Heel-density measurement detects osteoporosis...

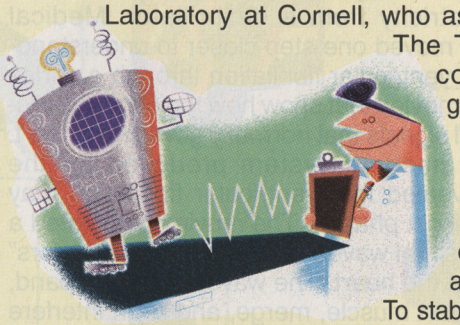
Osteoporosis afflicts an estimated 10 million Americans, mostly elderly women. Some 189 million others have low bone mass. All are at risk for severe injury, such as breaking a hip, as well as chronic pain and stooped posture as bones in the spine and other areas fracture. However, tests for detecting this crippling disease earlier are getting easier and less expensive, thanks to a system developed by Hologic Inc. (Waltham, MA). Called Sahara, the system is said to be the first osteoporosis test that does not use x-rays. Instead, the device relies on ultrasound to assess a woman's bones by measuring the density of her heel. Slip the foot into a small box about the size of a laser printer and the sound waves painlessly penetrate for a mere 10 secs. Bone density is determined by how easily and quickly the sound waves move. The system automatically analyzes the results, and, a minute later, spits out a slip of paper with the bone measurement. The Sahara costs $30,000, and Hologic estimates that patients will pay about $40 for the test. In contrast, today's osteoporosis tests are performed by large, specialized x-ray machines that typically measure a patient's hip or spine. They cost $70,000 to $150,000, and patients are charged $127 for the leading x-ray test, according to Eric von Stetten, Hologic's director of ultrasound technologies. FAX (781) 890-8031 or Circle 571.

...while study shows you can 'just say NO' to bone loss

When Mae West pronounced that too much of a good thing sometimes is a good thing, she probably didn't have the versatile molecule nitric oxide (NO) in mind. However, biologists at Washington University (St. Louis) have shown that a high concentration of NO in osteoclast bone cells might keep them from eating away too much bone, preventing bone loss associated with such diseases as osteoporosis. A team led by Philip Osdoby, a professor of biology, introduced an antibody into the osteoclasts that halted bone resorption, a process where bone is gnawed away by osteoclasts that are too numerous or too active. Biochemical tests showed that, after adding the antibody, an increase in NO occurred, followed by decreases in bone resorption. Osdoby believes that NO acts as a signal to turn the osteoclast off. "With a better understanding of how NO is regulated in osteoclasts, we may be able to develop new strategies to prevent bone loss," Osdoby adds. E-mail Susan_Killenberg@aismail.wustl.edu or Circle 572.

Headless robot provides insights into how humans walk

It doesn't have a brain or a heart, and its walk is a little like the scarecrow's. But a little, headless, armless, trunkless, two-legged robot developed at Cornell University can walk, wobble, hobble, limp, stride, and stagger—even though it can't stand still without falling over. Made of plastic Tinkertoy parts and a few odds and ends, the robot remains stable while in motion, giving mechanical engineers new insights about how humans walk. Michael J. Coleman, a lecturer in mechanical engineering at Cornell, says the little worker, by using gravity on a gentle slope, "performs repeatable, chattering, human-like steps without falling over." Coleman stumbled on the walker's design while preparing for his doctoral defense. "It is one of the few devices of any kind that is dynamically stable near a statically unstable configuration and doesn't have fast spinning parts," says Andy Ruina, director of the Human Power, Biomechanics and Robotics Laboratory at Cornell, who assisted Coleman.



The Tinkertoy device consists of two green rod legs bottomed with rounded yellow feet into a red crossbar hip, along with several orange washers and green hinges. To stabilize the toy, Ruina added low-lying red and yellow outriggers weighted with steel nuts off each foot to lower the centers of mass. He further fine-tuned the toy by rounding out the flat spots of the Tinkertoy wheels with flexible brass strips. Soon, the hand-sized gadget was tottering down a gentle slope, tilting from side to side, but steadily walking on and on and on. E-mail SSL4@cornell.edu or Circle 573.

Petri test uncovers potentially deadly E. coli bacteria

Strains of E. coli and salmonella kill about 1,250 Americans and infect more than 2 million others each year. As a result, government researchers have expanded their testing program for slaughter houses, with the focus on methods to speed tests for the deadly bacteria. They may not have to look beyond a new testing device developed at Springfield (MA) College. Most existing food tests yield initial results in two to three days, sometimes letting bad meat reach consumers, threaten health, and force recalls. The Springfield College test, according to inventors Chun-Kwun Wun, a microbiologist, and Frank J. Torre, a chemist, can check for E. coli and salmonella within 8 to 24 hrs. The core of the test, performed in a specially designed petri dish, contains chemicals that encourage the bacteria to migrate toward a serum containing antibodies for the strain of microbe under test. When bacteria and antiserum collide, they clump together to form a visible, cream-colored line—the indicator of a positive result. The inventors say the test will cost con-