



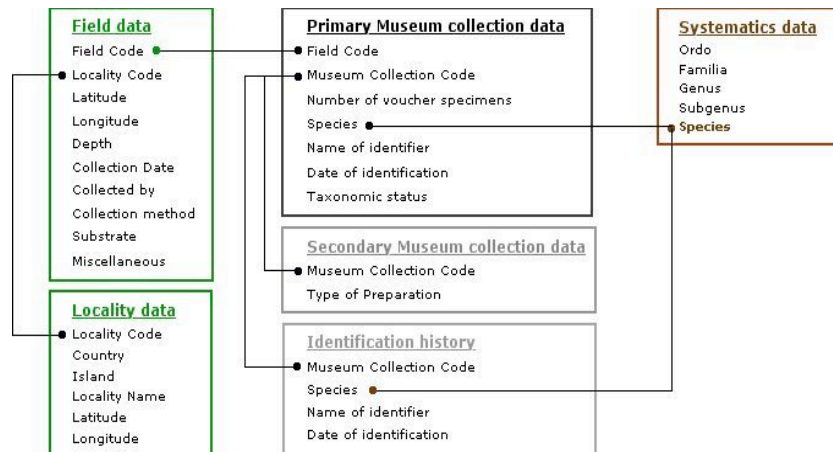
Relaxtion with magnesiumchloride or alike



The field label (± a compressed page from field book)

Field Code: Com/GtCom/2003.17	The field code is here chosen to incorporate locality information, here the code indicates Comores / Grande Comore / 2003 expedition sample number 17)
Locality Code: Com/GtCom/Itsandra	The locality code gives accute information on the location of collection, here the code indicates Comores / Grande Comore / Itsandra
GPS readings: 11°23'43" S / 43°55'15E	Latitude / Longitude
Depth: 23 m	Use the metric system
Collected by: Vanden Spiegel D. & Samyn Y	Name and initial(s) of the collector(s)
Collection date: 01 / VI / 2003	Do not allow inconsistencies in your dating system, use the format dd / mm / yyyy
Collection method: SCUBA - diving	
Substrate: Coral rubble	Concisely describe the substrate type, this can also be another species
	Concisely describe the substrate type, this can also be another species

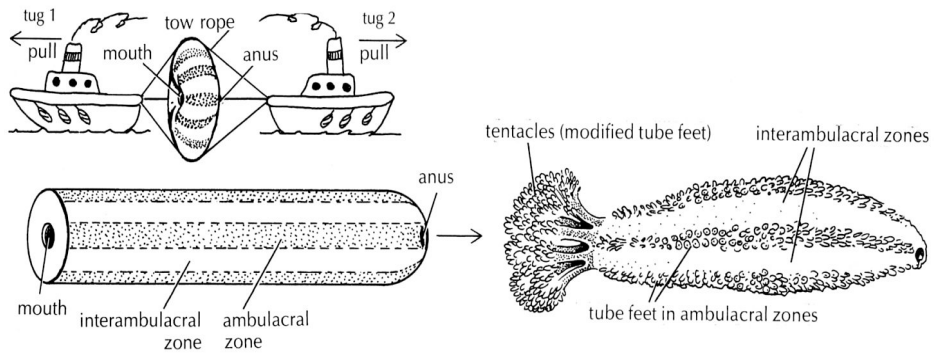
Storage of data in a database



An example of a museum label

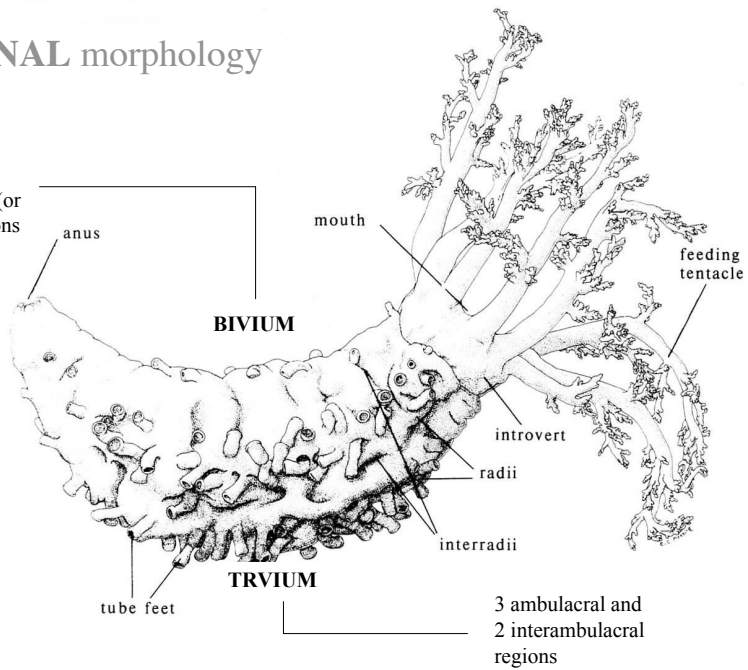
Holothuriidae 1
Pearsonothuria graeffei (Semper)
 Det. Yves Samyn & Van den Spiegel D. 2003
 Loc. Comoros, Grande Comore. . Alt. -18 m.
 Rec. Yves Samyn & Van den Spiegel D.,
 22.XI.2003
 Mus. R. Afr. Centr. 1730

Holothuroidea ?



