The Crustacean Cure

Ever since Alexander Fleming spied an errant mold growing on a culture dish, most antibiotics have come from fungi and bacteria. A new generation of the drugs could hail from creatures best known as a tasty dish: shrimp, which battle microbial interlopers using peptides known as penaeidins.

Immunologists, drug designers, and other researchers can learn more about these molecules at PenBase, sponsored by an international team of scientists.

A database lists amino acid and DNA sequences for 28 of the bug-killing compounds, more than half of which are products of the Pacific white shrimp (*Litopenaeus vannamei*). The site also serves up a nomenclature guide, a bibliography, and a roster of PCR primers for duplicating penaeidin genes.

> [www.penbase.immunaqua.com](http://www.penbase.immunaqua.com)

**EDUCATION**

**Stem Cell Basics**

How does therapeutic cloning differ from reproductive cloning? What distinguishes the stem cells in umbilical cord blood from embryonic stem cells? Students tussling with such questions can find help at a new primer from the University of Michigan, Ann Arbor. The site’s centerpiece is a six-part multimedia tutorial that explores topics including the different types of stem cells and their potential applications in drug testing. Visitors will learn, for example, that blood-forming stem cells in the umbilical cord have begun to specialize, so they can’t produce the same assortment of tissues as embryonic stem cells can.

> [www.lifesciences.umich.edu/index.html](http://www.lifesciences.umich.edu/index.html)

**DATABASE**

**The Crustacean Cure**

El Niño and La Niña periodically disrupt wind patterns and ocean temperatures, bringing deluges to some areas of the world and drought to others. Whether you’re after background information on the climate phenomena or the latest data on warm-water volume in the tropical Pacific Ocean, zoom over to the El Niño Theme Page from the U.S. National Oceanic and Atmospheric Administration (NOAA).

El Niño occurs when warm water that normally pools in the western Pacific (top) sloshes toward South America (bottom). By contrast, cool water predominates along the equator during La Niña. The Basics section explains these climatic extremes with primers, animations, and other resources. Visitors will also find the latest forecast—we’re currently in a La Niña episode that scientists predict will continue for the next 3 to 6 months. Researchers can trawl numerous data sets from NOAA and other sources, which record variables such as atmospheric water vapor and sea level.

> [www.pmel.noaa.gov/tao/elnino/nino-home.html](http://www.pmel.noaa.gov/tao/elnino/nino-home.html)

**EXHIBITS**

**Electrification Project**

This centimeter-long lump of solder and wires (above) is one of the original integrated circuits, built by Jack Kilby of Texas Instruments in 1958. To learn more about the history of the shrinking microchip and other developments that electrified our world, plug into the IEEE Virtual Museum from the Institute of Electrical and Electronics Engineers. Subjects of the nine exhibits include Thomas Edison and nanotechnology. A presentation on electronic music resurrects pop songs you tried hard to forget to demonstrate instruments such as the Moog synthesizer. It meshed tone-producing circuits, filters, and other modules so that for the first time musicians could create new sounds. Visitors can divert to minibiographies of figures such as integrated circuit co-inventor Robert Noyce of Fairchild Semiconductor and backgrounders on buckyballs, vacuum tubes, and other technologies.