



# Science + Technology

## IN CONGRESS

November  
2003

### Senate Passes Genetic Discrimination Bill

The Senate has unanimously passed a bill to prohibit employment and health insurance discrimination based on genetic information. The Genetic Information Nondiscrimination Act (S. 1053), legislation long sought by many scientists and patients, passed the Senate by a 95-0 vote on October 14. It would prevent health insurance providers and employers from using an individual's genetic predisposition to a disease as a basis for denying access to health coverage or a job.

The completion of the human genome sequence has raised hopes of a medical revolution, but the bill's supporters say that to take full advantage of this achievement, the public must be reassured that genetic information will be used to improve health and not to discriminate unfairly. They report that many individuals faced with the option of undergoing genetic tests have declined due to fears of discrimination.

Such fears are understandable, says Senate Majority Leader Bill Frist (R-TN), a key supporter of the legislation. "Genetic screening is a powerful tool, and can impart highly sensitive and very personal information. The fear of genetic discrimination has the potential to prevent individuals from participating in research studies, from taking advantage of new genetic technologies, or even from discover-

ing that they are not at high risk for genetically related illnesses."

Advocates for the health insurance industry, which opposed the bill, counter that there is little evidence that genetic discrimination is actually occurring, and that the Health Insurance Portability and Accountability Act (HIPAA) provides sufficient pro-

tection, rendering the Senate legislation unnecessary.

The bill, which was introduced by Sen. Olympia Snowe (R-ME), was approved by the Senate Health, Education, Labor, and Pensions Committee in May after lengthy bipartisan negotiations. Supporters hope

>>> *Continued on page 7*

### Nanotech R&D Bill Headed to White House

The House and Senate reached agreement on a four-year authorization bill to fund almost \$3.7 billion in nanotechnology research and development (R&D) programs scattered across five agencies, paving the way for a presidential signature. The 21<sup>st</sup> Century Nanotechnology Research and Development Act (S. 189), which passed both chambers the week of November 17<sup>th</sup>, represents a compromise between the House Science Committee bill (H.R. 766) and the Senate Commerce, Science, and Transportation Committee's earlier version of S. 189.

Science Committee Chairman Sherwood Boehlert (R-NY) issued a press release shortly after House passage, congratulating both chambers for swift movement: "The U.S. is the leader in nanotechnology and must remain so as this new field starts remaking the marketplace. The nanotechnology program will be a model of government, university, industry cooperation, and of coordination, interdisciplinary research and public involvement."

Management of the interagency program would be coordinated through the executive branch National Science and Technology Council with technical and administrative support from staff within a newly created National Nanotechnology Coordination Office. A point of contention between the House and Senate was the composition of an external advisory committee to provide additional oversight and assessment of the progress of the research programs.

The final bill retains a plan supported by both chambers to allow the president to "estab-

>>> *Continued on page 6*

FEATURES

- 1, 7 Genetic Discrimination
- 1, 6 Nanotech R&D
- 2 NIH Post-Doubling
- 3, 7 Security Technology
- 3, 4 Cord Blood Stem Cell Act

- 4 Database Protection
- 5 Reports and Publications
- 6 Scientific Definitions
- 8 Frontiers in Science

*"Now, to that already crowded field, add [DHS], which Congress charged to act as both a developer and clearinghouse for innovative technologies."*

TURN TO PAGE 3

# Post-Doubling, NIH Could Face Bumpy Ride

The House and Senate committees charged with overseeing the National Institutes of Health (NIH) held a joint hearing in October that highlighted both the management challenges facing the research agency and the political challenges facing members of Congress as they seek to address those management issues.

The Senate Health, Education, Labor and Pensions (HELP) Committee and House Energy and Commerce Committee scheduled the hearing two days after NIH Director Elias Zerhouni unveiled a new "roadmap" for biomedical research that would maximize opportunities and bridge gaps unlikely to be addressed under NIH's current decentralized structure. The plan offered a series of new initiatives to encourage cross-disci-

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plinary research involving multiple institutes, some of which the agency has already begun to implement. Dr. Zerhouni also made clear at the joint hearing that some elements of the plan call for strengthening the office of the director by providing greater authority over the agency's budget and a better centralized planning mechanism.