EXTERNAL morphology

2 ambulacral (or radial) and 3 interambulacral (or interradiial) regions



INTERNAL morphology

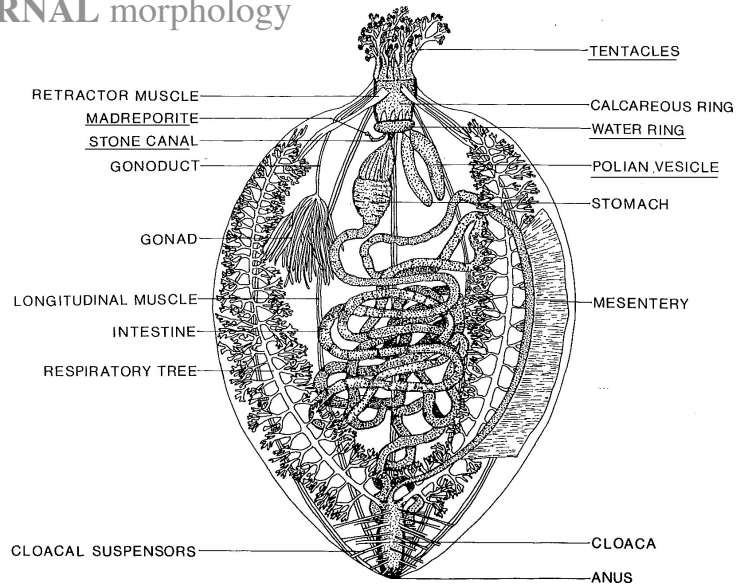
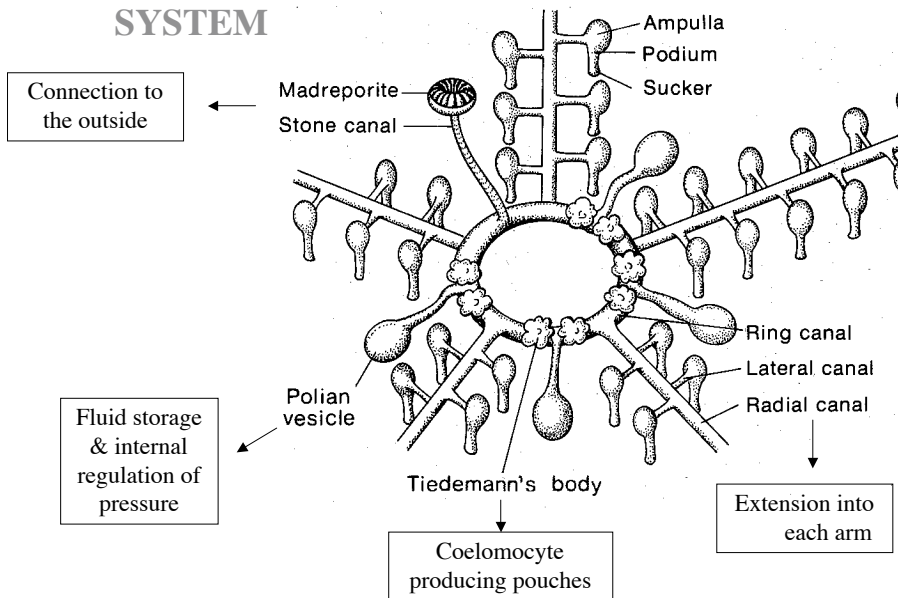


Figure 3. Anatomy of the holothurian, *Sclerodactyla briareus*, order Dendrochirotida (after Coe, 1912).

The WATER VASCULAR SYSTEM



INTERNAL morphology

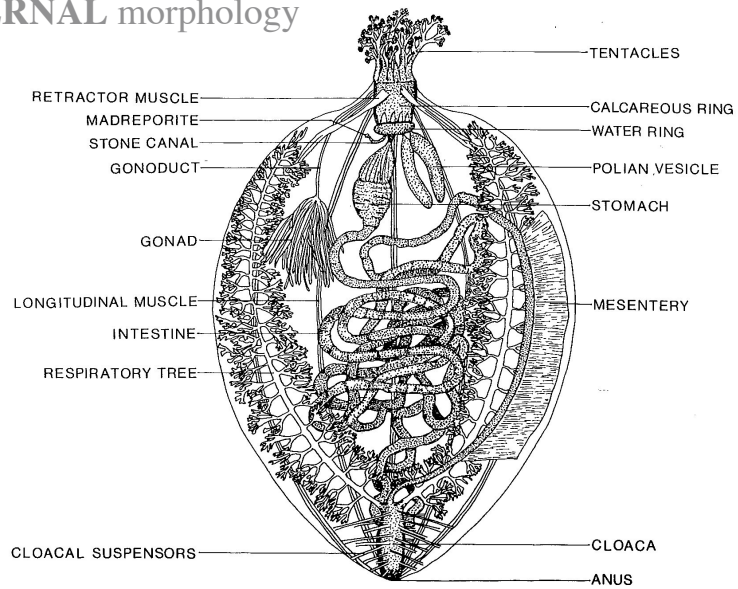
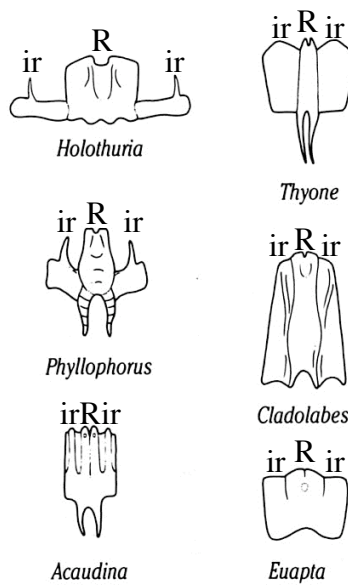


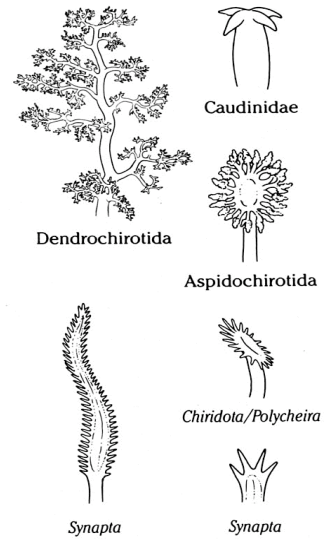
Figure 3. Anatomy of the holothurian, *Sclerodactyla briareus*, order Dendrochirotida (after Coe, 1912).

