

Learning Biology Through Science Fiction

Sophomore Zak Rose steps to the front of the Kenyon College lecture hall to present his Biology 103 project, a unique binary taxonomy key for classifying living organisms by primary and secondary characteristics. “Primary characteristic: limbs or no limbs,” he begins. “In other words, humanoid or blob. Secondary characteristics: plant, animal or plant and animal....”

According to the syllabus, Biology 103 is taught by Joan Slonczewski, a “visiting extraterrestrial,” and it is “the only biology course on Earth investigated by the K-Files.” Previous instructors include “Xenon of Castor 6, from the Pangalactic Bureau of Investigation (PBI), and Yyrda of Betelgeuse, visiting professor of extra-Betelgean studies.”

This is a biology class? It’s “Biology in Science Fiction,” a course designed by Slonczewski, a molecular biology professor and HHMI undergraduate program director at Kenyon, to capture the interest of nonscience majors at this small liberal arts college in Ohio. The course’s reading list, which is as startling as the syllabus, includes *Galapagos*, by Kurt Vonnegut; *Dune*, by Frank Herbert; *Jurassic Park*, by Michael Crichton; and “The Trouble with Tribbles” episode from *Star Trek*. But the issues are real

and solidly rooted in biology: How do living organisms grow and reproduce? What type of planet is needed for living things and ecosystems to evolve? How does the science of genetics create and re-create us? What forces shape the evolution of species? Could human beings evolve into something very different?

Rose based his student project on *Barlowe’s Guide to Extraterrestrials: Great Aliens from Science Fiction Literature*, which is described by one Web-based bookseller as “an illustrated field guide to extraterrestrials.” By creating a taxonomy key to Barlowe’s aliens, Rose helps his 60 fellow students learn a basic principle of biological classification: the technique of dividing living things into two categories, then dividing each of those categories into progressively more specific categories. “This is the most fun homework assignment I’ve ever done,” he says.

Slonczewski herself is a published science fiction novelist. Her latest book, *Brain Plague*, has been described by *Publisher’s Weekly* as “a story that is not only exciting but also filled with memorable characters: human, alien and sentient machine.” Away from the world of science fiction, Slonczewski studies bacterial genetics, specifically the molecular biology of stress response in *Escherichia coli*. Under her direction, Kenyon’s HHMI program supports undergraduate research and provides state-of-the-art equipment for science majors and laboratory courses.

Her science fiction course focuses on quality literature, although Slonczewski says she also includes examples of inaccurate science from “bad science fiction” books, movies, television shows and tabloid publications to teach her

Kenyon students explore biological principles by studying creatures in speculative fiction, such as this alien “shepherd” from Slonczewski’s novel, The Wall Around Eden.



Kenyon College biology professor Joan Slonczewski, a published novelist, uses science fiction to teach biology to nonscience majors.

students to distinguish real science from pseudoscience. Even the best science fiction’s biology sometimes goes awry, she says. In Frank Herbert’s *Dune*, for example, explorers landing on another planet immediately start eating some of the plants they find there. Slonczewski’s own novel *The Children Star* presents a scenario that planetary explorers would be more likely to encounter: a biosphere that has such alien chemistry that local biochemicals are indigestible or even toxic to humans.

Who takes “Biology in Science Fiction”? Hilary Hodge, a Spanish major, took it on a whim. “I haven’t read much science fiction, but I do watch *Sliders* and *The X-Files*,” she says. Adds Tim Lloyd, a political science major, “We get to read books we actually enjoy.” The course is by no means an easy alternative to “real” courses, he stresses. “We’re reading more than 300 pages a week, a lot more reading than I do for any of my other classes,” Lloyd says.

Sometimes, the students’ close encounters with biology even motivate a major change of academic direction. Toby Rand, a student artist who created the “portrait” of Yyrda of Betelgeuse on the course’s Web site, decided to major in biology after taking the class.

The Web site (www2.kenyon.edu/depts/biology/slonc/bio3/bio03syl.htm) also contains the course syllabus and reading list; sample student projects; and K-Files (K for Kenyon, of course)—student-written “investigations” patterned after the popular end-of-alphabet television show. **H**

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