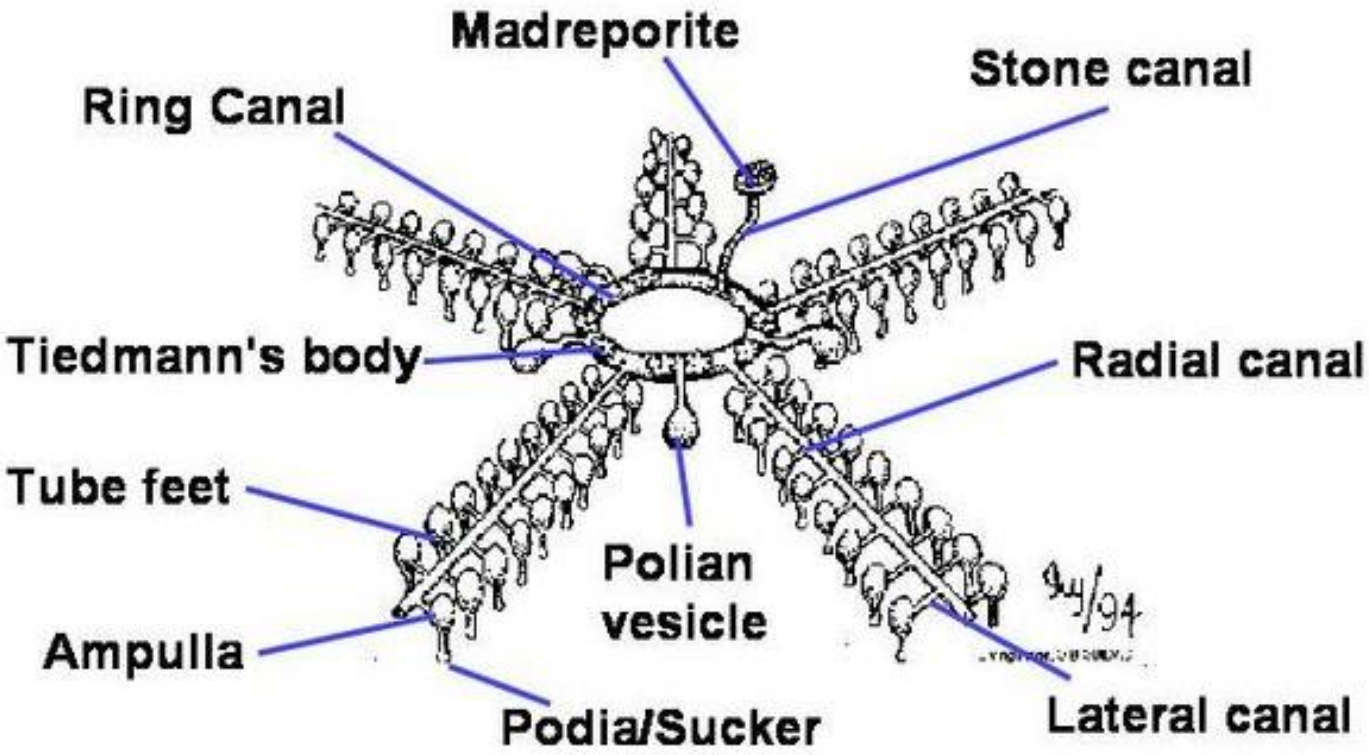
Filum : Echinodermata

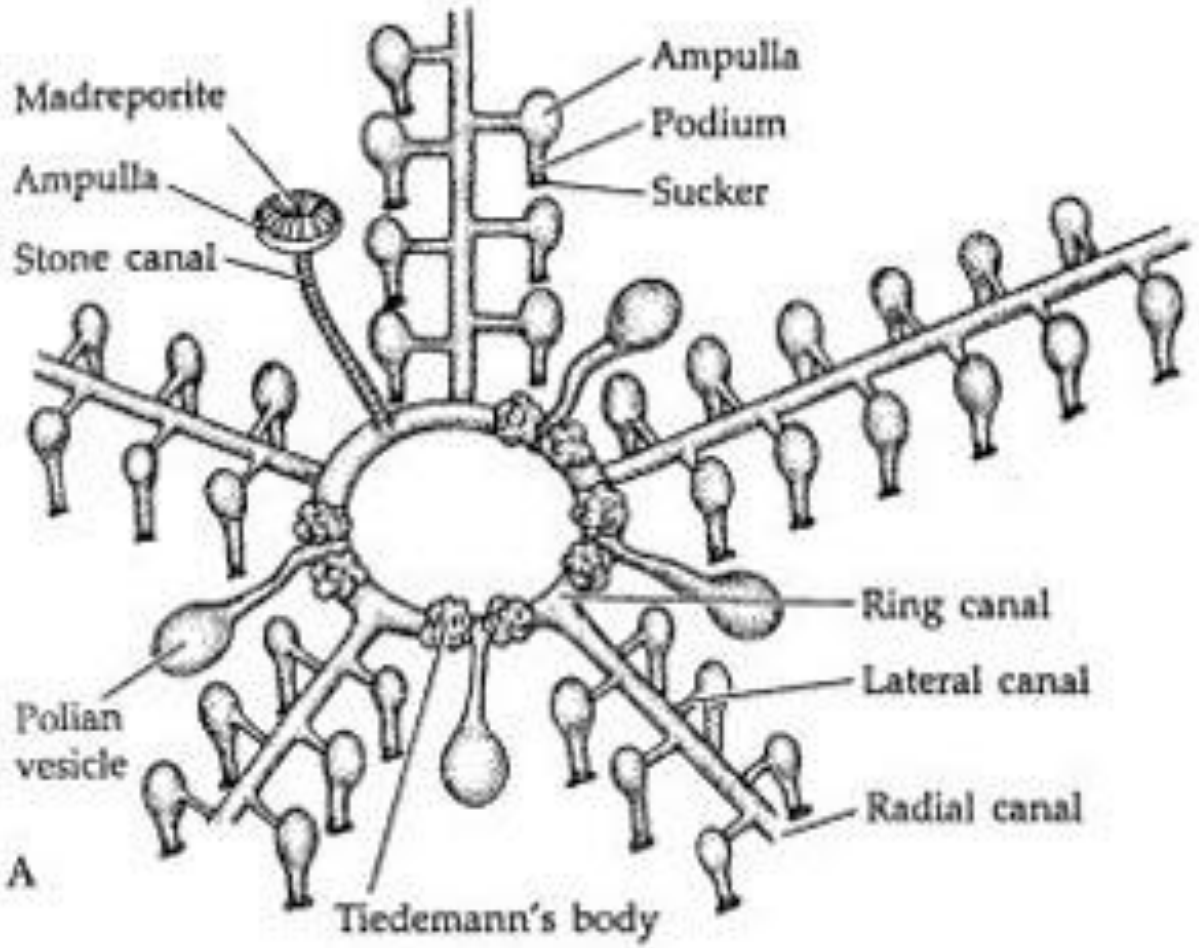
Klasis : Crinoidea – Deniz zambakları, tüy yıldızları

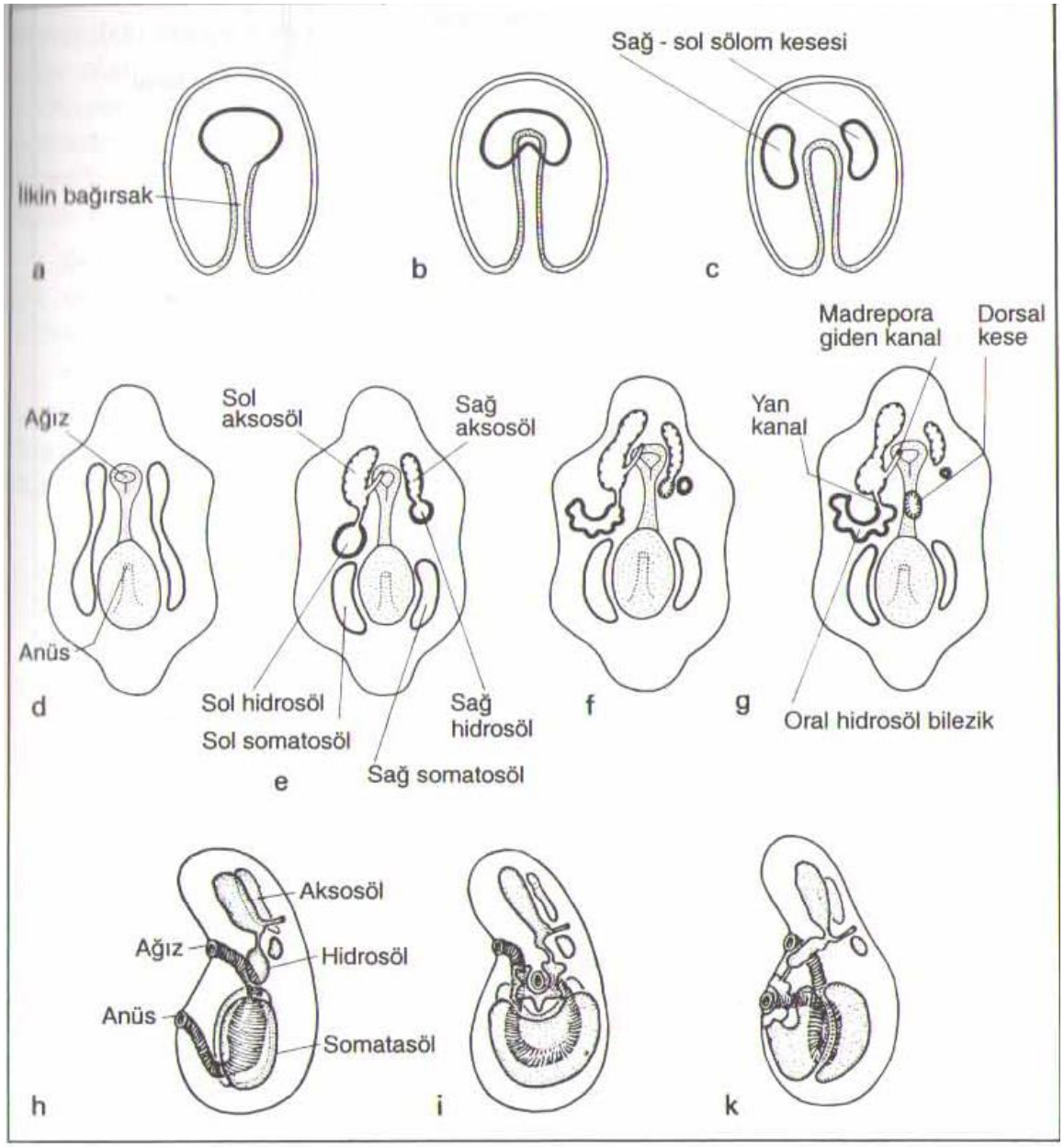
Klasis : Stelleroidea – Deniz yıldızları, yılan yıldızları

Klasis : Echinoidea –Deniz kestaneleri

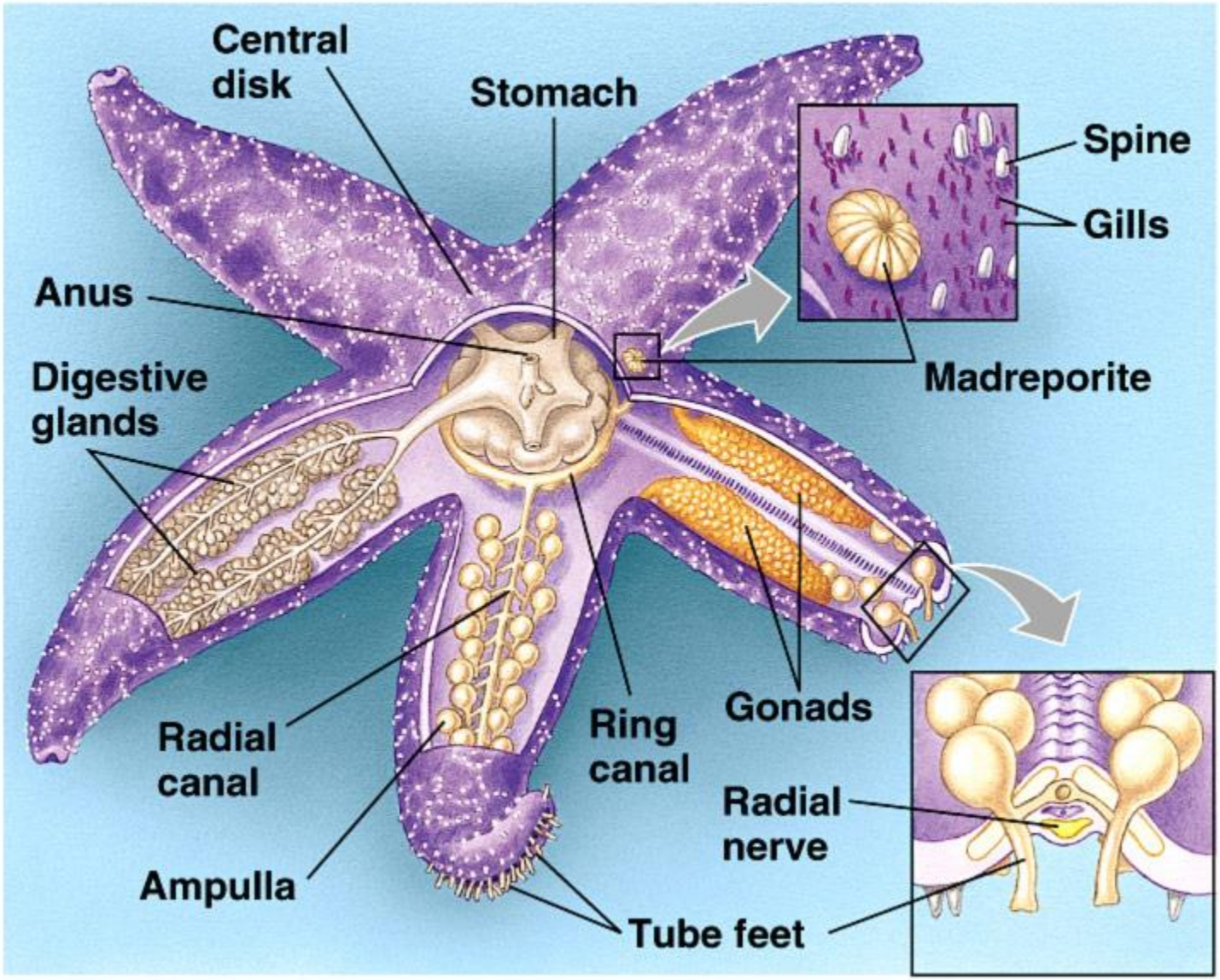
Klasis : Holothuroidea

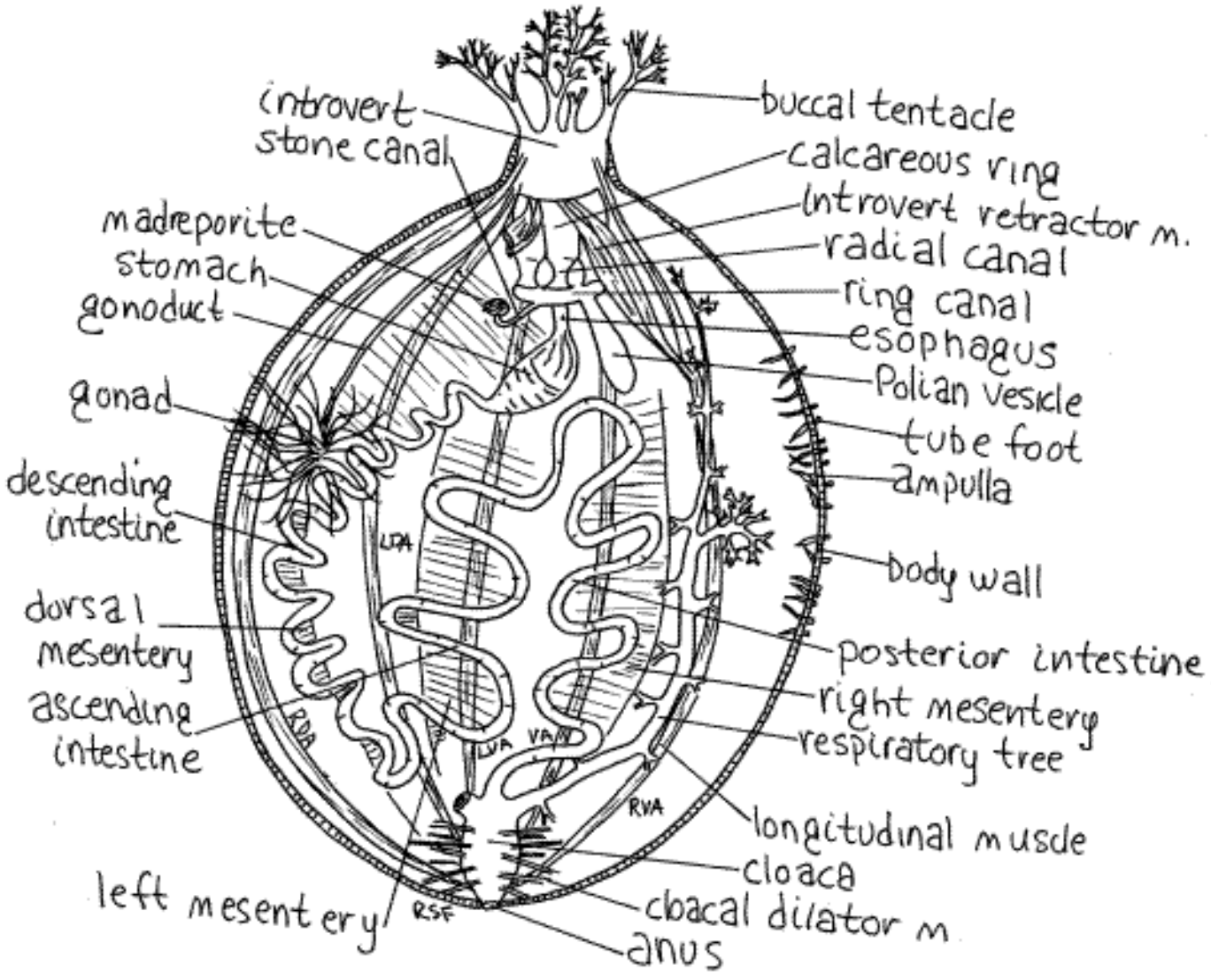

Madreporite
Stone canal
Ring Canal
Tiedmann's body
Radial canal
Tube feet
Polian vesicle
Ampulla
Podia/Sucker
Lateral canal