Taxonomic characters - structure calcareous ring

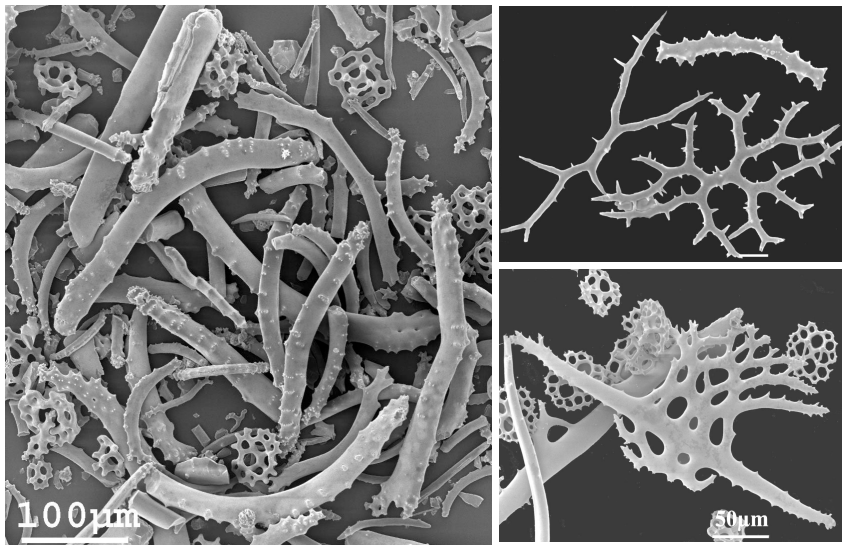


Taxonomic characters - Morphology, number and position of tentacles

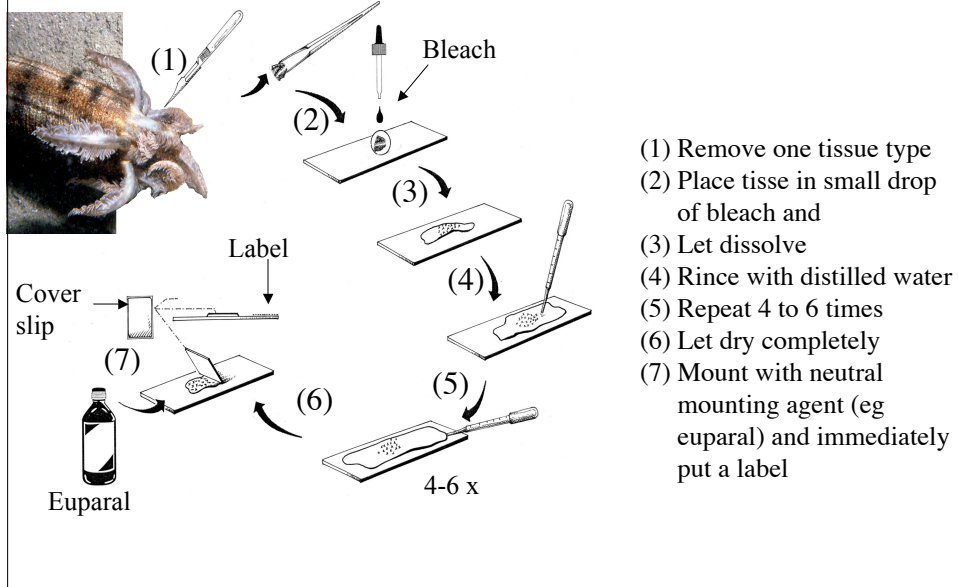
Dendritic
Peltate
Digitate
Pinnate



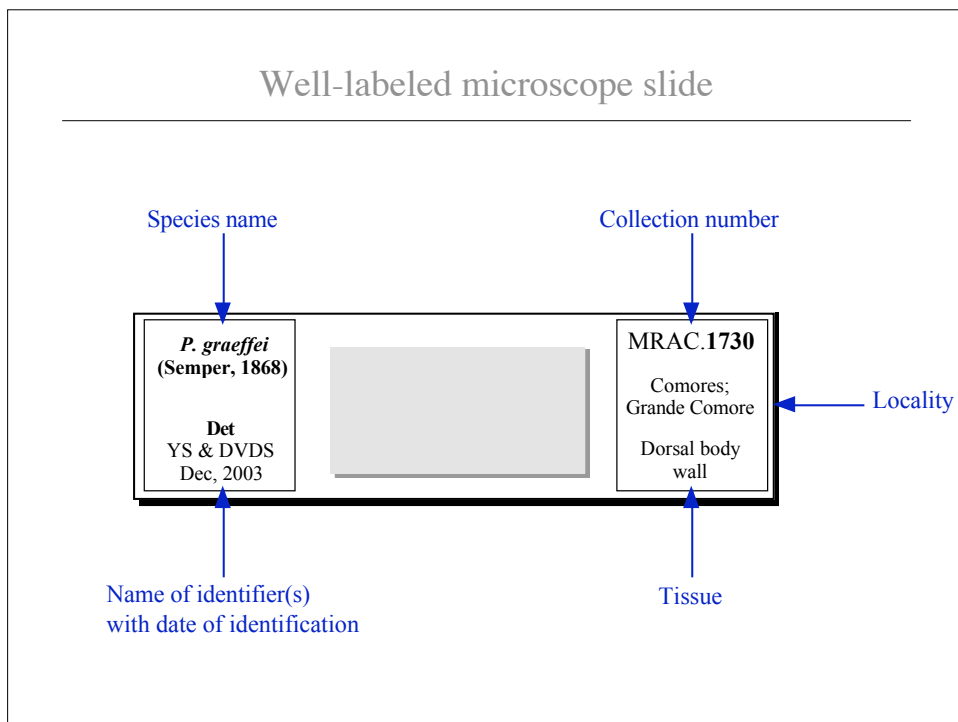
Taxonomic characters - ossicles



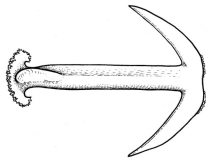
Ossicle preparation



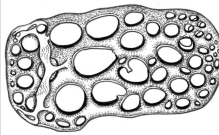
Well-labeled microscope slide



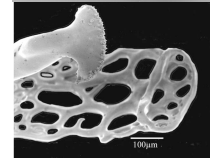
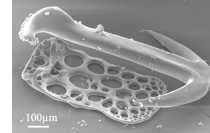
Common ossicle types



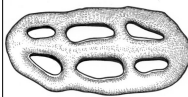
Anchor (German: *Anker*; French: *ancre*; Spanish: *ancla*). Ossicle shaped as an anchor. Anterior end of shaft terminates in 2 flukes which may be smooth or laterally finely dented; *vertex* sometimes with minute knob-like projections; flukes often slightly raised distally out of horizontal plane; *stock* finely rugose or branching; stock end of anchor (*keel*) articulated with corresponding anchor plate by connective tissue.



