

CALIFORNIA ASCIDIANS

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These notes are intended to be an aid in using the ascidian key appearing in the Proceedings of the Taxonomic Standardization Program, Vol. 4, No. 4, Aug. 1976.

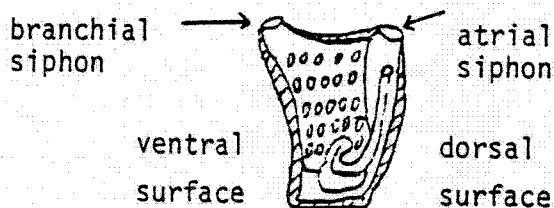
It should be pointed out that the key is based upon preserved material, and that zooid characteristics are used extensively, requiring the use of a dissecting microscope.

In order to successfully identify ascidians they must be relaxed prior to preservation. A stock saturated solution of magnesium sulfate is prepared and diluted 1:10 with the sea water containing the ascidians to be relaxed. A few crystals of menthol are then sprinkled on the surface of the water. After about 12 hours the ascidians may be transferred to 5% sea water-formalin.

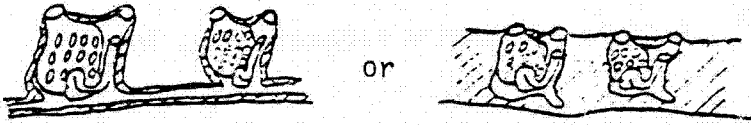
It should be noted that many character descriptions such as zooid size, structure of the gonads, and the number of rows of stigmata refer to adult zooids only. Also, zooid characteristics, especially those of compound ascidians, tend to be somewhat variable. Therefore many (10-20) zooids should be studied in order to obtain an accurate impression of the structure being examined.

The following hints and definitions of terms used in the key are offered. For a more complete account of ascidian anatomy see Abbott (1975).

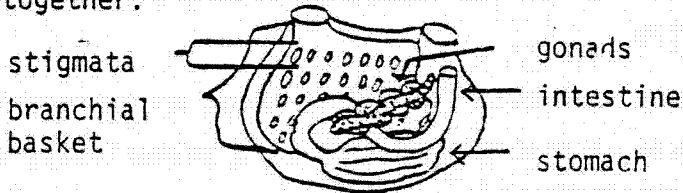
1a-Simple ascidians-Solitary ascidians, not connected to other individuals by stolons, nor embedded along with other individuals in a common test.



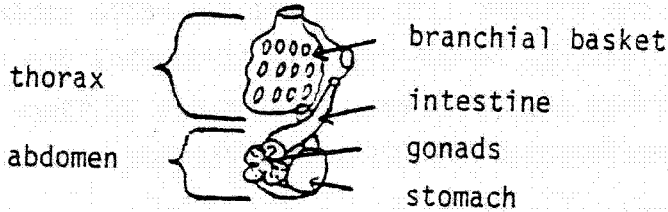
1b-Colonial ascidians-Ascidians which reproduce by budding with the result that zooids are attached to one another by stolons, or embedded together in a common test.



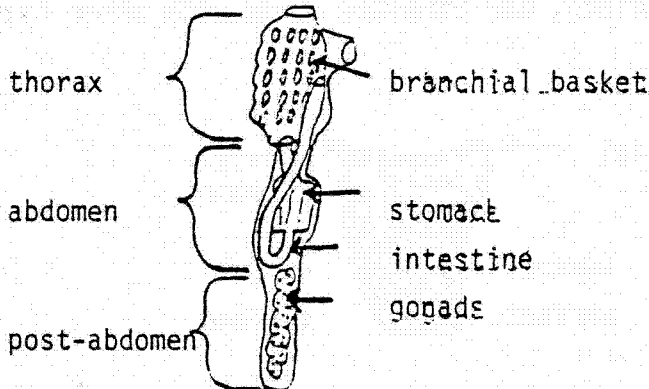
2a-Body entire-Branchial basket, stomach, intestine and gonads all close together.



