EDUCATION

The Stringy Cosmos

According to string theory, fundamental particles such as electrons and quarks are concealing something. They may actually be composed of unobservable, shimmying loops, or strings, the vibrations of which dictate the particle’s character. If that sounds fantastic, drop by The Official String Theory Web Site for a cheeky tutorial on string theory, the framework that many physicists believe will allow them to tie down a unifying “theory of everything.”

Written by a Caltech Ph.D., the tutorial explains strings at two levels of difficulty: advanced for the calculus-savvy and basic for those stymied by the first chapter of Stephen Hawking’s A Brief History of Time. In the introduction, you’ll learn how these quivering filaments may reconcile the seemingly irreconcilable theories of quantum mechanics and general relativity and why we can’t detect them even with mammoth particle accelerators (strings are too small). Other sections explain how string theory ties in with cosmology and black holes. To learn more from the experts themselves, try the audio files of interviews with string savants such as Brian Greene of Columbia University, who’s billed as “string theory’s answer to John Cusack.”

www.superstringtheory.com

DATABASE

Taxonomists’ Companion

Though it’s only one-tenth complete, the World Biodiversity Database already boasts entries for some 200,000 species of plants, fungi, animals, bacteria, and protists. Compiled by the Amsterdam-based Expert Center for Taxonomic Identification, the database draws from 39 taxonomic surveys and projects on groups such as marine mammals, sea cucumbers, and the orchids of New Guinea.

EXHIBITS

Making Sense of Viruses

One hundred years ago, scientists knew next to nothing about viruses, whether killer flu strains or the less fearsome tomato bushy stunt virus (left), a scourge of the garden. Today we can snap their mugshots, take them apart like old cars, and reengineer their components to make more effective vaccines or tools for molecular biology.

Learn how the field advanced so far, so fast at Viruses: From Structure to Biology, which tracks the evolution of structural virology from the first crystallization of tobacco mosaic virus in 1935 to modern efforts to banish polio. Six chapters relate key milestones, such as deciphering the structure of hemagglutinin, one of the proteins jutting from the surface of the influenza virus. And in 11 interviews, you can read in their own words the stories of pioneers such as Stephen Harrison, who in 1978 was the first to determine the atomic structure of a virus using x-ray diffraction. Molecular biologist and site editor Sondra Schlesinger of Washington University in St. Louis hopes the history will help future virologists appreciate the difficulties faced by lab researchers just a few decades ago. “It’s amazing for [students] to see how hard it was to do this work.”

medicine.wustl.edu/~virology/index.htm

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IMAGES: Come Fly With Me

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