Madreporite
Ampulla
Stone canal
Ampulla
Podium
Sucker
Ring canal
Lateral canal
Radial canal
Polian vesicle
Tiedemann's body
A



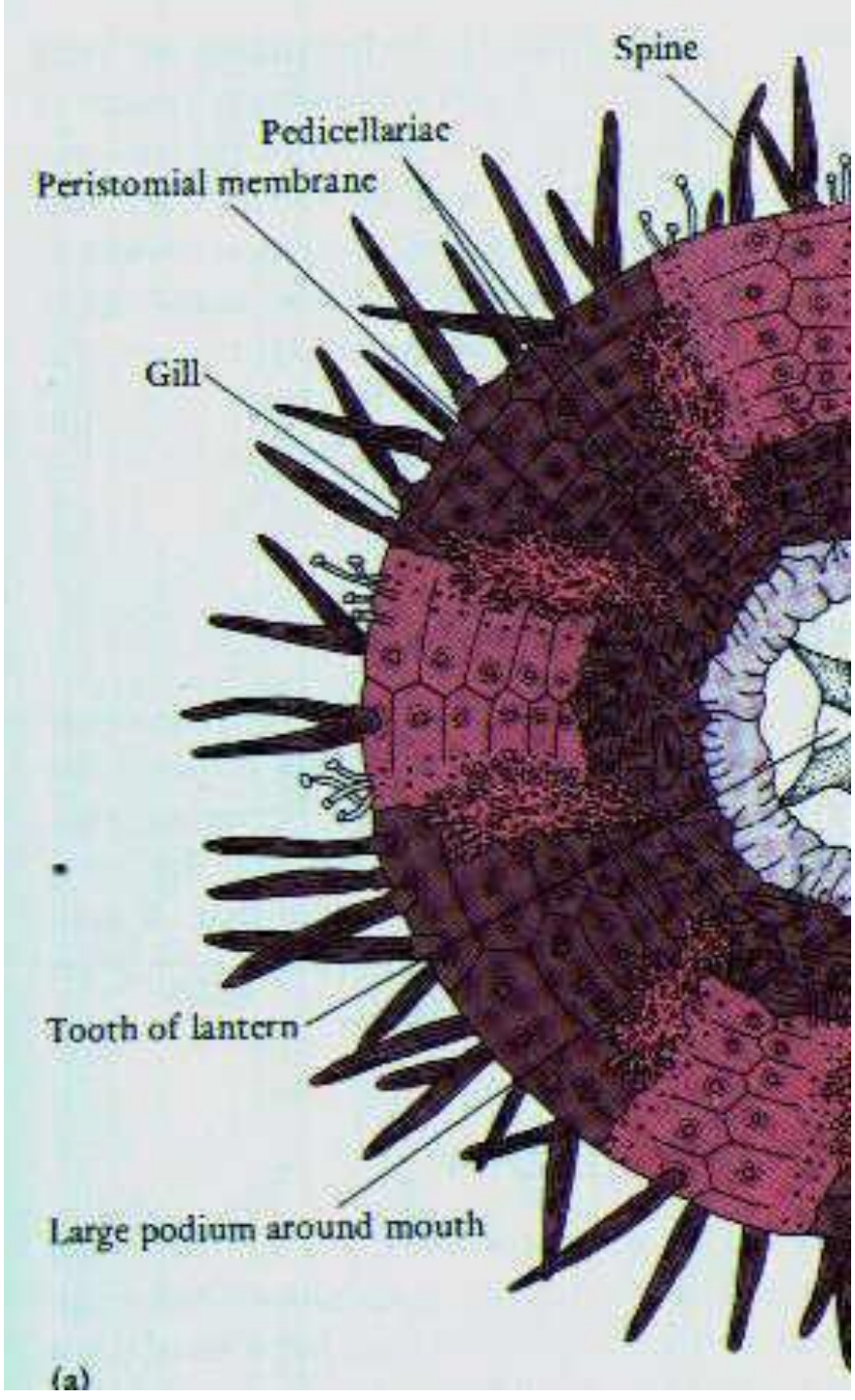
Şekil 31.7: Echinodermata'da sölom oluşumu. a-g) Denizyıldızları ve denizkestanelerinin bugünkü gelişimlerine dayandırılarak, h-k)- Evrimsel süreç içerisinde dipleurula larvasına dayalı olarak varsayılan gelişim (Cuenot, Heider ve Ubaghs).



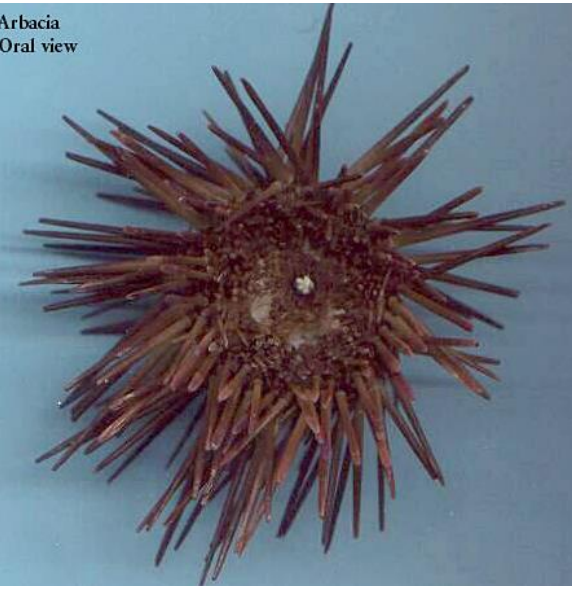

introvert
stone canal
madreporite
stomach
gonoduct
gonad
descending intestine
dorsal mesentery
ascending intestine
left mesentery
buccal tentacle
calcareous ring
introvert retractor m.
radial canal
ring canal
esophagus
Polian vesicle
tube foot
ampulla
body wall
posterior intestine
right mesentery
respiratory tree
longitudinal muscle
cloaca
cloacal dilator m
anus
LDA
RDA
LVA
VAM
RVA
RSF

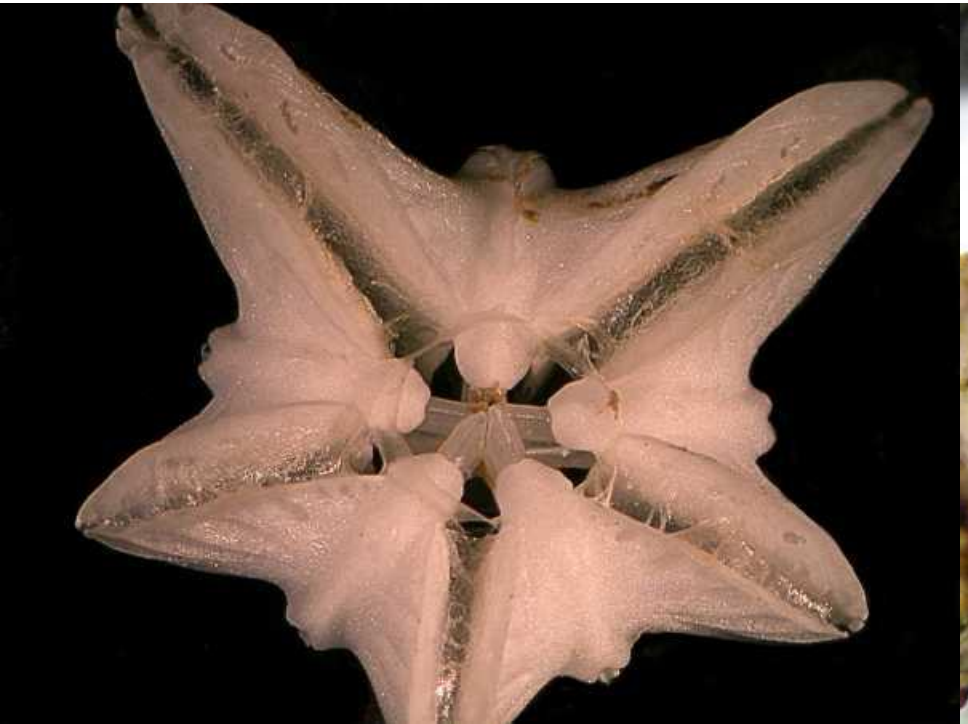
Solunum

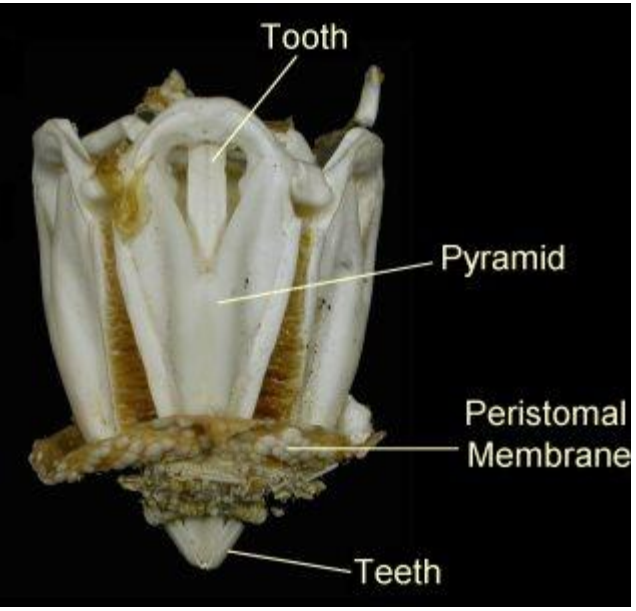
An echinoderm uses some of the bumps or spines on its surface take in oxygen. Echinoderms also have series of very small gills, which are able to take in oxygen. The respiratory system of echinoderms in poorly developed.

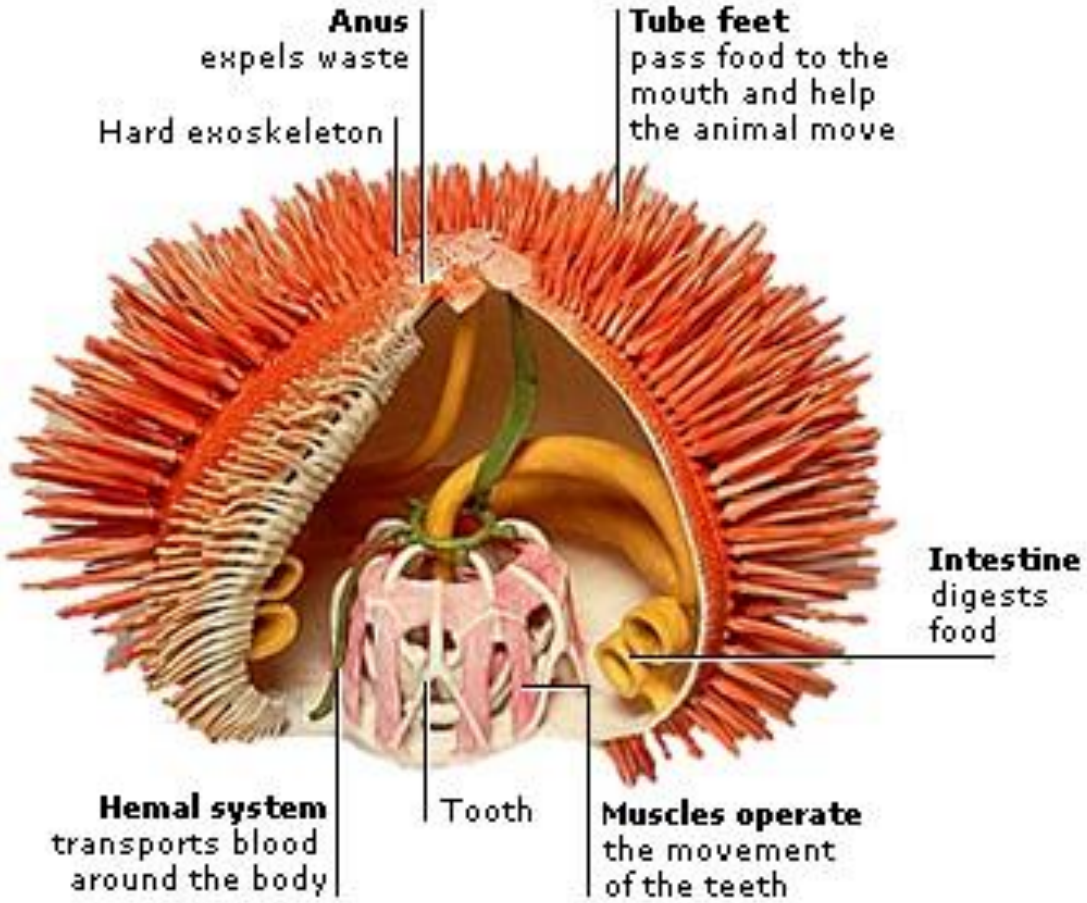

Spine
Pedicellariae
Peristomial membrane
Gill
Tooth of lantern
Large podium around mouth
(a)

