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PSEUDOCOHNILEMBUS LONGISETUS
a Hymenostome Ciliate from Antarctica.*

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In December 1961, Dr. Stanley Wilson, of the Virginia Institute of Marine Science, collected some unidentified plant material from an exposed rock surface at an elevation of about 100 feet on Nelly Island, an island situated 12 miles west-northwest of Wilkes Station, Antarctica. This frozen collection was later received by the author and cultures were made from it in November 1962. A small ciliate was isolated from the material; subsequent studies of both living and silver impregnated animals identified it as a member of the genus *Pseudocohnilembus* (Evans and Thompson, 1964).

GENERAL MORPHOLOGY

Two silver impregnated slides have been deposited in the International Collection of Ciliate Type-specimens (Corliss, 1963), presently under jurisdiction of the Museum of Natural History of the University of Illinois.

Body form and size. The body is elongate with a bluntly tapering anterior end and a rounded posterior end. The average size of 50 impregnated animals was 28.5 x 14.3 μ.

Ciliary meridians. The bipolar meridians vary in number from 9 to 11, with 10 being the usual number. The meridians are relatively straight and evenly spaced except for the first and last which curve around the buccal cavity. All meridians appear to end anteriorly around a polar fibril (Fig. 5). The basal bodies of each meridian are connected by a single argentophilic fibril. A caudal cilium is present, about two-thirds as long as the body.

An argentophilic circular polar fibril (Fig. 6) almost encloses a small area at the posterior end which contains the polar basal body-complex. This circular polar fibril connects all the meridians except the

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Virginia Institute of Marine Science Contribution No. 158.

last. A fibril from the last meridian continues on to the polar basal body-complex and crosses over to the circular polar fibril near meridians 4 and 5.

Buccal cavity and associated organelles. A large buccal cavity extends from near the anterior end to about the middle of the body. The right border of the buccal cavity contains two membranes. The infraciliature of these two membranes, one designated as the outer membrane (OM) and the other as the inner membrane (IM), (Figs. 1, 2, 3), usually appears as two single rows of granules; however, occasionally the inner membrane appears to consist of more than a single row of granules. The infraciliature of these measures 15.4 μ. The inner membrane is slightly longer. Several argentophilic fibrils are present in the buccal cavity (Figs. 1, 2, 3). Figure 4 shows an abnormal animal which possesses two sets of membranes in a single buccal cavity.

Contractile vacuole pores. The CVP's vary in number from 1 to 3 (Figs. 1, 3, 6), with two being the usual number, and are associated with meridians 2, 3, 4, and 5, but more often with meridians 3 and 4.

Cytoproct. The cytoproct (Figs. 1-4, 6) is located between the first and last meridians near the posterior end of the animal. In silver impregnated animals it appears as an elongate structure about one-third as wide as long. Anteriorly it is joined by an argentophilic fiber, the so-called director-meridian, from the base of the buccal cavity, and posteriorly by a fiber which connects to the first meridan.

Nuclear apparatus. An irregularly spherical macronucleus, measuring *ca.* 4.0 μ, is found near the middle of the body. A single micronucleus is present.

Cyst formation. Cysts are not observed but probably occur because of the nature of the collection (exposed rock surface at 100 feet elevation) and the physical state (frozen) of the material.

Stomatogenesis. The details of stomatogenesis were not studied, but, from observations made on numerous dividing forms, it appears to be very similar to that described for *Pseudocohnilembus persalinus* by Evans and Corlis (1964).

DISCUSSION

Evans and Thompson (1964) described a new hymenostome ciliate, *Pseudocohnilembus longisetus,* from Daytona Beach, Florida. *P. longisetus,* from Antarctica, is quite similar to this species, but differs in the number of meridians and the number and location of the contractile vacuole pores. *P. longisetus,* from Daytona Beach, has 10 to 11 ciliary meridians, with the usual number being 11, and only one CVP, which is associated with

meridians 2 and 3. *P. longisetus*, from Antarctica, has 9 to 11 meridians, with the usual number being 10, and 1 to 3 CVP's associated with meridians 2-5.

The presence of *P. longisetus* in unidentified plant material on an exposed rock at 100 feet elevation is probably accidental. All other species described have been collected from saline environments and it is probable that *P. longisetus* was carried to the rock surface by wind-blown spray or some marine animal.