The hearing was held amid increasing calls for Congress to step up its oversight of the agency after doubling its budget over the last six years to about \$28 billion. In addition to providing Zerhouni an opportunity to present his proposals, the hearing served as a warning that his planned roadmap could encounter some rugged terrain on Capitol Hill. Committee members are contemplating the first reauthorization of NIH since 1993, and a plethora of obstacles could get in the way, from partisan politics to contentious ethical issues to the complex web of patient groups and re-

search institutions with a stake in the outcome.

One such issue, which has recently garnered much attention, is an attempt by conservatives in the House to prevent NIH from funding certain studies that involve behavioral research relevant to drug abuse and HIV/AIDS transmission. Rep. Patrick Toomey (R-PA) proposed an amendment to the Labor-HHS appropriations bill in July that would have blocked funding for four such studies that have already been approved through NIH's peer-review process, and while the amendment failed by a vote of 212-210, three of its backers raised the issue with Zerhouni at the hearing.

This issue caused additional controversy when an Energy and Commerce staff member provided NIH with a list of over 200 grants that had been deemed questionable by the Traditional Values Coalition, a conservative advocacy group. NIH began contacting recipients of these grants apparently to request information to help defend the research, prompting an outcry from scientific organizations. Many in the research community (including AAAS) expressed concern that such an action undermines the peer-review process and could have the effect of deterring researchers from pursuing projects similar to those targeted.

Rep. Mike Rogers (R-MI), who opposed the Toomey amendment, also spoke up at the hearing, noting that his former career as an FBI agent had convinced him of the usefulness of research on sexual behavior, but nevertheless citing a need for NIH to be more transparent.

Among the other contentious issues raised at the bicameral hearing were stem cell research (a perennial favorite), an outsourcing initiative that has rankled NIH staff, and allegations by Rep. Henry Waxman (D-CA) that the Bush Administration has allowed ideology to interfere inappropriately with scientific panels at NIH.

Many members raised additional issues that are less explosive, but nonetheless illustrate the complicated task facing lawmakers who will need to balance a wide array of parochial interests and overarching policy concerns as they craft a bill. For example, Sen. Hillary Rodham Clinton (D-NY) urged NIH to undertake comparative effec-

tiveness studies of existing drugs; Rep. Stephanie Tubbs Jones (D-OH) focused on the need to address health disparities affecting minorities; and Sen. Edward M. Kennedy (D-MA) attacked the fiscal 2004 appropriations bill that awards NIH a much smaller increase than in past years.

Though Zerhouni was flanked at the hearing by two prominent scientists who support the roadmap—Dr. Harold Varmus, a former NIH director who now heads the

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Memorial Sloan-Kettering Cancer Center and Dr. Harold Shapiro, who chaired an Institute of Medicine study of NIH's organizational structure released last summer—the plan may prove a nonstarter. The 27 individual institutes that comprise NIH face pressure from constituent groups to focus resources on their specific area of concern. This pressure makes it difficult for institute directors to support the centralized research efforts proposed by the roadmap and thus motivated Zerhouni to ask Congress for greater authority. Members of Congress, however, face pressure from these same patient and disease groups, many of whom feel the current highly decentralized structure is working well. It remains to be seen whether Congress will go along with Zerhouni and pave the way for his proposed reforms. ●●●

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#### FOR MORE INFORMATION:

*NIH Roadmap:* [nihroadmap.nih.gov](http://nihroadmap.nih.gov)

*House/Senate Oversight Hearing:*  
[www.senate.gov/-labor/bills/025\\_bill.html](http://www.senate.gov/-labor/bills/025_bill.html)

# Role of Security Technology Working Group Examined

On September 30, the National Security Subcommittee of the House Government Reform Committee heard testimony from federal agencies and industry leaders regarding a little-known part of the government called the Technical Support Working Group (TSWG). The hearing focused on the history and practices of this interagency group which invests in rapid prototyping technology to arm both the intelligence community and first responders in order to prevent terrorist attacks and minimize damage to citizens and infrastructure. The event also offered an opportunity to hear from the new kid on the block, the Department of Homeland Security, and how it fits into the 20-year old working group.