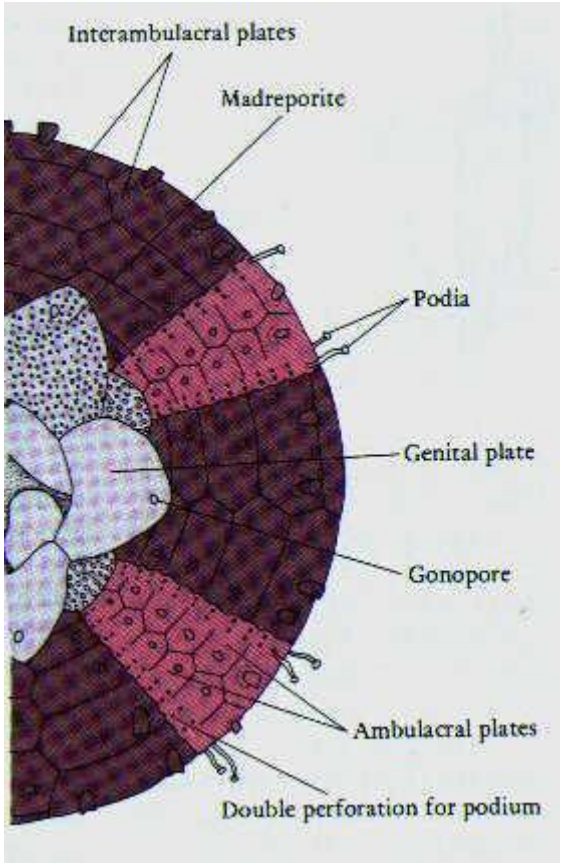
Aristo Feneri

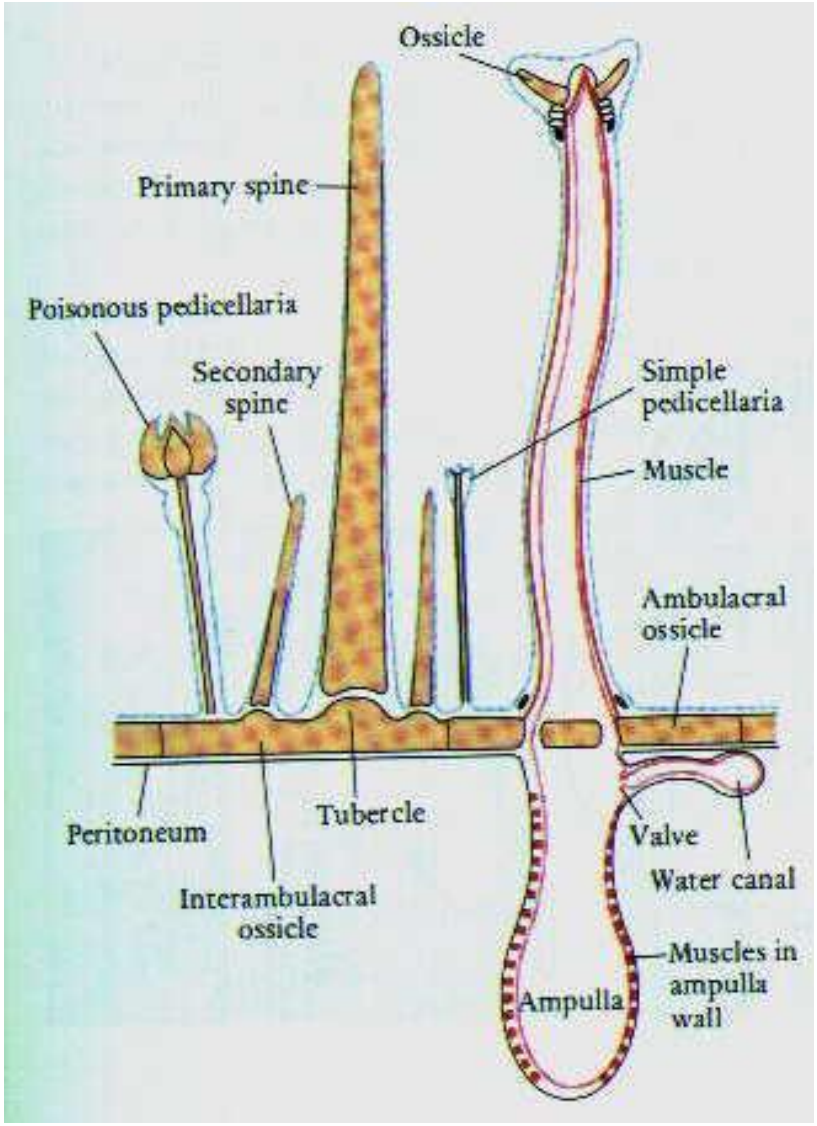


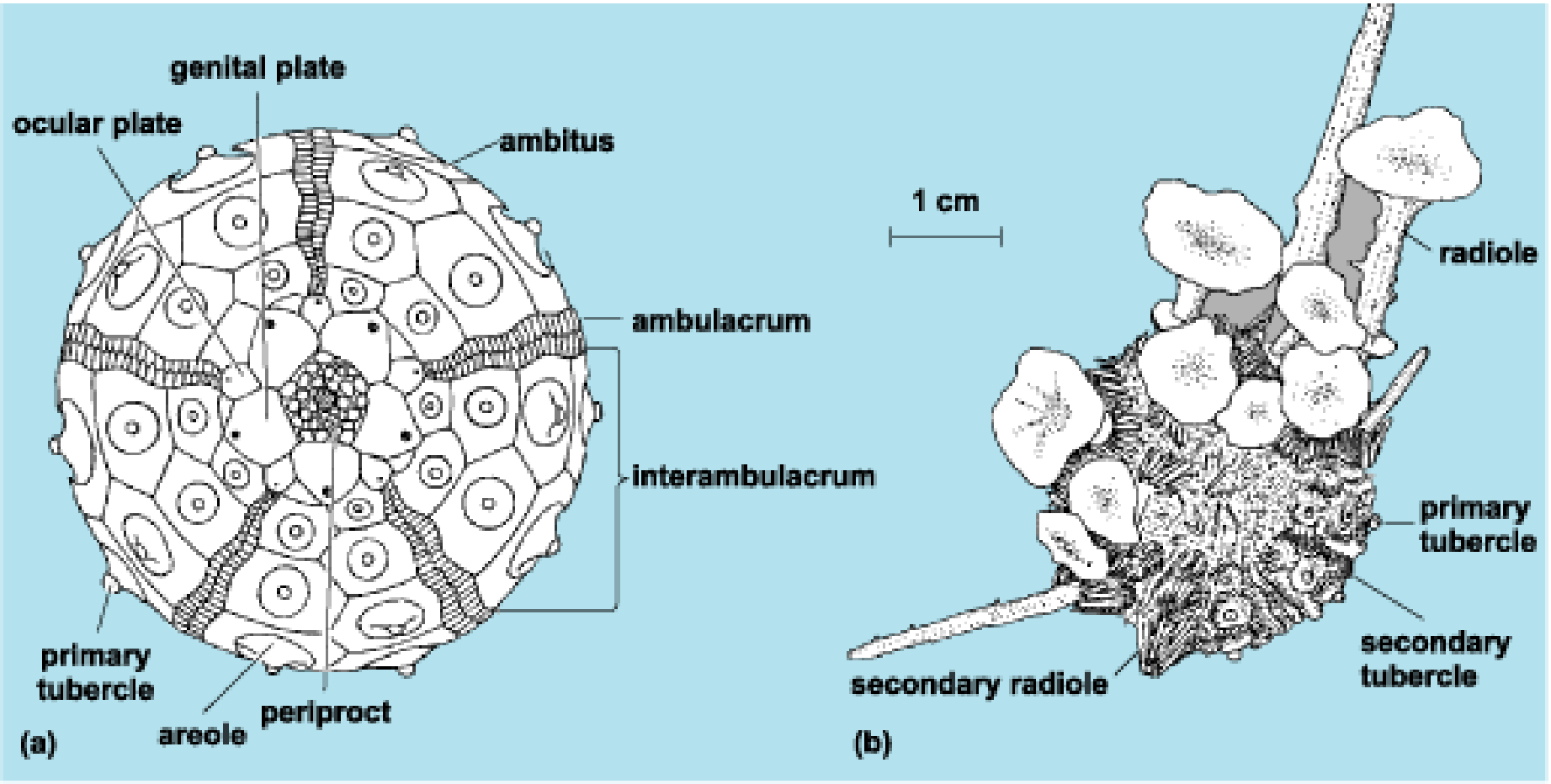


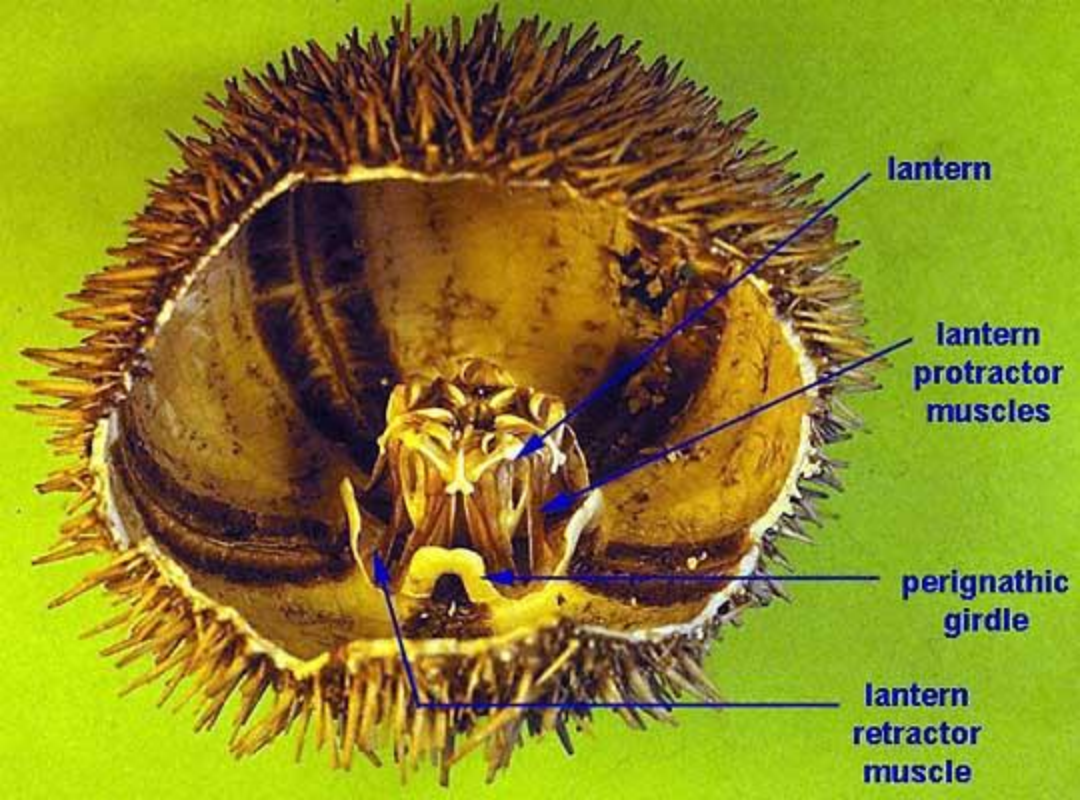

Tooth
Pyramid
Peristomal
Membrane
Teeth

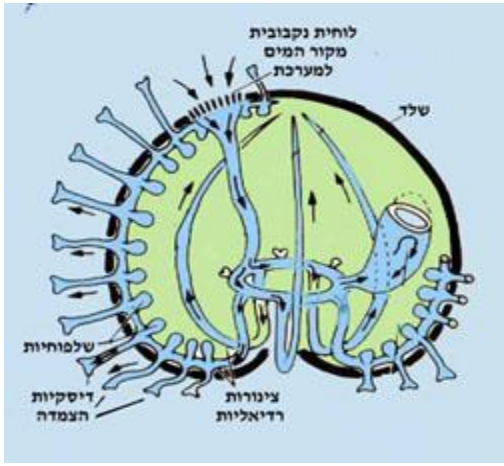

Anus
expels waste
Hard exoskeleton
Tube feet
pass food to the mouth and help the animal move
Intestine
digests food
Hemal system
transports blood around the body
Tooth
Muscles operate
the movement of the teeth

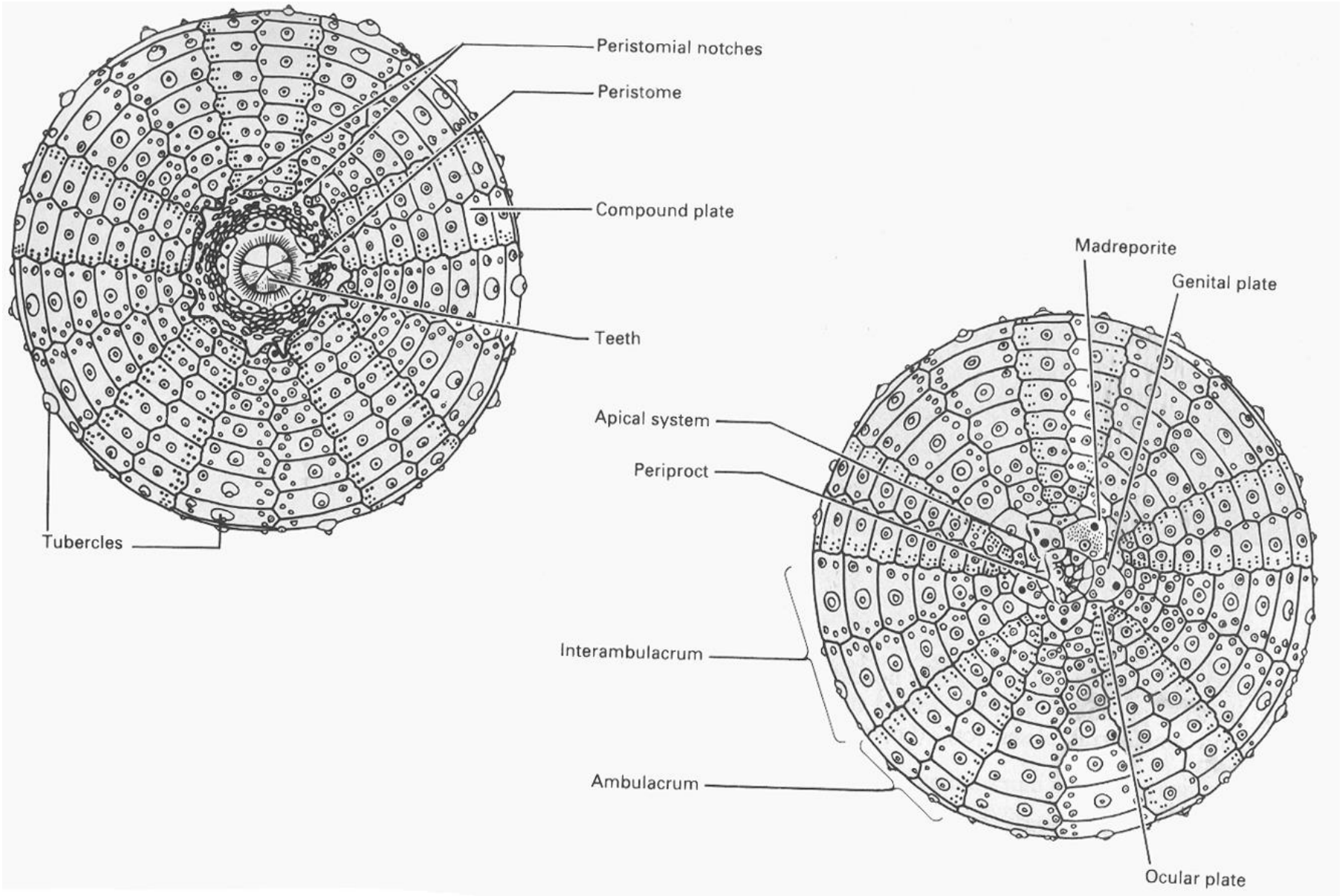

Interambulacral plates
Madreporite
Podia
Genital plate
Gonopore
Ambulacral plates
Double perforation for podium


Ossicle
Primary spine
Poisonous pedicellaria
Secondary spine
Simple pedicellaria
Muscle
Ambulacral ossicle
Peritoneum
Tubercle
Valve
Water canal
Interambulacral ossicle
Muscles in ampulla wall
Ampulla

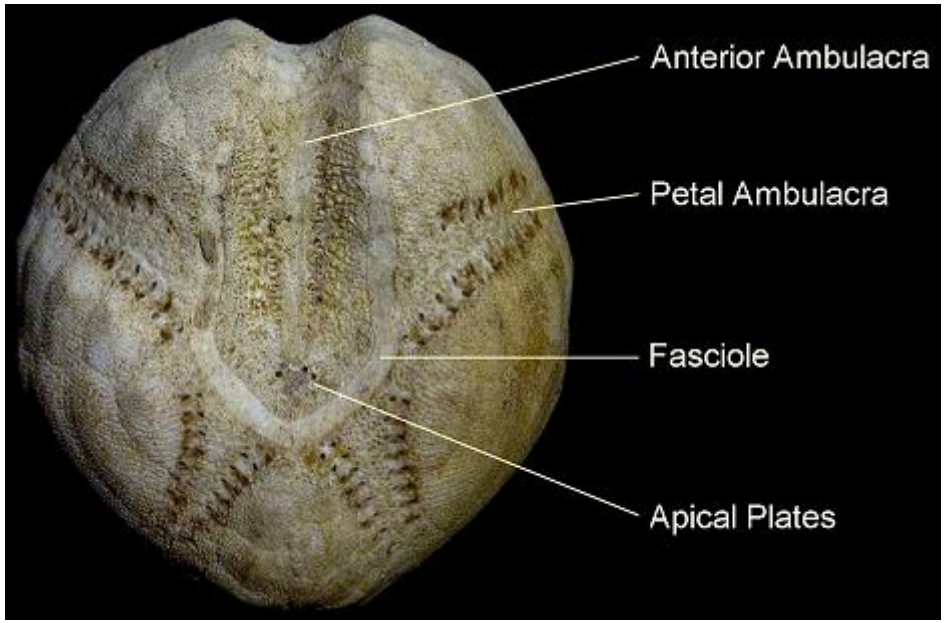

genital plate
ocular plate
ambitus
ambulacrum
interambulacrum
primary tubercle
areole
periproct
(a)
1 cm
radiole
primary tubercle
secondary tubercle
secondary radiole
(b)

