

Technology Digest

June 2006

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Bisphenol A, found in baby bottles and microwave cookware, permanently altered genes in newborn lab rats. Linking prostate cancer to Bisphenol A, scientists have found that exposure to a chemical that leaks from plastic causes genetic changes in animals' developing prostate glands that are precursors of the most common form of cancer in males. Bisphenol A is used in the manufacture of hard, polycarbonate plastic for baby bottles, microwave cookware and other consumer goods, and it has been detected in nearly every human body tested. **(LA Times 1-Jun-06)**

Microbiologist Lynne Mackaskie and her colleagues at the University of Birmingham in the UK have powered a fuel cell by feeding E. coli bacteria chocolate-factory waste and then using the hydrogen produced by the bacteria to power a fuel cell, which generated enough electricity to drive a small fan (Biochemical Society Transactions, vol 33, p 76). **(New Scientist 1-Jun-06)**

Flash memory is replacing hard disks in new portable computer models by Sony and Samsung shipping this summer. Both companies will use NAND-type flash memory chips and say the quicker read-write speed of flash memory will make start-up as well as other operations faster. Other advantages over hard disks include greater shock resistance and less power consumption. Sony's mobile computer, equipped with 16 gigabytes of flash memory, will be about palm-top size. Samsung's lineup consists of a standard notebook computer and a lighter portable computer, which both come with 32 GB of flash memory. **(FinanceAsia 2-Jun-06)**

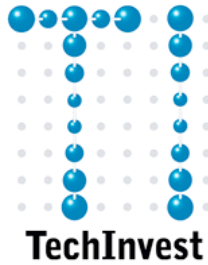
LCD TVs will be the most popular kind of TVs in the world by 2009, according to iSuppli. This year, shipments of these TVs will rise by 74 percent to 46.7 million units. If the trend continues, LCDs will account for 48 percent of TVs shipped in 2009, while CRTs will account for only 42 percent. By 2010, LCDs will account for 56 percent of TVs shipped. Meanwhile, sales of projection TVs and plasmas will remain a somewhat smaller part of the overall market. Projection TVs will account for 3 percent of the market by 2009, the same as they do now, while plasma will climb from 3 percent to 7 percent. South Korea produced 44.8 percent of the world's LCD TVs in the fourth quarter, followed by Taiwan at 40.1 percent. **(News.com 5-Jun-06)**

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Project Gutenberg and World eBook Library plan to make 300,000 e-books available free for a month during the first World eBook Fair. Downloads will be available at the fair's Web site worldebookfair.com from July 4, the 35th anniversary of Project Gutenberg's founding, through Aug. 4. The majority of the books will be contributed by the World eBook Library which otherwise charges \$8.95 for one year of access to its database of more than 250,000 e-books, documents and articles. **(TechnologyReview 5-Jun-06)**

Surgeons have managed to transplant a beating heart into a patient for the first time in the UK. Surgeons removed the heart from the donor in one hospital, kept it pumping for five hours, during which time it was transported to another hospital where it was placed into a patient who was critically ill. It was kept beating in a specially designed Organ Care System which fed the heart blood and oxygen and can keep a heart pumping for up to 12 hours. When transplanted into the patient the heart was as fresh as when it had been removed from the donor. **(Medical News Today 5-Jun-06)**

German company ESG has developed lightweight strap-on carbon fibre mono-wings specifically for UK special forces' use. Resembling a 6ft-wide pair of jet aircraft wings, the devices should allow a parachutist to glide up to 120 miles, carrying 100kg of equipment. Fitted with oxygen supply, stabilisation and navigation aides, troops wearing the wings will jump from a high-altitude transport aircraft. Once close to their target landing zone, the troops pull their parachute rip cord to land. Weapons, ammunition, food and water can all be stowed inside the wing. ESG says the next stage of development will be fitting 'small turbo-jet drives' to the wings to extend range even further. **(Daily Mail 6-Jun-06)**

This month's World Cup is attracting armies of techies and traders gaming the odds on which nation out of the 32 might actually win the cup. There are at least eight dedicated exchanges on which punters can trade the 'shares' of national teams to win a range of prizes or cash settlements that are awarded based on the teams' final rankings. The implied probability of a win for Brazil is currently about 26%. **(Buttonwood 6-Jun-06)**