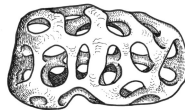
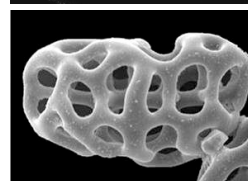
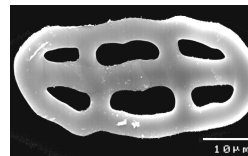
Anchor plate (German: *Ankerplatte*; French: *plaque anchorale*; Spanish: *placa ancla*). Ossicles shaped as rounded, oval, pyriform or rectangular plates with anterior side of plate usually wider than posterior side. Anterior side with large, smooth or variably denticulate holes; posterior side with smaller, generally smooth, holes. Arch-like smooth or toothed transverse bar (*bridge*) usually more or less well developed near the posterior end.



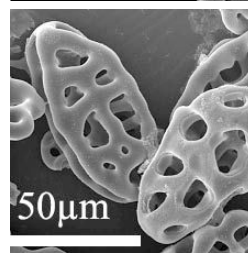
Common ossicle types



Button (German: *Schnalle*; French: *bouton* or *boucle*; Spanish: *botón*). Ossicle pierced by a variable number of regular to irregular holes that are usually arranged in pairs; rim of button may be smooth, spiny or knobbed, straight, undulating or irregular; surface of button smooth (occasionally with a median optical discontinuity) or knobbed; thickness of button variable.



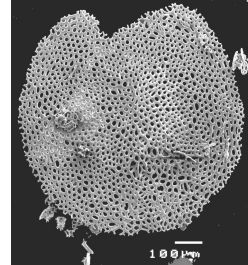
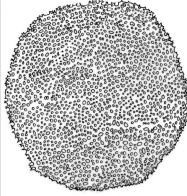
Fenestrated ellipsoid (German: *gefensterte* or *durchbrochene Hohlkugeln* or *Hohlkörper*; French: *ellipsoïde fenestré*; Spanish: *elipsoide festoneado*). Buttons with knobs interconnecting to form a three-dimensional fenestrated structure; number, size and arrangement of holes and knobs variable.



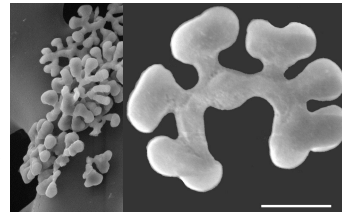
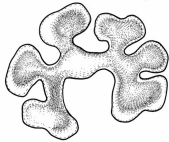
Common ossicle types

End-plate (German: *Endscheibe*; French: *plaque terminale*; Spanish: *placa de la ventosa*). An end-plate is a multiperforated ossicle found in the terminal part of tube feet. Fully formed end-plates are circular in outline and have their rim smooth or ragged; central part often slightly concave.

Number, size, arrangement and regularity of the holes vary between higher-level taxa. Diameter of end-plate variable (75-500 μm in diameter), but species-specific in some groups. The large central holes can be overgrown by a secondary layer thus forming an irregular meshwork.



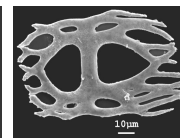
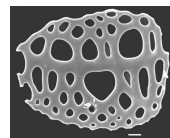
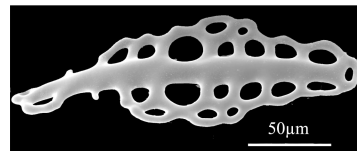
Miliary granule (German: *biscuitförmige Kalkkörper*; French: *corpuscules crépus*; Spanish: *gránulo miliar*) (see also plate 1K). Usually very small (5-30 μm in diameter) ossicles; shape from blebs to rods to rosette-alikes; they can be found in synaptids and chiridotids.



Common ossicle types

Perforated plate (German: *Gefensterte Platte*; French: *plaque perforé*; Spanish: *placa perforada*). Ossicles of various size and structure, commonly divided on the basis of the length-width ratio, the arrangement of the perforations, the rugosity and the thickness of the plate. The number of different types is almost proportional to the number of authors that described them.

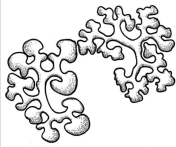
Within the Aspidochirotida perforated plates can be divided into those derived from the button and those formed from the rosette-*bauplan*. The first type has its holes arranged in two or more rather regular rows (Holothuriidae), while the second type has its holes arranged more randomly (Stichopodidae).



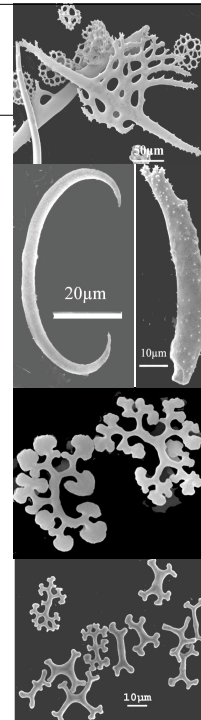
Common ossicle types

Rods (German: *Kalkstäbchen* or *Stützstäbe*; French: *bâtonnet*; Spanish: *barrotas*). Elongated bar-like ossicle which may be thickened centrally and/or distally; perforated or not; branching or not. Various types of rods can be discerned according to the taxon, e.g.:

- *Holothuriidae*: perforations are mostly two by two, giving rise to a regular perforated rod, which by many authors is called an elongated plate
- *Stichopodidae*: perforations are more random, giving rise to an irregular perforated rod (see also *plate*). In the dorsal papillae these rods typically have the central part expanded to one side; the perforations are found therein.