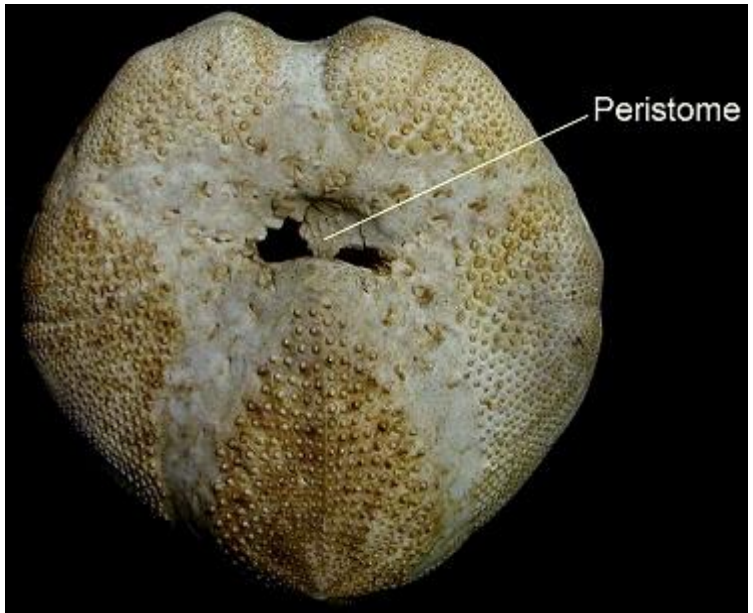

lantern
lantern protractor muscles
perignathic girdle
lantern retractor muscle

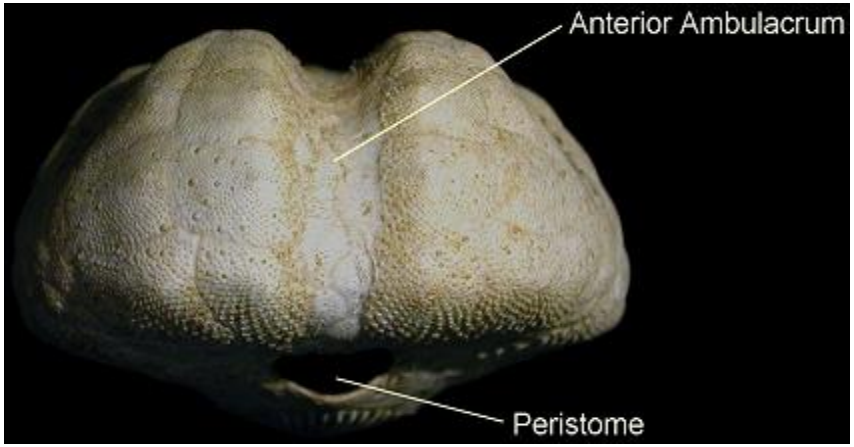

לוחית נקבובית
מקור המים למערכת
שלד
שלפוחיות
דיסקיות הצמדה
צינורות רדיאליות


Peristomial notches
Peristome
Compound plate
Teeth
Tubercles
Madreporite
Genital plate
Apical system
Periproct
Interambulacrum
Ambulacrum
Ocular plate

IRREGULAR ECHINOID

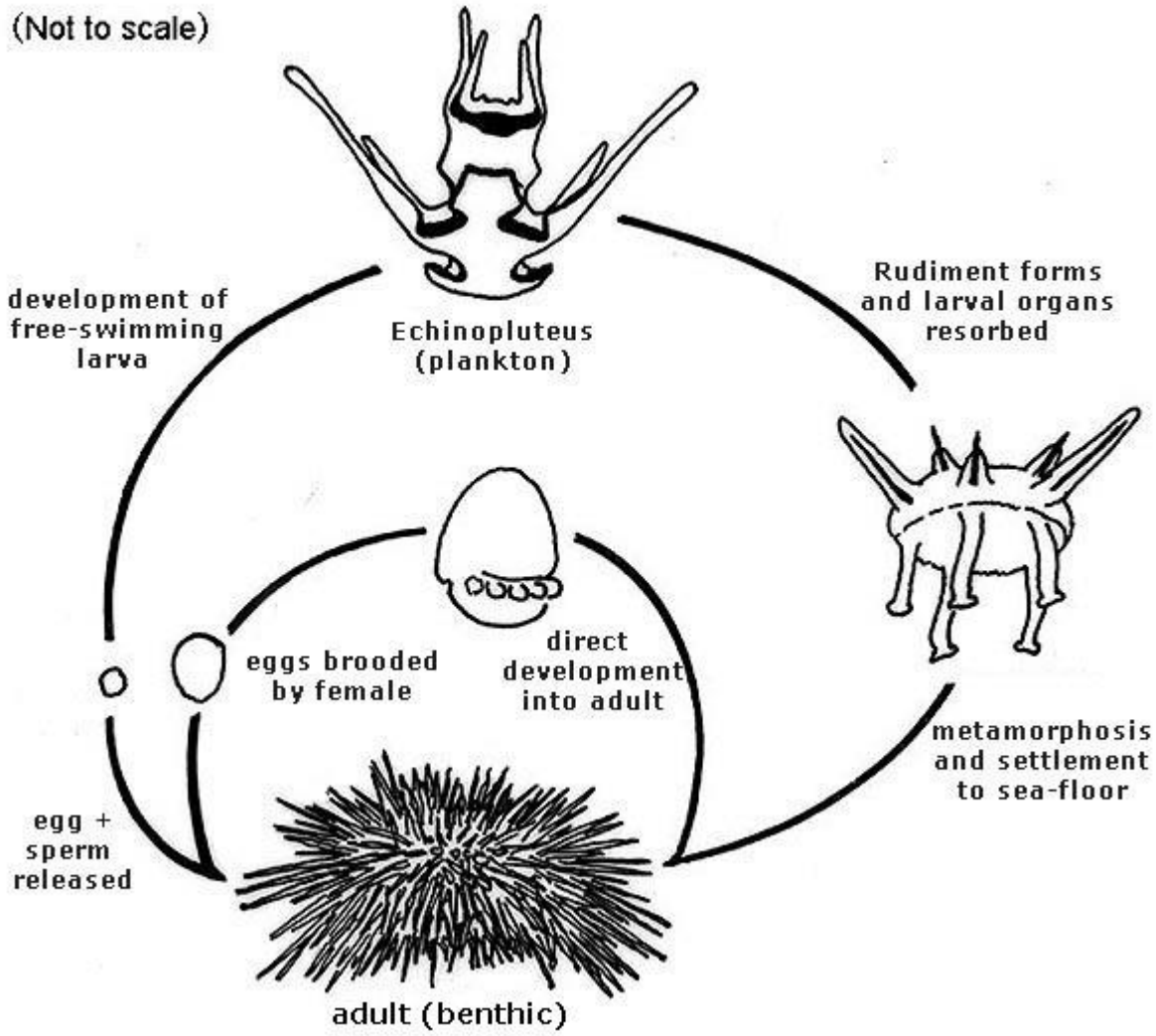




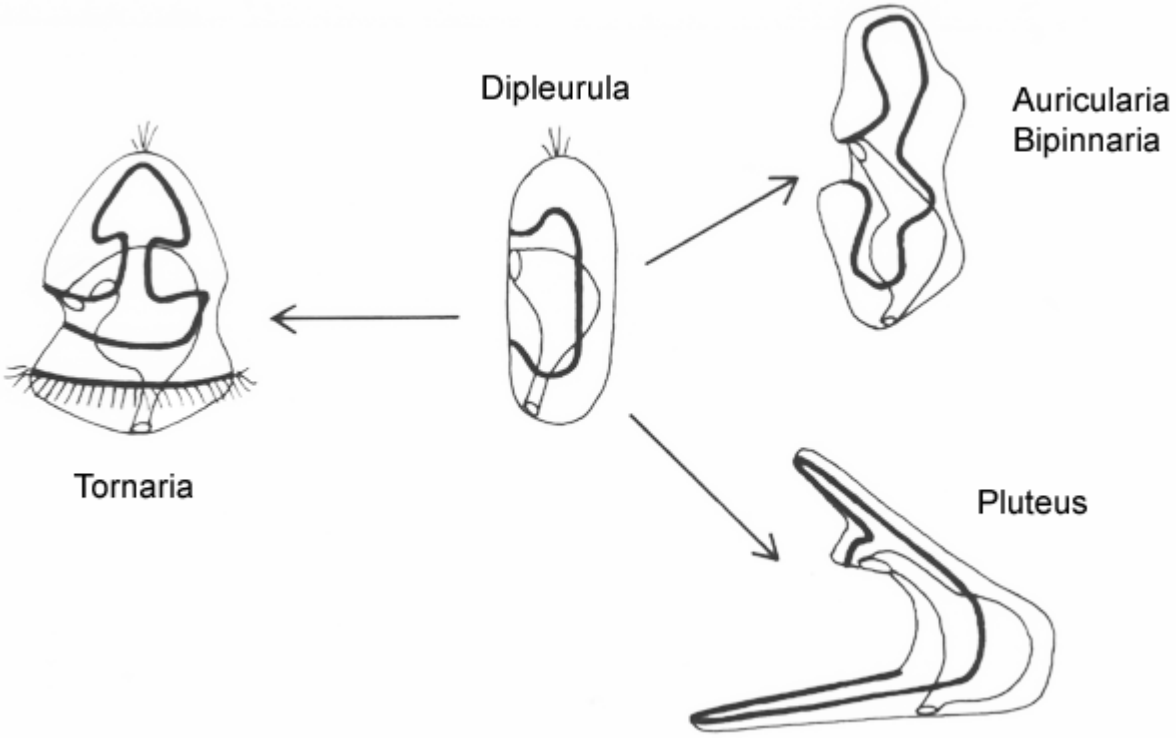


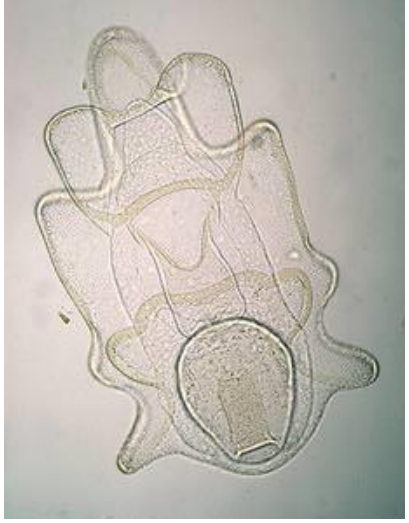
Klasis : Echinoidea

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Clypeasteroida
Suborder:	Scutellina
Family:	Dendrasteridae
Genus:	*Dendraster*
Species:	***D. excentricus***