As far as the author can determine, this is the first description of the infraciliature of a ciliate from Antarctica.

SUMMARY

Pseudocohnilembus longisetus is described as a hymenostome ciliate from Antarctica. Morphological studies were made on specimens treated with the Chatton-Lwoff silver impregnation technique and living material was examined with phase microscopy.

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EXPLANATION OF FIGURES

Fig. 1. A semi-diagrammatic representation of a ventral view of the infraciliature of *Pseudocohnilembus longisetus*. Legend: AF—argentophilic fibrils of the buccal cavity; CVP—contractile vacuole pore; CYP—cytoproct; DM—director-meridian; IM—inner membrane; OM—outer membrane.

Figs. 2-6. These figures are unretouched photomicrographs of *Pseudochnilembus longisetus* impregnated with silver according to the Chatton-Lwoff technique.

Fig. 2. Ventral view. Note the argentophilic fibrils in the buccal cavity.

Fig. 3. Ventral view. Note the two buccal membranes, cytoproct, and the two CVP's.

Fig. 4. Ventral view of an abnormal animal showing two sets of membranes in the buccal cavity.

Fig. 5. Anterior view showing ten ciliary meridians and the buccal membranes.

Fig. 6. Posterior view showing cytoproct, two CVP's, circular polar fibril, and the polar basal body-complex.

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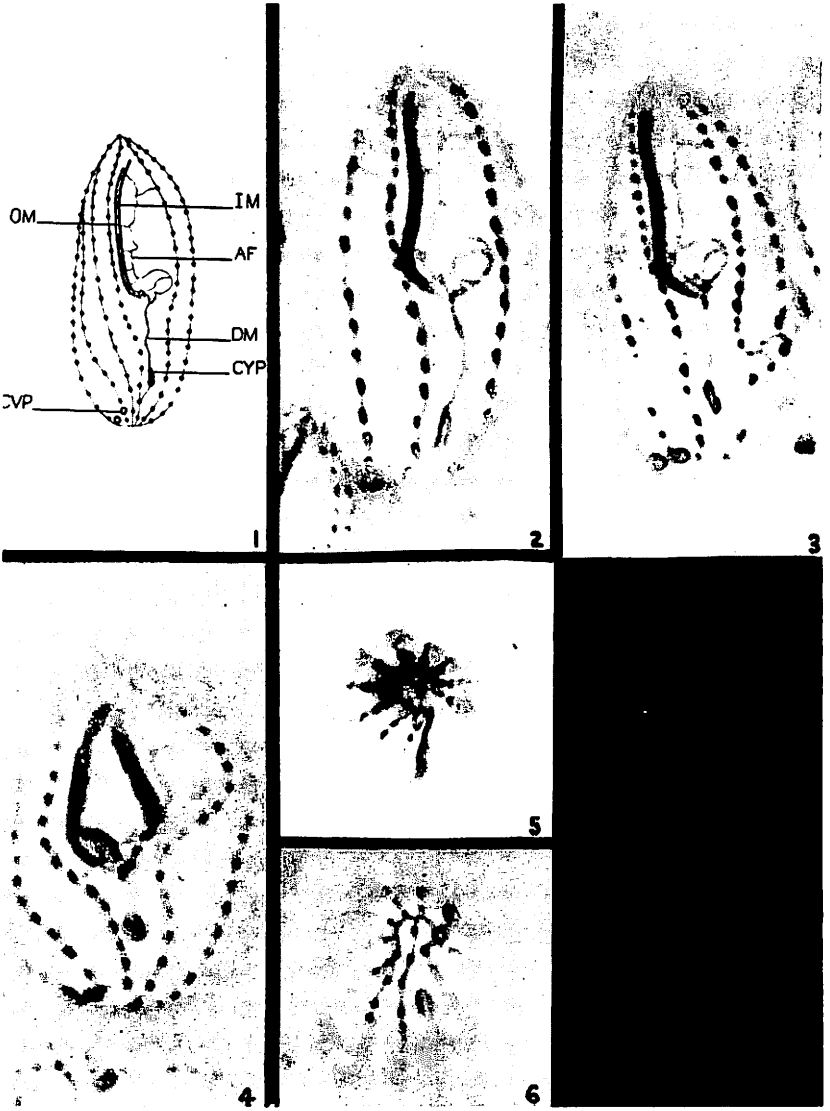

FIGURES 1-6