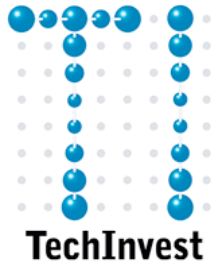
Plug an iPod or USB stick into a PC running Windows and the device can literally take over the machine. The two features that make this possible are the Windows AutoRun facility and the ability of peripherals to use something called direct memory access (DMA). In a successful penetration test USB drives were scattered in the parking lot of a credit union to be "found" by employees arriving for work. Once they plugged them in to their work computers, a Trojan program ran to collect passwords, logins and machine-specific information from the computer, and then emailed the information elsewhere. **(Schneier 8-Jun-06)**

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US federal prosecutors charge that Edwin Andres Pena of Miami hacked into the networks of Internet telephone providers and fraudulently sold more than 10 million minutes of VoIP calls. Pena allegedly sold \$1 million of phone service to his customers at extremely reduced rates. Telecommunications brokers often buy long-distance minutes from carriers - especially VoIP carriers - and then re-sell those minutes directly to customers. But rather than buy long-distance minutes to provide the service, Pena just hacked into the networks of VoIP providers. **(TechWeb 8-Jun-06)**

An ear-splitting 17-kilohertz buzzer designed to help shopkeepers disperse young people loitering in front of their stores while leaving adults unaffected has now been adapted by its young targets as a ring-tone for classrooms that ban cell-phones. An invention called the Mosquito, developed last year by a Welsh security company and marketed as an ultrasonic teenager repellent takes advantage in the difference between young and old ears. While most human communication takes place in a frequency range between 200 and 8,000 hertz (a hertz being the scientific unit of frequency equal to one cycle per second), most adults' ability to hear frequencies higher than that begins to deteriorate in early middle age. **(New York Times 12-Jun-06)**

On the banks of the windswept Columbia River in Oregon, at the intersection of cheap and reliable hydro-electricity and fibre-optic data networking, Google is building a computing center as big as two football fields, with twin cooling plants protruding four stories into the sky. The cooling plants are essential because of the searing heat produced by so much computing power. In March 2001, when the company was serving about 70 million Web pages daily, it had 8,000 computers. By 2003 the number had grown to 100,000. Google now has more than 450,000 servers spread over at least 25 locations around the world. **(New York Times 14-Jun-06)**

Bill Gates, the man who started Microsoft and has been its public face throughout its three decades of existence, will leave the company in order to spend more time at his foundation. Gates announced that he will relinquish his current role, ceding the title of chief software architect immediately, while remaining a full-time employee for the next two years. In July 2008, he will become a part-time employee but remain as chairman. According to Forbes magazine, Gates is the richest person in the world with a net worth of \$50 billion in 2005. Through this foundation, Mr. Gates has said that he intends to give away 95 percent of this wealth. The foundation's primary interests are education, poverty and global health. **(News.com 15-Jun-06)**

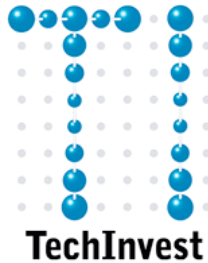
While sites like YouTube have lately become popular for allowing users to share their self-produced videos, a new class of sites also offers simple tools for stringing together video clips and then adding soundtracks, titles, transitions and unusual visual effects. Taking advantage of the huge growth in digital video captured using

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camcorders, Webcams, digital still cameras and cellphones, sites like Jumpcut, Eyespot, Grouper, VideoEgg and Motionbox all hope to reduce the complexity of video editing, and to reduce the cost to zero. A group of parents attending a school play can upload all their video, and then edit a single version of the play that makes use of the best shots. **(New York Times 15-Jun-06)**

Professor Shuji Nakamura, now at the University of California, Santa Barbara, was awarded the US\$1.2 million Millennium Technology Prize for inventions in light and laser technology. The prize was awarded for only the second time since it was established in 2002. Two years ago, it was given to Tim Berners-Lee, the MIT scientist credited with inventing the World Wide Web. Professor Nakamura developed a new, revolutionary source of light - bright-blue, green and white LEDs and a blue laser. LED lights that have long lives and consume far less energy than normal incandescent lamps, could achieve very significant reductions in energy consumption in future decades. The blue laser allows storage of much more data on optical disks than the longer wavelength red laser. **(TechnologyReview 15-Jun-06)**

The federal government has decided to put its secret Homeland Security hotline to the nation's 50 governors on the federal Do Not Call Registry. The move came after a complaint by Delaware Gov. Ruth Ann Minner. Minner says that when her line rings, it's always someone offering a time-share condominium or the latest deal on long-distance phone service. Telemarketers that use random-number call generators have apparently been stumbling onto the secure phone lines by accident. **(USA Today 15-Jun-06)**

