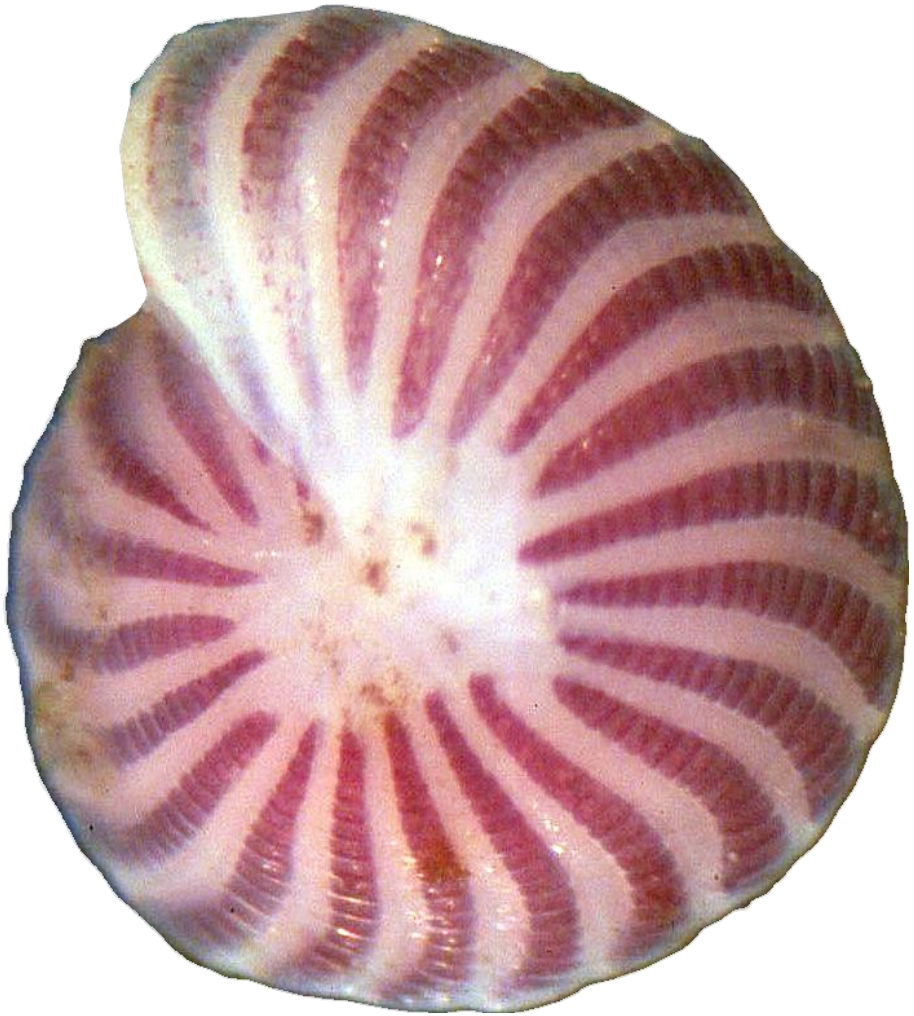
Rhodophyta (low profit on glycerol)

Acque basse e molto luminose
Addirittura sopravvivono fuori dall'acqua in caso di marea

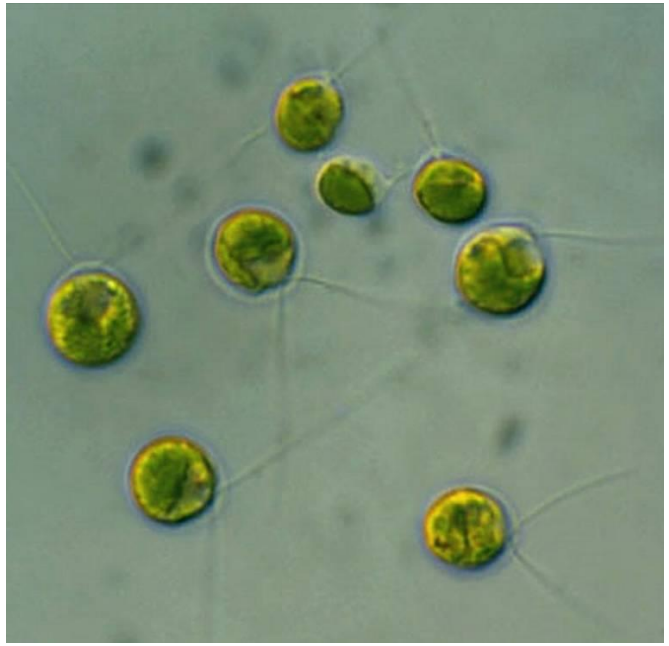


Porphyridium

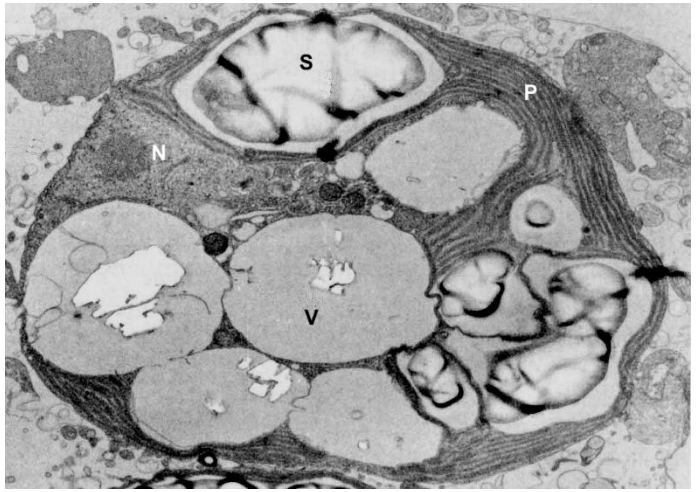




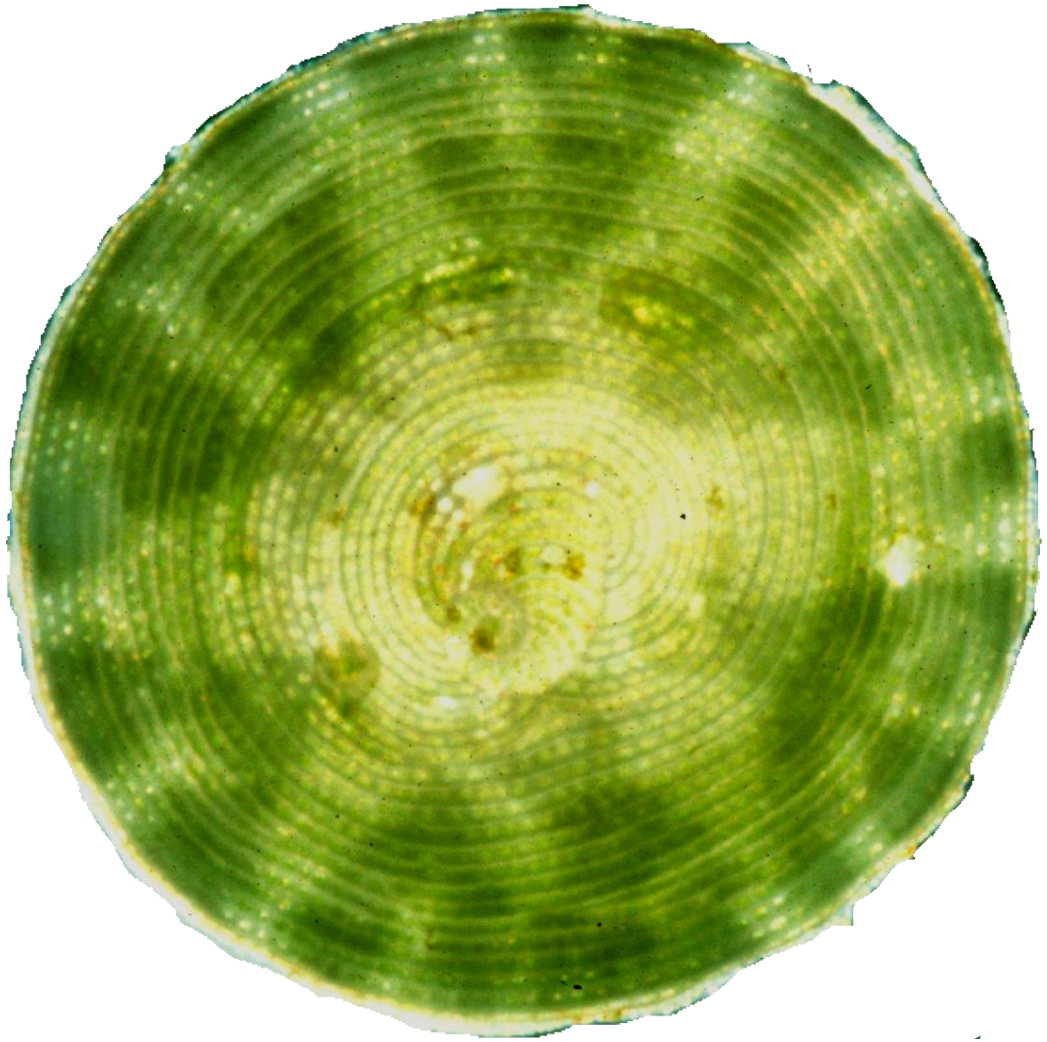
Chlorophyta (mean profit of glycerol and lipids)



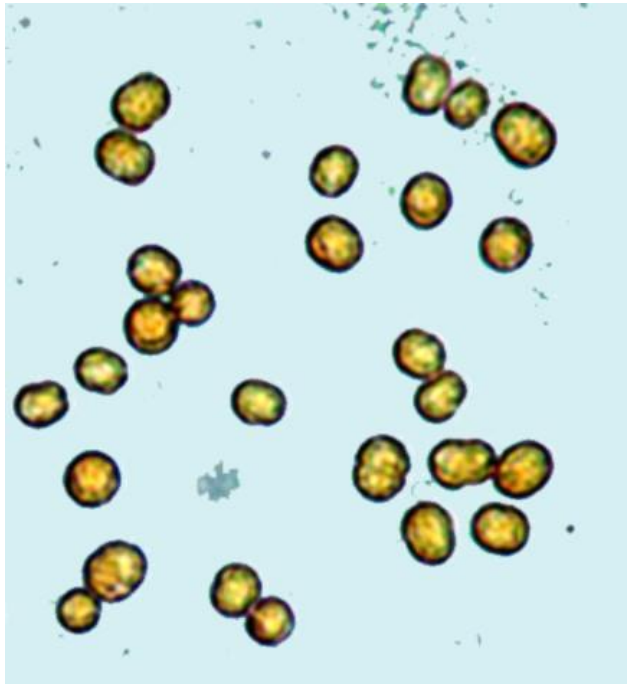
Chlamydomonas



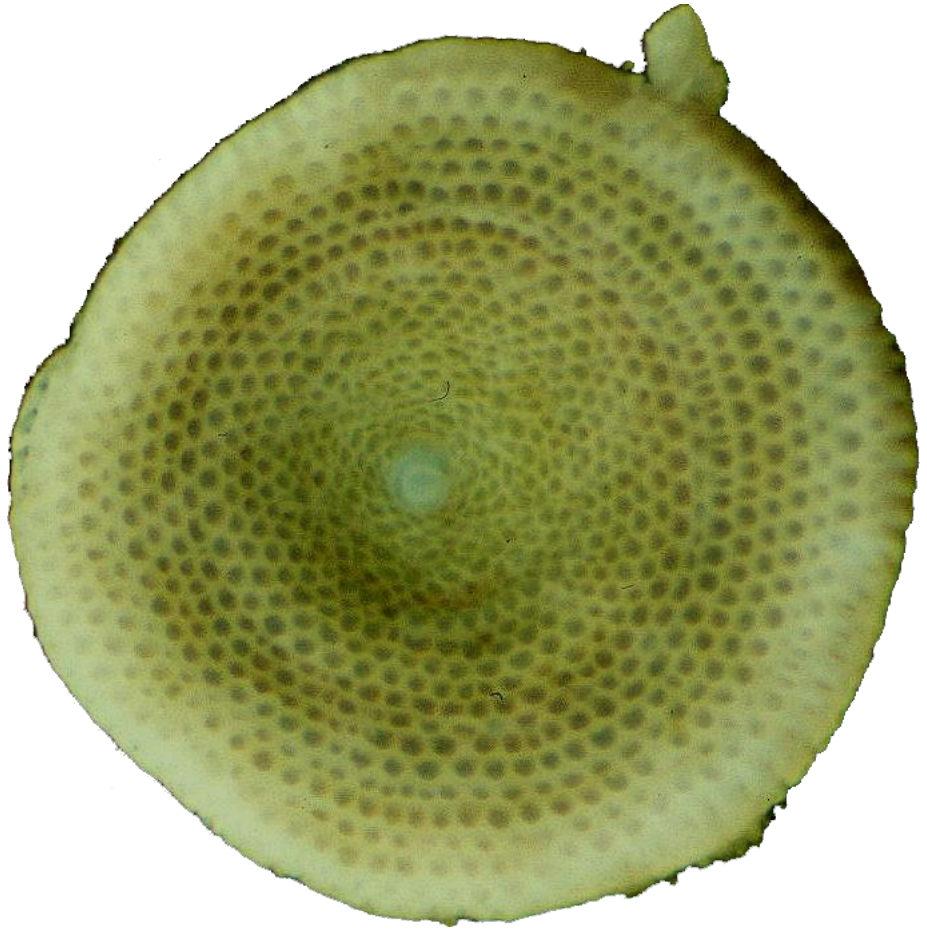
Laguna, reef interno (alta luminosità). Si attaccano alla poseidonia e ad altre alghe. Producono più cibo dei precedenti.



Zooxanthellae (high profit of glycerol and lipids)

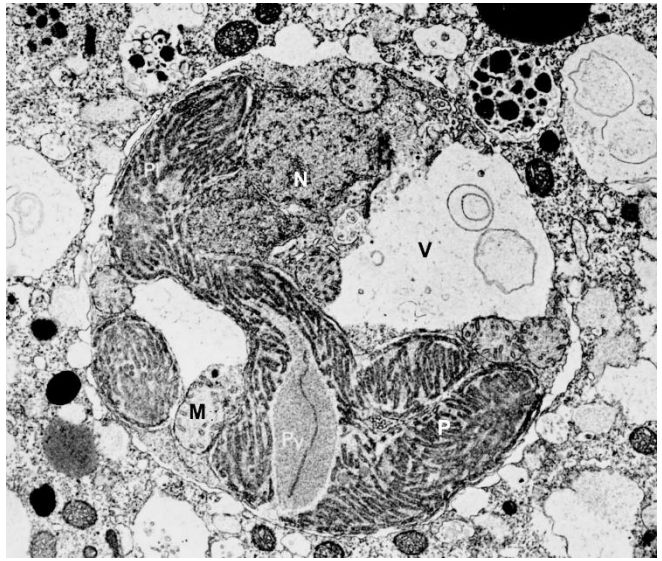


Symbiodinium



Diatoms (extreme profit of glycerol and lipids)