In his opening remarks, subcommittee chairman Christopher Shays (R-CT) noted

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*Although R&D funding continues to be primarily sponsored by DOD, TSWG has grown over the years to include active participation of over 80 federal programs spread among eleven cabinet-level departments and eight independent agencies.*

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that in the past Congress has found a lack of coordination in federal counterterrorism research and development (R&D). Even testimony as recent as March 2000 described duplication of effort in the field of bioterrorism between the Department of Defense (DOD), Department of Energy and the Department of Justice. Shays lamented, "Now, to that already crowded field, add the Department of Homeland Security (DHS), which Congress charged to act as both a developer and clearinghouse for innovative technologies."

Enter TSWG, created in 1986 per a recommendation of a cabinet-level Task Force on Counterterrorism led by then Vice President George H.W. Bush. In his testimony before the subcommittee, Michael Jakub, director of Technical Programs in the Office of the Coordinator for Counterterrorism at State, noted that the Task Force found

that U.S. counterterrorism activities were "uncoordinated and unfocused." Thus, TSWG was established within an existing program chaired by the State Department called the Interdepartmental Group on Terrorism. The pre-TSWG Interdepartmental Group was created by National Security Decision Directive 30 in 1982 and given responsibility for developing overall U.S. policy on counterterrorism.

The goal of the 1986 Task Force was to create a mechanism for coordinating a national R&D program across relevant agencies that would reduce duplication of effort and easily identify gaps in research that needed to be tackled by the federal government. Although R&D funding continues to be primarily sponsored by DOD, TSWG has grown over the years to include active participation of over 80 federal programs spread among eleven cabinet-level depart-

ments and eight independent agencies. The State Department continues to chair the TSWG Executive Committee and provide policy oversight while DOD executes and administers the program.

The R&D portfolio of TSWG is relatively small, only \$180 million in fiscal year 2003 spread among nine program elements: Chemical, Biological, Radiological and Nuclear Countermeasures; Explosives Detection; Improvised Device Defeat; Infrastructure Protection; Investigative Support and Forensics; Personnel Protection; Physical Security; Surveillance, Collection and Operations Support; and Tactical Operations Support. The majority of federal funds go to Chem-Bio Countermeasures (23 percent), Physical Security (16 percent), and Personnel Protection (13 percent).

DHS, recently invited to participate in

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## Senators Propose Cord Blood Stem Cell Act

A bipartisan quintet of senators, who are on opposite ends of the spectrum with respect to embryonic stem cell research, have united as co-sponsors of the Cord Blood Stem Cell Act of 2003 (S. 1717). On October 21, Senators Orrin Hatch (R-UT), Chris Dodd (D-CT), Sam Brownback (R-KS), Arlen Specter (R-PA) and Dianne Feinstein (D-CA) joined in a press conference hailing "a new commitment to developing a national infrastructure of cord blood stem cell collection and research that could, in time, save the lives of thousands of gravely ill Americans."

The Hatch/Brownback bill would authorize the Health Resources and Services Administration (HRSA)—an arm of the Department of Health and Human Services responsible for improving access to healthcare—to establish and maintain a "National Cord Blood Stem Cell Bank Network" through contracts with existing or new cord blood banks that are certified at the federal and state level. The act would set as a goal the collection of at least 150,000 units of human cord blood stem cells that are genetically diverse to the greatest extent possible.

Blood collected from the umbilical cord and placenta after child birth contains hematopoietic stem cells that are able to differentiate into a number of specialized types of cells such as bone marrow. Since the early 1990s a number of physicians have conducted cord blood transplants on children suffering from diseases such as Leukemia or sickle cell anemia. A number of private cord blood banks have surfaced to meet the growing demand of new parents interested in preserving—for a fee—the cord blood of their newborn babies as a form of private insurance in the event of a debilitating disease.