NTT DoCoMo in Japan, one the world's leading mobile providers, announced a prototype wireless network called MIMO that could send data packets at 2.5 gigabits per second -- fast enough to download a DVD movie in between 7.5 and 10 seconds - - to a mobile device traveling at 20 kilometers per hour. **(TechnologyReview 19-Jun-06)**

Apple Computer has been talking with executives at all the major studios – including the Walt Disney Company, 20th Century Fox, Warner Brothers and Universal Studios – about adding movies to its popular iTunes music store. Mr. Jobs, Apple's chief executive, is telling studio executives that he wants to have a deal in place by the fall. Mr. Jobs's proposal is to charge a flat price of \$9.99 for movies already sold on DVD. **(New York Times 20-Jun-06)**

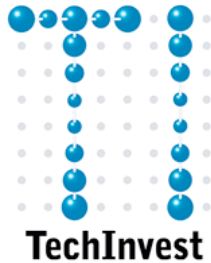
New information was reported this month on *Toxoplasma gondii*, a single-celled pathogen that infects over half the world's population, including an estimated 50 million Americans. *Toxoplasma*'s victims carry thousands of the parasites, many residing in the brain. *Toxoplasma* is equally adept at infecting all warm-blooded animals, as disparate as chickens and kangaroos. *Toxoplasma* can cause serious brain

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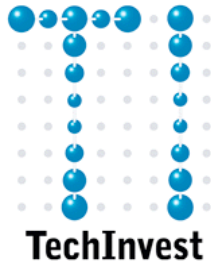
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damage in humans with weak immune systems, like fetuses and adults with AIDS, but it can only reproduce in cats. Cats carry it in their intestines, where they can produce egg-like cysts. A single infected cat can shed 100 million of these and they can survive in the soil for over a year and contaminate drinking water. In 2000, British scientists demonstrated that rats infected with *Toxoplasma* lost their fear of cats. Scientists at Stanford University have now followed up on these experiments, showing that rats and mice actually developed a mild attraction to the cat odor but were still afraid of dog odor. How *Toxoplasma* incites this change is a mystery. **(New York Times 20-Jun-06)**

Nearly a third of every 1,000-member US Naval Academy class now takes advantage of free laser eye surgery. In the Naval Academy's class of 2006, 349 of the 993 midshipmen had the surgery, up from 50 five years ago, according to Naval Academy records. The procedure used by the Navy, photorefractive keratectomy, or PRK, is different from the one used on most civilians. Rather than slicing into the cornea covering, Navy doctors grind it away. The approach requires a longer recovery as the covering re-forms, but leaves the eye more stable. Now that most midshipmen meet the vision requirements, getting into pilot training or the SEALs is harder than ever before. For generations, Academy graduates with high grades and bad eyes were funneled into the submarine service but in the past five years, the Naval Academy has missed its annual quota for submarine officers every year. **(New York Times 20-Jun-06)**

The Berlin company Audiantis is offering the beta version of its combined translation and speech output service "iSound TranSpeaker" free of charge for the duration of the World Cup. This enables an English speaker to input a request or an order into his mobile phone, immediately receiving the German translation as speech output. Equally, he can input an unfamiliar German text - from a newspaper or from a signpost - receiving the speech output in English. The whole procedure takes less than 4 seconds per translation. TransSpeaker requires either a PDA or Smartphone running Windows CE, and at least a GPRS data connection. **(Company Release 22-Jun-06)**

Seven colleagues from four top medical and genomics institutes in Beijing reported in the New England Journal of Medicine that in November 2003 a man died in the city of avian flu. The man in Beijing tested negative for SARS, but further tests on samples from his lungs have found H5N1. The DNA shows it is similar to previous human and poultry isolates of H5N1 in East Asia. Despite numerous human deaths from the virus in other countries with poultry outbreaks, China did not admit to any human cases until November 2005. The Chinese Ministry of Health said it was unaware of the case until the researchers' report appeared in NEJM. **(New Scientist 22-Jun-06)**



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The US Business Roundtable, whose 160 corporate members include companies ranging from Hewlett-Packard, IBM and Sun Microsystems to General Motors, Home Depot and Coca-Cola, issued a report saying that without proper planning, myriad industries - from health care to transportation to financial services - could face devastation if a natural disaster, terrorist or hacker succeeds in disrupting Net access. The report criticised the lack of a national policy on why, when and how the government would intervene to reconstitute portions of the Internet or to respond to a threat or attack. **(News.com 23-Jun-06)**