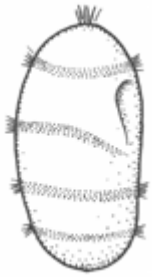


lecithotrophs



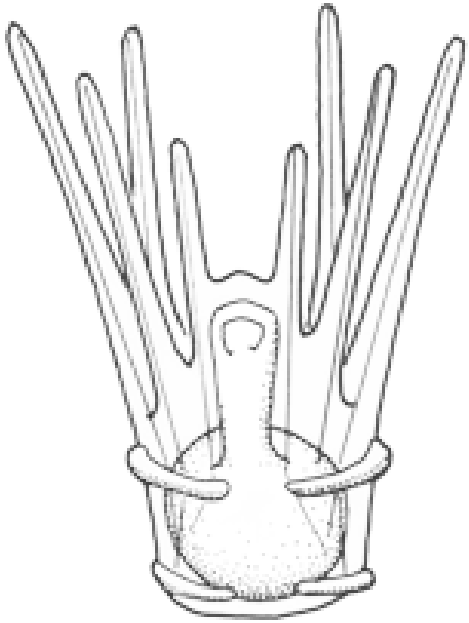


Bipinnaria larva of the starfish

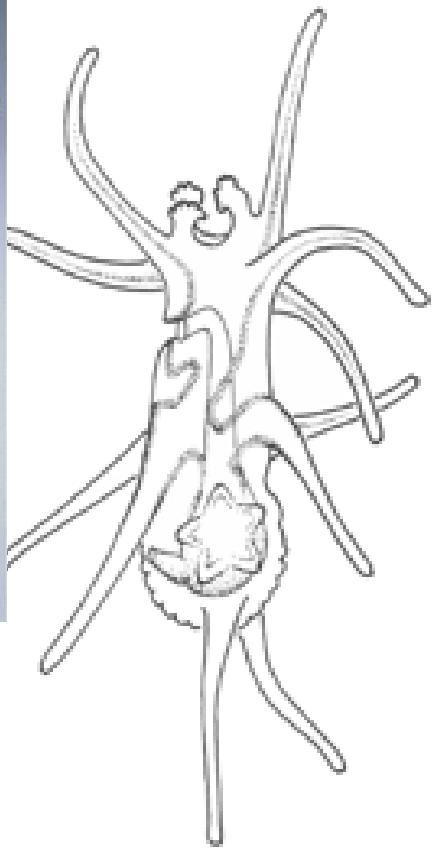


Doliolaria

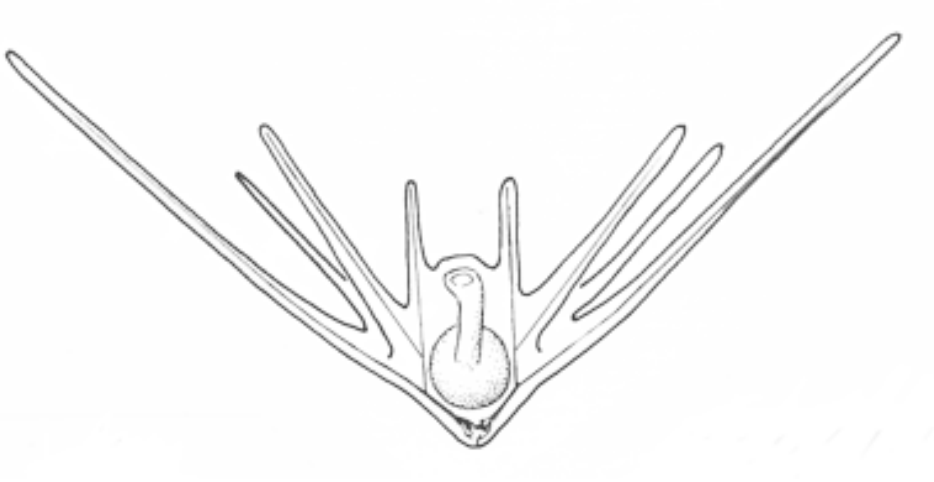
The young starfish



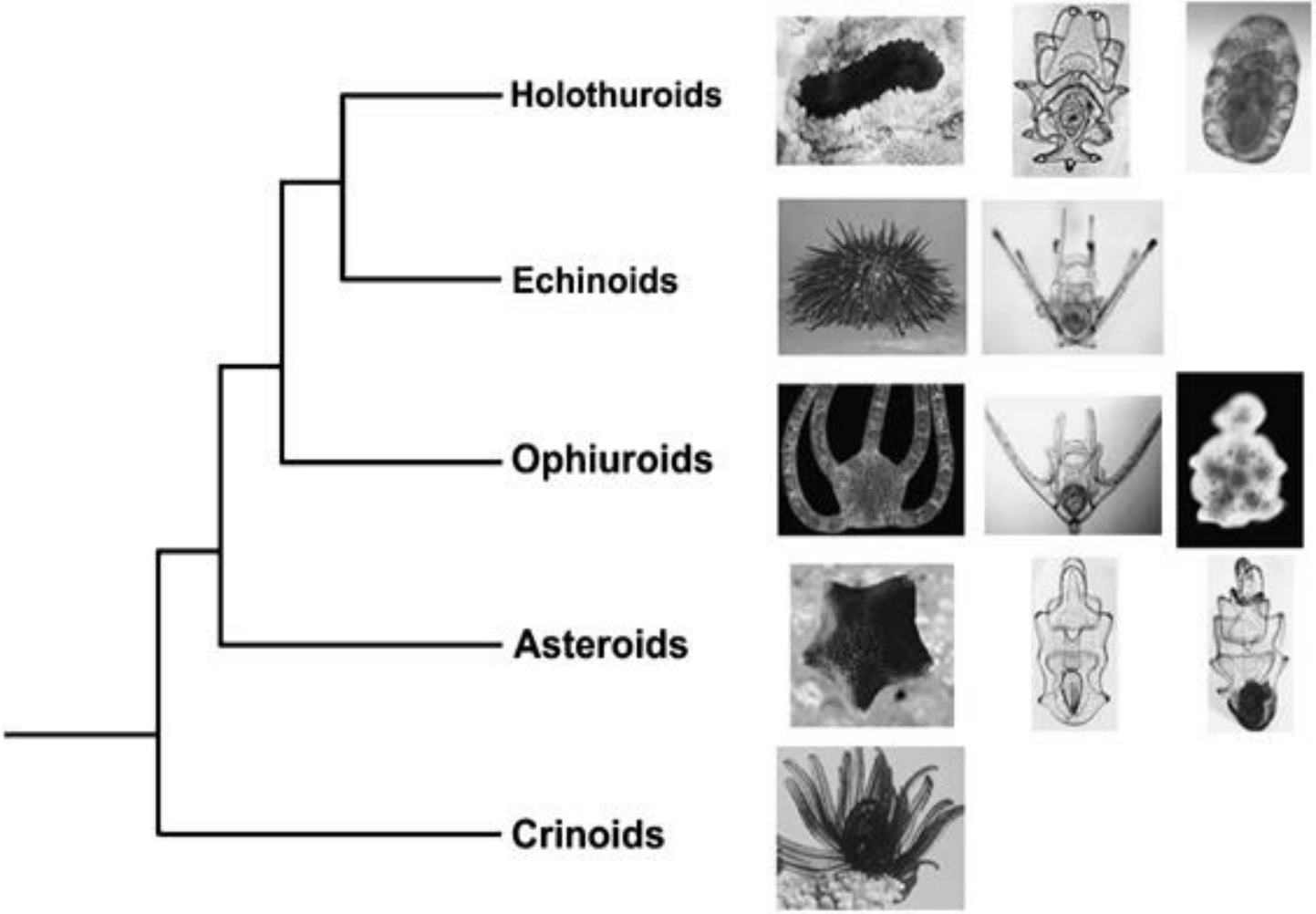
Echinoid Pluteus



Brachiolaria

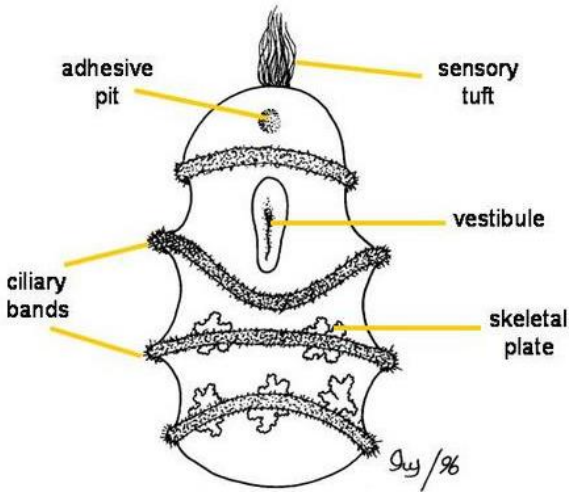


Ophiuroid
Pluteus

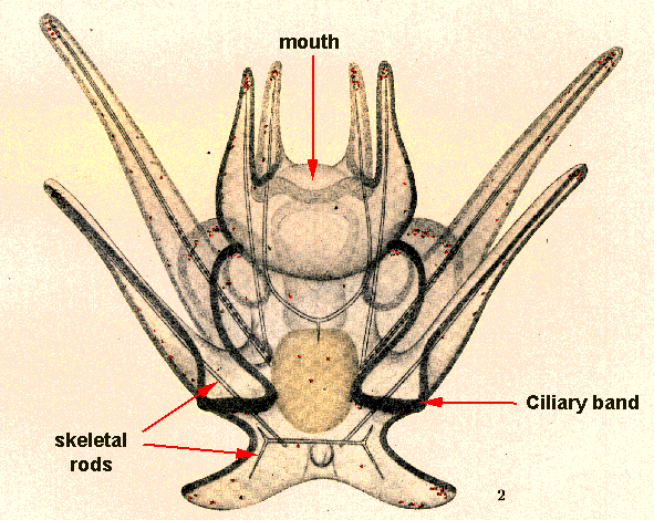


Phylogenetic relationships of the echinoderm classes (After Janies, 2001) showing the adults and planktotrophic larvae. Right three rows of figs show representative adults, feeding larvae, and pre-metamorphic larvae. Crinoids do not have a feeding larva. Holothuroids, asteroids and ophiuroids have two larval stages and early larva (auricularia, bipinnaria and ophiopluteus, respectively) and late metamorphic settlement stage larva (doliolaria, brachiolaria and vitellaria, respectively). Echinoids have one larval stage, the echinopluteus, which is also the settlement stage.


ESD©2003


adhesive pit
sensory tuft
vestibule
ciliary bands
skeletal plate

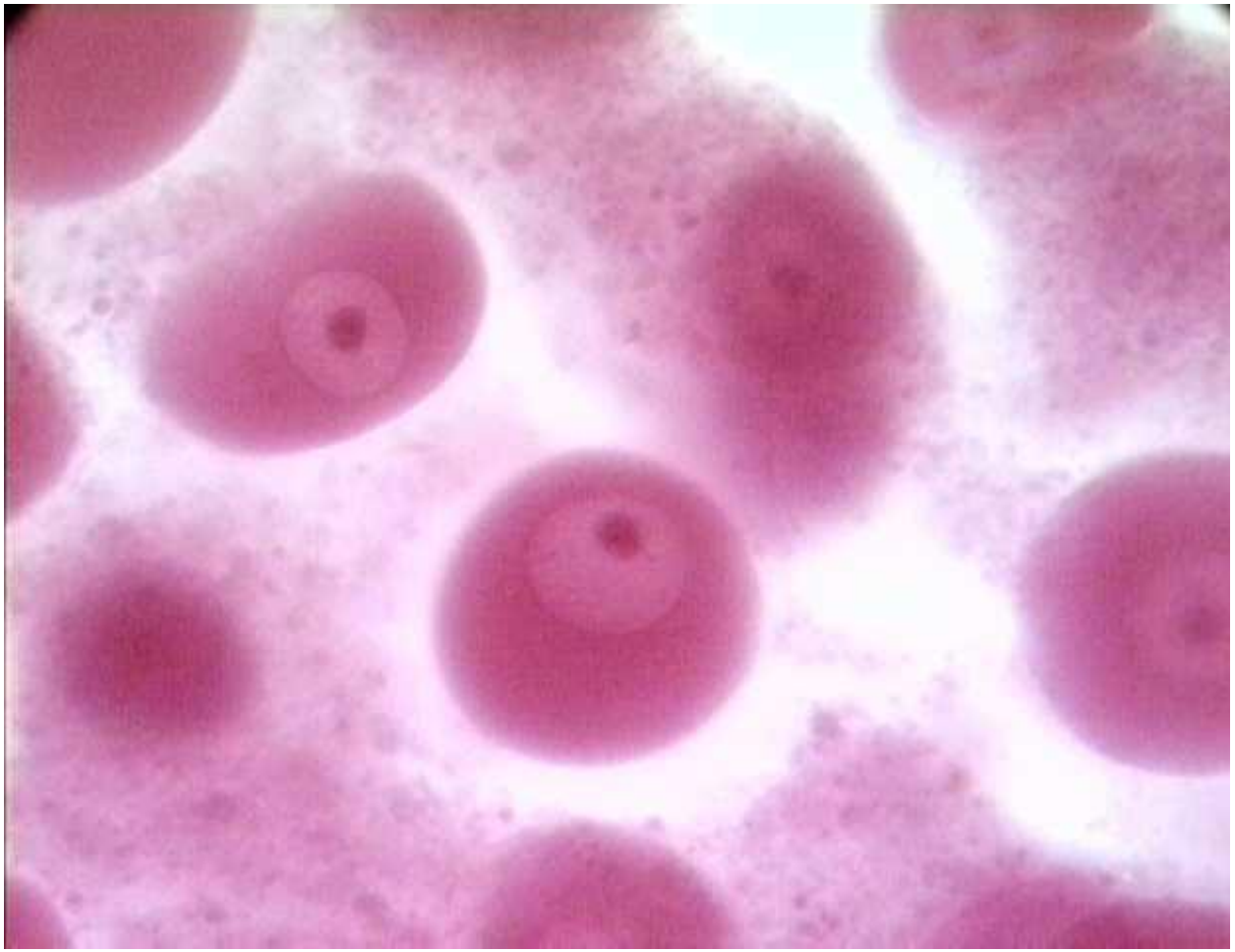
doliolaria



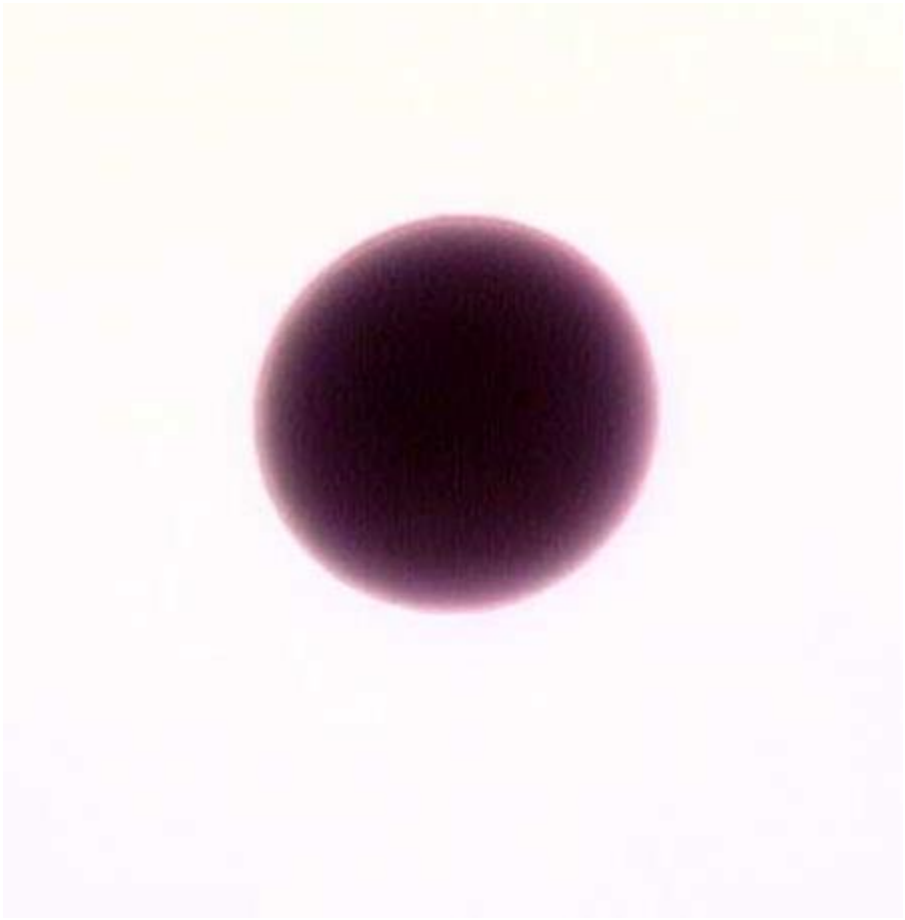
Echinopluteus-Echinoida

Pluteus-Ophiuroida, Echinoida

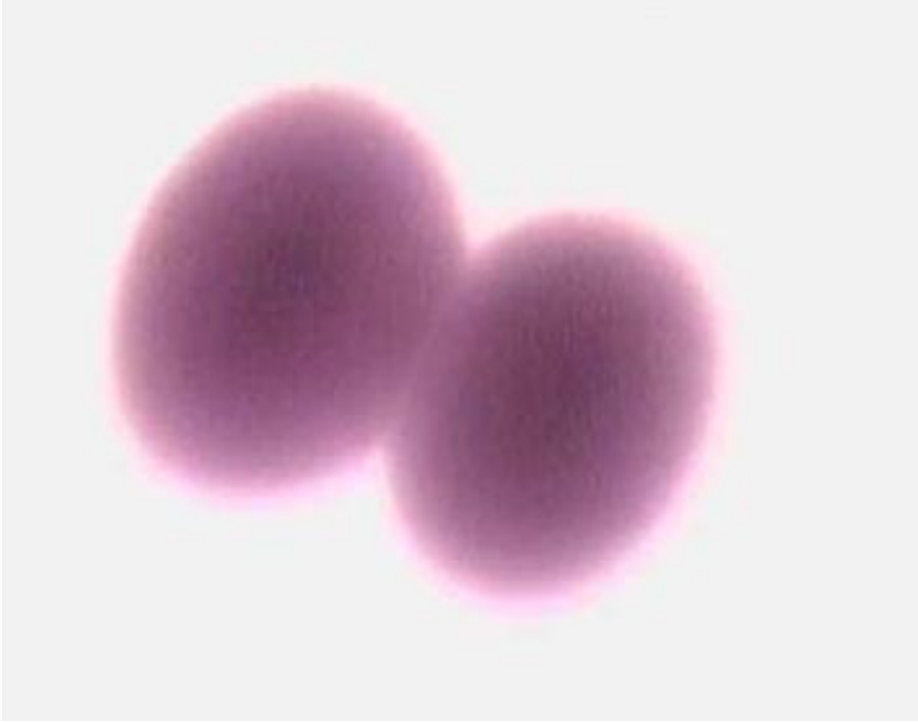
Zygote (Fertilized Egg)



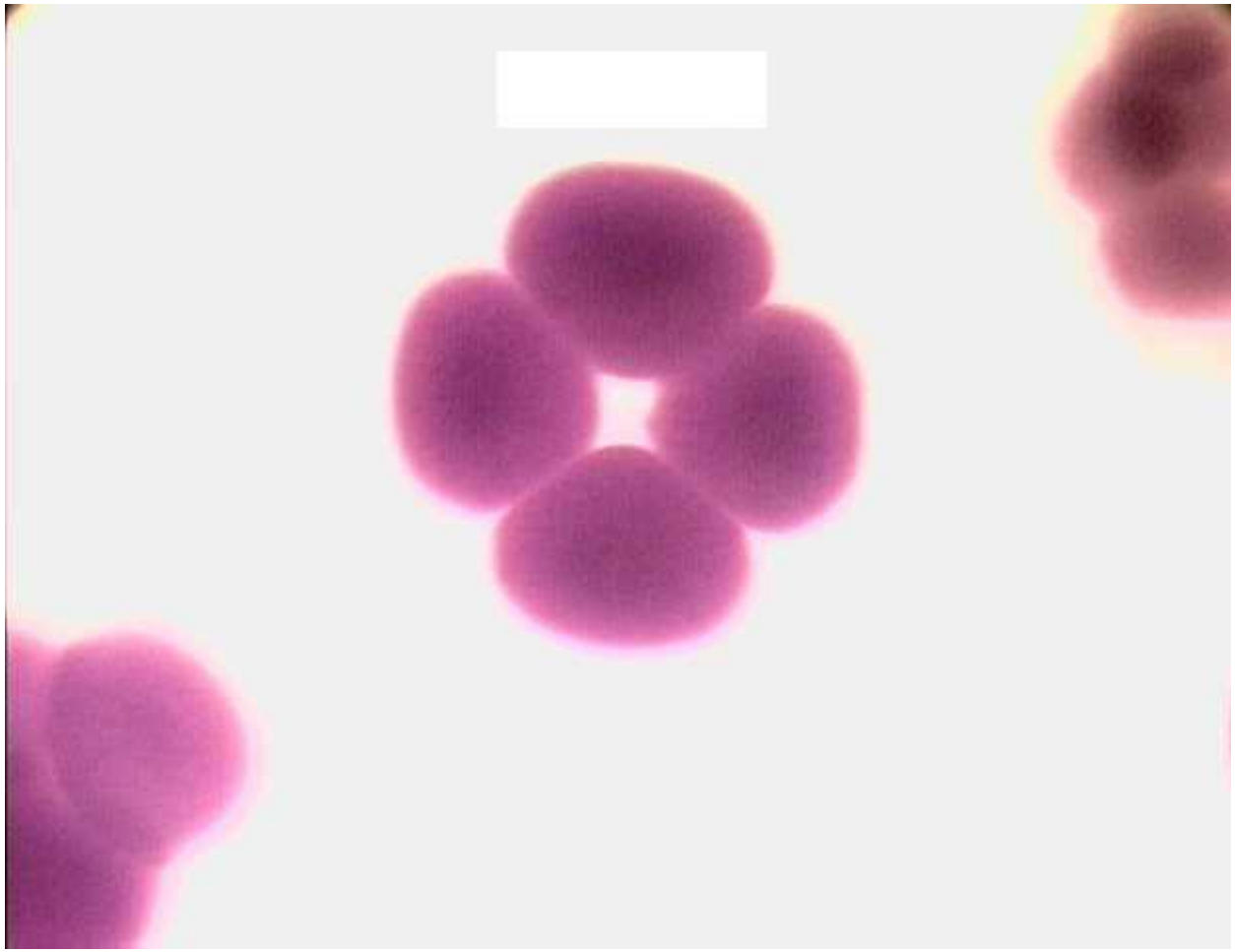
Zygote (Fertilized Egg)