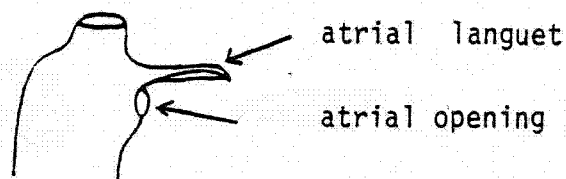
2b-Body divided into two regions, 1) the thorax containing the branchial basket, and 2) the abdomen containing the stomach, intestine and gonads.



2c-Body divided into three regions- 1) the thorax containing the branchial basket, 2) the abdomen containing the stomach and intestine, and 3) a post abdomen containing the gonads. This includes Euherdmania claviformis, which may have a short gonad not conspicuously separate from the abdomen, but definitely below it. It also includes Polyclinum in which the postabdomen is attached to the abdomen by a narrow stalk which is easily broken off, resulting in the loss of the postabdomen during dissection. It does not include Distaplia, which has a brood pouch containing embryos, but not a postabdomen.)



3a-Atrial languet-A projecting flap extending from the anterior margin of the atrial (excurrent) opening.



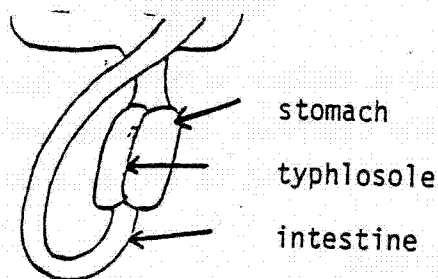
5a-Stigmata-The ciliated openings (gill slits) in the branchial basket.

See 2a

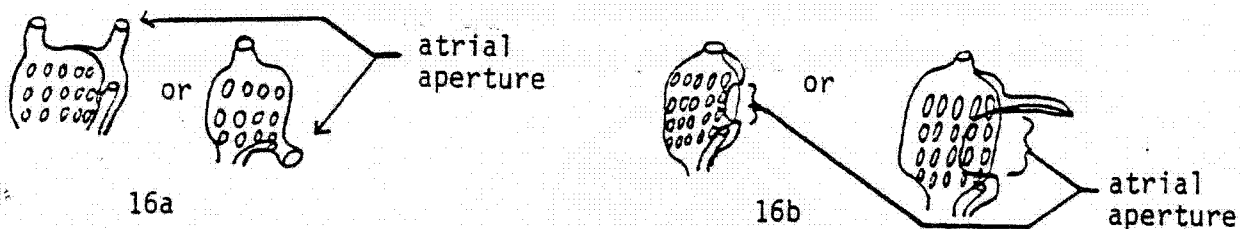
8a-Branchial basket-The pharynx of ascidians, which is provided with numerous stigmata. It performs filter feeding and respiratory functions.

See 2a

9a-Typhlosole-A single longitudinal invagination of the stomach wall.

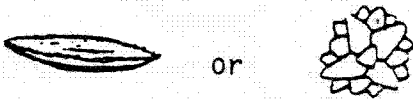


16a and b-The atrial aperture of 16b may be difficult to see, especially if the specimen is contracted. This is not a problem, however, since the atrial siphon of 16a is always clearly seen. Therefore, if the siphon cannot be seen choose 16b.



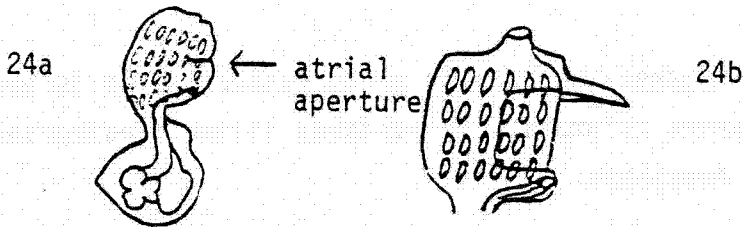
17a and 23a-The spicules may be very minute, requiring a magni-

fication of 50X or more to identify them.