Nanosolar, a startup in Palo Alto, California, announced plans to build a \$100m production facility with the capacity to make 430 megawatts of solar cells each year - triple current US capacity, and a substantial portion of the worldwide production of solar energy. The company was founded in 2001 and first received seed money in 2003 from Google's founders Larry Page and Sergey Brin. Nanosolar's technology involves a thin film of copper, indium, gallium, and selenium (CIGS) that absorbs sunlight and converts it into electricity. Nanosolar can make these cells using a printing technology similar to the kind used to print newspapers, much cheaper than current methods. **(TechnologyReview 23-Jun-06)**

Ancestry.com has copied complete US census records from 1790 to 1930, making it the only searchable, online repository of the documents. Copying the material took a team of experts and workers a combined 6.6 million hours of labor as workers deciphered the handwriting on millions of census forms, then indexed and cataloged every name, and scanned images of the census documents. The project added 540 million names to the Utah company's genealogical database. The information details people's moves across the country, their race, marital status, assets, residence, schooling and other personal information. **(TechnologyReview 25-Jun-06)**

U.S. House Energy and Commerce Committee held a series of hearings investigating data brokers, from whom banks, car dealers, jealous lovers and even some law enforcement officers have covertly purchased information. Data broking is a multimillion dollar industry that sells cell phone records for \$200, Social Security information for \$60 and a student's university class schedule for \$80. The committee subpoenaed representatives from 11 companies that obtain, market, and sell personal data, but every one of them invoked their constitutional right not to incriminate themselves when asked whether they sold "personal, non-public information" that had been obtained by lying or impersonating someone. **(Reuters 25-Jun-06)**

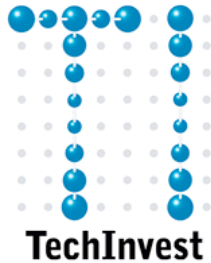
Warren Buffett will donate most of his wealth to charities, primarily the Gates Foundation. Mr. Buffett plans to give away 85 percent of his fortune, or about \$37.4 billion. Of that amount, the greatest share, about \$31 billion, will go to the Gates Foundation. The Gates Foundation is already the United States' largest grant-making

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foundation, with assets of almost \$30 billion. The second largest, the Ford foundation, has only \$11.6 billion. The Gates Foundation is now likely to make grants of \$3 billion per year, compared to the UNESCO budget of \$610 million. Mr. Buffett, 75, and Mr. Gates, 50, have long been friends. In addition to traveling together and regularly playing online bridge games, the two men routinely seek out each other's advice on personal and business matters. Mr. Buffett will also divide about \$6 billion in stock among charities run by his wife and children emphasizing family planning, abortion rights, anti-nuclear proliferation, environmental and conservation issues, educational opportunities for low-income children, and human rights. **(New York Times 26-Jun-06)**

Washington D.C. will launch an unprecedented campaign to test every resident aged between 14 and 84 for the HIV virus. The initiative, believed to be the most comprehensive in the history of the AIDS epidemic, is part of a plan to make HIV testing as routine as getting a blood-pressure check in the city that has America's worst rate of new infections. Clinics and doctors' surgeries will receive hundreds of thousands of free oral testing kits, which can indicate a person's HIV status within 20 minutes. The aim of the program is to ensure that all Washington DC residents know their HIV status by year-end. Washington, DC, suffers from the worst rate of new AIDS cases in the country, with about 180 of every 100,000 people infected. **(Guardian 26-Jun-06)**

BioEden, in Austin Texas, will recover and store stem cells from your child's baby teeth, as a viable, ethical, and morally non-controversial alternative to the possibilities offered by embryonic stem cells. Stem cell research is a promising path to curing many severe diseases and disabling medical conditions, but it is desirable that the source of the stem cells be compatible with the recipient. Following simple storage and shipping instructions, parents can now preserve these valuable cells. BioEden will isolate and store cells from the baby teeth, and return them to the original donor if they are ever needed. BioEden is registered with the FDA, and it is the first fully operational processing laboratory and storage bank for primary teeth stem cells to open in the U.S. Processing costs \$595, and storage \$89 per year. **(BioSpace 27-Jun-06)**