2- Cell Stage



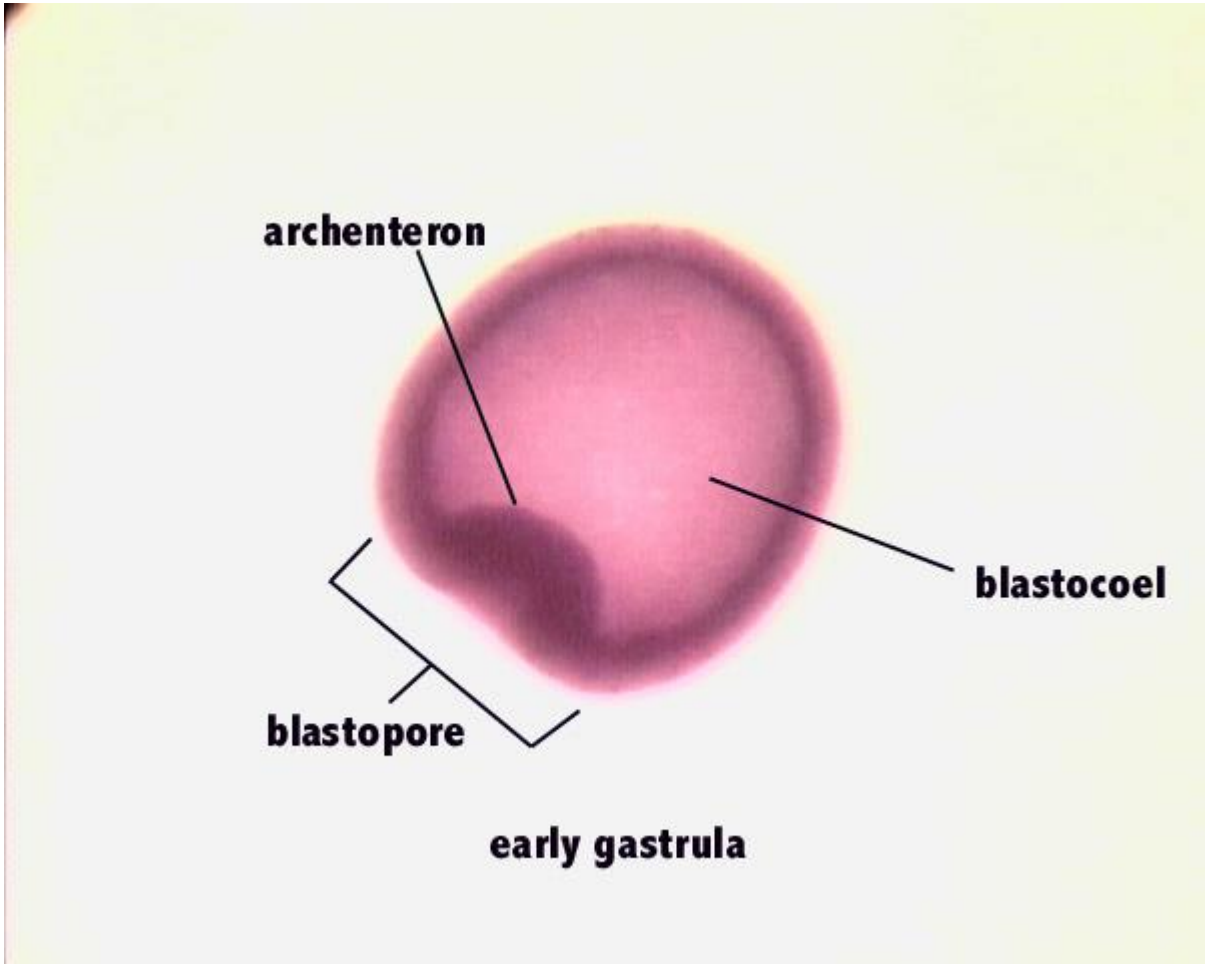
4-Cell Stage



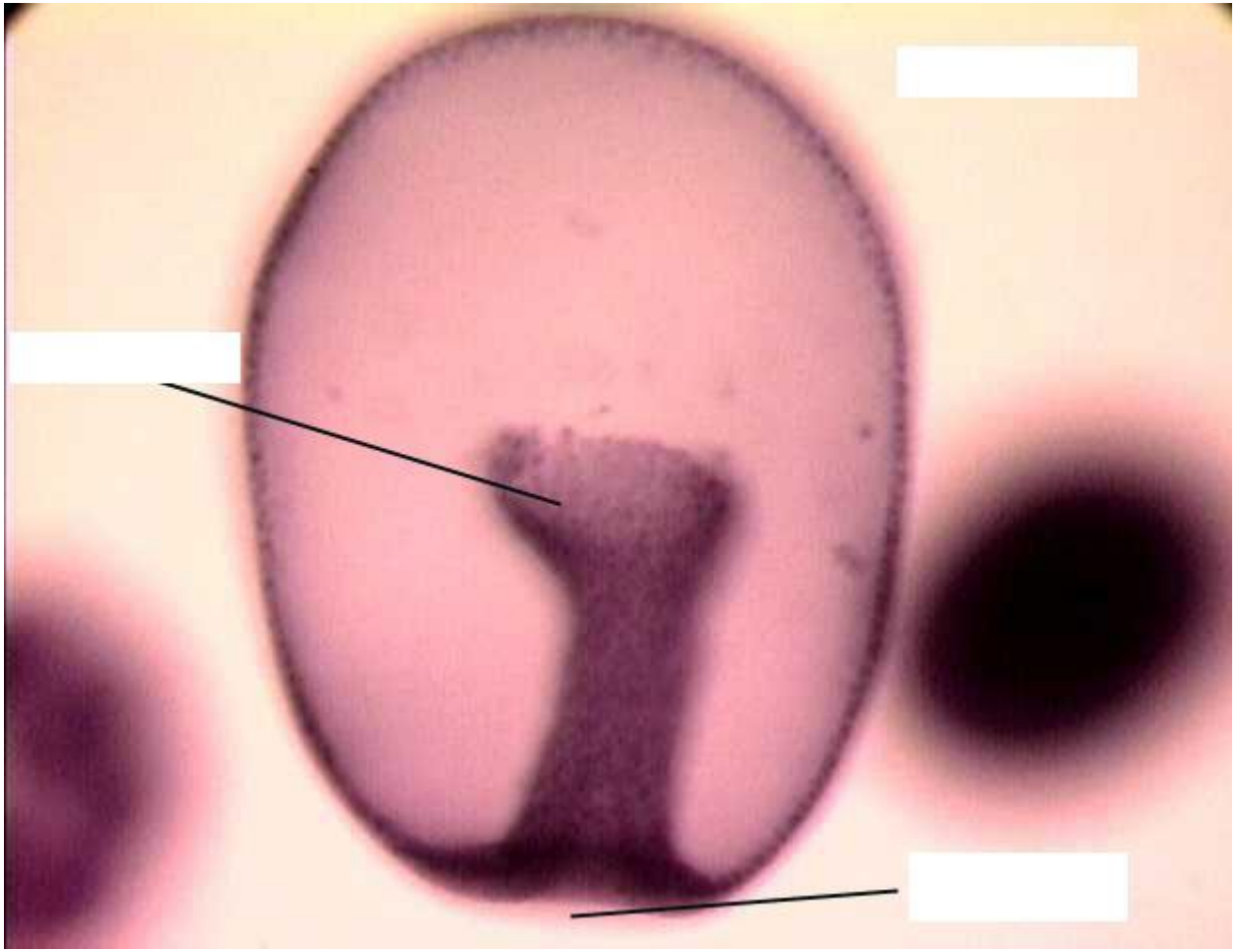
16-Cell Stage (Morula)