One problem is that little empirical evidence exists to show that stem cells extracted from a donor's cord blood can be utilized in a therapy to the same donor. The majority of the successful transplants have involved cord blood from siblings. The American Academy of Pediatrics (AAP) even issued a policy statement that there is "no evidence of the safety or effectiveness of autologous (self) cord blood transplantation for the treatment of malignant [tumors]." Based on existing research in five diseases AAP determined that con-

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# House Considers Database Bill

Bringing to the forefront an issue which has been percolating within the technology world, Rep. Howard Coble (R-NC) introduced the Database and Collections of Information Misappropriation Act (H.R. 3261) on October 8. The bill has five cosponsors, including House Judiciary Committee Chairman F. James Sensenbrenner Jr. (R-WI) and House Energy and Commerce Committee Chairman W.J. "Billy" Tauzin (R-LA), who have been working on a compromise for months. The legislation seeks to make illegal the unauthorized utilization of a database, or as the proposed text defines it, "a collection of a large number of discrete items of information."

The advent of the Information Age has caused commercial database producers to seek new legislative protections for their intellectual property. Proponents say it is needed to protect the significant investments in time and money involved in creating databases, as well as to spur economic growth by promoting the creation of new databases. Their concerns derive from the ease with which a company or individual can pirate electronic materials from a commercial database, such as EBay, and make them commercially available as its own product.

Opponents, however, argue that the electronic format of these works is already protected under other enacted laws, such as the Computer Fraud and Abuse Act (18 U.S.C. §1030), and that the enactment of the bill might endanger public service activities such as price comparison websites or lists of political candidates' voting records.

Past versions of database legislation sought to clarify the amount of information from a particular database that could be legally used outside of the database and what remedies would be available if that amount is surpassed. The new compromise bill attempts a "clarification" of technological terms but is in the eyes of many opponents potentially damaging. For example, the bill describes that amount by labeling it "quantitatively substantial," a term which is not defined within the act and, thus, subject to a wide-range of interpretations.

Many in the research community rely on

databases to share scientific information and have long followed the "fair use" principle that factual information should be publicly available. For example, research projects on climate change and the human genome have used publicly accessible databases to facilitate large-scale collaborations by far-flung scientists. Hence, the scientific and library communities have expressed concern about any new database protection legislation.

H.R. 3261, however, includes a provision that would protect nonprofit educational, scientific or research institutions from litigation should they make available in the stream of commerce certain portions of a database. However, these exemptions require a court to first hear a claim against a party to determine if the sharing is "reasonable under the circumstances, taking into consideration the customary practices associated with such uses of such database[s] by non-profit educational, scientific or research institutions and other factors that the court determines relevant."

Opponents express concern that such

ambiguous language could be used to create delays as courts determine whether research projects fall under the exemption. Similarly they argue that the legislation fails to clarify the fate of government databases which are owned or co-created with other entities such as universities, and that these works may fall under the government exemption but may ultimately be open to recapture under other sections of the act.

Database protection legislation was first introduced back in the 104th Congress, and proposals have been floated in each Congress since. In the 107th, no bills were formally introduced, but much action took place behind the scenes, leading to the current effort. At an October 16 markup, the House Judiciary Committee's Subcommittee on Courts, the Internet and Intellectual Property approved the bill by a 10-4 vote.

—Lincoln G. Harris

*AAAS Science and Intellectual Property  
in the Public Interest (SIPPI) Project*

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**FOR MORE INFORMATION:**

*AAAS SIPPI Project: <http://sippi.aaas.org>*

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**Cord Blood**

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ventional therapy or transplantation from a related donor is more effective than autologous cord blood transplantation. The statement, however, does encourage the "philanthropic donation of cord blood for banking at no cost for allogeneic (related or unrelated) transplantation" and research.

The Hatch/Brownback bill would be a big step towards expanding public accessibility of therapeutic applications developed by cord blood banks that conduct research. For example, the act would require that up to 10 percent of cord blood collected be available for peer-reviewed research. Furthermore, it would establish a registry system for identifying the blood units in order that health care professionals may easily search for suitable donor matches. Encouraging a genetically diverse collection of samples would improve the odds for positive donor/patient matches. Finally, a Board of Directors composed of physicians, research scientists, patients and representatives from industry would be created to oversee the network.

