



COMMUNITY SITE

Gene Chip Central

Microarrays—chips dotted with DNA or proteins—have become indispensable in molecular biology for tracking what goes on inside cells. A helpful site for microarray users is BioChipNet, maintained by researchers at the University of Tübingen, Germany. Looking for studies that deployed gene chips? Check the literature section, which trawls PubMed for the abstracts. Another section profiles companies that sell gene chips, machines for making them, and other lab staples. The glossary helps you bone up on the field's lingo. BioChipNet also posts announcements for meetings and new products, along with links to review articles, some available as full text.

www.biochipnet.de

FUN

Yeeeeeeeeer Out!

With baseball season less than a week old, it's a little early to give up on the Boston Red Sox. But if you want to know when your favorite team is mathematically eliminated from playoff contention—or when it's clinched a postseason spot—keep tabs on the Baseball Playoff Races Web site from the Remote Interactive Optimization Testbed (RIOT) project at the University of California, Berkeley. Since 1996, the RIOT group has used algorithms from operations research to determine when teams have no chance of catching up (or being caught).

The calculation takes into account more than won-loss records. RIOT applies techniques from optimization theory to find the best and worst scenarios for each team, given the combinations possible from the remaining schedule. In 1996, for example, the San Francisco Giants (59–81) trailed the Los Angeles Dodgers (78–63) by 19 games with 22 left to play. They seemed to have a slim chance, but in fact they were already eliminated. Los Angeles was scheduled to play seven more games against the San Diego Padres (78–65). One of the teams would win at least four of those games and finish with a minimum of 82 wins, one more than the Giants could conceivably muster.



Doing such calculations across an entire league could make for a snarly supercomputer problem; the algorithm uses linear programming to cut through the complications.

riot.ieor.berkeley.edu/~baseball

RESOURCE

Some Like It Hot, or Cold, or Acidic

This scalding pool in Yellowstone National Park might seem too hostile for life, but rugged microbes known as archaea find it comfy. ArchaeaWeb, curated by microbial genomicist Neil Saunders of the University of New South Wales in Australia, brims with genetic and biochemical information on archaea and extremophiles: bugs that thrive in scorching heat, fierce cold, or other seemingly inhospitable conditions.

To help you follow the latest developments, the site announces hot new papers and freshly completed archaea genomes. You can also search genome sequences from the site. A database details the properties of more than 100 "cold enzymes" that work at the frigid temperatures some of these microbes relish. For a change of pace, check out the links to sites on exobiology, or the study of possible life beyond Earth. If organisms do exist on places like Jupiter's ice-coated moon Europa, some scientists speculate that they might resemble earthly extremophiles.

www.archaea.unsw.edu.au

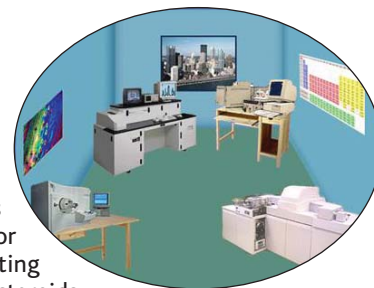
EDUCATION

Mass Spec Without the Wait

The chemistry technique known as mass spectrometry is useful for everything from busting athletes who take illicit steroids to pinpointing rocks likely to harbor oil.

However, universities often can't afford the latest machines, or if they can, give priority use to faculty. Now undergrads can absorb the principles of this powerful tool at the Virtual Mass Spectrometry Laboratory, hosted by Carnegie Mellon University in Pittsburgh. The expanding primer teaches with four realistic scenarios, including screening hair samples for traces of cocaine and comparing proteins from different species. The problems allow students to explore a variety of approaches—using different types of mass spectrometers, for example, or altering how they prepare the specimens—so they can make their mistakes before they work with a real instrument.

mass-spec.chem.cmu.edu/VMSL



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