Rosette (German: *Rosette*; French: *rosette*; Spanish: *roseta*). Rosettes form from dichotomously (terminal & lateral) branched rods; branches may variously anastomose to form perforated deposits. Often the general appearance is rather button-like, though rosettes differ from buttons in having the holes of various sizes and in having a single terminal perforation.



Common ossicle types

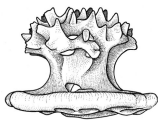
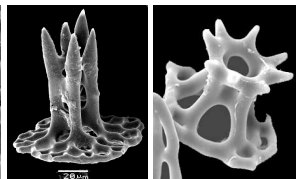
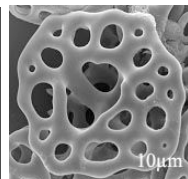
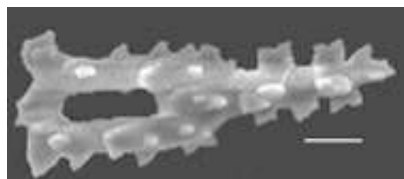
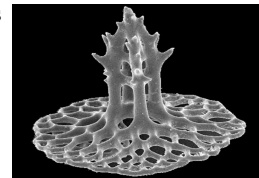
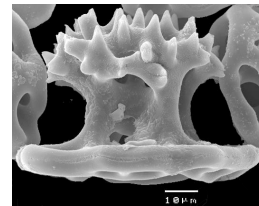


Table (German: *Türme*; French: *table*; Spanish: *tabla*) (see also plate 2L); tables originate from multi-armed (usually four) deposits which branch distally. These branches anastomosing to form a perforated disc, on which arise a variable number of vertical pillars; these pillars can be variously connected to each other (cross-beam or bridge) to form the spire; the spire ends in a cluster of spines or in a crown. Special kinds of tables exist (e.g. *Pearsonothuria*, *Thelenota*,...)

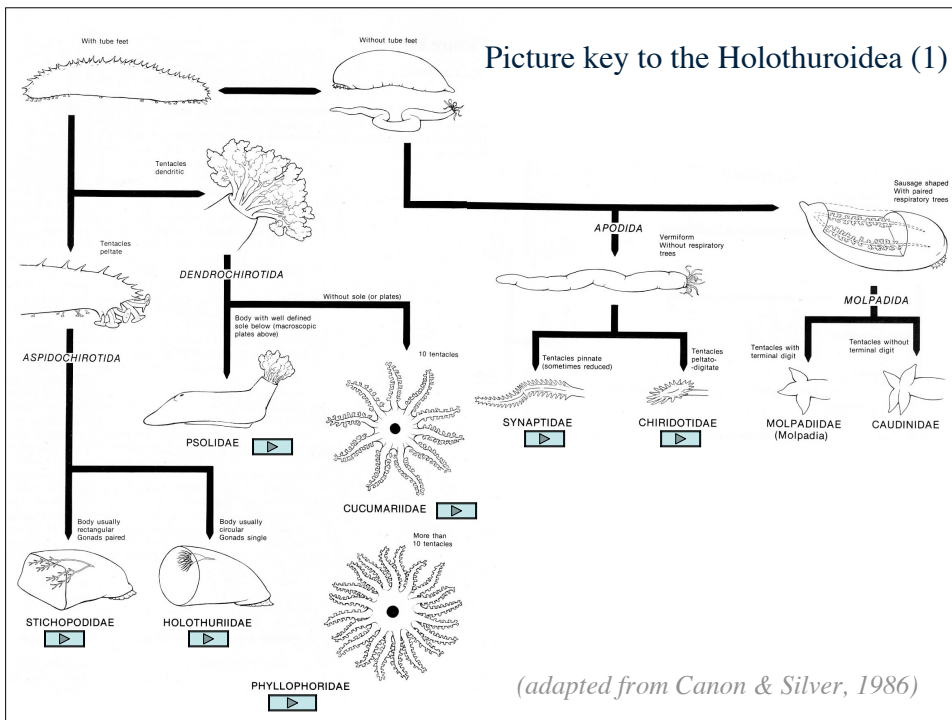
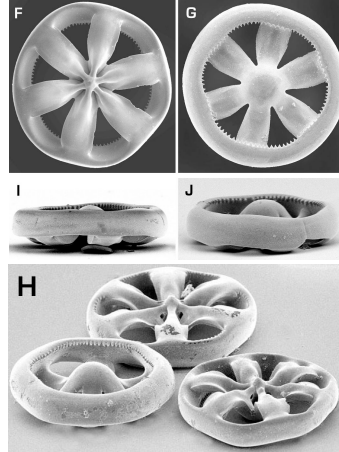


Common ossicle types

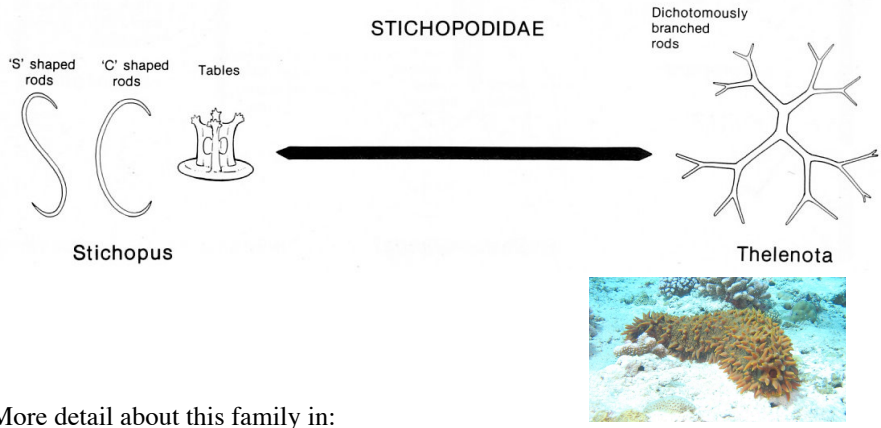
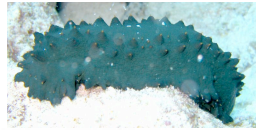


Wheels (German: *Rädchen*; French: *roue*; Spanish: *rueda*). Circular ossicles with six or more spokes leading to the peripheral rim; restricted to the Chiridotidae and Myriotrochidae (Apodida).