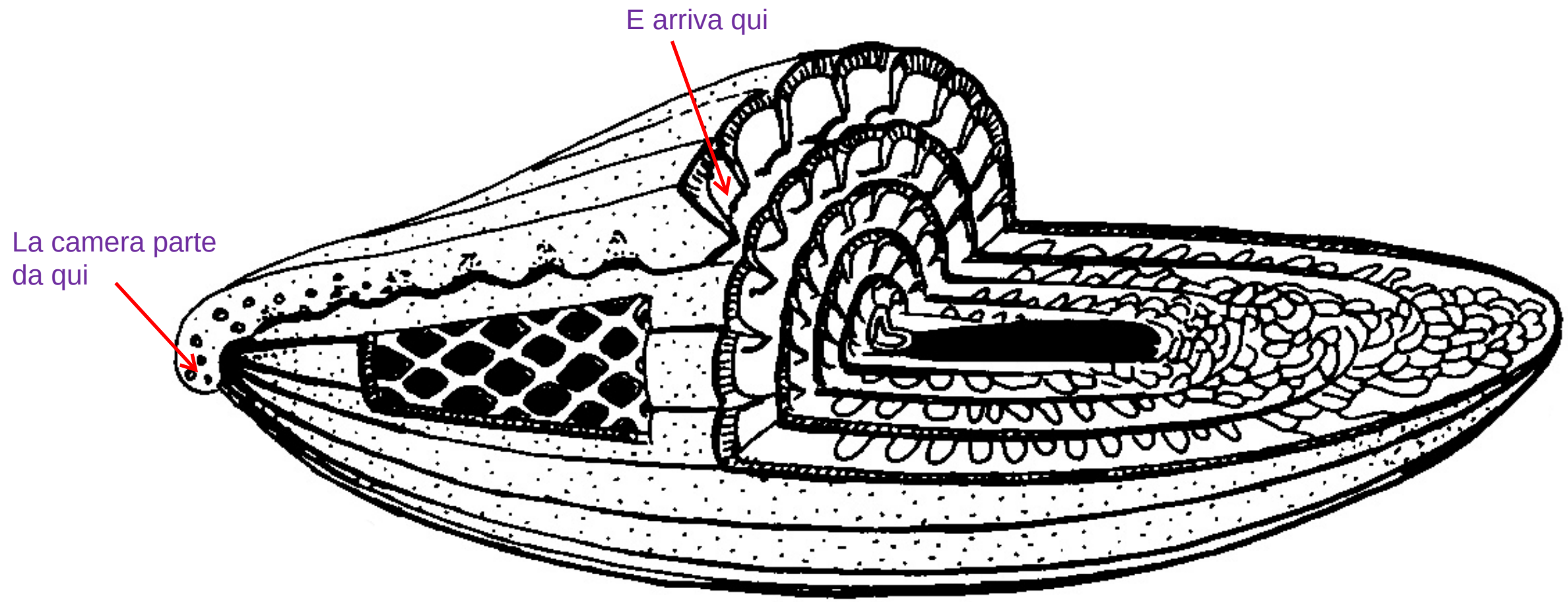
Thalassionema



Adatte ad ambienti poco luminosi (anche 70-90 metri)

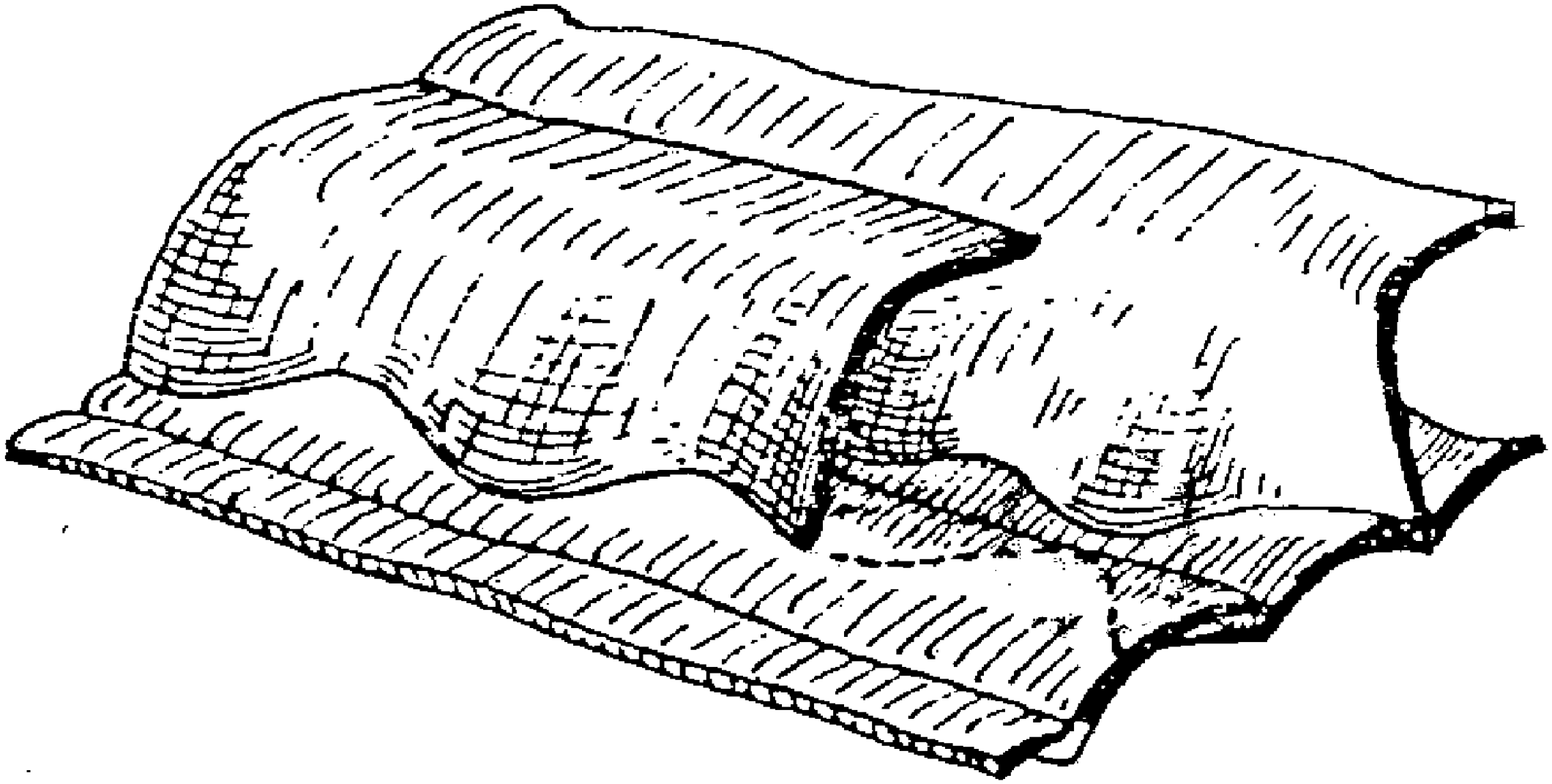
I fusulinidi

Non si sa che tipo di simbionti abbiano questi.
Si sa che avevano simbionti visto che sono simili a foraminiferi moderni con simbionti

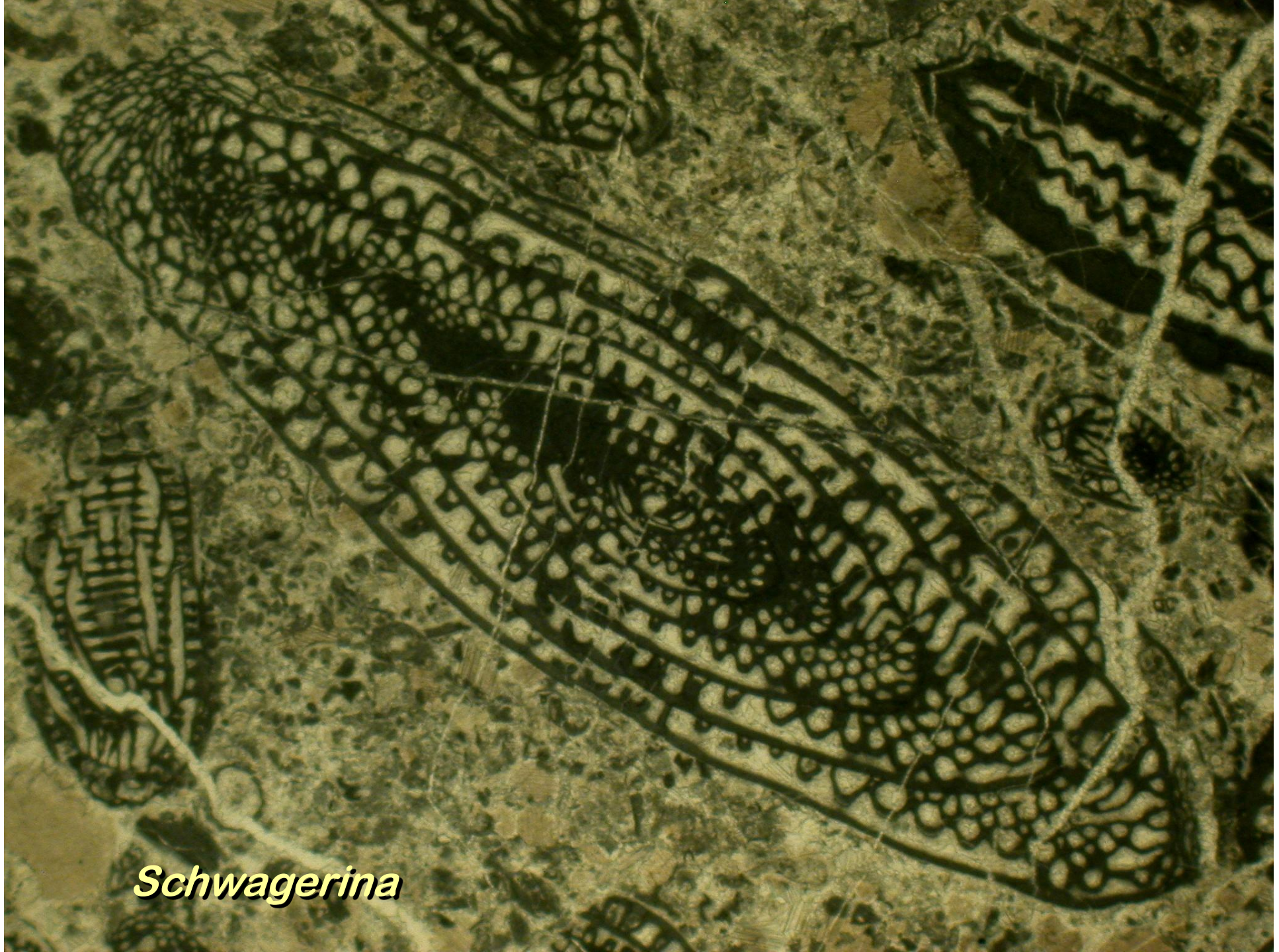


- Guscio microgranulare molto simile alla struttura aggliutinante.
- Dal Carbonifero al tardo Permiano

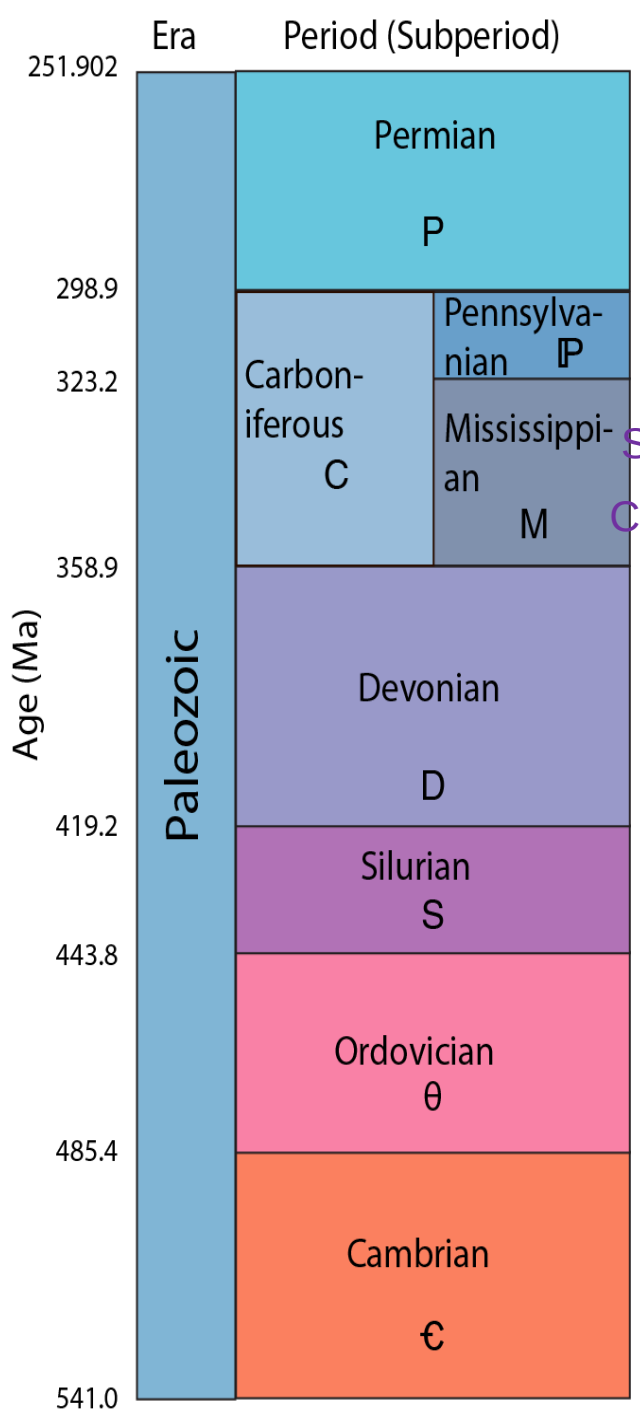
Septal folding del guscio (della theca)