Blastula

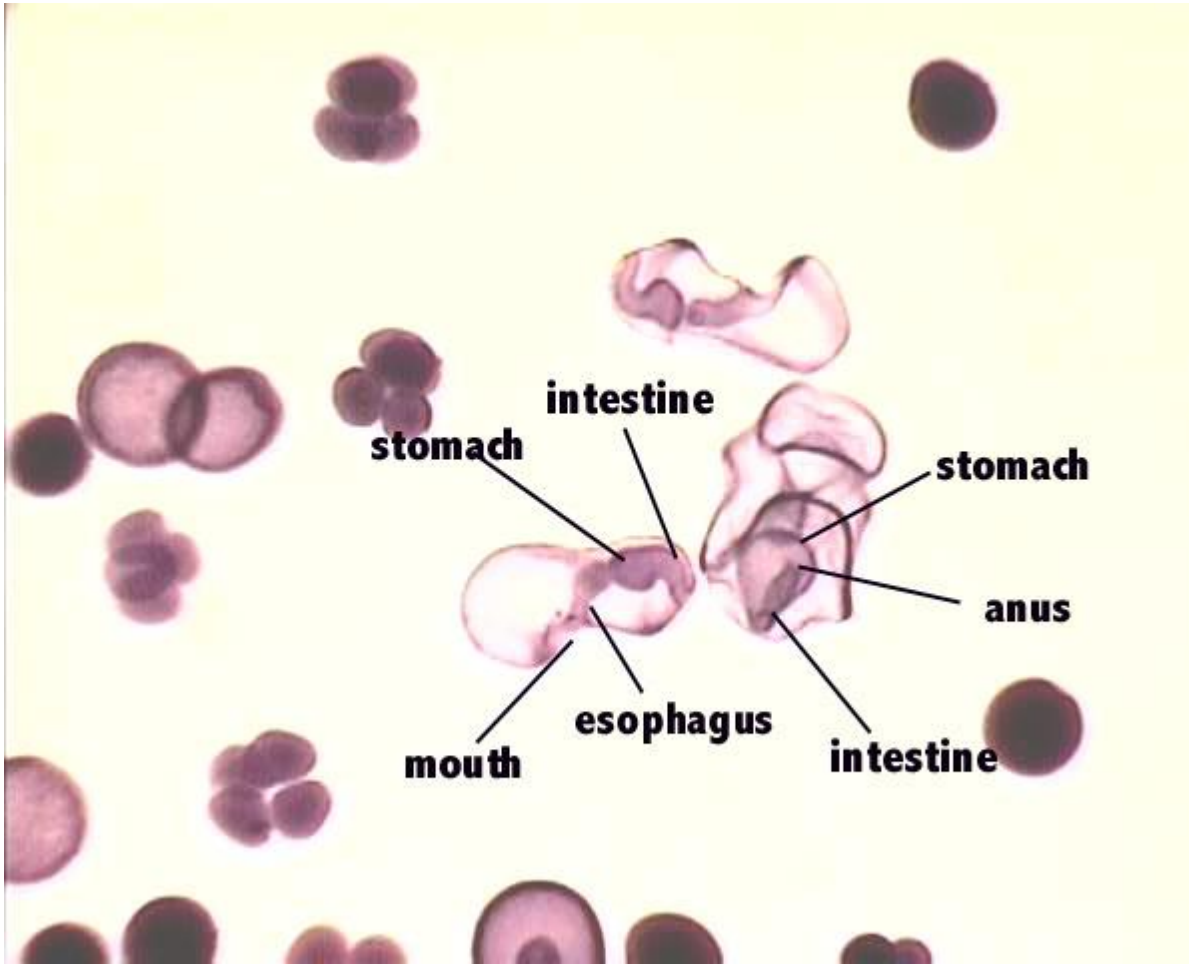
Early Gastrula

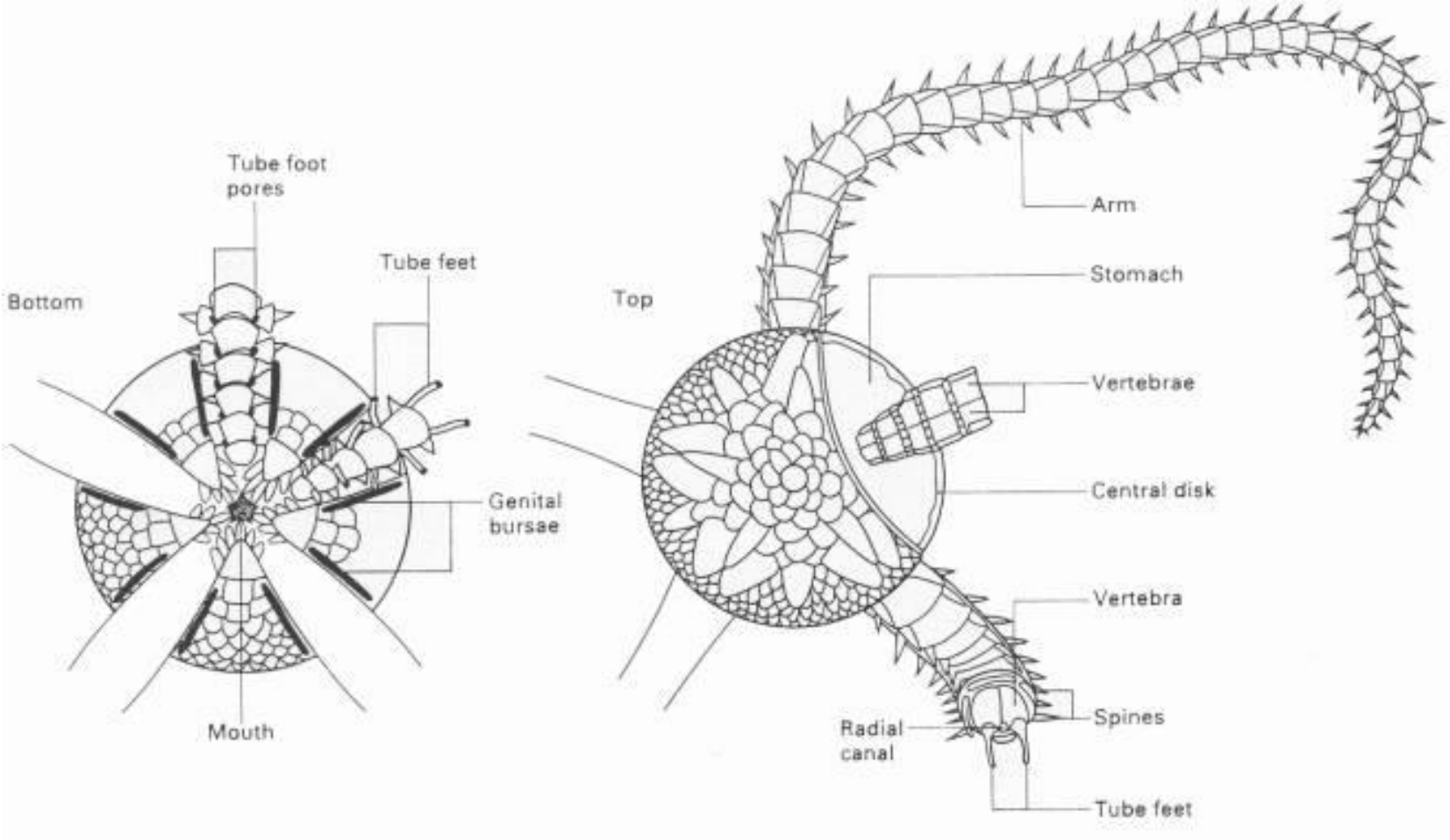


Late Gastrula



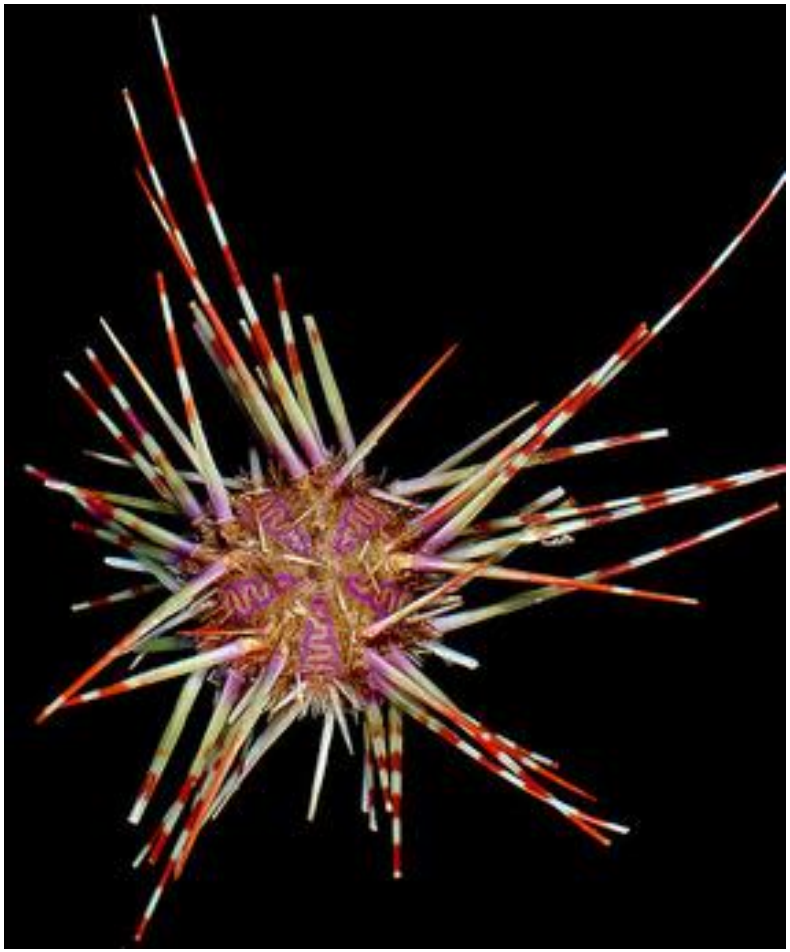
Bipinnaria Larva

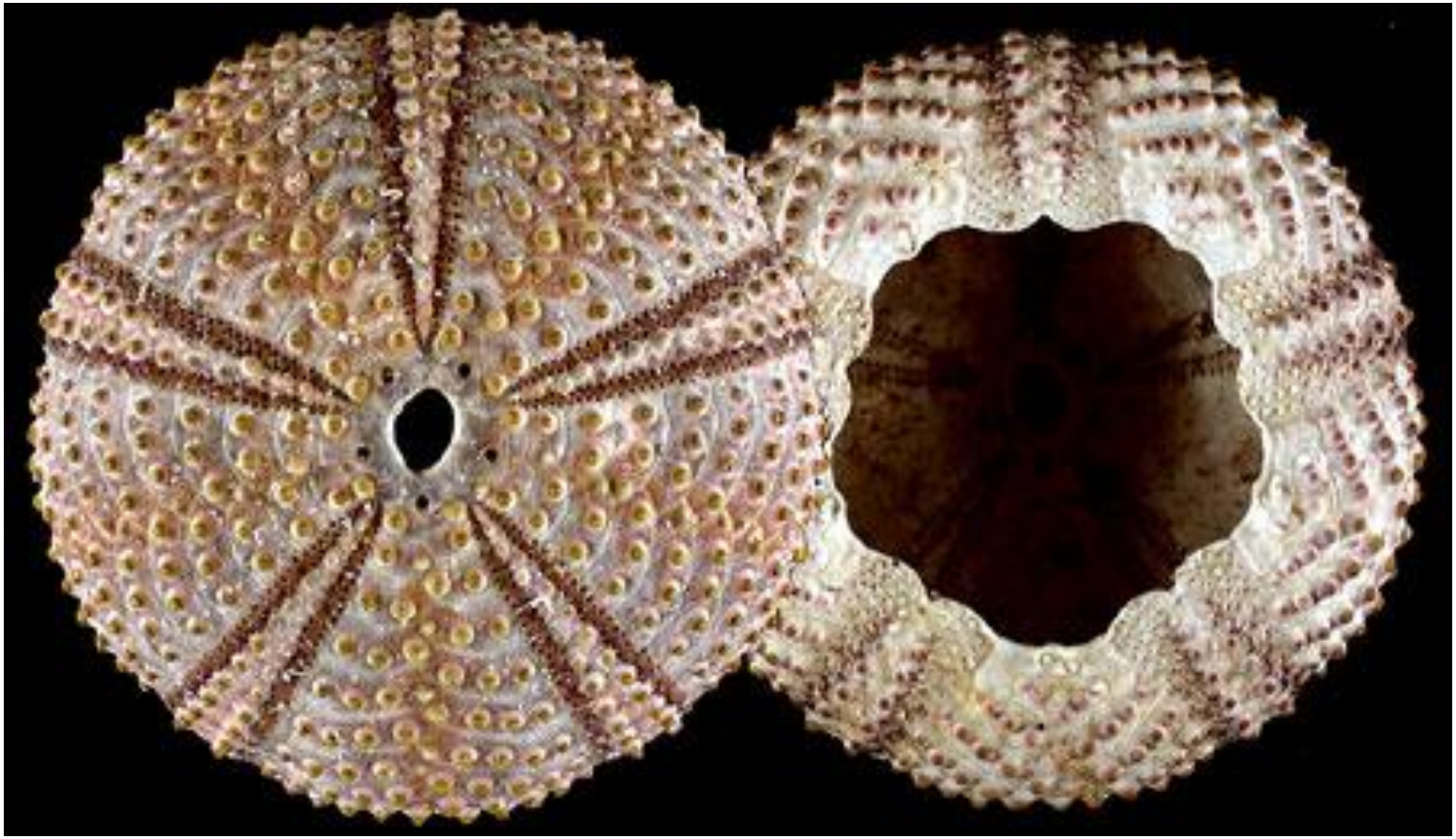



Tube foot pores
Tube feet
Bottom
Genital bursae
Mouth
Top
Arm
Stomach
Vertebrae
Central disk
Vertebra
Spines
Radial canal
Tube feet

The Passion Flower feather star, Ptilometra australis, a modern crinoid

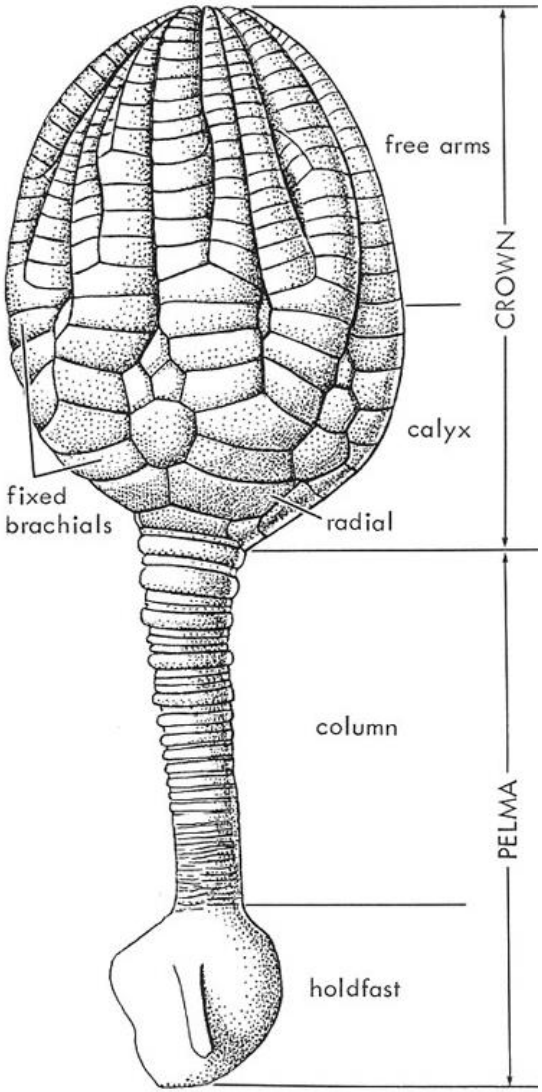

iStockphoto

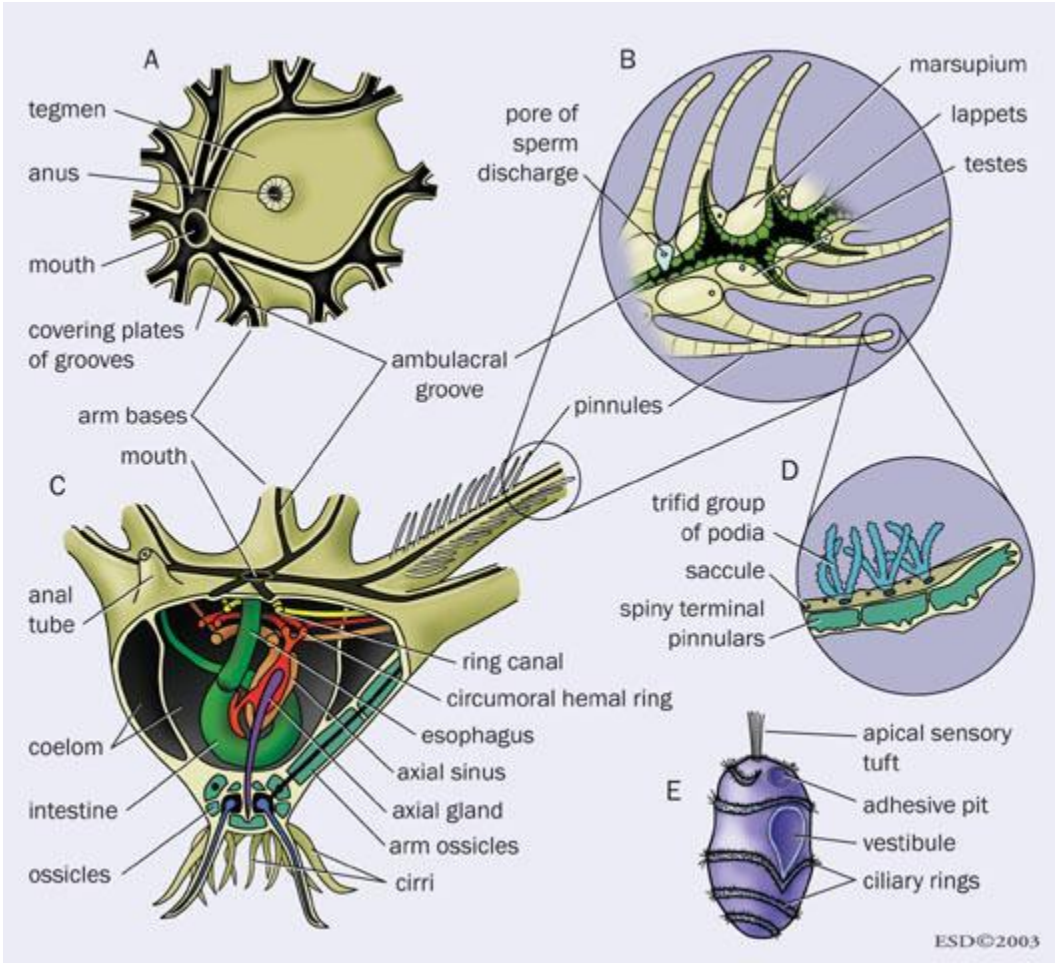




Filum : Echinodermata

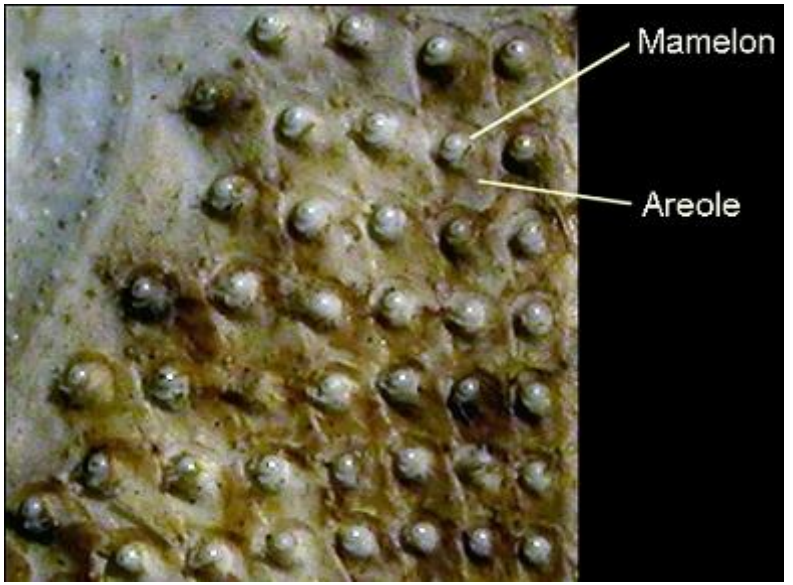
Klasis : Crinoidea – Deniz zambakları, tüy yıldızları

