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and Antarctica succeeds in conveying an important point: it was (and continues to be) worth the time, effort, and resources spent traveling to the ends of the Earth to hunt down the untold treasures that are meteorites.

References

DEVELOPMENT

The Tale Behind the Worm

Robert K. Herman

I’m one of the 2000 or so worm people who study the tiny nematode Caenorhabditis elegans. When we are asked by an outsider why we play with worms, our much-practiced answer goes something like this: In the mid-1960s, Sydney Brenner chose C. elegans as a model organism for elucidating animal development and behavior because of the roundworm’s cellular simplicity and advantages for genetic studies. The analysis of mutants helps us learn what the nonmutant versions of genes do. We know the location and lineage of every cell in an adult C. elegans as well as the wiring of all of the worm’s 302 neurons, down to the last synapse. C. elegans was the first multicellular organism to have its DNA completely sequenced (1), and many of its genes resemble those of humans and do similar jobs. The importance of such research was highlighted when Brenner, John Sulston, and Bob Horvitz were awarded the 2002 Nobel Prize in physiology or medicine for their worm work.

Such a recitation also summarizes Andrew Brown’s book, In the Beginning Was the Worm, except that Brown, an English journalist writing for a lay audience, gives life to the story. In addition to filling in the details on the why and how of the science, he helps us understand the lives and motivations of the early worm people, who worked in Cambridge, England.

I know all of the researchers described in the book, and I found Brown’s descriptions to be right on. Of Brenner, he observes, “When he starts to talk you are swept along in the icy, buffetting current of ideas, shocked and exhilarated to the point of exhaustion—and still he goes on talking. Profundities, puns, anecdotes and opinions all rush and jumble together.” It was Brenner’s spellbinding personality and force of argument that recruited the first generation of worm people, who were all very smart and hardworking but often untrained in biology.

John White, an electronics engineer with expertise in computer graphics, was recruited to spearhead the reconstruction of the nervous system from tens of thousands of electron micrographs of ordered thin sections. Brown’s description of White as resembling Leonard Rossiter may be lost on American readers (the late actor Rossiter played the lead in the late-1970s BBC comedy “The Fall and Rise of Reginald Perrin,” which later appeared on American public television). Brown sketches the project White directed, including the important contributions made by two technicians, that led to the description of the “mind of a worm,” which was published as a 340-page paper (2) twenty years after the worm project was started.

Sulston, another early recruit, was originally an organic chemist. He achieved heroic status in the worm community by tracing out—after the efforts of others over the years had stalled—the complete embryonic cell lineage of C. elegans by watching the cells divide under a light microscope (3). Sulston goes on for long, difficult projects. His second big project, a collaboration with Alan Coulson and Bob Waterston, sought to order a large collection of fragments of worm DNA according to their positions on the chromosomes. The resulting physical map of the genome (4) greatly aided many people in the worm community—by this time growing rapidly all over the world but particularly in the United States—to find the DNA sequences of genes they were interested in.

In addition, the physical map of the genome provided the perfect scaffold for whole-genome DNA sequencing. Sulston and Waterston directed the complete sequencing of the C. elegans genome and went on to help lead the international human genome project. [Sulston has teamed with science writer Georgina Ferry to provide a candid, informative account of efforts to sequence the human genome, a story that involved many people, lots of money, and a race against the private company Celera (4).]

References
Treasure Hunting to the Ends of the Earth
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