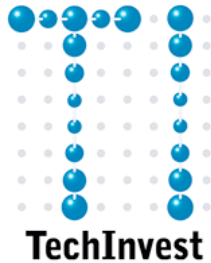
By landing a joint-marketing deal with NBC, YouTube is flexing some of its muscle as the No.1 video-sharing site with 13 million unique visitors every month, posting 50,000 new videos each day. In February, NBC ordered YouTube to remove a clip from "Saturday Night Live" called "Lazy Sunday". The ensuing controversy thrust YouTube onto the national stage and provided a huge marketing boost. Now NBC plans to upload promotional video clips of some of its TV shows, including "Saturday Night Live" and "The Tonight Show with Jay Leno." The entertainment company, owned by General Electric, will advertise on YouTube and promote the site on some of its TV shows. **(News.com 27-Jun-06)**

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Sales of mobile phones with both cellular and Wi-Fi capability will reach 132 million by 2010. More than 20 Wi-Fi-enabled models are either already on the market or will be released soon. Customers with Wi-Fi-enabled cell phones have the option of using Skype's service as long as they are within range of a Wi-Fi signal. Once out of Wi-Fi range, they could then operate the same phone on cellular technology. Customers that have bad cellular coverage inside their houses would be able to get around it by switching to a combination handset. Since Wi-Fi calls go over the internet, call charges are very low, or free if to another VoIP user. **(News.com 27-Jun-06)**

Hebert Meyerle of Germany is patenting a design for a gun cartridge that would only fire if a password entered into the gun using a tiny keypad matched one stored in the cartridge. When they are sold, cartridges could be programmed with a password that matches the purchaser's gun. An owner could set the gun to request the password when it is reloaded, or to perform a biometric check before firing. The gun could also automatically lock itself after a pre-set period of time has passed since the password was entered. **(New Scientist 27-Jun-06)**

Police chases kill, on average, one Californian every week. Now the Virginia-based company StarChase has proposed a safer way to catch fast-moving crooks - shoot GPS homing devices like darts and stick them to the back of fleeing vehicles. Instead of a frantic pursuit, an officer eases off the chase and lets police headquarters track the suspect by computer. Police can then move in for a calmer arrest. The Los Angeles Police Department will test the system this fall and, if all goes well, could purchase as many as 20 units by this time next year. **(Popular Science 28-Jun-06)**

The US Surgeon General Richard Carmona has updated a 1986 study on second hand smoke, saying "the debate is over: the science is clear". Secondhand smoke is an "alarming" public health hazard, responsible for tens of thousands of premature deaths among nonsmokers each year. There is no safe level of secondhand smoke, and even brief exposure can cause harm, especially for people suffering from heart or respiratory diseases. For nonsmoking adults, exposure raises the risk of heart disease by 25 percent to 30 percent and of cancer by 20 percent to 30 percent. Efforts to minimize the effect of secondhand smoke by separating smokers and nonsmokers are ineffective, as are ventilation systems in a shared space. In a statement on its Web site, R. J. Reynolds says, "It seems unlikely that secondhand smoke presents any significant harm to otherwise healthy nonsmoking adults." **(New York Times 28-Jun-06)**

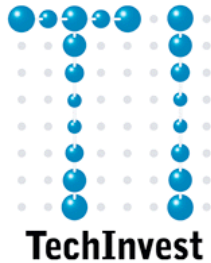
Wrightspeed Inc makes an electric car that is faster than a Porsche or Ferrari. Wright, a New Zealand-born electrical engineer, spent nine months retooling an Ariel Atom race car into a street-legal prototype, using lithium-ion batteries and a 3-phase electric motor delivering 236hp. The X1 prototype meets its design specs of 0-60 in 3

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seconds, 170 mpg equivalent, and 1536 lbs. There is no clutch, no shifting; first gear takes you to 112mph. Under normal city driving conditions the X1 can go around 125 miles on a charge and about 1.25 hours to fully charge. Wright hopes to eventually sell a production version for about \$120,000. **(TechnologyReview 28-Jun-06)**

Engineers at the Tokyo Institute of Technology in Japan are building an odour recorder capable of recording a smell to play it back later, just as you can with sounds or images. Simply point the gadget at a freshly baked cookie, for example, and it will analyse its odour and reproduce it for you using a host of non-toxic chemicals. The system will use 15 chemical-sensing microchips, or electronic noses, to pick up a broad range of aromas. These are then used to create a digital recipe from a set of 96 chemicals that can be chosen according to the purpose of each individual gadget. When you want to replay a smell, drops from the relevant vials are mixed, heated and vaporised. **(New Scientist 29-Jun-06)**