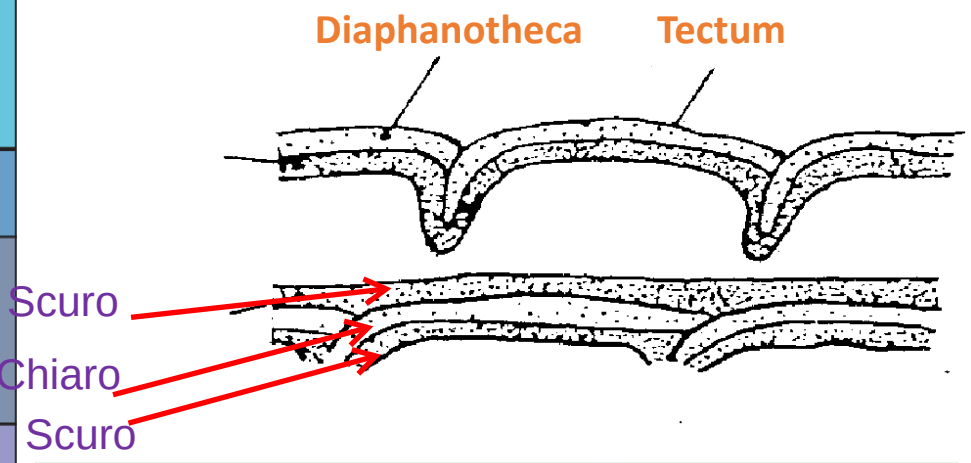

Schwagerina



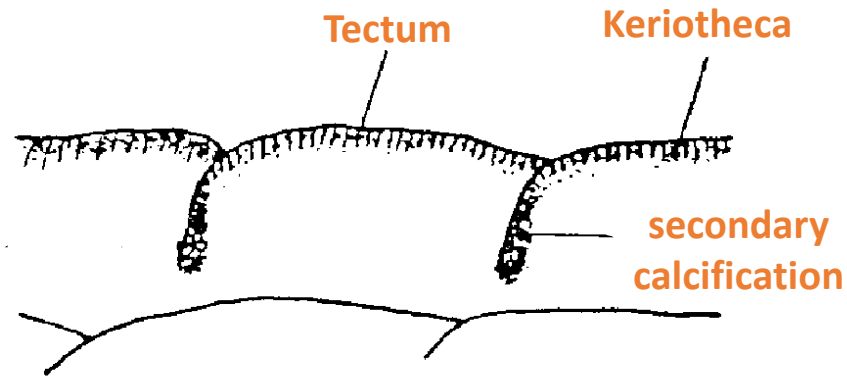
Struttura tipica delle fusuline

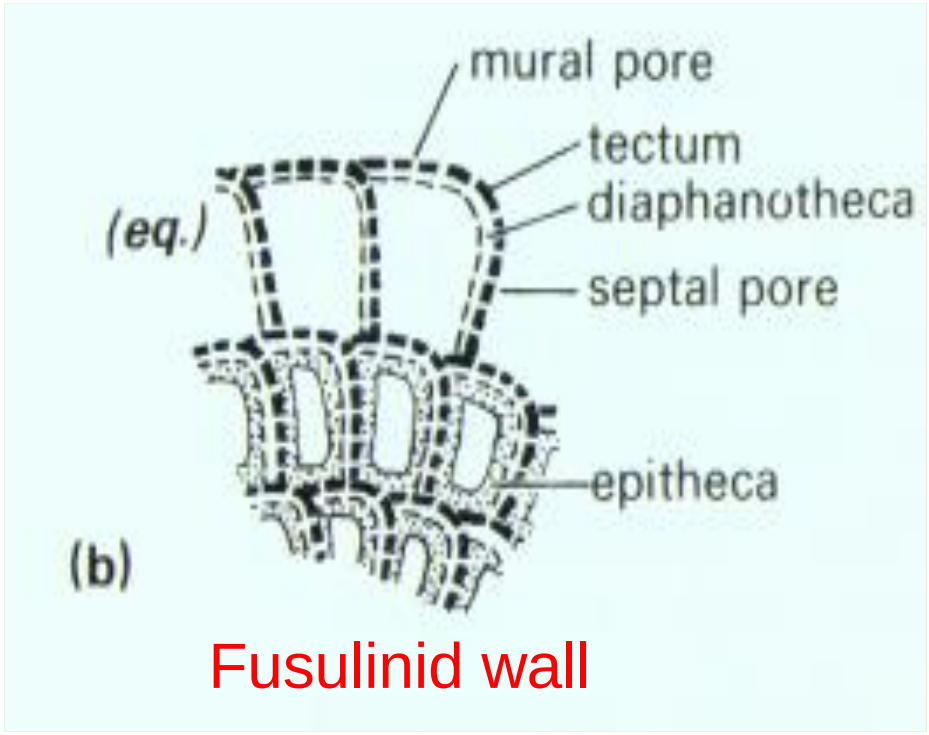


Early Pennsylvanian

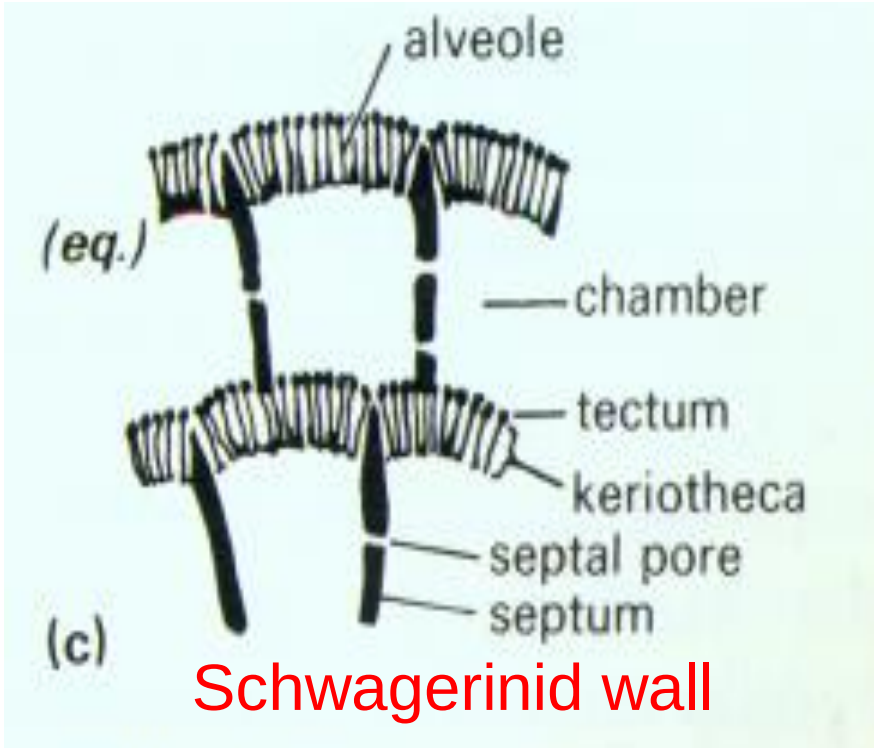


Late Pennsylvanian to Mid Permian

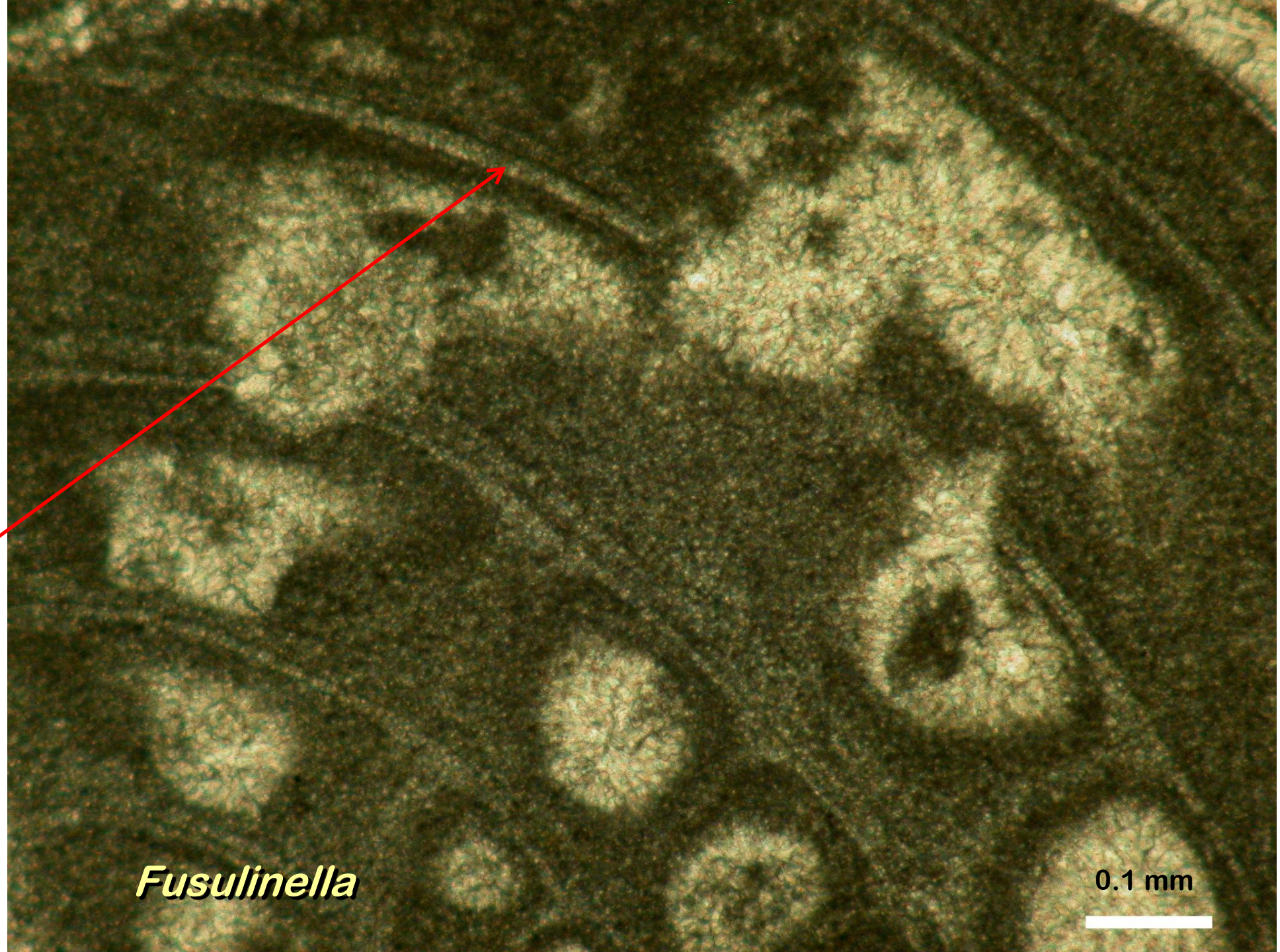




Fusulinid wall

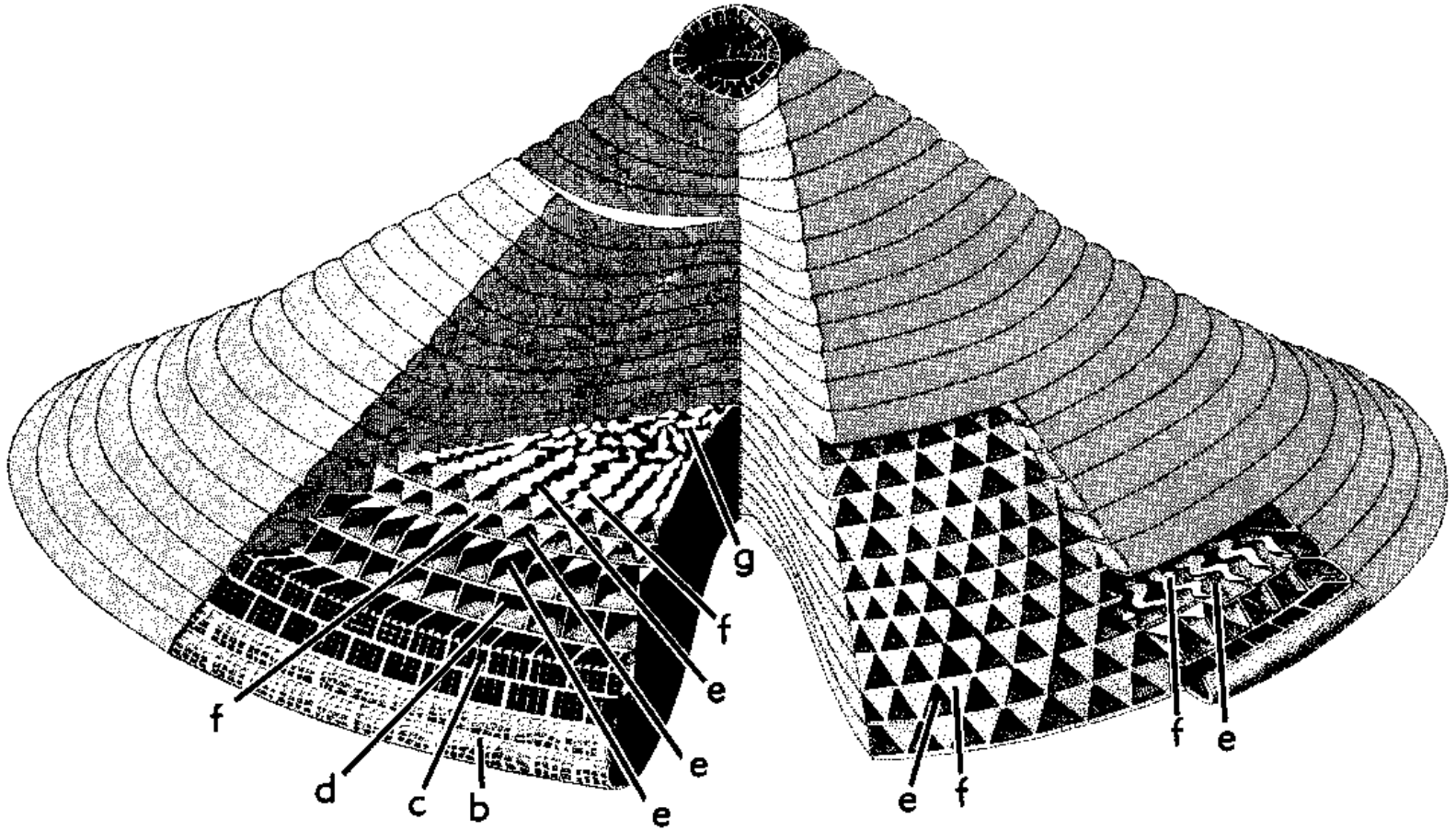


Schwagerinid wall


Diafanoteca
Fusulinella
0.1 mm

