



Views You Can Use

Vol. VI No. 7

February 2007

One of the biggest stories so far in the 21st century, which will continue to make headlines across the globe, is the rise of China as an economic power and its future prospects, including its relationship with the United States. You will hear much more about this critical topic and what it means for education in my keynote at the Model Schools Conference on June 30-July 3 in Washington, D.C. I hope to see you there.

Global Economic Trends

China: Taking U.S. Trash to Market

In its evolving economic relationship with the U.S., China has made a billion-dollar business out of recycling American garbage, from paper to our soda cans and plastics. After airplanes and high-tech semiconductors, trash for recycling is our third largest export to China. Some Chinese companies receive up to 90% of their paper from the U.S. These exported recyclables have an estimated value of \$1.2 billion, up from \$194 million six years ago, according to the U.S. Commerce Department.

Source: www.philly.com/mld/inquirer/business/15480244.htm
www.cbsnews.com/stories/2003/12/09/eveningnews/main587620.shtml

Biotechnology Trends

Reaching Deeper to Diagnose and Treat Disease

Researchers at Monash University in Australia are developing a microrobot that will be able to swim through arteries and the digestive system to detect disease. The device, 250 microns or the width of two human hairs, could extend a doctor's ability to treat patients using noninvasive or minimally invasive procedures and may allow patients to avoid surgery altogether. The microrobot, small enough to pass through the heart and other organs, could go where catheters cannot reach such as certain areas inside the brain. The device likely would be injected into an artery or a vein and be able to move through the body and pick up a few cells as part of a biopsy procedure or deliver medical glue to the site of a damaged cranial artery. Guided by remote control, the device would be transported via a propulsion system based on the E.coli bacterium and a built-in micromotor.

Source: www.wired.com/news/technology/medtech/0,72448-0.html?tw=rss.index

Sequencing the Human Genome in Less than a Day

Researchers at General Electric's Global Research Center in New York are developing a technology to sequence the human genome in less than a day for under \$1,000. The technology

could revolutionize the way that biomedical research and the practice of medicine are done. Scientists believe that DNA sequencing is a key component of identifying causes of such illnesses as cardiovascular disease, diabetes, arthritis, and cancers. DNA sequencing costs have fallen more than 50-fold over the past decade, in large part because of tools, technologies, and process improvements developed as part of the Human Genome Project completed in 2003. However, it still costs around \$10 million to sequence the amount of DNA found in the genomes of humans and other mammals.

Source: www.ge.com/research/grc_7_1_17.html

Human Stem Cells Found in Amniotic Fluid

Amid the controversy over embryonic stem-cell research in the U.S., researchers have discovered stem cells that are nearly as “pluripotent,” or adaptable, in the amniotic fluid that protects the fetus in the womb. The cells already have been used to create muscle, bone, fat, blood vessels, nerve, and liver cells in the laboratory. The scientists hope that the cells will provide valuable resources for tissue repair and engineered organs. Embryonic stem cells are considered the most malleable of the various types of stem cells, meaning they potentially can be formed into any tissue or organ. Those derived from amniotic fluid are nearly as good and easier to grow in the laboratory, researchers say. Adult stem cells, found in the tissue and blood of fetuses, babies, and adults, already are partially differentiated and therefore less adaptable.

Source: http://ca.news.yahoo.com/s/reuters/070107/us/usreport_stemcells_fluid_dc_1

Technology in Education

Combining Technology and Culture to Engage Students in Math

Ron Eglash, associate professor at Rensselaer Polytechnic Institute in New York, has uncovered mathematics embedded in the designs of various aspects of native and contemporary culture, from traditional beadwork and basket weaving to modern hairstyles and music. He has used the discovery to develop a series of interactive Web-based teaching tools that are capturing the interest of students in math classes across the country. New research reported in the June 2006 issue of *American Anthropologist* suggests that use of what Eglash has termed “culturally situated design tools” (CSDT) can raise math achievement and may improve technological-based career aspirations for minority students in particular. Moreover, two qualitative evaluations conducted by teachers of predominately Latin American students found a statistically significant improvement in the mathematics performance scores of students using the CSDTs, compared to the achievement of students in classes in which the tools were not used as a teaching aid. Eglash’s teaching tools are available free at www.rpi.edu/~eglash/csdt.html.

Source: <http://news.rpi.edu/update.do>

Easing Online DVD Restrictions

Hollywood Studios and Sonic Solutions have approved a new technology and licensing approach that would make it easier for consumers to burn movies purchased digitally over the Internet onto a DVD that will play everywhere. The deal could make it easier for educators to buy movies online and then show them in their classrooms. Consumers still would be subject to restrictions.

For instance, using the copy-protection technology in Microsoft's Windows Media system, a service could specify that a given title can be burned no more than two times.

Source: www.eschoolnews.com/news/showstoryts.cfm?Articleid=6796

Nanotechnology

Mass Producing Nanowires as Biosensors

Using conventional tools and resources, researchers at Yale University have built nanowires that have demonstrated an unprecedented ability to detect antibodies and other biomolecules. Because the nanowires have been built using the tried-and-true process of wet-etch lithography and a familiar material — silicon — they could be mass produced in the near future and easily incorporated as highly efficient biosensors in hand-held and other electronic devices, setting the stage for a new era of biological diagnostic applications.

The researchers carved the nanowires from a wafer of insulating material topped with a thin layer of silicon. They used standard techniques to build a stencil, which they placed on the wafer. They then poured a solvent on top that etched away the exposed silicon. Normally, such a process would leave relatively thick wires. To reduce the wires to nanosize, they removed the stencil and let the etching continue.

Source: www.sciam.com/article.cfm?articleid=849171DA-E7F2-99DF-3B85FCD830D501C3

By the Numbers — Asians and Other Minorities on Campus

- Across the U.S., Asian enrollment in postsecondary schools is at an all-time high. Asian Americans make up less than 5% of the U.S. population, but typically make up 10-30% of students at some of the nation's best colleges.
- At the University of California, Asians make up the largest single ethnic group, 37%, at its nine undergraduate campuses.
- For the last two years, the percentage of Asian freshmen at the University of California, Berkeley, has been at a record high of 46%.
- At Massachusetts Institute of Technology, Asians make up 27% of the undergraduate population.
- At Stanford and Carnegie Mellon universities, Asians make up 24% of the undergraduate population.
- At Yale, that number is 14% and at Princeton, 13%.
- About 95% of Asian freshmen come from a family in which one or both parents were born outside the U.S.
- By comparison, there were only 100 black freshmen in a class of 4,809 at the University of California at Los Angeles, the lowest number in more than three decades.
- At Berkeley, 3.6% of freshmen are black, barely equal to the statewide proportion.