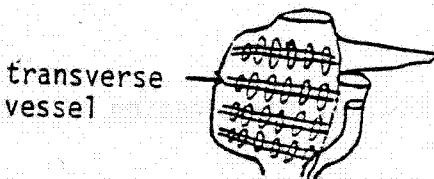


or

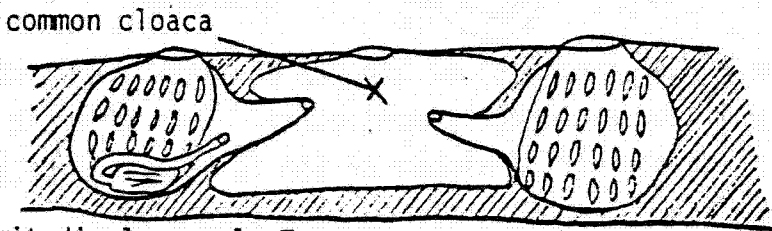
24a and b-The atrial aperture of 24a may be difficult to see, especially if the specimens are contracted. However, this should not be a problem, since the atrial aperture and languet of 24b is always clearly seen. Therefore, if the aperture and languet cannot be seen, choose 24a.



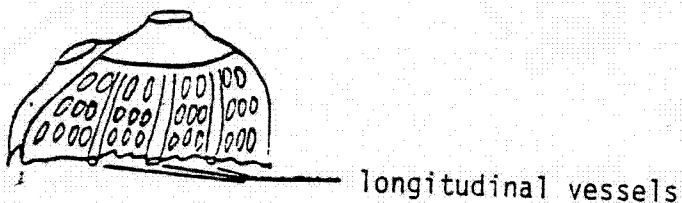
25a-Transverse vessel-A transparent vessel extending across the inside of each row of stigmata.



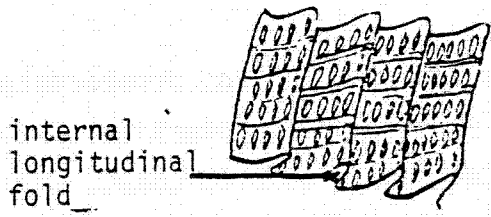
27b-Common cloaca-A chamber within the test of colonial ascidians into which the excurrent apertures of several zooids empty, and which in turn opens to the outside by way of a single opening.



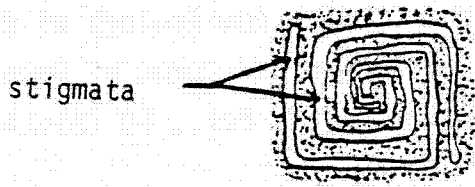
30a-Longitudinal vessels-Transparent vessels extending in an anterior-posterior direction along the inside of the branchial basket.



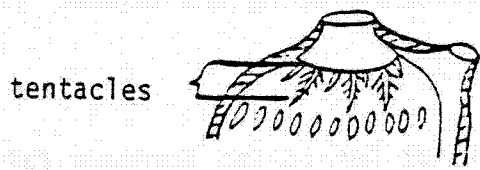
32a-Internal longitudinal folds-Conspicuous folds of the branchial basket extending in an anterior-posterior direction.



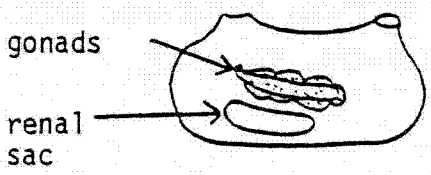
34a-The double spiral arrangement of the stigmata is important, since several ascidians resemble a ball of mud.



39a-Tentacles are found at the top of the branchial basket, just inside the base of the branchial (incurrent) siphon.

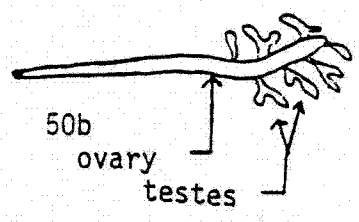
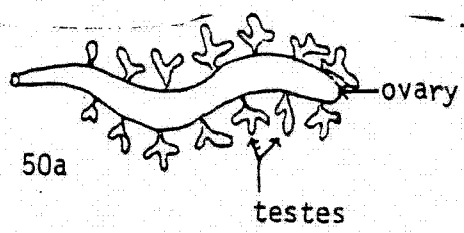


40a-The renal sac is a rather conspicuous oblong structure attached to the inside of the body wall on the right side of the animal.



46a and b-The fact that the stalk referred to in 46a is hollow in its upper region should be emphasized, since some ascidians keying out correctly to 46b occasionally have a short solid stalk.

50a and b-The ovary of 50a is sinuously curved throughout its length, that of 50b only slightly curved in the posterior half.



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