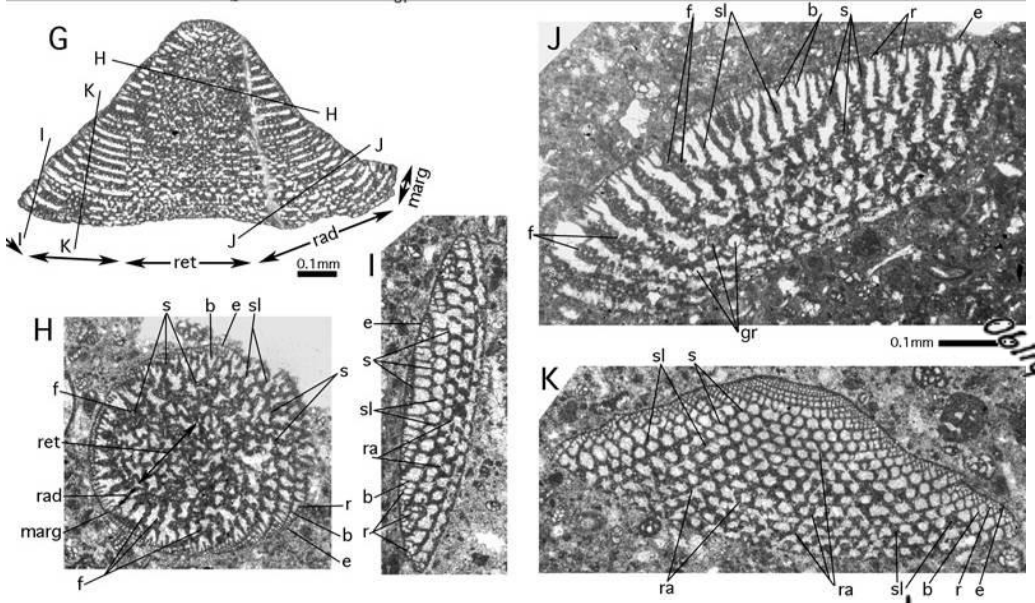

0.1 mm
Schwagerina

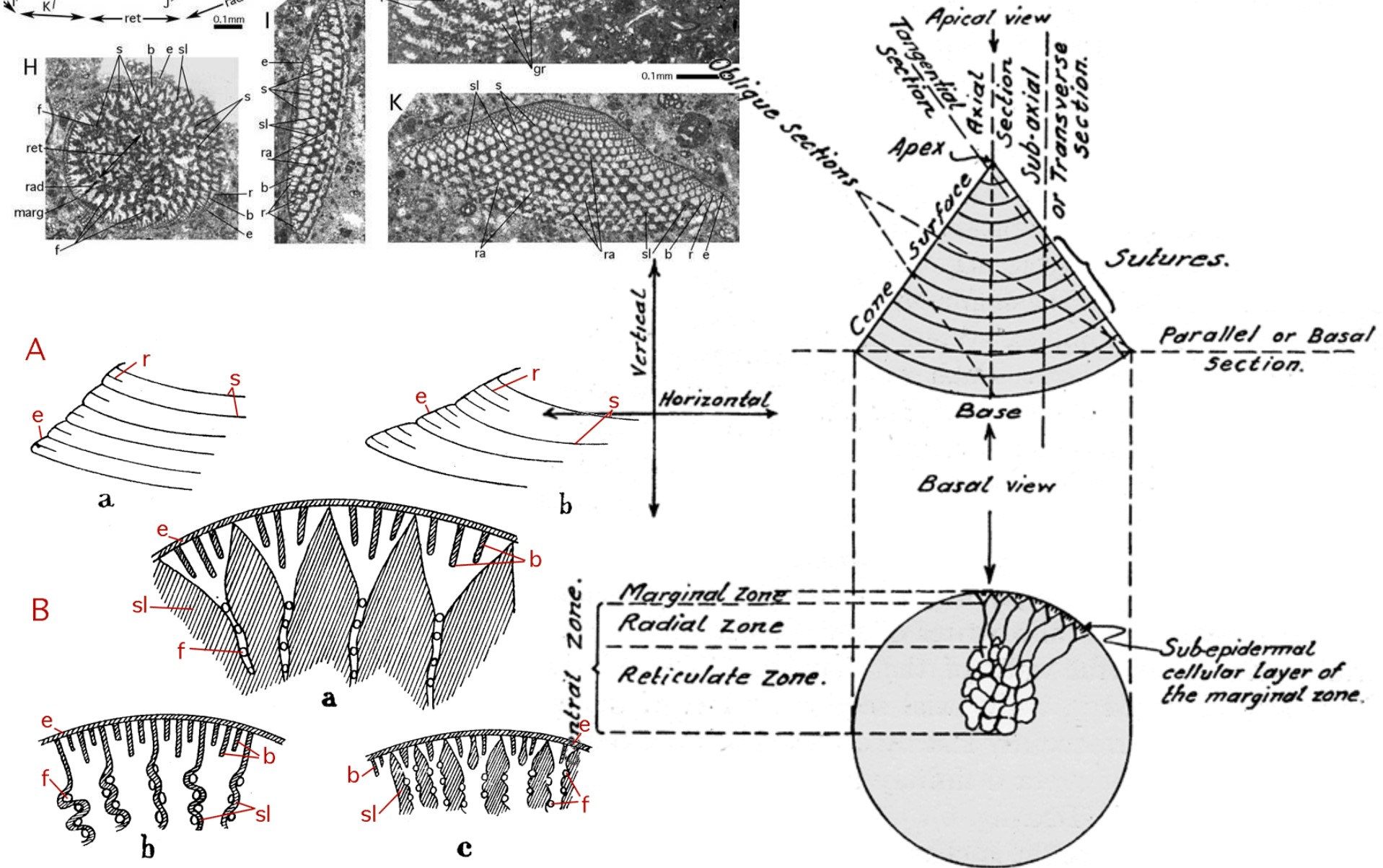
Gli orbitolinidi



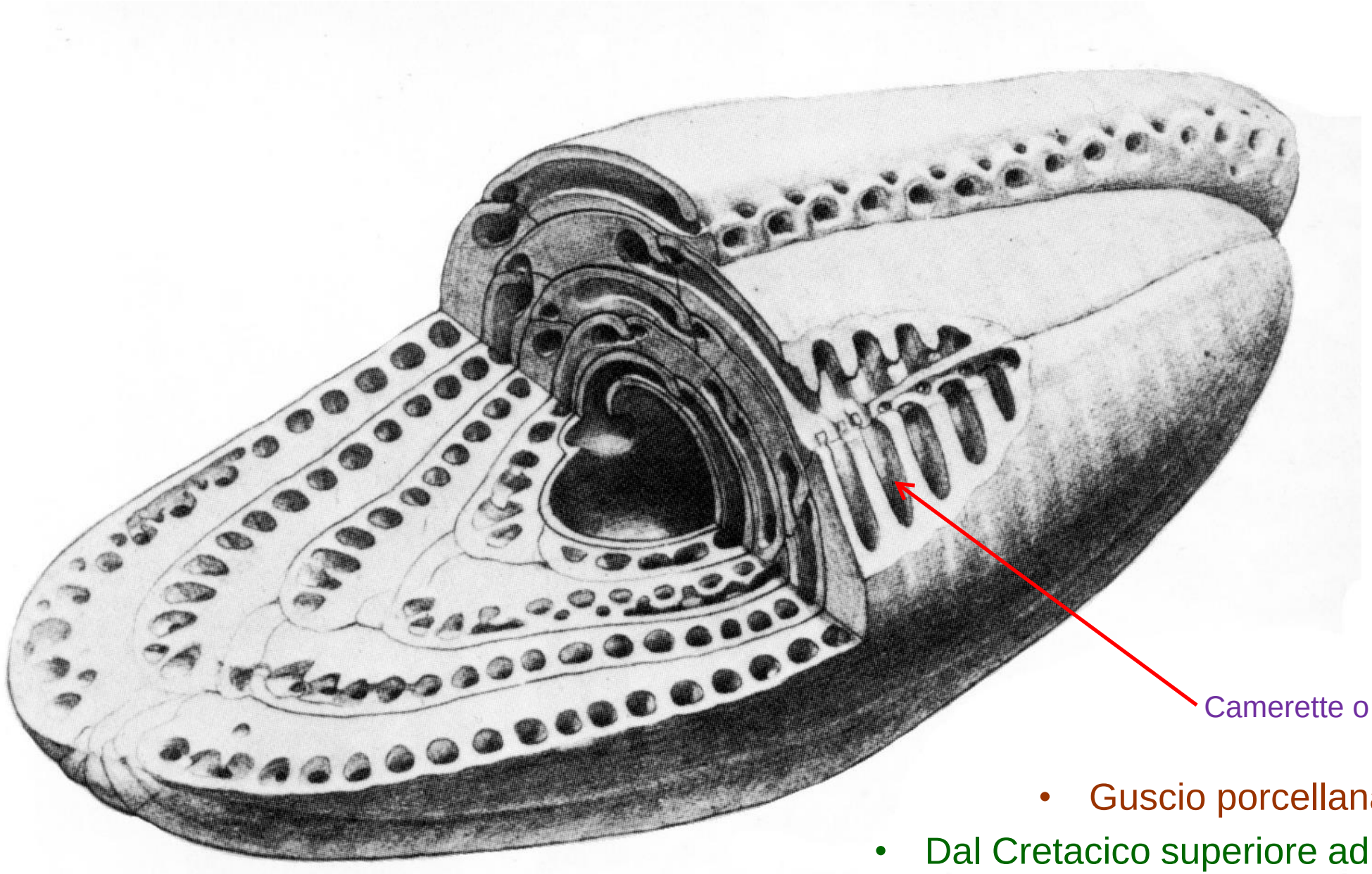
- Guscio agglutinato
- Cretacico

Textulariina - Orbitolina



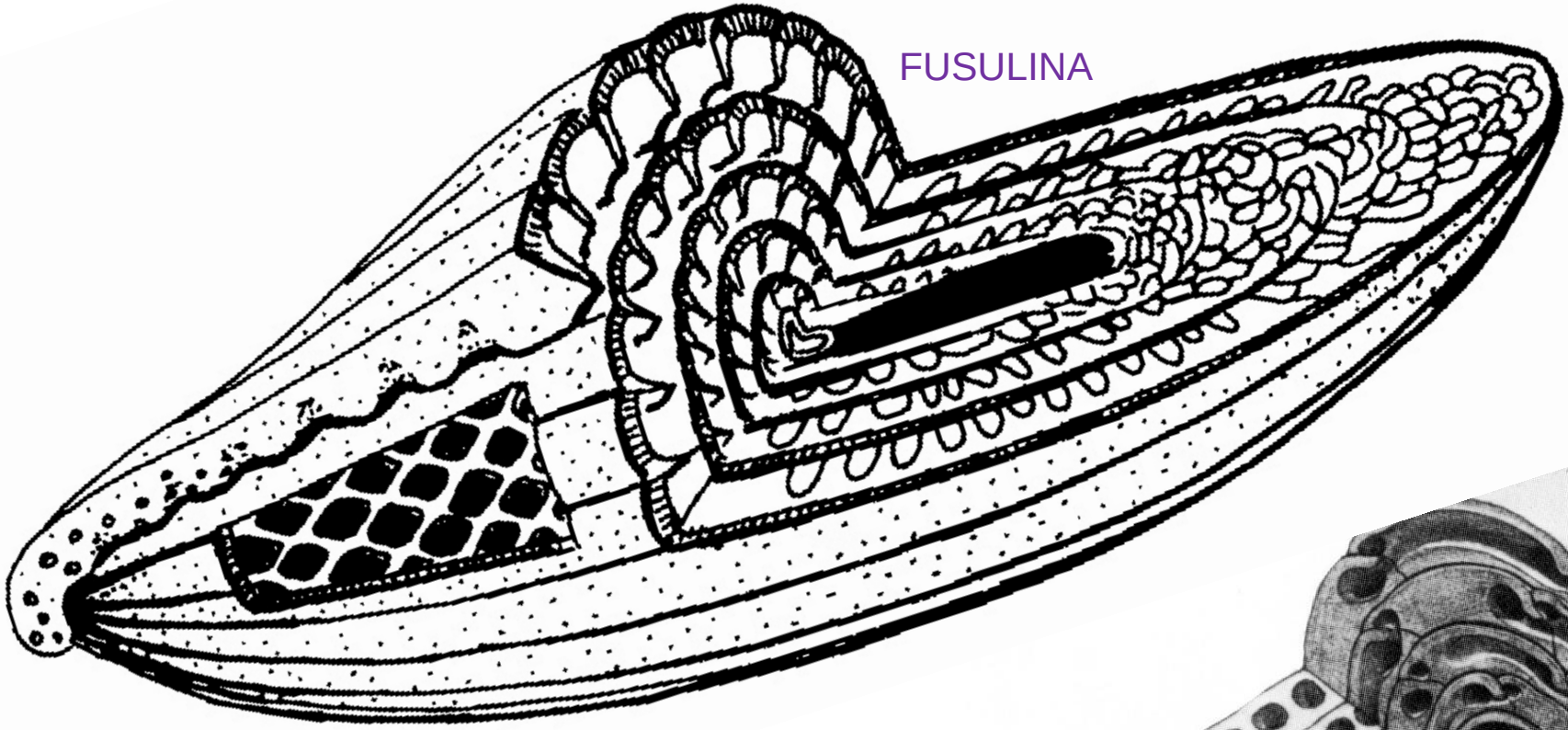


NON HA PARTI SCURE (DIAPHALOTECA)

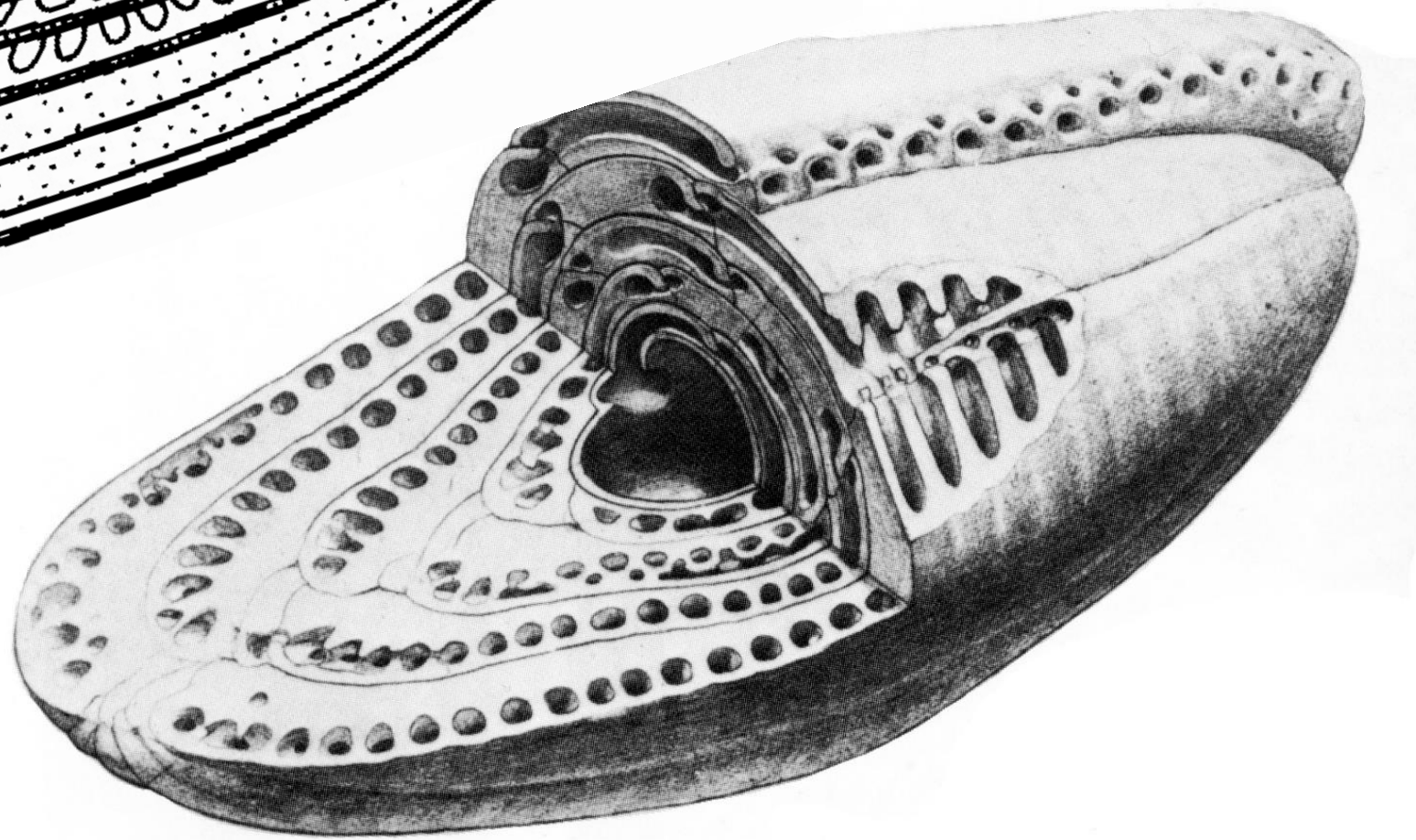


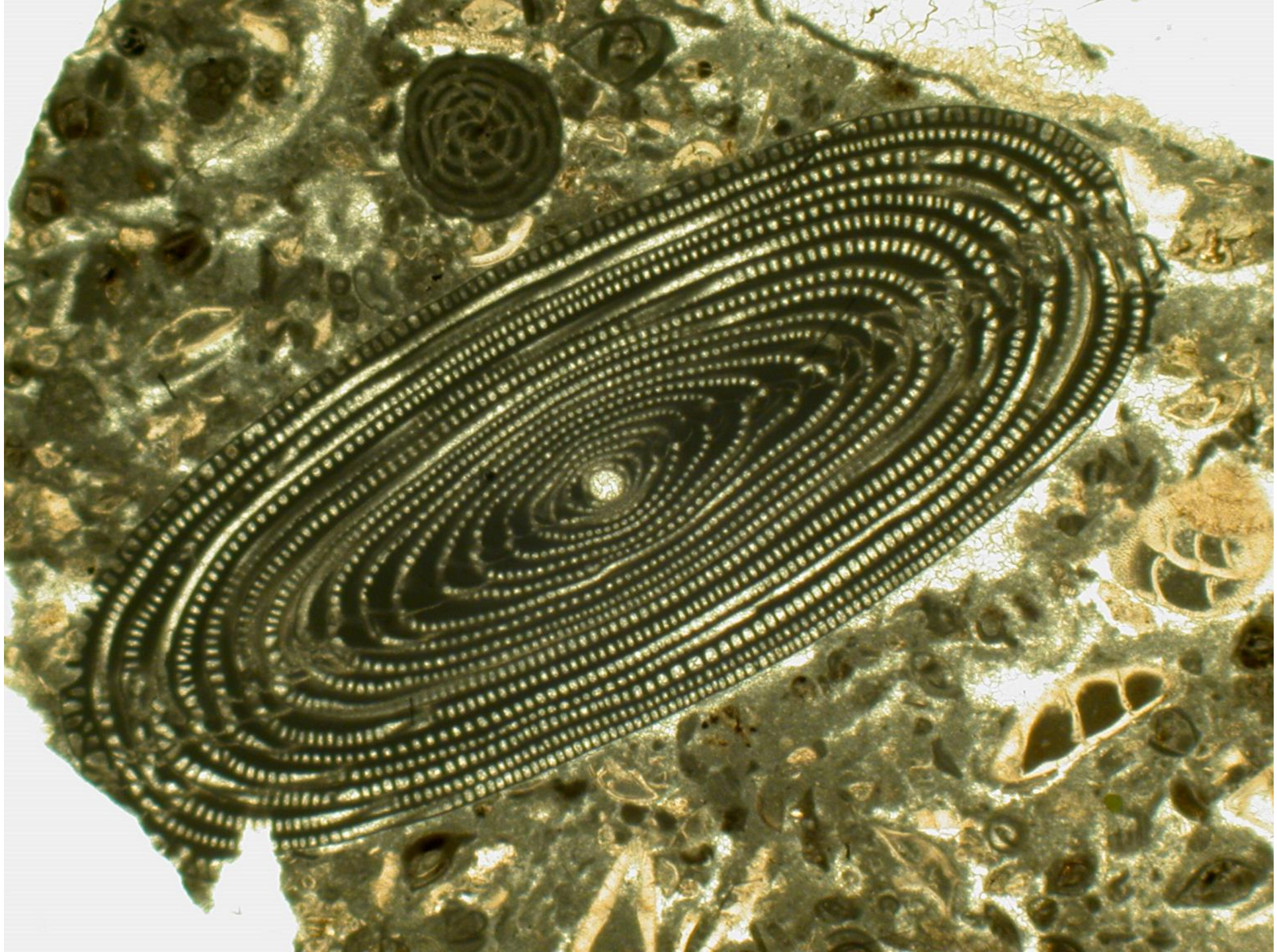
- Guscio porcellanaceo
- Dal Cretacico superiore ad oggi

