

PORIFERA

Mycale (formerly *Esperella*) *fibrexilis*

LIVING MATERIAL :

Mycale is a small, yellowish-brown encrusting sponge, with a poorly developed skeleton. It is reported by Wilson (1937) to be common on wharf piles at Woods Hole, Mass.

BREEDING SEASON :

Asexual larvae (gemmules) are released in July and August. At this time, a few small eggs in the germinal vesicle stage can be found, but sexual reproduction and the release of sexual larvae probably occur in the early fall.

PROCURING AND HANDLING MATERIAL :

A. Care of Adults: This sponge is easily kept in aquaria. It requires no special care, beyond the provision of an adequate supply of running sea water.

B. Preparation of Cultures: Larvae may be obtained during the breeding season by placing the adult sponge in a two- or three-gallon jar containing sea water. Exposure to air should be avoided. Release of the ciliated larvae seems to be stimulated by confinement in a limited amount of water and may occur within a few minutes, although sometimes it is necessary to leave the animal overnight. The larvae can be collected with a pipette and transferred to a fingerbowl of filtered sea water. The water should be changed several times a day. The free-swimming stage lasts only one or two days. Shells, pieces of wood, or glass slides placed in the bowl will provide attachment surfaces for the metamorphosing larvae, which can then be easily transferred to live-boxes if further growth is desired.

NORMAL DEVELOPMENT :

A. The Unfertilized Ovum: The oöcyte is small; it has a large nucleus containing a prominent nucleolus.

B. Fertilization and Cleavage: Sexual reproduction in this species has not been thoroughly studied. If development is similar to that of *Tedanione foetida* or *Hircinia aeuta*, fertilization is internal and cleavage equal and regular. In these forms, a morula develops into a ciliated larva very similar to the asexually-produced gemmule larva of *Mycale* (Wilson, 1894).

C. Rate of Development: The developmental rate for this species has not been recorded. The free-swimming larval stage is short, lasting only a day or two.

D. Later Stages of Development and Metamorphosis: A ciliated larva is produced, which escapes through an osculum as a free-swimming form. The gemmule larva at this stage is a solid, oval body, measuring a millimeter or less. The flat posterior pole is non-ciliated and contains a bundle of long straight spicules. The rest of the animal is covered by ciliated ectoderm cells which contain orange pigment granules. The inner, parenchymatous mass contains several types of scattered spicules.

At metamorphosis the swimming larva settles and attaches obliquely at the posterior pole. At this time there is a flattening of cells and loss of cilia. In the course of two or three days, epidermis, canals, pores, and flagellated chambers appear.

E. Asexual Gemmules: The gemmules develop from mesenchyme cells within the body of the parent. When mature, they burst into one of the excurrent canals and are carried by the water currents out through an osculum.

SPECIAL COMMENTS:

This culture method has been successfully used by H. V. Wilson for several species of sponges, although Mycale seems to have been the only Woods Hole form studied.

REFERENCES:

- WILSON, H. V., 1891. Notes on the development of some sponges. *J. Morph.*, 5: 511-519.
WILSON, H. V., 1894. Observations on the gemmule and egg development of marine sponges. *J. Morph.*, 9: 277-406.
WILSON, H. V., 1898. On the feasibility of raising sponges from the egg. *Bull. U. S. Fish Comm.*, 17: 241-245.
WILSON, H. V., 1935. Some critical points in the metamorphosis of the halichondrine sponge larva. *J. Morph.*, 58: 285-353.
WILSON, H. V., 1937. Notes on the cultivation and growth of sponges from reduction bodies, dissociated cells, and larvae. *In: Culture Methods for Invertebrate Animals*, edit. by Galtsoff *et al.*, Comstock, Ithaca, pp. 137-139.