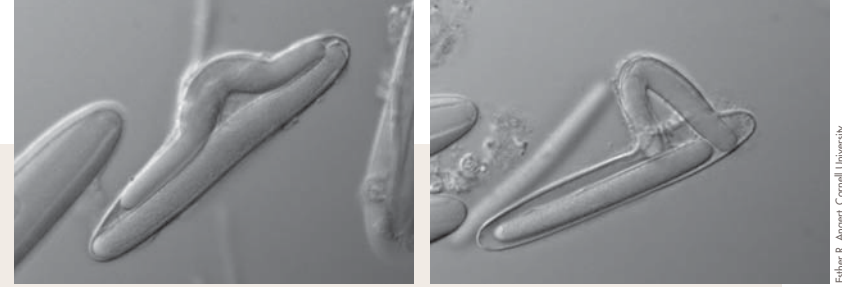


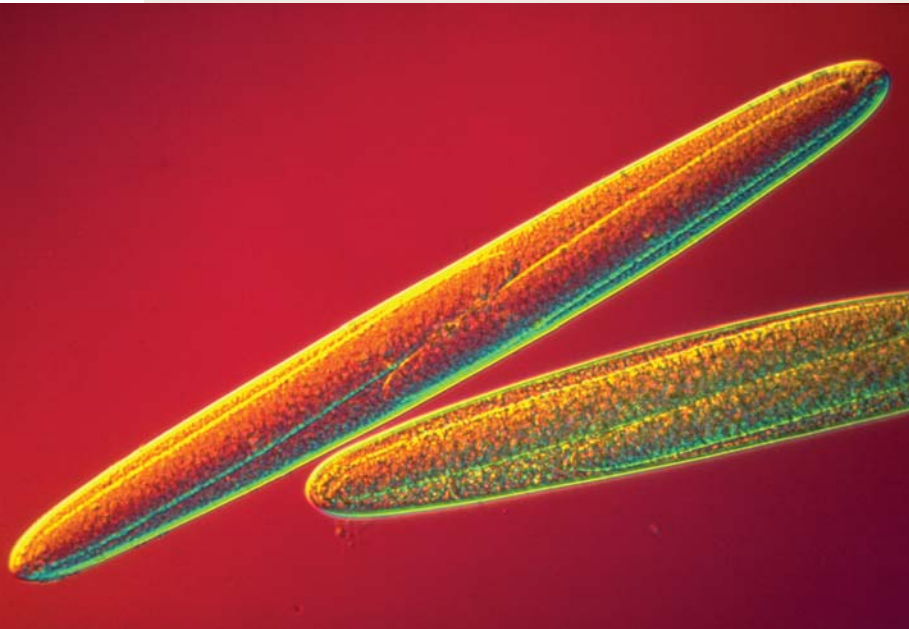
Although it is a bacterium, *Epulopiscium* reproduces by bearing multiple internal offspring. Comparative genome studies will provide insight into the development of this unusual form of reproduction.



Esther R. Angert, Cornell University

SEEKING CLUES TO THE EVOLUTIONARY LADDER IN A LARGE BACTERIUM

An *Epulopiscium* cell, approximately 0.6 mm long, is about the size of a period at the end of a sentence. The *Epulopiscium* genome could provide insight into the development of larger (eukaryotic) cells.



Esther R. Angert, Cornell University

Whole genome sequencing of prokaryotes, such as bacteria, has become important to the study of microbial species that cause diseases as well as those responsible for environmental processes such as bioremediation. Every genome that has been completed to date has provided tremendous insight into the basic biology, physiology and evolutionary history of the organism from which it was derived. Most of the bacteria that have had their genomes sequenced have been those that are easily cultivated in the laboratory, such as, *E. coli*. In a novel approach to studies of uncultivated microbial species, scientists at The Institute for Genomic Research and Cornell University collaborated to sequence the genome of the largest heterotrophic bacterium identified to date, *Epulopiscium*.

Epulopiscium spp. are among the largest of the known bacteria, with some cells reaching 600 μm in length. A distinguishing feature of this group of bacteria, which is found to live only in the digestive tract of some tropical marine fish (members of the surgeonfish family), is its unusual ability to produce multiple offspring internally. It is anticipated that through comparative genome analyses with other completely sequenced bacterial genomes it will be possible to identify the differences in this bacterium that enable the development and growth of these enormous cells. These studies will also provide insight into important rudimentary genomic changes that may have occurred early in the transition from prokaryotic cells to eukaryotic cells, such as algae and fungi.

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