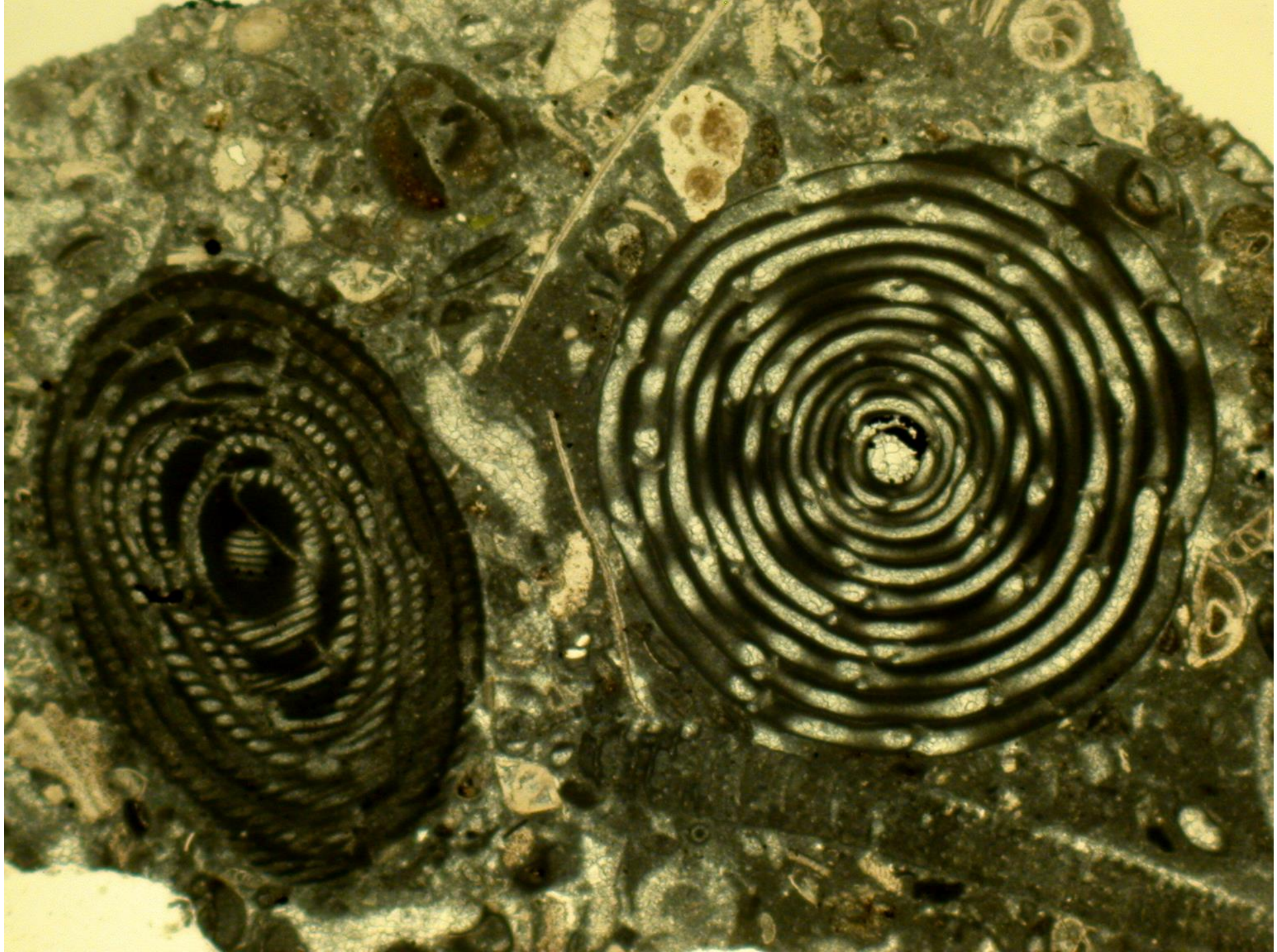
FUSULINA

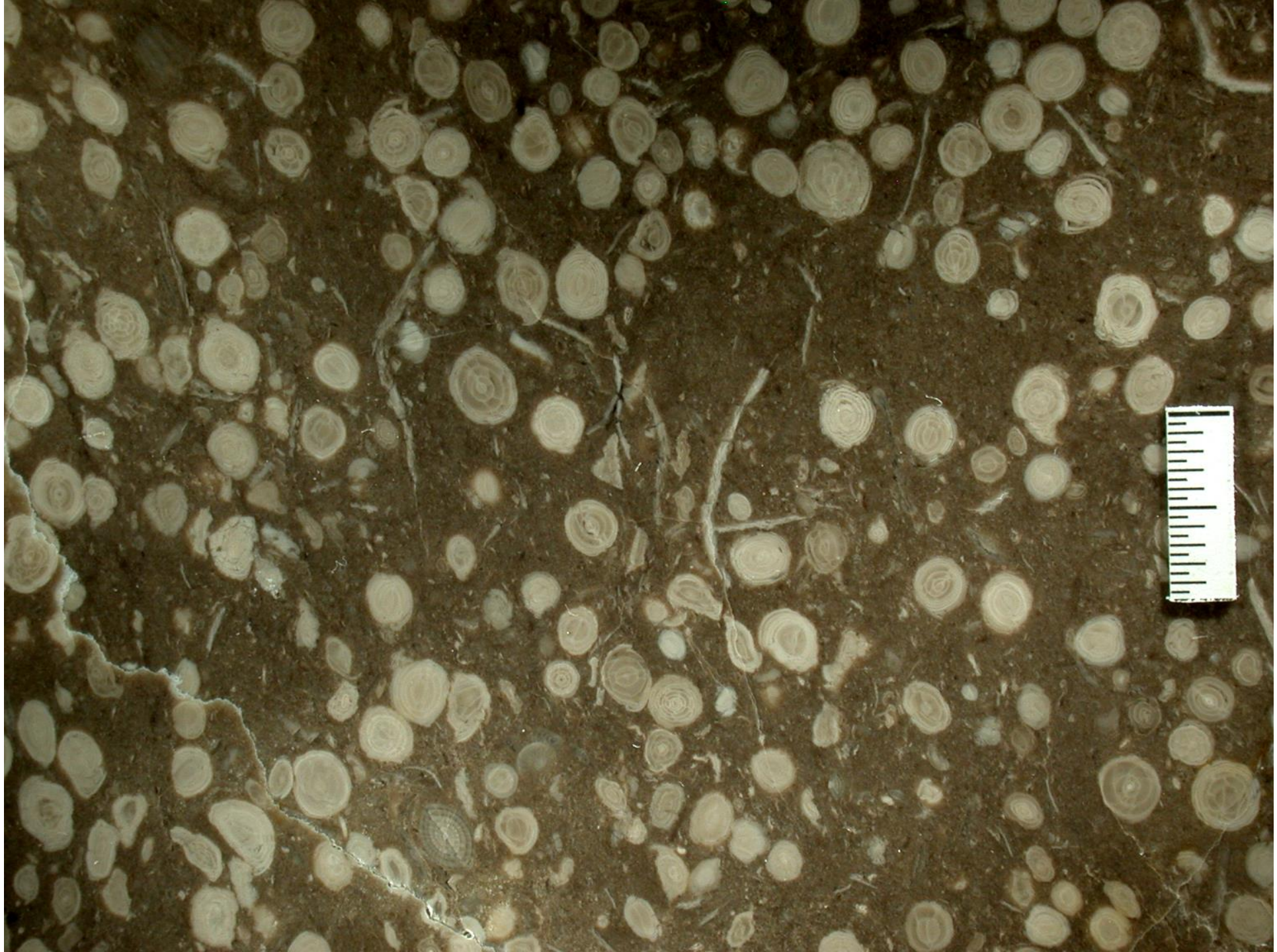


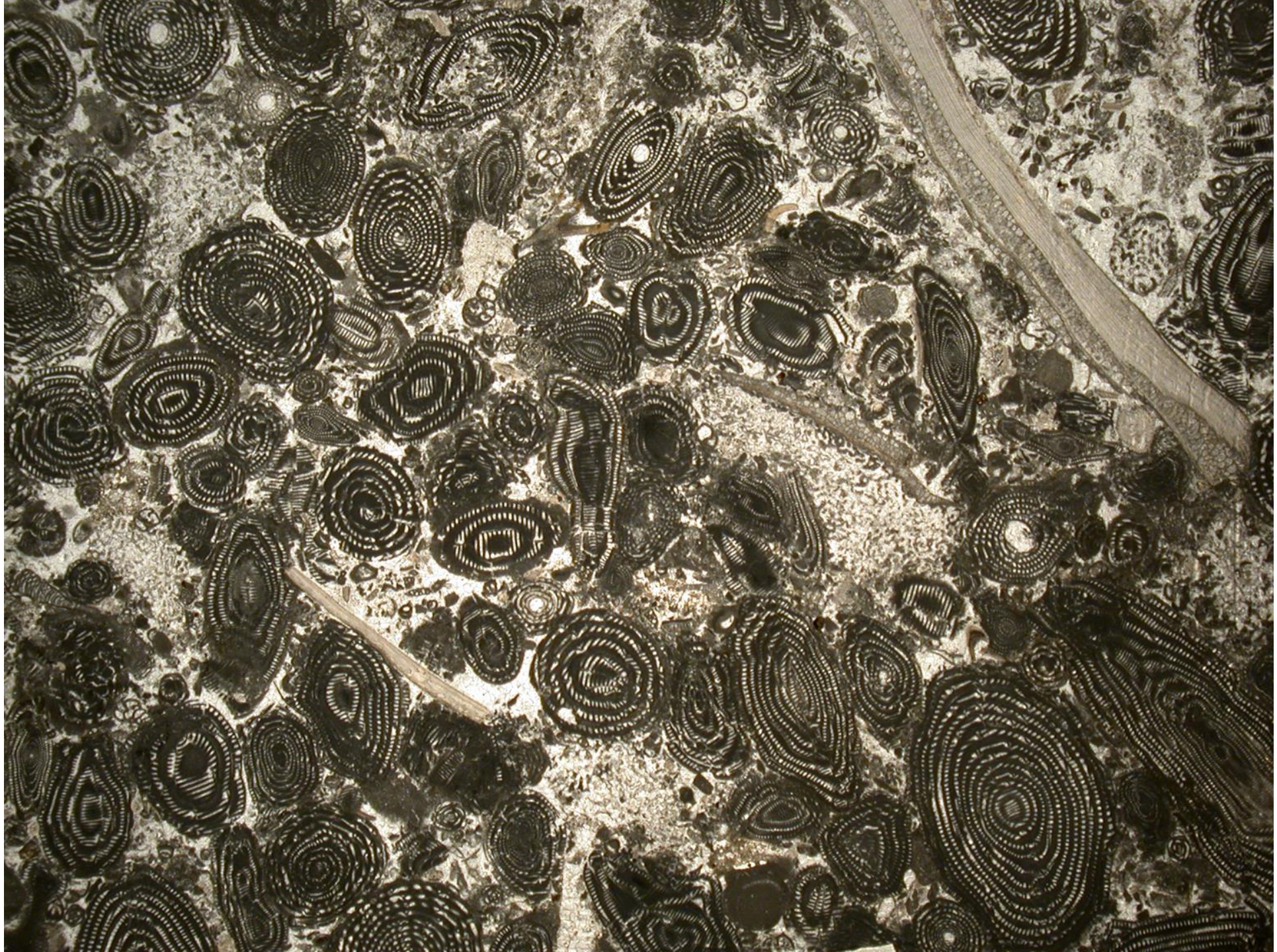
ALVEOLINA



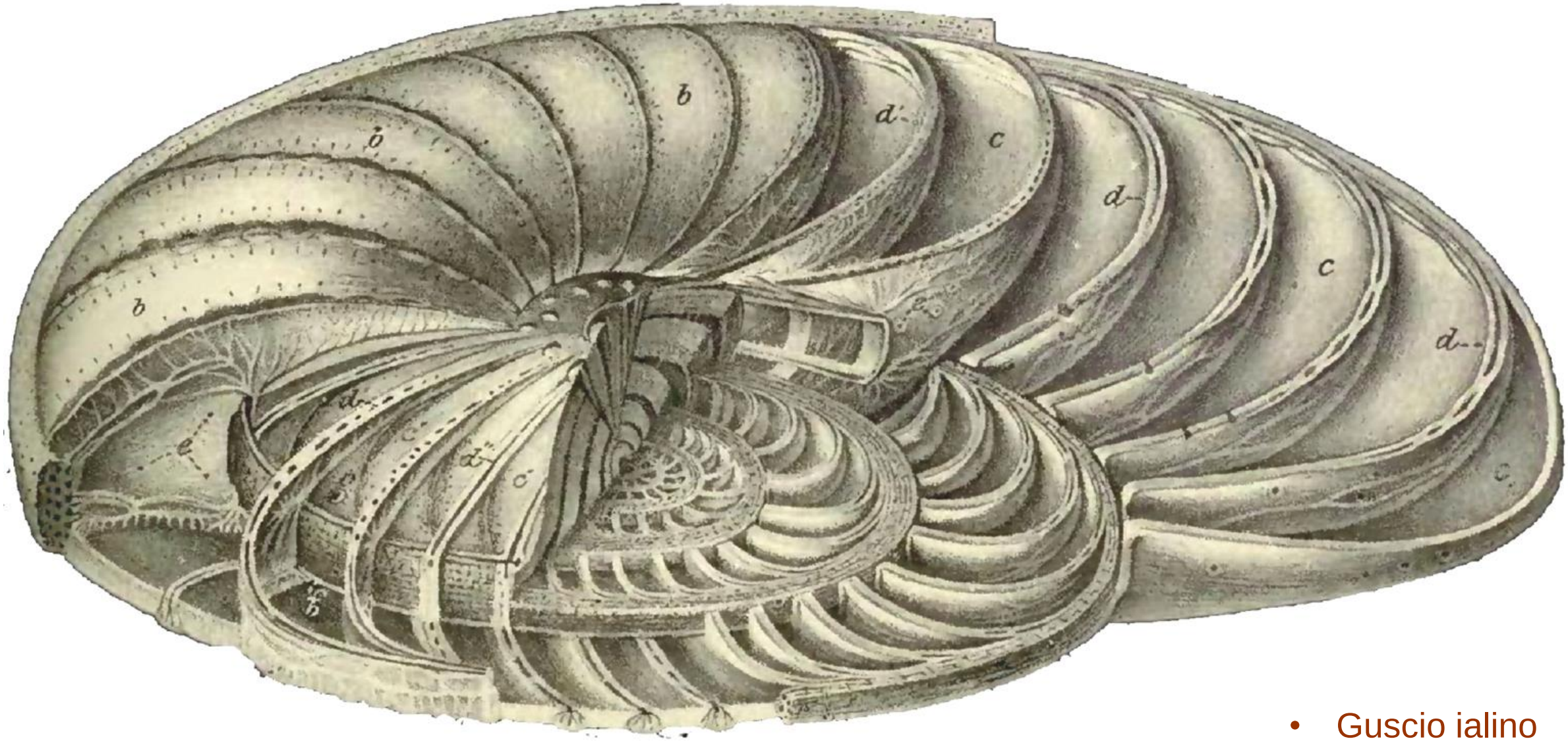






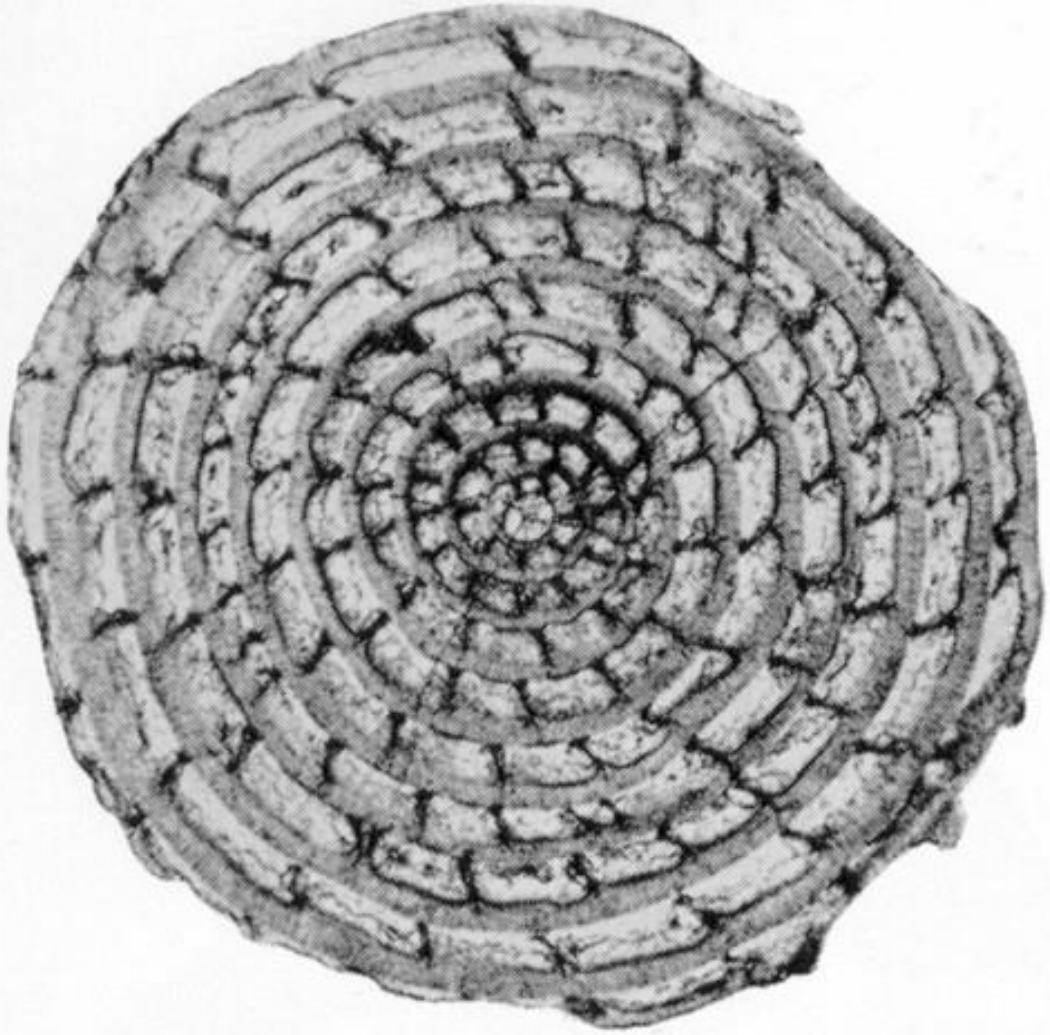


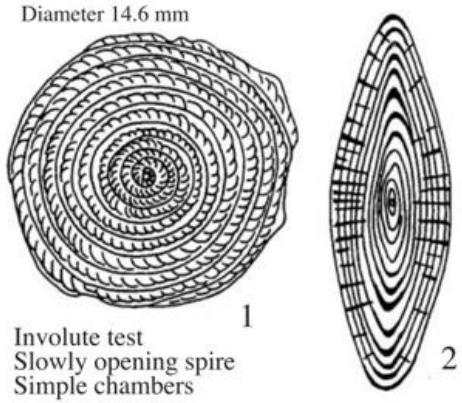
I nummulitidi



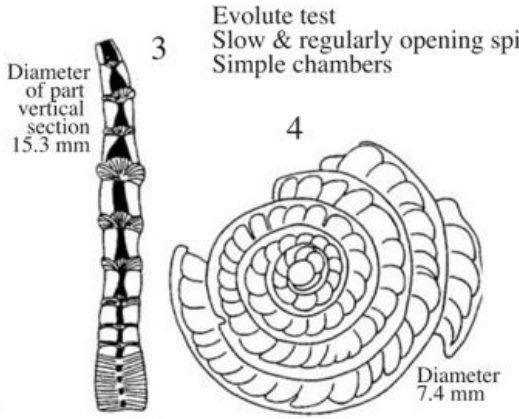
- Guscio ialino
- Dal Cretacico superiore ad oggi