The Cord Blood Stem Cell Act would provide \$15 million in fiscal 2004 to support its establishment and operation. A companion bill (H.R. 2852) was introduced in July by Rep. Christopher Smith (R-NJ). ●●●

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**FOR MORE INFORMATION:**

*American Academy of Pediatrics:  
[www.aap.org/policy/reg86o.html](http://www.aap.org/policy/reg86o.html)*

*National Institutes of Health: [www.nih.gov](http://www.nih.gov)*

*International Cord Blood Society:  
[www.cordblood.org](http://www.cordblood.org)*

*National Marrow Donor Program:  
[www.marrow.org/NMDP/  
nmdp\\_network.html](http://www.marrow.org/NMDP/nmdp_network.html)*

## CONGRESSIONAL RESEARCH SERVICE

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*Copies of CRS reports for congressional use are available by calling 202/707-7132.*

- **Nuclear Weapons Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness (RL32130)**  
This report provides the policy context for four nuclear weapon initiatives included in the administration's FY 2004 budget request, including arguments and counterarguments. The initiatives addressed in the report include: (1) rescinding the 1993 ban on R&D on low-yield nuclear weapons; (2) funding for the Advanced Concepts Initiative; (3) \$15 million to continue a study of the Robust Nuclear Earth Penetrator (aka, bunker busters); and (4) funding to conduct a nuclear test within 18 months of a presidential order to test.
- **Innovation and Intellectual Property Issues in Homeland Security (RL32051)**  
This report discusses how patents, trade secrets and other intellectual property rights may impede prompt and widespread distribution of innovations to promote homeland security. It outlines existing statutes and laws that allow the federal government to impose eminent domain and compulsory licensing for national security purposes, and describes mechanisms for intellectual property owners to obtain compensation.
- **The Bayh-Dole Act: Selected Issues in Patent Policy and the Commercialization of Technology (RL32076)**  
This report provides a historical perspective of the Bayh-Dole Act, which provided patent rights for inventions arising out of government-sponsored research. It discusses the impact of the Act on collaboration between government, industry, and academia, and addresses concerns raised over the redirection of research funds and scientific openness.

## GENERAL ACCOUNTING OFFICE

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*Copies of GAO Publications are available online at [www.gao.gov](http://www.gao.gov) or by calling 202/512-6000.*

- **University Research: Most Federal Agencies Need to Better Protect against Financial Conflicts of Interest (GAO-04-31)**  
This report provides detailed results of a survey of 200 universities that addressed (1) their policies and procedures for ensuring that federally funded research results are made available to the public, (2) their views of the advantages and disadvantages of posting a grant's final technical report to the agency's Web site, (3) their conflict of interest and financial disclosure policies, (4) any FOIA requests federal agencies had received that asked for access to research data, and (5) data on their research funding and technology transfer activities. GAO recommends that the National Science and Technology Council coordinate the development of a uniform federal requirement for identifying and resolving financial conflicts of interest in federally funded research.

- **Climate Change: Trends in Greenhouse Gas Emissions and Emissions Intensity in the United States and Other High-Emitting Nations (GAO-04-146R)**  
This report focuses on (1) how greenhouse gas emissions and the emissions intensity of the United States and the nine nations with the next-highest emissions changed from 1980 to 2000, (2) how such emissions and the emissions intensities of the same nations are expected to change between 2001 and 2025, and (3) how meeting the administration's goal of reducing emissions intensity by 18 percent would affect cumulative U.S. emissions between 2002 and 2012.