Round concavo-convex wheels, similar to chiridotids wheels, can be found in the auricularia larvae of synaptids.



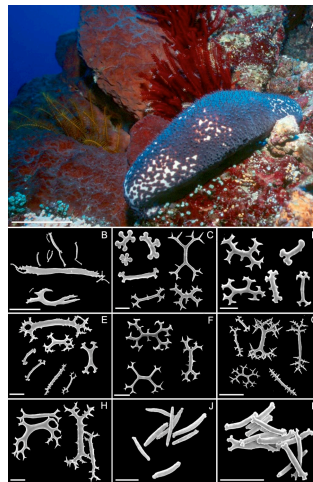
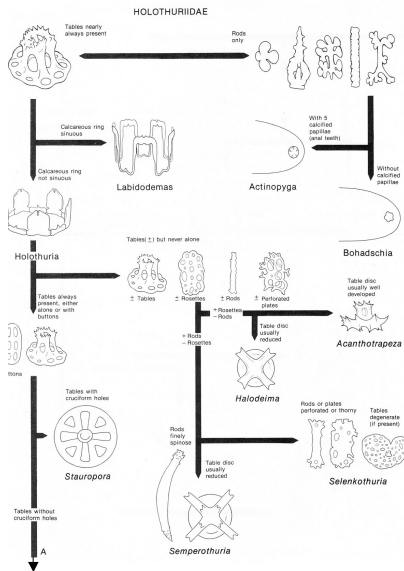
Picture key to the Holothuroidea (2)



More detail about this family in:
H.L. Clark (1922) & Massin *et al* (2004)

(adapted from Canon & Silver, 1986)

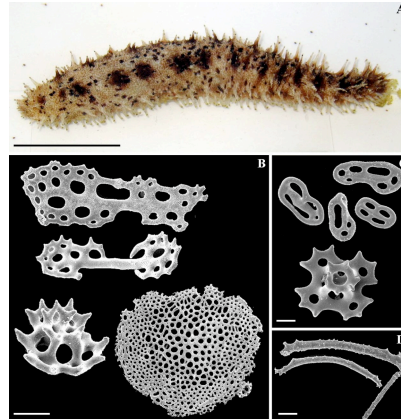
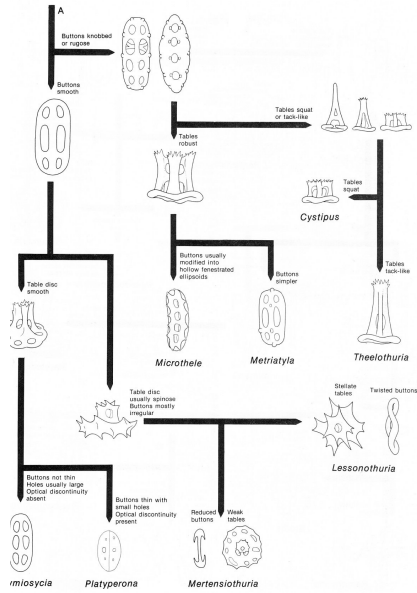
Picture key to the Holothuroidea (3)



To 3'

(adapted from Canon & Silver, 1986)

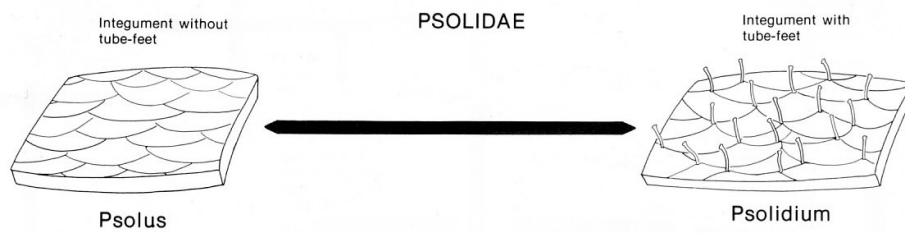
Picture key to the Holothuroidea (3)



More detail about this family in:
Rowe (1969)