Nummulites

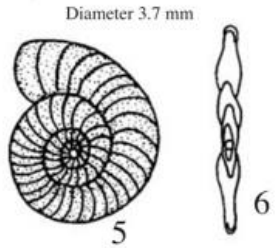




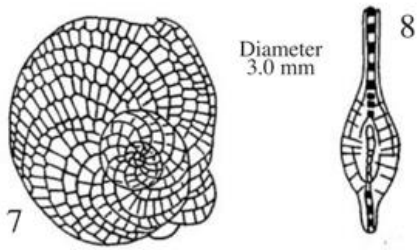
Involute test
Slowly opening spire
Simple chambers



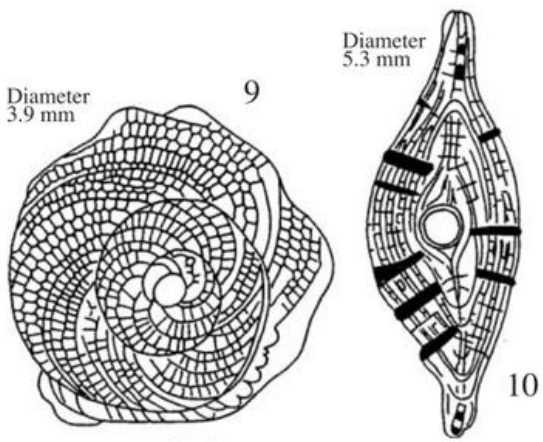
Evolute test
Slow & regularly opening spire
Simple chambers



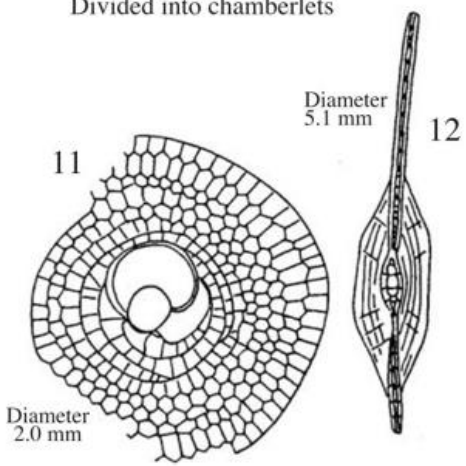
Evolute test
Rapidly opening spire
Simple chambers



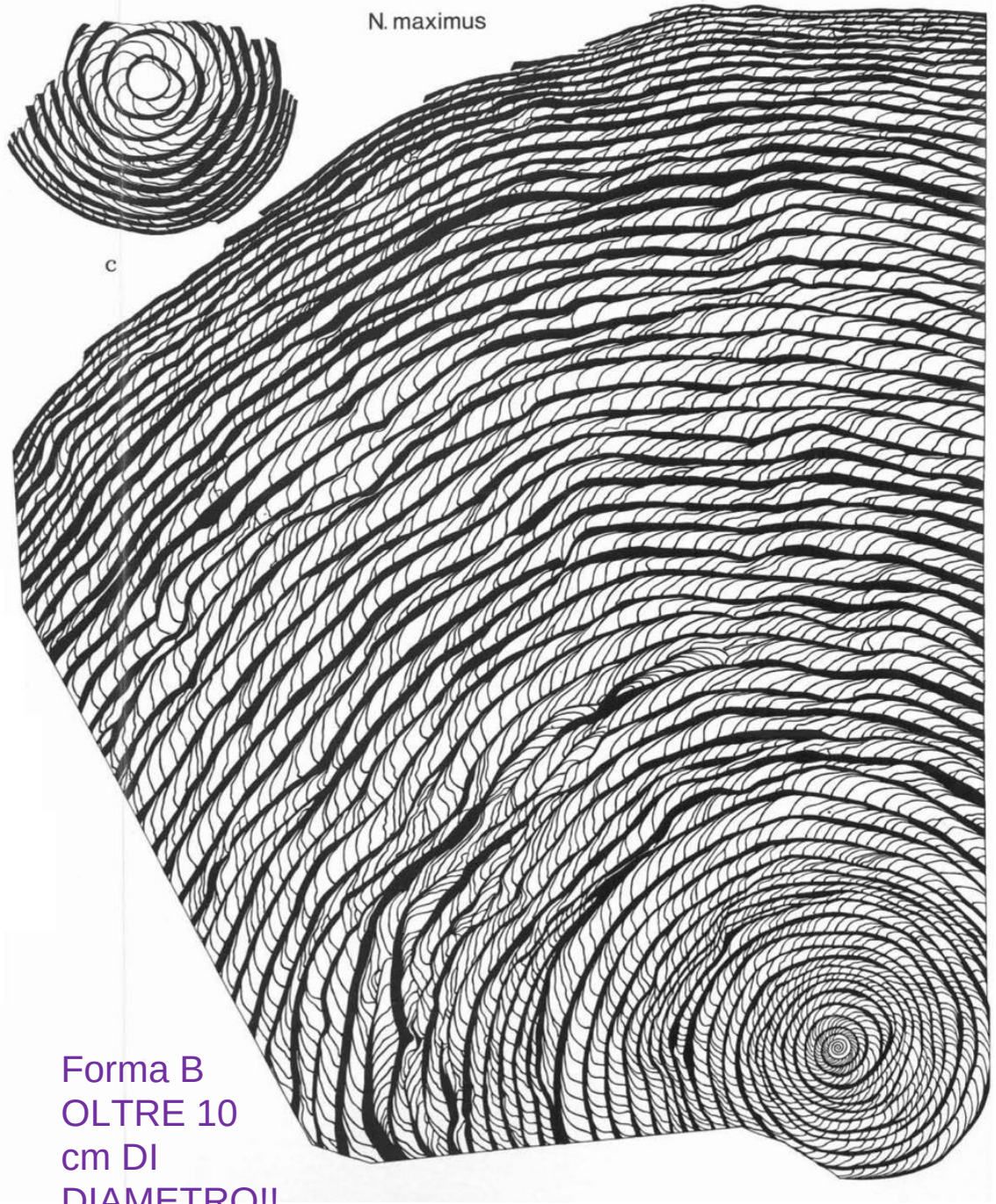
Maturo-evolute test
Rapidly opening spire
Divided into chamberlets



Evolute test
Rapidly opening spire
Divided into cubicula



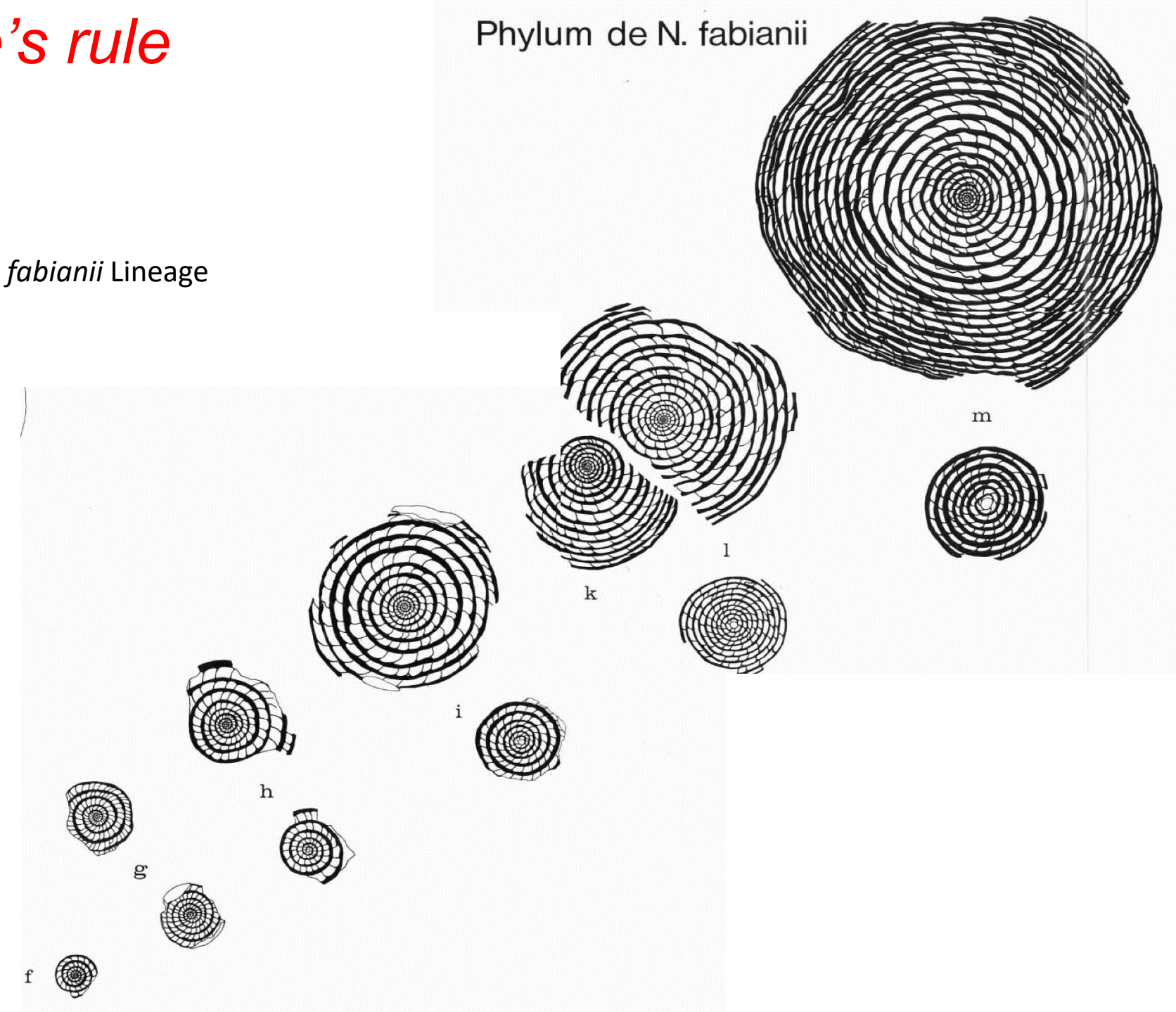
Evolute test
Rapidly opening spire, becoming annular
Divided into chamberlets



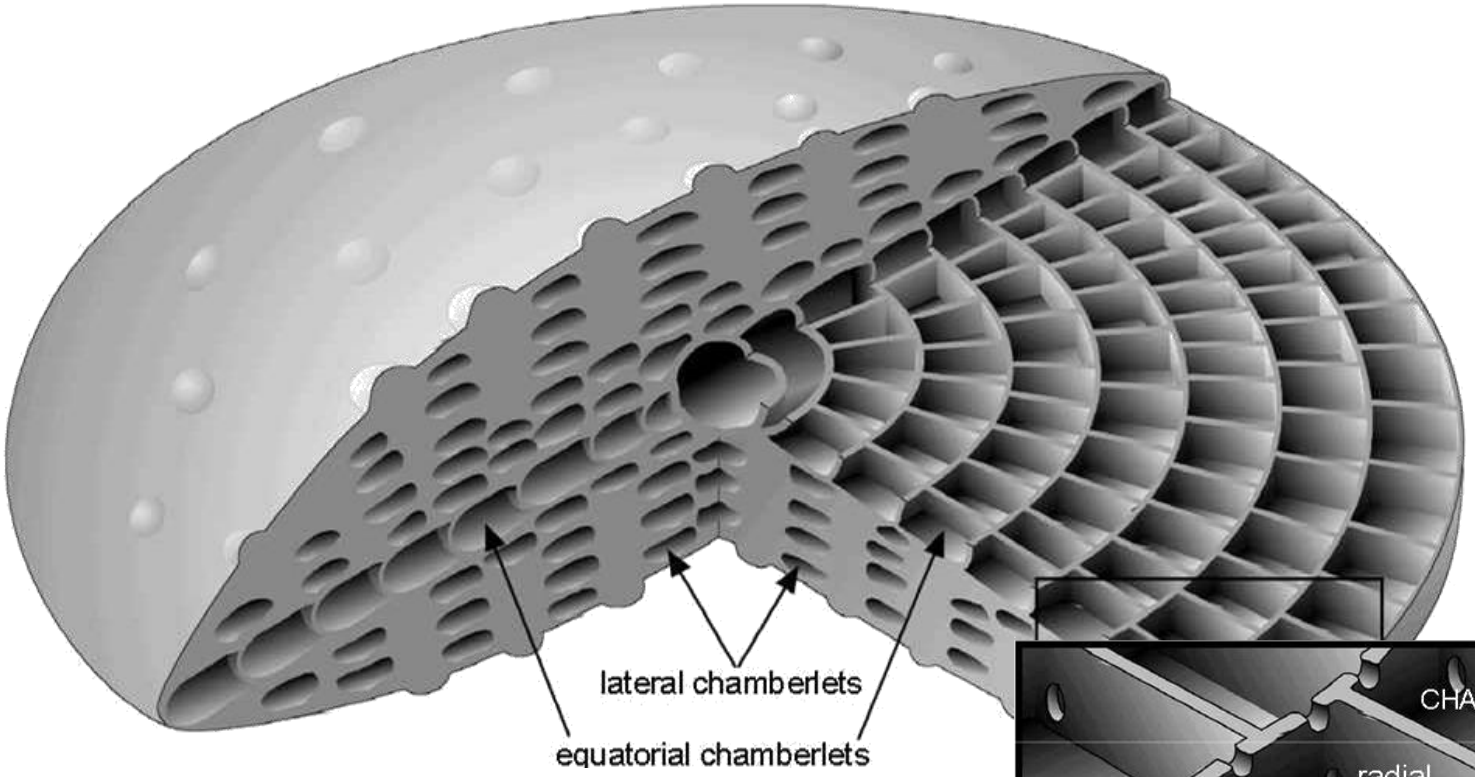
Forma B
OLTRE 10
cm DI
DIAMETRO!!

