

edited by Mitch Leslie

IMAGES

Electron Visions

Under the electron microscope, the surface of a cat's tongue (above) resembles a doormat, with rows of the backward-pointing tines, known as papillae, that come in handy for primping the creature's fur. The micro world comes into focus at this Web gallery from microscopist and professional photographer Dennis Kunkel of Kailua, Hawaii. The more than 1500 colored and black-and-white electron micrographs expose a flea's face, the wrinkles on the surface of a stem cell, the bacteria speckling a patch of human skin, and many more hidden details. Teachers and researchers can use the images for free by contacting Kunkel.

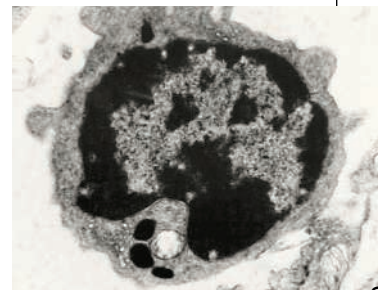
education.denniskunkel.com

WEB TEXT

On the Defensive

Signs of our protracted struggle against pathogens show up in our genome—up to 10% of our genes may help build or operate body defenses. Learn more about the molecular and genetic underpinnings of the immune system in this primer written by medical student Daniele Focosi of the International Centre for Genetic Engineering and Biotechnology in Trieste, Italy. Packed with links and original pages, *Molecular Immunology* is an outline-style guide aimed at upper-division college students and above. Readers can start by touring our border defenses, learning about, say, the 20 varieties of gooey mucin molecules that trap pathogens trying to sneak in through the nose, mouth, and other entryways. Other topics include the origin of infection-fighting cells such as this T cell (above) and the immune systems of fruit flies and other model organisms.

www.mi.interhealth.info



DATABASE

Who's Your (Chemistry) Daddy?

Much like genealogy buffs piecing together their ancestry, science historians compile intellectual genealogies that unravel researchers' influences and impact by mapping out their mentors and students. This site reconstructs the intellectual family trees of more than 1500 chemists from the 15th century through the late 20th century. For example, a line runs from chemist Larry Faulkner, who is now the president of the University of Texas, Austin, to the Italian scholar Nicolo da Lonigo (1428–1524). Vera Mainz and Gregory Girolami of the University of Illinois, Urbana-Champaign, compiled the database by working backward from faculty lists for 10 major universities, including the Massachusetts Institute of Technology, the University of California, Berkeley, and their own. Click on each chemist to download a PDF with biographical details, a career synopsis, and references.

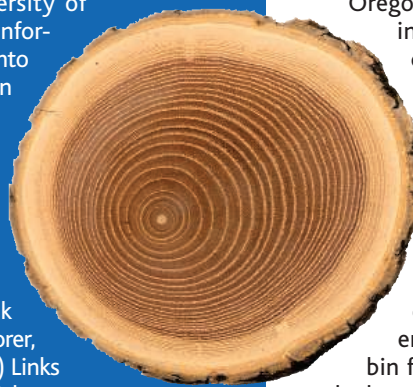
www.scs.uiuc.edu/~mainzv/Web_Genealogy

COMMUNITY SITE

Beneath the Bark

By parsing the rings in this red oak trunk (*Quercus rubra*; below), a sharp-eyed dendrochronologist can read the tree's life story, deducing past fires, droughts, and other growth-changing events. These wooden records can help researchers track global warming, investigate the collapse of ancient civilizations, and more. Featuring everything from a jobs board to a gallery, the Ultimate Tree Ring Pages from dendrochronologist Henri Grissino-Mayer of the University of Tennessee, Knoxville, brims with information for professionals and initiates into the fellowship of the rings. Visitors can download a slew of software for analyzing tree-ring records and browse a giant bibliography with more than 10,000 listings stretching back to 1737. A list of recommended supplies explains why even pacifist dendrochronologists need gun-cleaning kits. (They're ideal for dislodging gunk from the long tube of an increment borer, the standard tool for removing cores.) Links include tree-ring databases and a tutorial on cross-dating, the technique for matching sequences from different trees to ascribe a year to each ring.

web.utk.edu/%7Egrissino/default.html



in the 1960s, when Pauling campaigned for laws regulating childbearing by sickle cell disease carriers and urged that they be tattooed on the forehead for easy recognition.

osulibrary.oregonstate.edu/specialcollections/coll/pauling/blood/index.html

EXHIBITS

Sickle Cell Mystery

When he wasn't probing the secrets of chemical bonds or championing vitamin C, chemist Linus Pauling was often puzzling over hemoglobin. "It's in the Blood!" from Oregon State University in Corvallis chronicles the chemist's more-than-60-year fascination with the blood's oxygen-hauling molecule. The high point came in 1949, when Pauling and his colleagues discovered that hemoglobin from patients with the hereditary illness sickle cell anemia behaves differently than hemoglobin from healthy people does, inaugurating the concept of a molecular disease. The low point came

Send site suggestions to netwatch@aaas.org. Archive: www.sciencemag.org/netwatch