## THE NATIONAL ACADEMIES

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*Government offices may obtain single complimentary copies by calling the Office of Congressional and Government Affairs at 202/334-1513. Others may order copies from the National Academy Press (800/624-6242, [www.nap.edu](http://www.nap.edu)).*

- **Patient Safety: Achieving a New Standard for Care (ISBN: 0-309-09077-6)**  
This report recommends that in order to reduce deaths and injuries caused by medical errors, health care organizations should adopt standardized information technology systems capable of collecting and sharing health information on patients and their care. These systems should be part of a national network accessible and understandable to all health care organizations. While acknowledging that sizable investments will be needed by both the private sector and federal government, the report notes that the resulting tools and information could yield significant benefits for other areas as well, including homeland security and public health.
- **Future Needs in Deep Submergence Science: Occupied and Unoccupied Vehicles in Basic Ocean Research (ISBN: 0-309-09114-4, Prepublication Copy Only)**  
This report, requested by the NSF Division of Ocean Science, analyzed the usefulness of the current fleet of deep-diving submersibles such as Alvin. The report notes that while such submersibles have advanced deep-ocean science, exploring the ocean and seafloor at greater depths requires new vehicles. It calls for manned vehicles that provide improved visibility and achieve neutral buoyancy at various depths, so that researchers can pause to study life forms.
- **Biotechnology Research in an Age of Terrorism: Confronting the "Dual Use" Dilemma (ISBN: 0-309-08977-8)**  
This report addresses methods for minimizing the potential for terrorists to misuse biotechnology research, and recommends that the United States build on existing measures within the scientific community to screen plans for certain types of experiments before they are conducted. The report identifies seven classes of experiments that should be reviewed by experts in the scientific and medical communities.

# scientific definitions

1. The act of making clear and distinct.
2. the act of stating a precise meaning or significance.

## NANOTECHNOLOGY TERMS

**NANOMETER** One billionth of a meter.

**NANOTECHNOLOGY** Manufacturing technology able to inexpensively fabricate nanometer-scale structures.

**MICROMETER (MICRON)** One millionth of a meter.

**MEMS (MICROELECTROMECHANICAL SYSTEMS)** Micron-scale devices that integrate mechanical as well as electronic elements onto a silicon chip.

**FULLERENE** A molecular form of pure carbon discovered in 1985, consisting of convex, cage-like structures of atoms with only hexagonal and/or pentagonal faces. The most abundant form produced is buckminsterfullerene (C60). There are also larger fullerenes containing from 70 to 500 carbon atoms.

**BUCKMINSTERFULLERENE (C60, BUCKYBALLS)** Molecules made up of 60 carbon atoms arranged in a series of interlocking hexagonal shapes, forming a structure similar to a soccer ball. Named after the architect Buckminster Fuller, who is famous for the geodesic dome, which buckyballs resemble.

**CARBON NANOTUBE** A one dimensional fullerene with a cylindrical shape discovered in 1991. Nanotubes resemble rolled up graphite. Apart from remarkable tensile strength, nanotubes exhibit varying electrical properties (depending on the way the graphite structure spirals around the tube, and other factors) and can be insulating, semiconducting or conducting.

**WET NANOTECHNOLOGY** The study of nanoscale biological systems that exist primarily in a water environment. The structures of primary interest are genetic material, membranes, enzymes and other cellular components.

**DRY NANOTECHNOLOGY** Derives from surface science and physical chemistry; focuses on fabrication of structures in carbon, silicon, and other inorganic materials.

**NANOBIOTECHNOLOGY** Applying the tools and processes of nanotechnology to build devices for studying biosystems, in order to learn from biology how to create better nanoscale devices. Should hasten the creation of useful biomimetic devices.

**COGNOTECHNOLOGY** Convergence of nanotech, biotech and IT, for remote brain sensing.

**QUANTUM COMPUTER** A computer that takes advantage of quantum mechanical properties such as superposition and entanglement of nanoscale, molecular, atomic and subatomic components. Offers the potential of fabricating smaller chips and providing faster performance for certain problems such as factoring large numbers.

SOURCE: [www.nanotech-now.com/nanotechnology-glossary.htm](http://www.nanotech-now.com/nanotechnology-glossary.htm)

## Nanotech R&D

*Continued from page 1*

lish or designate" a National Nanotechnology Advisory Panel, but follows the House intent of providing the administration with greater flexibility over its composition. The provision, however, strongly emphasizes that the panel's members should come primarily from academia and suggests that the president should consider recommendations from the scientific community, as well as state and local governments.