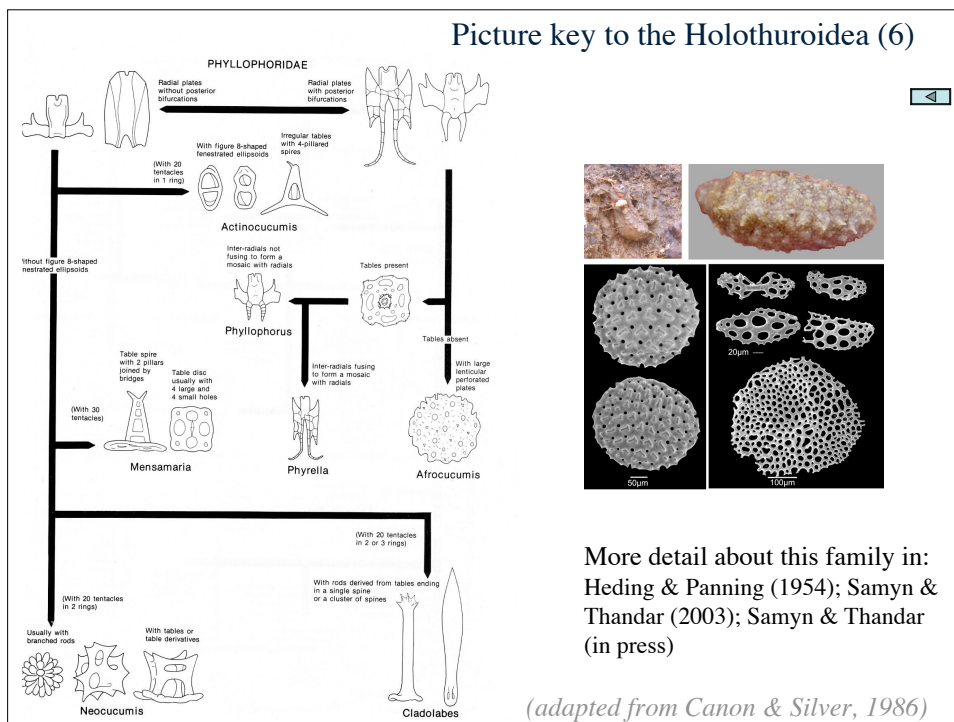
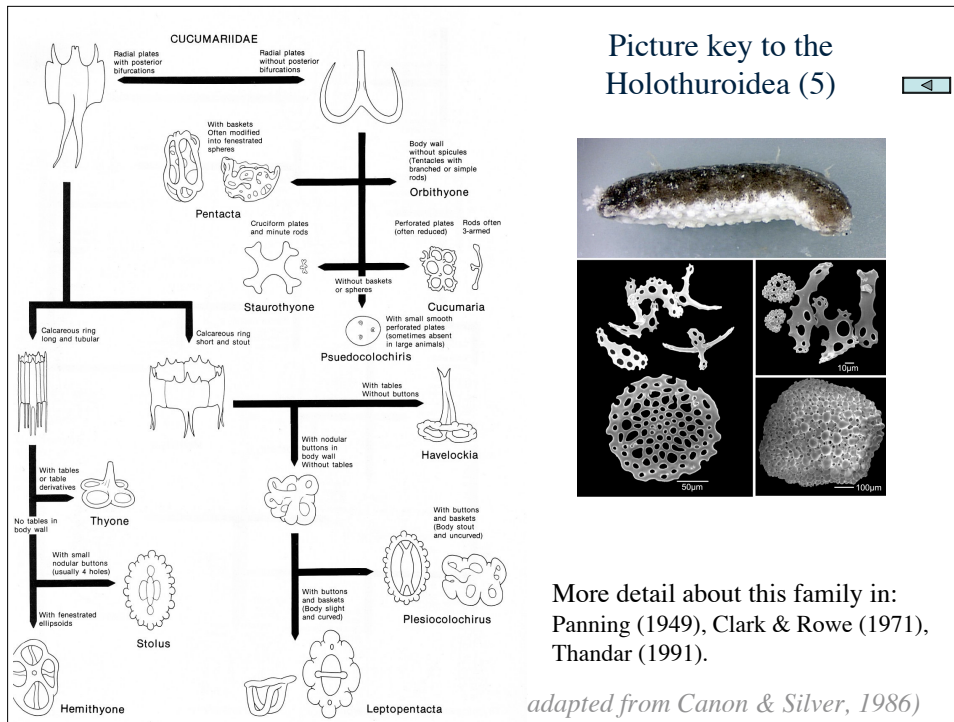
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Picture key to the Holothuroidea (4)

