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past one another allows the ring to dilate as the cystocyte grows. Four short, broad leaves have a length of 1.1 μ and a width of 0.7 μ while the four long, narrow leaves have a length of 2.0 μ and a width of 0.4 μ. The mean outer diameter measures 200 Å and each is separated from its neighbor by a space 100 Å wide. Each short and long leaf contains 40 and 70 microtubules, respectively, embedded in an electron-dense matrix. The origin of this system prior to the onset of cytokinesis is consistent with the interpretation that the ring canal derives from parallel tubules in the mitotic apparatus, *i.e.*, the mid-body of the spindle, rather than arising from the cleavage furrow.

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A chemical signal attracting the flatworm Bdelloura candida *to its host,* Limulus polyphemus. ROBERT L. CHEVALIER AND H. BURR STEINBACH.

It has been known for over a century that a small triclad, *Bdelloura candida,* is present in large numbers only on the legs and gills of *Limulus polyphemus.* The present study was a preliminary attempt to discover the means by which *Bdelloura* identifies its host. Whether it is a parasite or commensal has not been established, but it was found that *Bdelloura* will move toward a current of sea water coming from a vessel containing *Limulus* but not toward water bathing *Libinia, Cancer,* or *Pagurus.* This indicates the presence of some specific chemical factor released into the water which is detected by the worms. A simple glass Y-tube choice apparatus was used in an assay of the "host-factor." When enough factor is present to be detected by the worms, they will move up the arm of its source, never entering the other arm more than once in ten trials. As soon as the concentration falls below this threshold, *Bdelloura* will not move against the current.

In attempts to characterize the factor, it was found to be stable in sea water for at least five days, and remained active even after evaporation to dryness at 45° C. Bringing the solution to a boil does not destroy all activity, although boiling for 15 minutes or more eliminates activity. The factor penetrates a dialyzing membrane, indicating a relatively low molecular weight. Establishing the source of the factor proved difficult because a damaged *Limulus* was found to release some inhibitory substance repelling *Bdelloura.* Water extracts of *Limulus* blood, isolated legs and gills, and brick-red glands proved inactive or inhibitory.

It is hoped that these preliminary results will stimulate a biochemical approach to isolating and analyzing the chemical signal(s) involved.

Experimental inhibition of ciliogenesis and ciliary regeneration in Arbacia *embryos.* FRANK M. CHILD AND MATTHEW N. APTER.

The formation of motile cilia during ciliogenesis or ciliary regeneration in *Arbacia* blastulae may be conveniently assayed by allowing a sufficient number of particles of carmine to settle upon the blastulae, and then scoring the percentage of embryos which are visibly jiggling the carmine (% CJT). Beginning about 5 hr after fertilization, the CJT rises from zero to 100% in about 45 min, in demembranated embryos at 24° C. If cilia of blastulae are amputated and allowed to regenerate, then beginning about 21 min after amputation at 24° C the CJT rises from zero to 100% in about 8 min.

Pactamycin at concentrations between 20 and 100 $\mu g \cdot ml^{-1}$ delays the scheduled time of rise of CJT during both ciliogenesis and ciliary regeneration if added sufficiently early. The amount of delay varies with the time of addition and concentration of pactamycin and with batches of embryos. Pactamycin does not paralyze motile cilia; neither does it prevent the expected onset of the rise of CJT when added a minute or two before the rise is scheduled. Hence, pactamycin does not *directly* inhibit the *assembly* of substances into forming cilia, at least within the limits of the CJT assay.

Pactamycin inhibits the rate of incorporation of ^{14}C-valine into total protein of intact