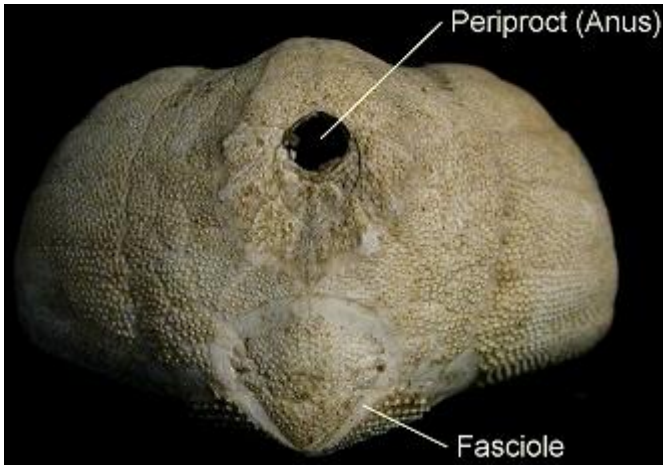


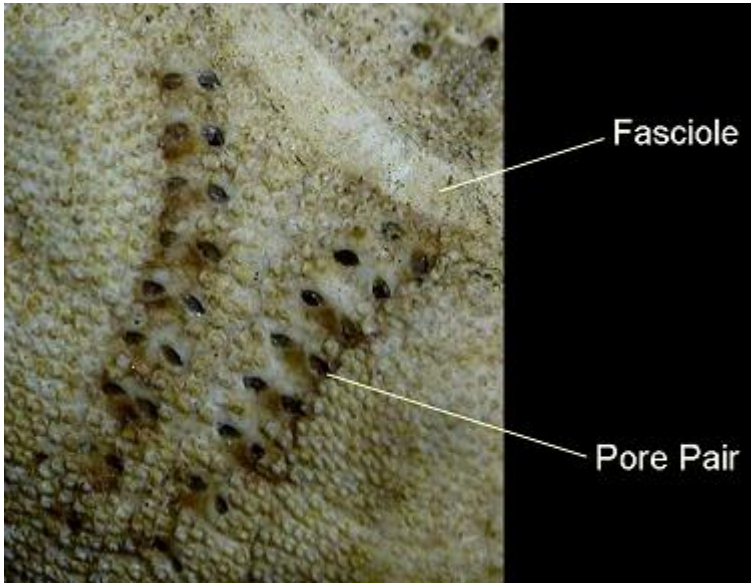



SINGAPORE

IRREGULAR ECHINOID





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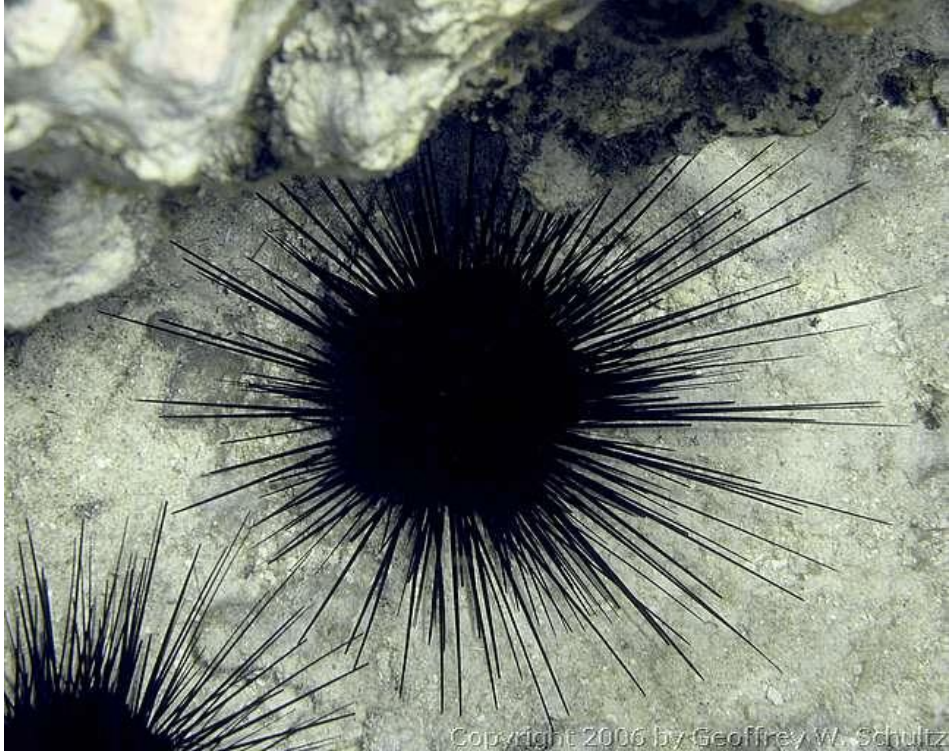
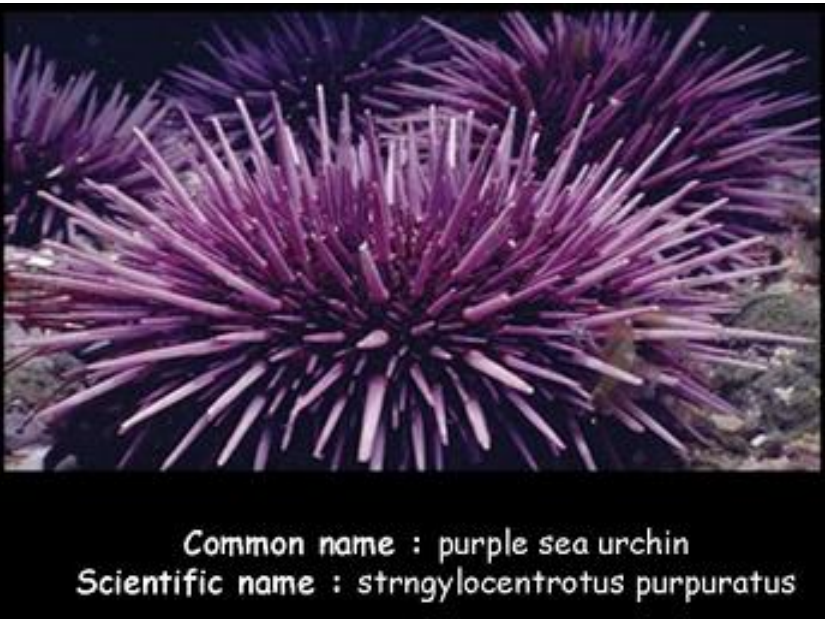
Zubi 03


SUNFLOWER STAR

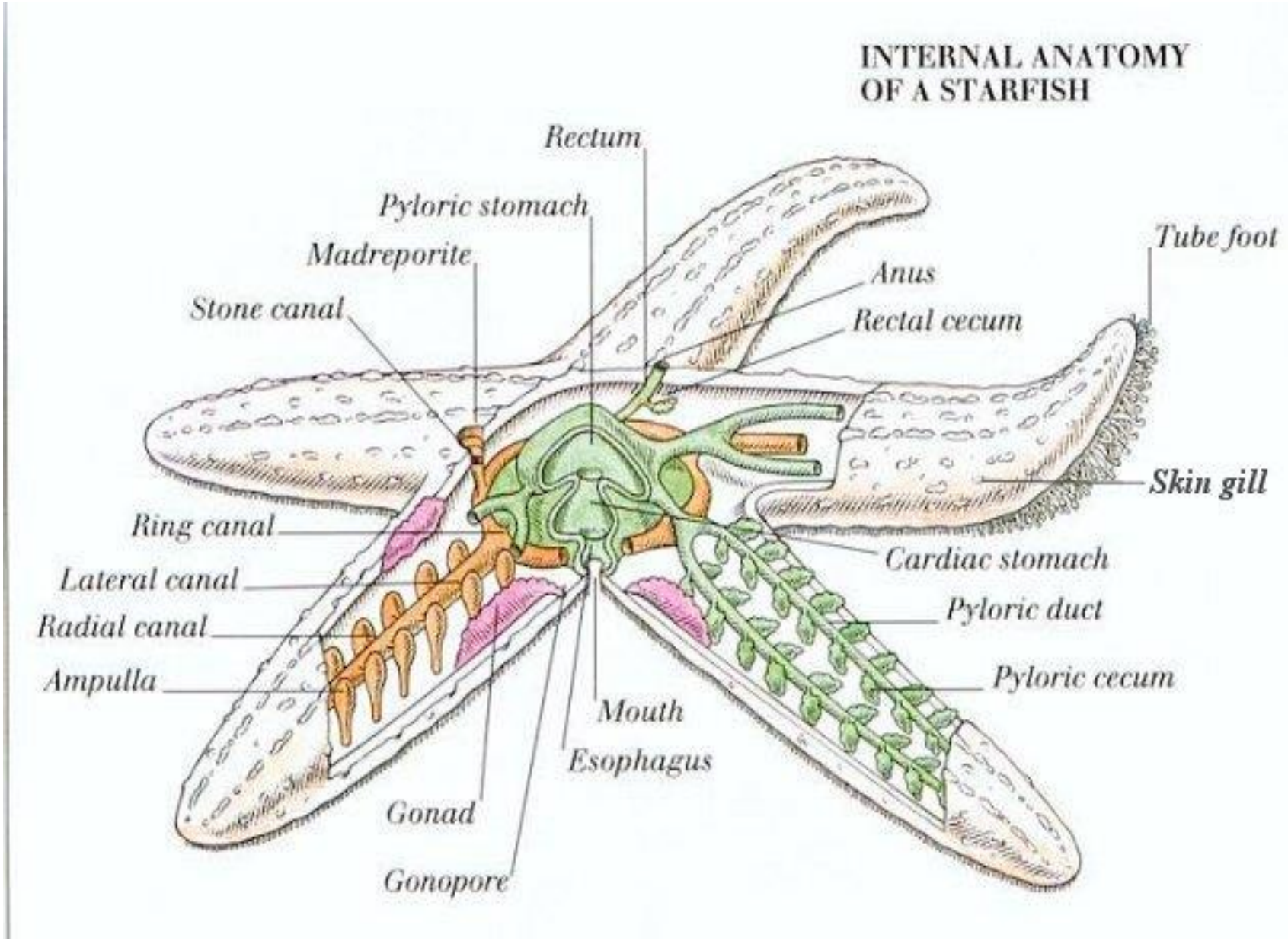




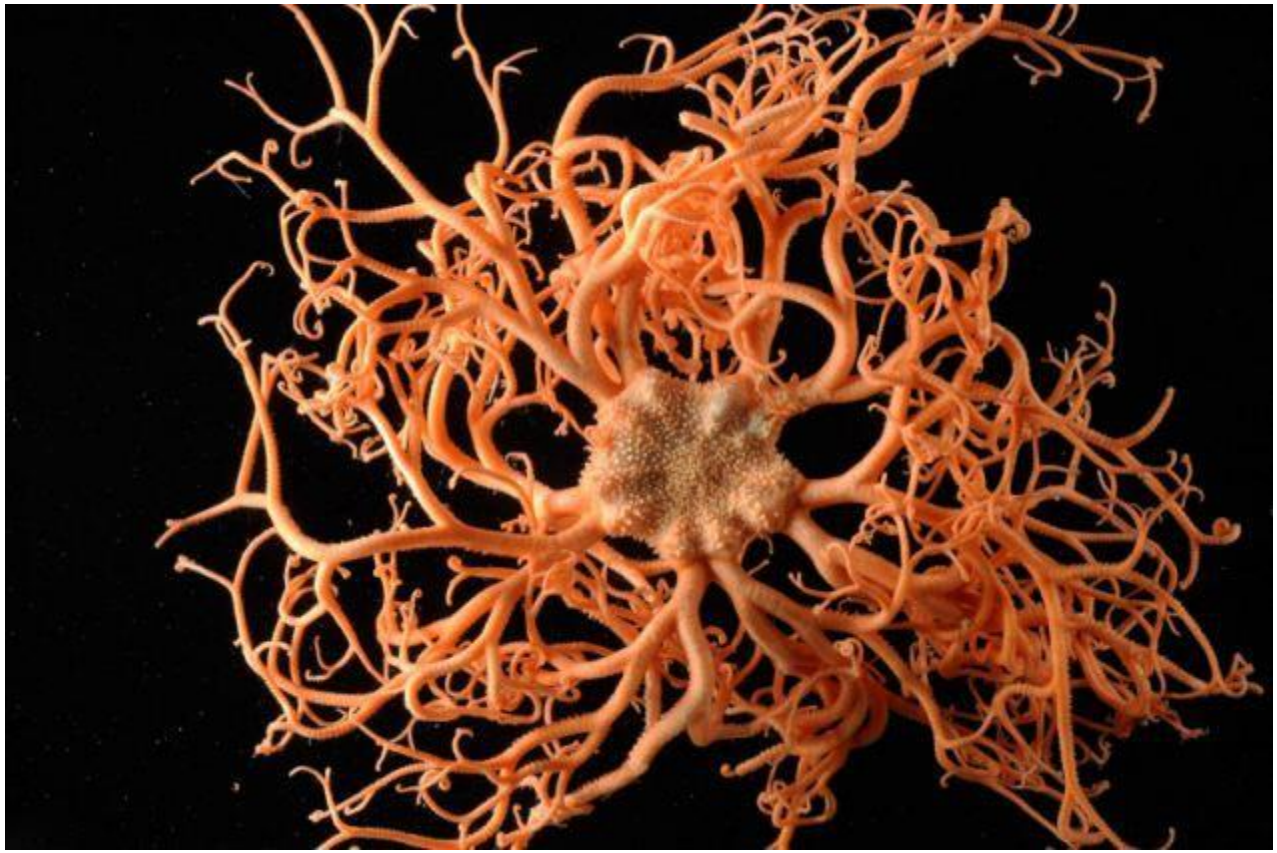
Common name : purple sea urchin
Scientific name : strngylocentrotus purpuratus


Geoffrey W. Schultz 2005

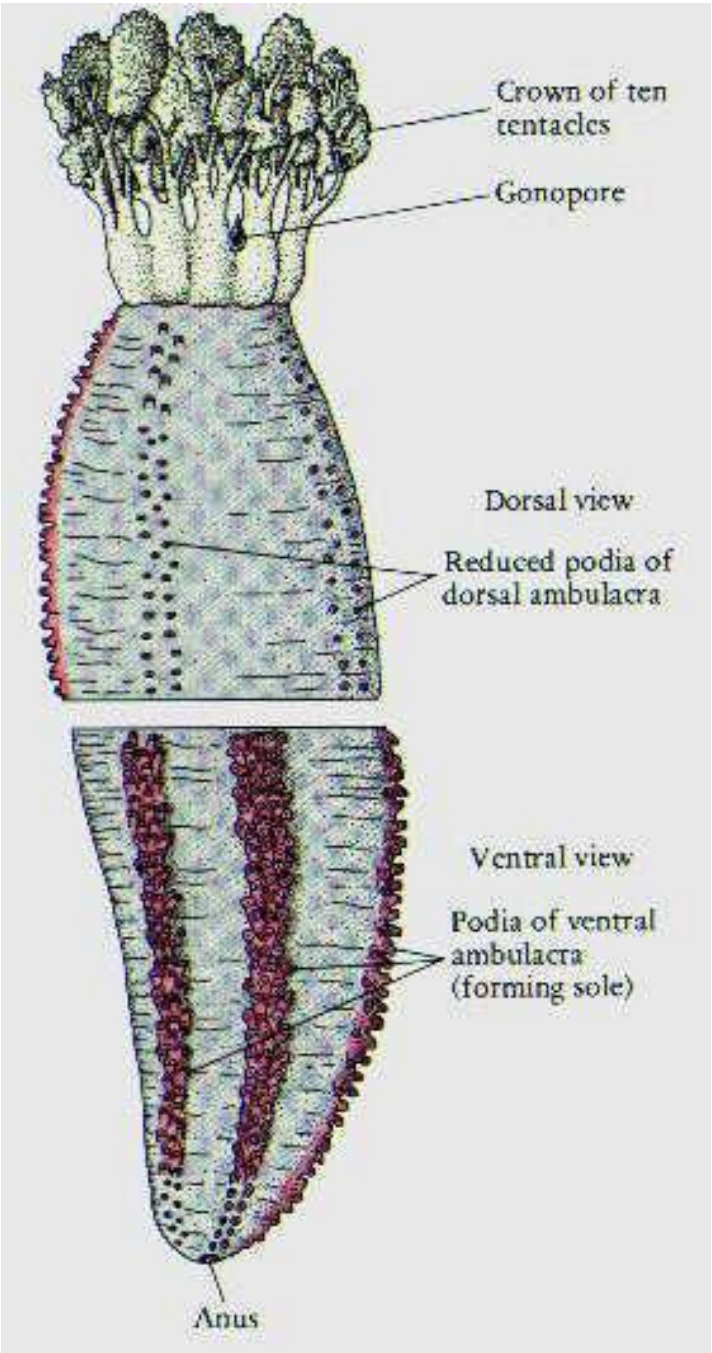

Geoffrey W. Schultz - 2005

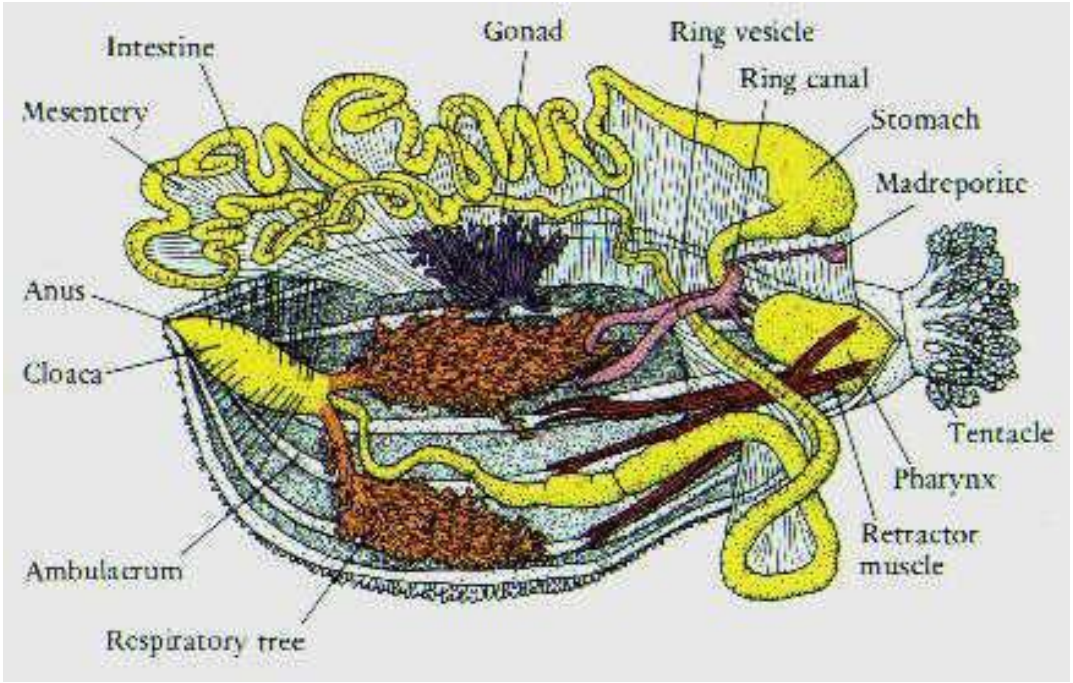

INTERNAL ANATOMY
OF A STARFISH
Rectum
Pyloric stomach
Madreporite
Stone canal
Tube foot
Anus
Rectal cecum
Skin gill
Ring canal
Lateral canal
Radial canal
Ampulla
Cardiac stomach
Pyloric duct
Pyloric cecum
Mouth
Esophagus
Gonad
Gonopore

Common name : Brittlestars
Scientific name : Phiotrix spiculata



CLASS *ESTERINA MINIATA* (BAT STAR)


Crown of ten tentacles
Gonopore
Dorsal view
Reduced podia of dorsal ambulacra
Ventral view
Podia of ventral ambulacra (forming sole)
Anus


Intestine
Gonad
Ring vesicle
Ring canal
Mesentery
Stomach
Madreporite
Anus
Cloaca
Tentacle
Pharynx
Retractor muscle
Ambulacrum
Respiratory tree