



SMART FLUID ORTHOTICS
Rehab goes mobile

"Smart fluids" transform a simple knee brace into a computer-operated resistance device for rehabilitation. The 10-pound brace, being developed by roboticist Constantinos Mavroidis of Northeastern University, is outfitted with a pair of actuators containing a special liquid called "smart fluids," which change viscosity when subjected to an electrical field. Higher viscosity creates more resistance, and vice versa, as the wearer flexes his or her knee to exercise leg muscles. An external computer regulates the voltage, but in future models, the computer could be internal. Although these wearable rehab machines won't be commercially available for at least five years, eventually they could replace today's bulky physical-therapy equipment, enabling therapists to fine-tune workouts remotely while injured patients exercise at home. / robots.neu.edu



SAMPLE

ROCHE AMPLICHIP CYP450 TEST

The first gene chip for everyday medicine

This thumbnail-size glass wafer will help doctors predict how patients might respond to thousands of medications. With just a drop of blood, the CYP450 AmpliChip scans for two enzyme-producing genes—2D6 and 2C19—that help metabolize up to 25 percent of all prescription drugs, including those for heart disease and depression. DNA fragments implanted on the chip bind to variations in the two genes and indicate which of them will cause the body to process a drug too fast, too slow or not at all. With FDA approval likely in 2005, this is a harbinger for truly personalized medicine. / roche-diagnostics.com



AVASTIN

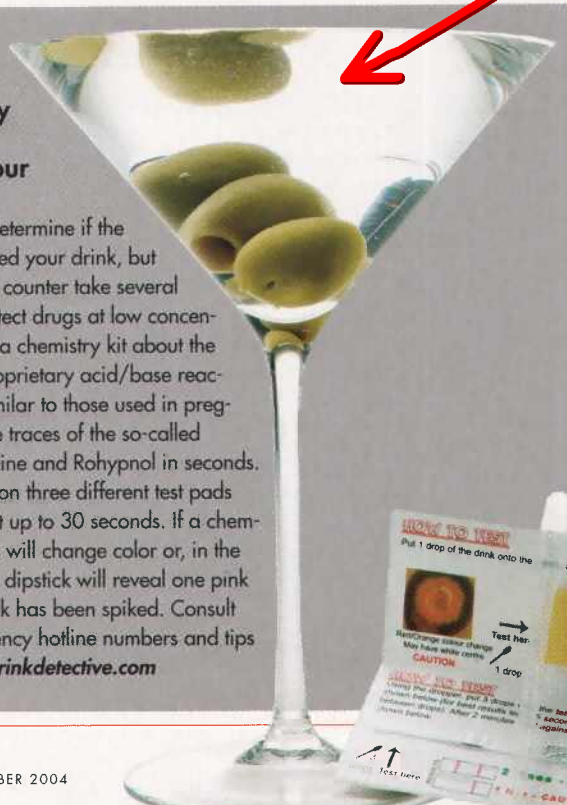
First tumor-starving drug approved for cancer treatment

Most cancer drugs work by brute force: Chemotherapy sears tumor cells. Avastin (bevacizumab), the first in a new class of drugs known as angiogenesis inhibitors, takes a more strategic approach. FDA-approved in February, Avastin shrinks tumors by blocking proteins that stimulate blood vessel growth. So far, it's been approved in conjunction with chemotherapy for patients with advanced colon cancer. Avastin is not a cure, but it's a new weapon for the 100,000 people in the U.S. diagnosed with colon cancer each year. / avastin.com

DRINK DETECTIVE

This barstool chemistry kit is the quickest way to tell whether your cocktail's been spiked

There are numerous tests to determine if the shady guy down the bar spiked your drink, but the few that are sold over the counter take several minutes to work and can't detect drugs at low concentrations. The Drink Detective, a chemistry kit about the size of a raffle ticket, uses proprietary acid/base reactions and an antibody test similar to those used in pregnancy kits to find even minute traces of the so-called date-rape drugs GHB, Ketamine and Rohypnol in seconds. Place a few drops of a drink on three different test pads (one for each drug), and wait up to 30 seconds. If a chemical reaction occurs, the pads will change color or, in the case of the Rohypnol test, the dipstick will reveal one pink stripe, signifying that the drink has been spiked. Consult the back of the kit for emergency hotline numbers and tips on what to do next. / \$5 / drinkdetective.com



RIMONABANT

Lose weight! Stop smoking! Control cholesterol!

It may sound like Internet spam, but the benefits of this weight-loss drug, now in the final stages of clinical testing, are legit. In one recent study, a 20-milligram daily dose helped 50 percent of 500 obese volunteers shed an average of 20 pounds and then keep the weight off for one year. In other studies, the same dose doubled the odds of quitting smoking and increased levels of good (HDL) cholesterol, which no other weight-loss aid can claim. The breakthrough? It's the first drug to block a chemical receptor called cannabinoid-1, the culprit behind marijuana-induced munchies and other cravings that drive us to overindulge. Rimonabant maker Sanofi-Aventis expects it to be available by prescription within two years. / sanofi-synthelabo.us

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