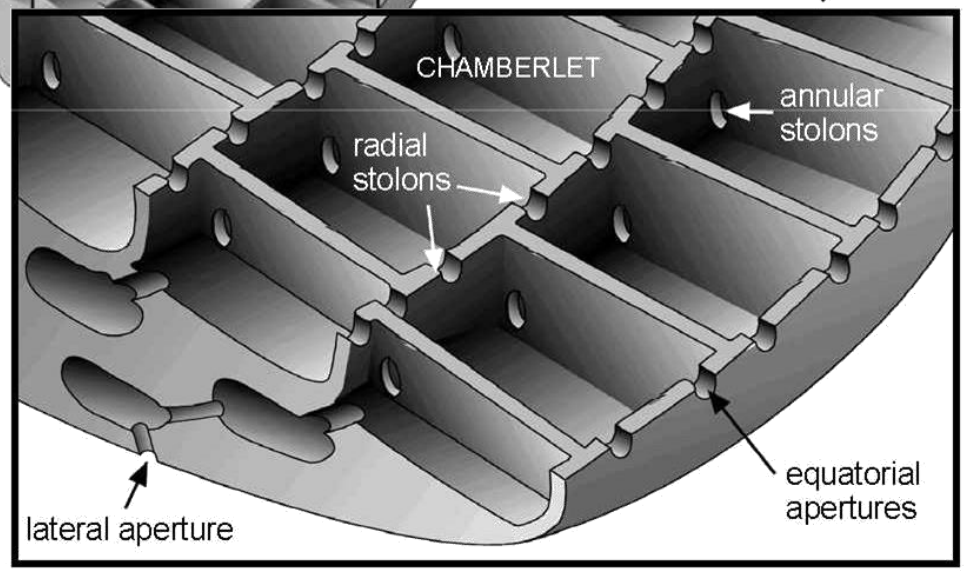
Cope's rule

Nummulites fabianii Lineage

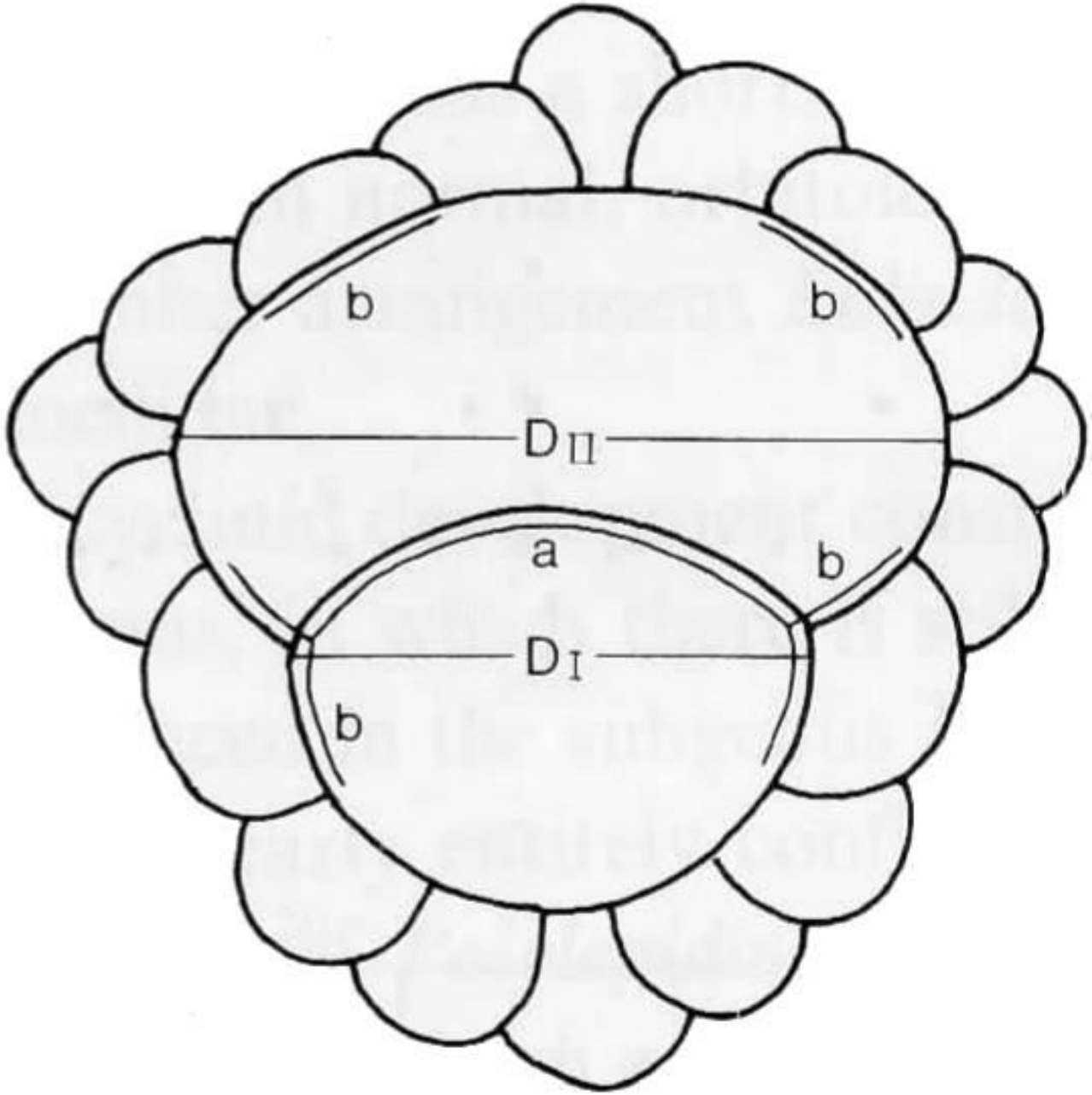


I macroforaminiferi a crescita ciclica: gli orbitoidi





- Guscio ialino
- Dal Cretacico superiore ad oggi

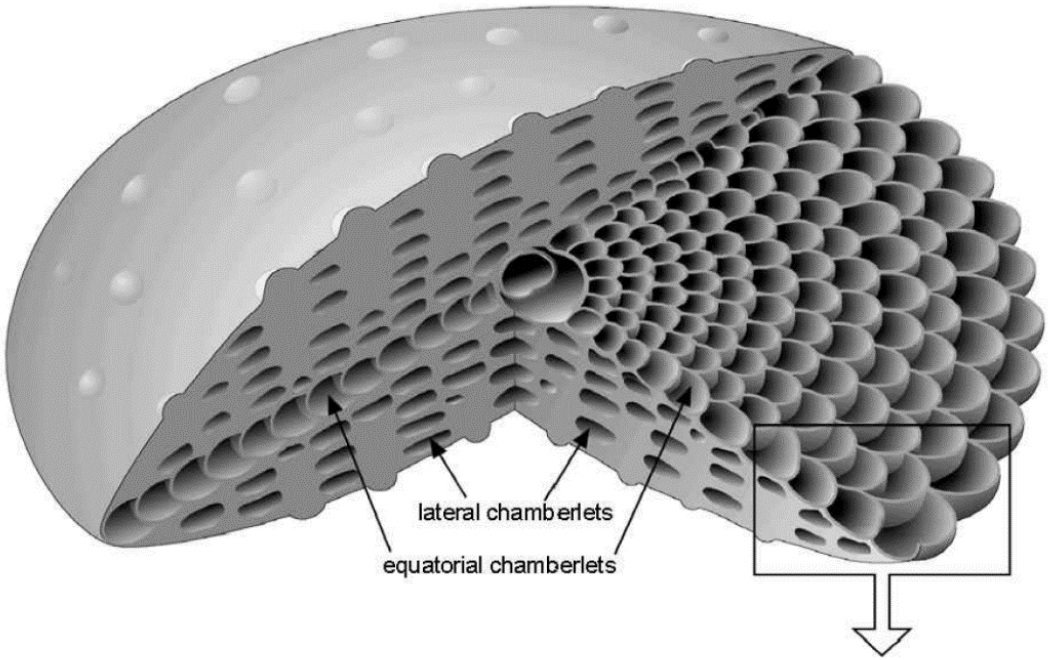


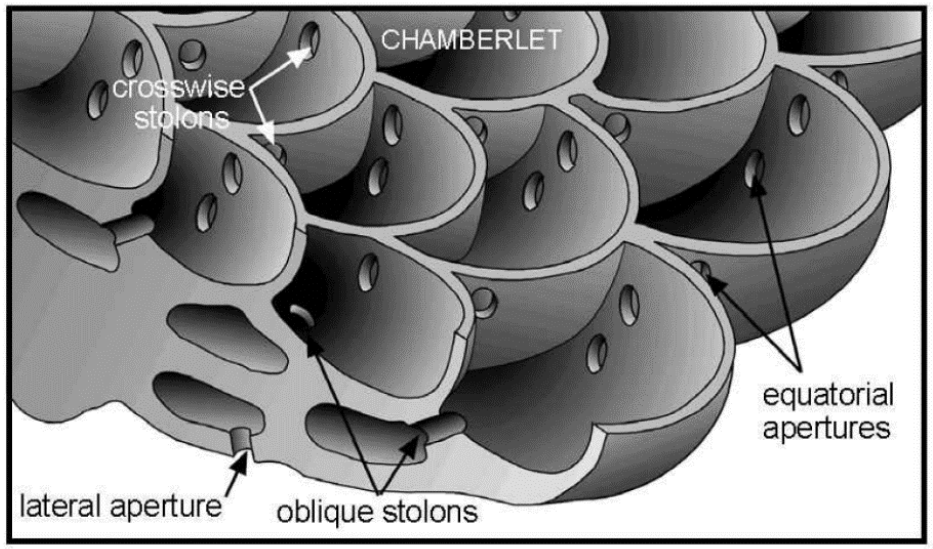
Il nepionte

Proloculo
Deuteroloculo
Camere ausialiari

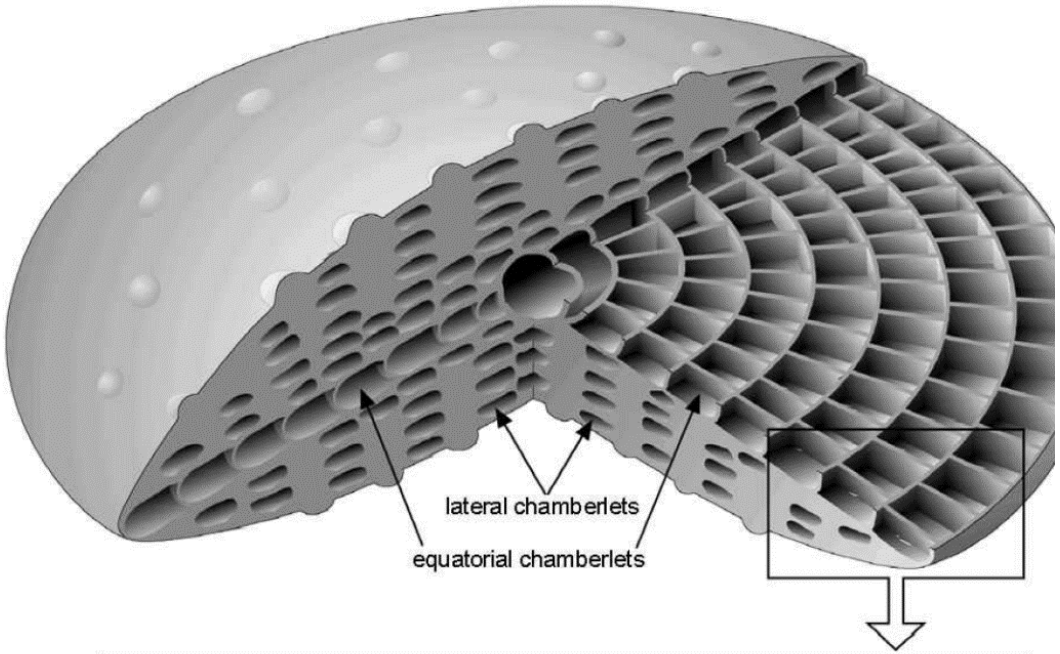
ORBITOIDIFORM STRUCTURE

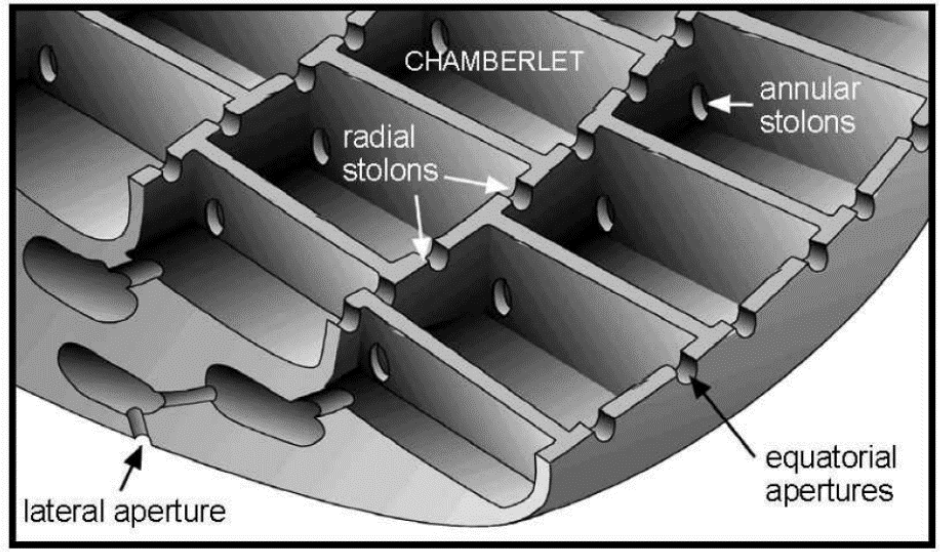
ORBITOIDAL

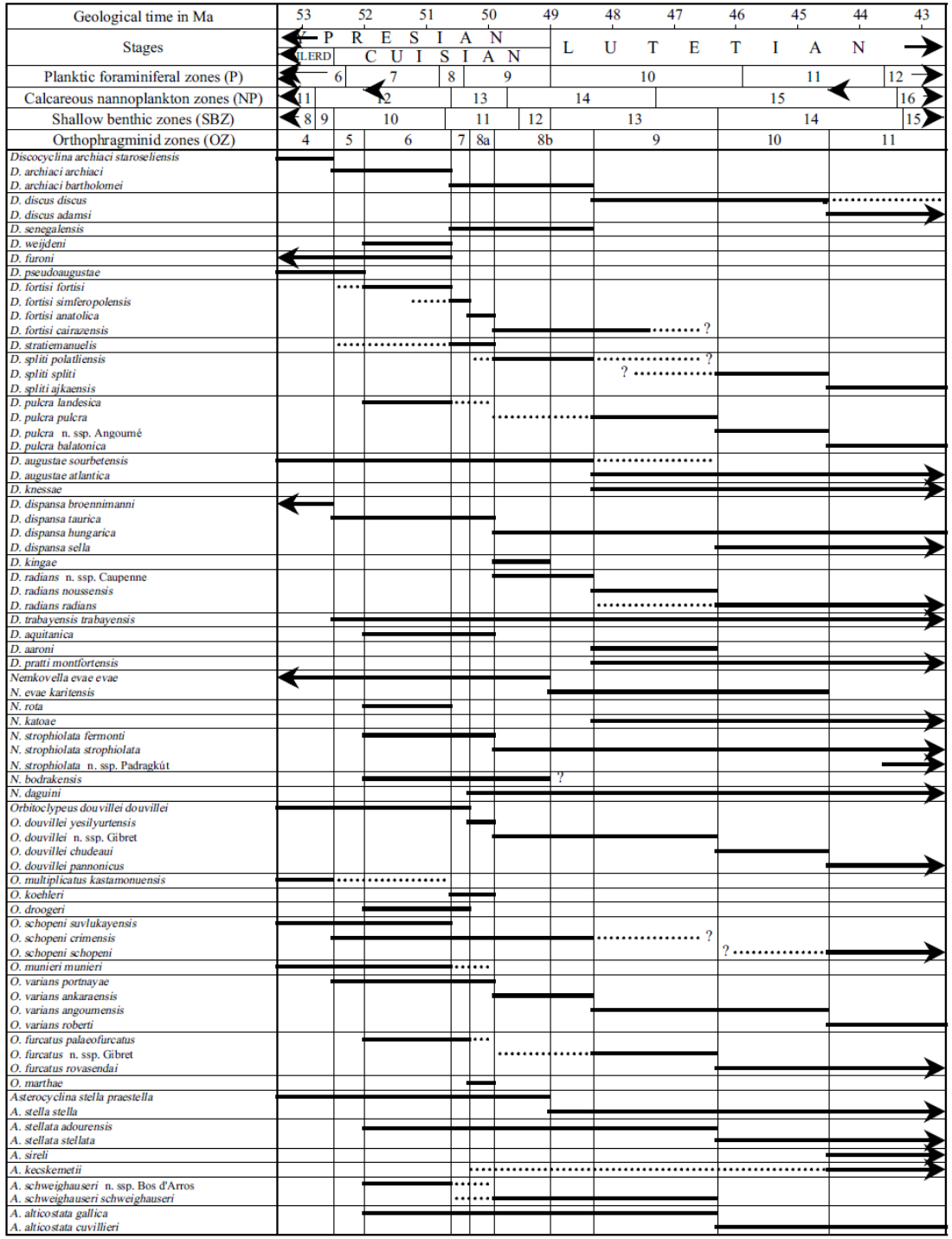


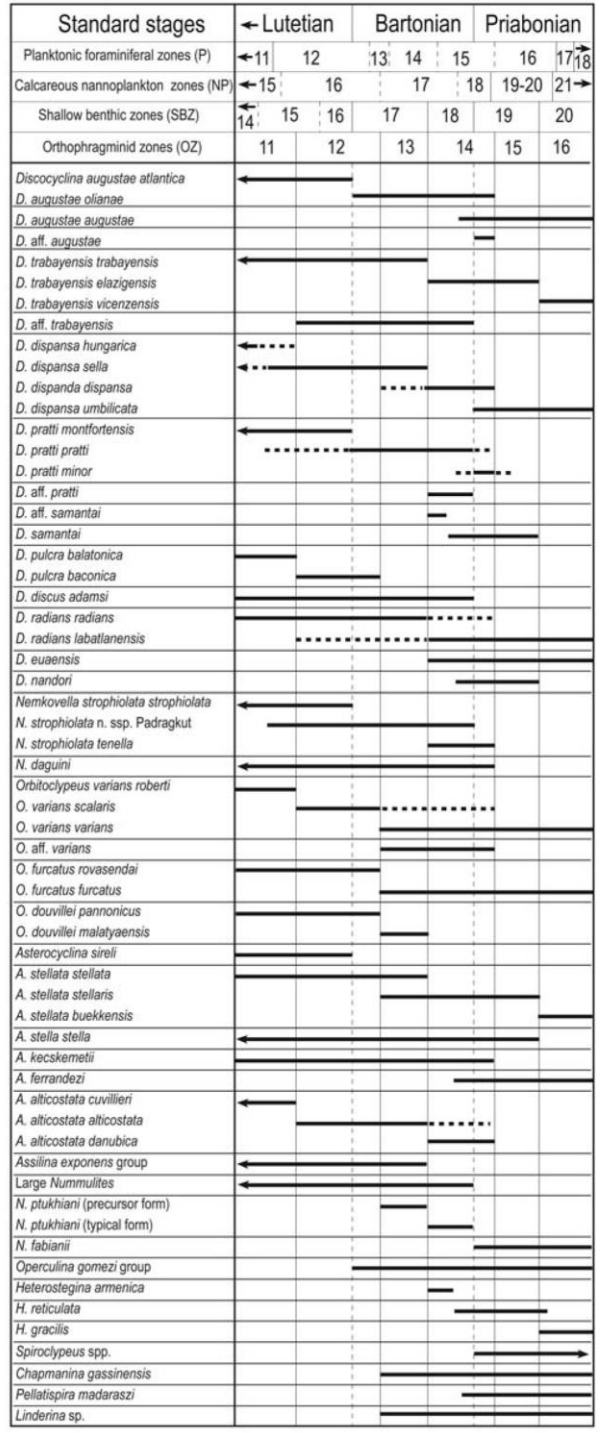


ORTHOPHRAGMINID

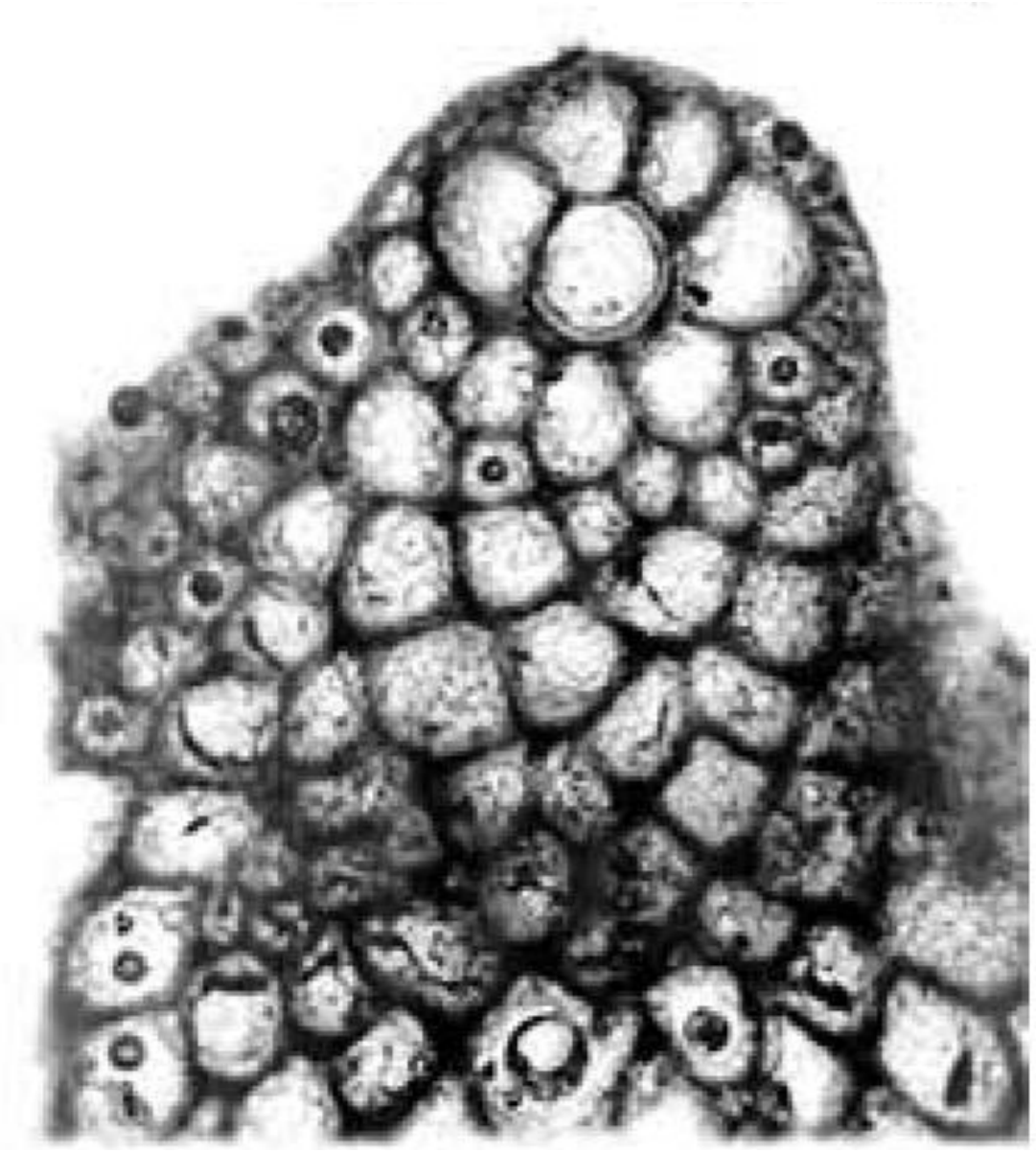




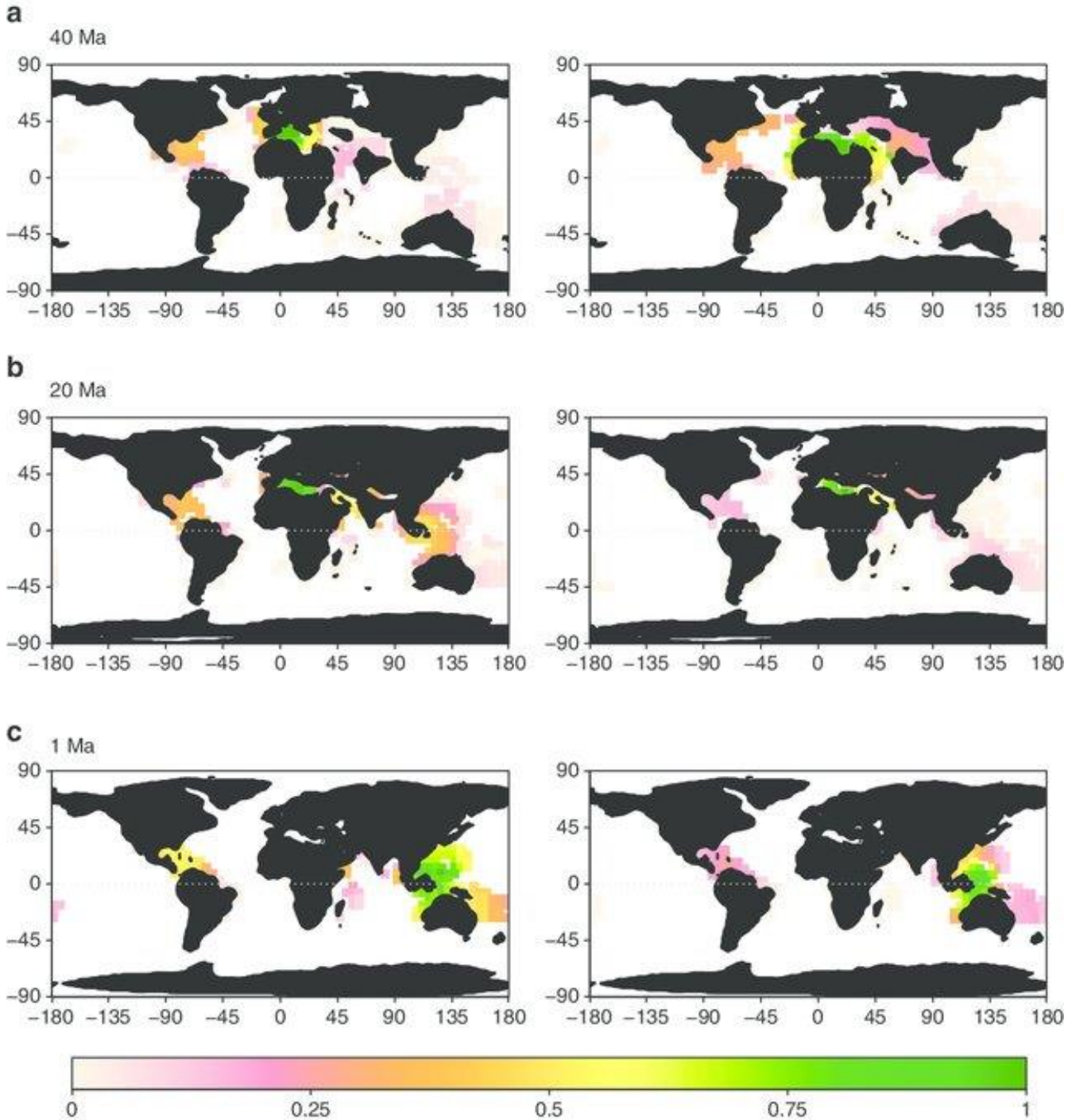

Geological time in Ma
53 52 51 50 49 48 47 46 45 44 43
Stages
PRESIAN
ILERD
CUISIAN
LUTETIAN
Planktic foraminiferal zones (P)
6 7 8 9 10 11 12
Calcareous nannoplankton zones (NP)
11 12 13 14 15 16
Shallow benthic zones (SBZ)
8 9 10 11 12 13 14 15
Orthophragminid zones (OZ)
4 5 6 7 8a 8b 9 10 11
Discocyclina archiaci staroseliensis
D. archiaci archiaci
D. archiaci bartholomei
D. discus discus
D. discus adamsi
D. senegalensis
D. weijdeni
D. furoni
D. pseudoaugustae
D. fortisi fortisi
D. fortisi simferopolensis
D. fortisi anatolica
D. fortisi cairazensis
D. stratiemanuelis
D. spliti polatliensis
D. spliti spliti
D. spliti ajkaensis
D. pulcra landesica
D. pulcra pulcra
D. pulcra n. ssp. Angoumé
D. pulcra balatonica
D. augustae sourbetensis
D. augustae atlantica
D. knessae
D. dispansa broennimanni
D. dispansa taurica
D. dispansa hungarica
D. dispansa sella
D. kingae
D. radians n. ssp. Caupenne
D. radians noussensis
D. radians radians
D. trabayensis trabayensis
D. aquitanica
D. aaroni
D. pratti montfortensis
Nemkovella evae evae
N. evae karitensis
N. rota
N. katoae
N. strophiolata fermonti
N. strophiolata strophiolata
N. strophiolata n. ssp. Padragkút
N. bodrakensis
N. daguini
Orbitoclypeus douvillei douvillei
O. douvillei yesilyurtensis
O. douvillei n. ssp. Gibret
O. douvillei chudeaui
O. douvillei pannonicus
O. multiplicatus kastamonuensis
O. koehleri
O. droogeri
O. schopeni suvlukayensis
O. schopeni crimensis
O. schopeni schopeni
O. munieri munieri
O. varians portnayae
O. varians ankaraensis
O. varians angoumensis
O. varians roberti
O. furcatus palaeofurcatus
O. furcatus n. ssp. Gibret
O. furcatus rovasendai
O. marthae
Asterocyclina stella praestella