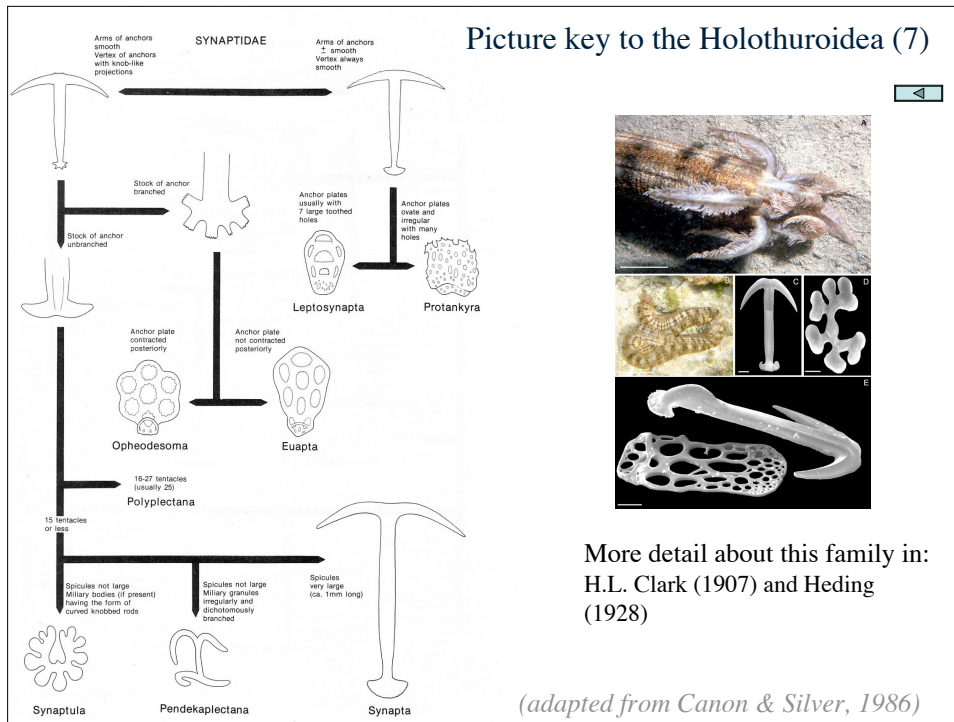


More detail about this family in:
ad hoc literature

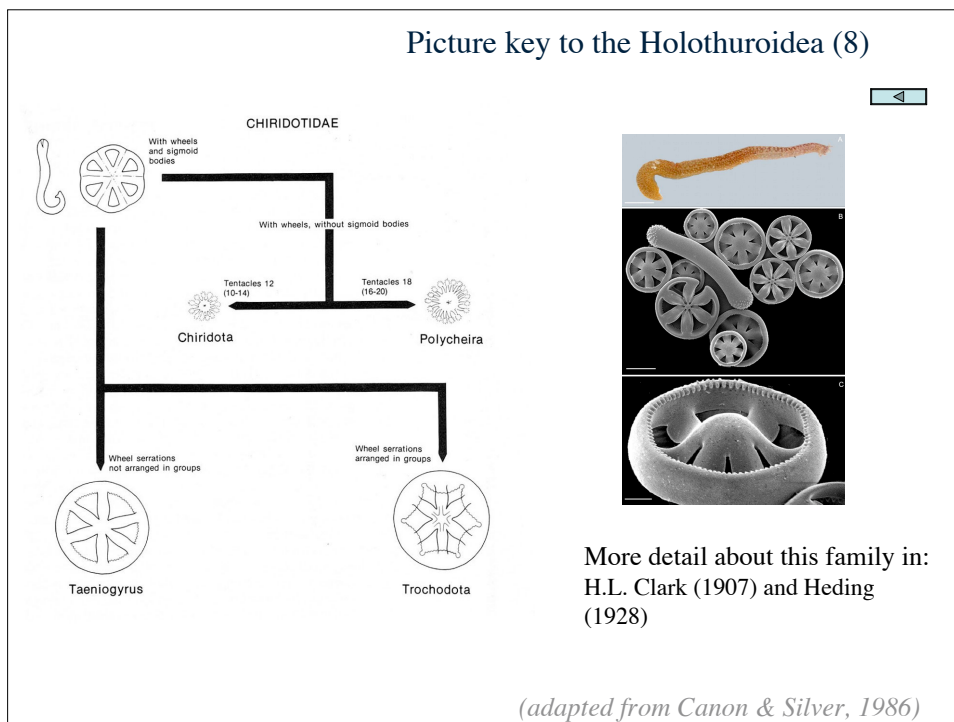
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Picture key to the Holothuroidea (7)



Picture key to the Holothuroidea (8)



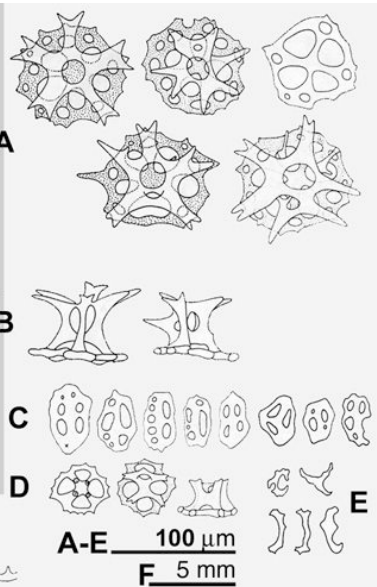
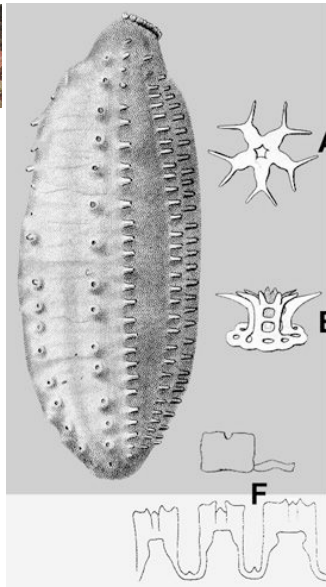
Descriptions always to be approached with care



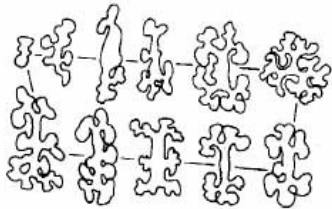
Descriptions always to be approached with care

Selenka, 1867

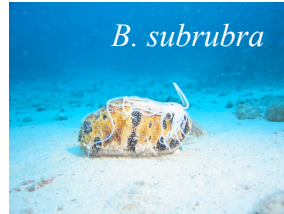
Cherbonnier, 1970



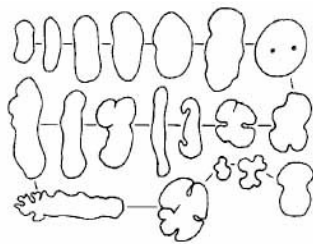
Descriptions always to be approached with care



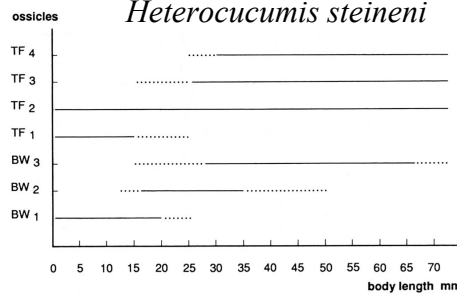
Dorsal body wall



B. subrubra

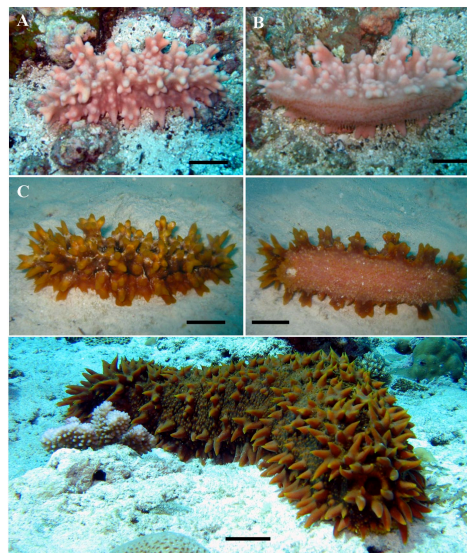


Ventral body wall



H. godfroyi, H. steineni, H. antarctica

Descriptions always to be approached with care



Descriptions always to be approached with care
 Ontogeny & ossicles...