A. stella stella
A. stellata adourensis
A. stellata stellata
A. sireli
A. kecskemetii
A. schweighauseri n. ssp. Bos d'Arros
A. schweighauseri schweighauseri
A. alticostata gallica
A. alticostata cuvillieri


Standard stages
Lutetian
Bartonian
Priabonian
Planktonic foraminiferal zones (P)
11 12 13 14 15 16 17 18
Calcareous nannoplankton zones (NP)
15 16 17 18 19-20 21
Shallow benthic zones (SBZ)
14 15 16 17 18 19 20
Orthophragminid zones (OZ)
11 12 13 14 15 16
Discocyclina augustae atlantica
D. augustae olianae
D. augustae augustae
D. aff. augustae
D. trabayensis trabayensis
D. trabayensis elazigensis
D. trabayensis vicenzensis
D. aff. trabayensis
D. dispansa hungarica
D. dispansa sella
D. dispanda dispansa
D. dispansa umbilicata
D. pratti montfortensis
D. pratti pratti
D. pratti minor
D. aff. pratti
D. aff. samantai
D. samantai
D. pulcra balatonica
D. pulcra baconica
D. discus adamsi
D. radians radians
D. radians labatlanensis
D. euaensis
D. nandori
Nemkovella strophiolata strophiolata
N. strophiolata n. ssp. Padragkut
N. strophiolata tenella
N. daguini
Orbitoclypeus varians roberti
O. varians scalaris
O. varians varians
O. aff. varians
O. furcatus rovasendai
O. furcatus furcatus
O. douvillei pannonicus
O. douvillei malatyaensis
Asterocyclina sireli
A. stellata stellata
A. stellata stellaris
A. stellata buekkensis
A. stella stella
A. kecskemetii
A. ferrandezi
A. alticostata cuvillieri
A. alticostata alticostata
A. alticostata danubica
Assilina exponens group
Large Nummulites
N. ptukhiani (precursor form)
N. ptukhiani (typical form)
N. fabianii
Operculina gomezi group
Heterostegina armenica
H. reticulata
H. gracilis
Spiroclypeus spp.
Chapmanina gassinensis
Pellatispira madaraszi
Linderina sp.

I Miogypsinidi (Olig sup - Miocene inf. - medio)



Epoch
Stage
Planktonic Zone
Mediterranean
Indo-Pacific
"Letter Stages"
MIDDLE MIOCENE
EARLY MIOCENE
OLIGOCENE
SERRAVALLIAN
LANGHIAN
BURDIG.
AQUIT.
CHATTIAN
RUPELIAN
N13
N12
N11
N10
N9
N8
N7
N6
N5
N4
P22
P21
P20
P19
P18
Neorotalia
Paleomiogypsina
Miogypsinella
Miogypsinoides
Miogypsinodella
tethyana
boninensis
cyprea
complanatus
formosensis
bantamensis
dehaarti
primitiva
bornea
borodinensis
ubaghsi
indica
Tf3
Tf2
Upper Tf1
MiddleTf1
Lower Tf1
Upper Te (Te5)
Te4
Te3
Te2
Te1
Td
Tc



Variazioni e movimenti degli Hotspots di biodiversità marina in ambienti di REEFS