The legislation also resolves previous differences between the two committees over the management of research into ethical and societal impacts of nanotechnology. The final bill would allow for the creation of an American Nanotechnology Preparedness Center responsible for the "conduct and dissemination of studies on the societal, ethical, environmental, educational, legal, and workforce implications of nanotechnology." This was an important win for Sen. Ron Wyden (D-OR), who preferred a separate center to focus on such complex issues, as opposed to Rep. Boehlert, whose bill would have kept such responsibilities as an element of the R&D programs within each of the participating agencies.

The final version, however, fails to allocate any specific funds for the new center, which will be established by a merit-based competitive process. Wyden's original bill would have authorized \$5 million annually, an amount that many members of Congress felt was arbitrary.

The \$3.7 billion R&D investment will be shared by the National Science Foundation (NSF), Department of Energy (DOE), National Aeronautics and Space Administration, National Institutes of Standards and Technology, and the Environmental Protection Agency. NSF and DOE will be the primary sponsors of R&D with \$1.73 billion and \$1.46 billion, respectively. Funding for the interagency program is not due to start until fiscal year 2005. ●●●

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### FOR MORE INFORMATION:

*National Nanotechnology Initiative:*

<http://www.nano.gov>

*Nanotechnology Now:*

<http://nanotech-now.com>

## Security Technology Working Group

*Continued from page 3*

TSWG, was provided \$75 million in its FY 2004 appropriations to support rapid prototyping research within the Homeland Security Advanced Research Projects Agency (HSARPA). This is a substantial increase from the \$30 million initially requested by the administration, reflecting the serious interest that Congress has in this activity. According to Dr. David Bolka, the new HSARPA director, the agency expects to use the TSWG process "for the near term." "As HSARPA matures, and the Systems Engineering and Development branch of the S&T Directorate stands up, we will assume the majority of rapid prototyping responsibility and will coordinate it internally," he added.

It is Bolka's last sentiments that worry members of Congress. Chairman Shays likened the current TSWG structure to a chair with legs of different sizes. He said, "I thought DHS would be the only agency evaluating proposals. ...Why not just keep TSWG in the Department of Homeland Security?"

As Bolka silently sat by, Edward McCallum, Director of DOD's Combating Terrorism Technology Support Office, explained that homeland security technology needs cut across many sectors—from po-

lice to soldiers—and the tools that derive from TSWG can benefit this diverse constituency. He cited as an example a robot for retrieving and/or detonating bombs that is used by the Pentagon, the FBI and local bomb squads. He also emphasized that the current investment of \$180 million does not preclude each department or agency from pursuing separate counterterrorism R&D programs.

Rep. John F. Tierney (D-MA) stated that first responders in his district are at a loss on where to go for the latest technology. And a clearly frustrated Shays asked, "How do you know proposals are vetted and weighed appropriately?"

McCallum attempted to reassure the chairman that TSWG would continue to utilize its well-established three-step process for evaluating technologies from concept phase to preparation of a full proposal. The idea is to quickly review and winnow down the large number of ideas that are submitted for developing counterterrorism technologies.

According to McCallum, only 0.5-1 percent of ideas that are initially submitted by companies at the concept-level move to the second stage of the review process. He further noted that "the success rate of pro-

posals submitted [after the first two steps] is quite high: perhaps nine out of ten."

The TSWG model of efficiency was generally viewed in a positive light by the majority of industry representatives at the hearing. According to Bruce deGrazia, chairman of the Homeland Security Industries Association, the TSWG process "produces significant time and cost savings" to companies that submit ideas. However, he stated that only 15 percent of their 400 industry members are even familiar with TSWG and recommended that the TSWG website be directly linked to the DHS website, and that DHS organize a series of educational seminars. ●●●

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### FOR MORE INFORMATION:

*Technical Support Working Group:*  
[www.tswg.gov](http://www.tswg.gov)

*Department of Homeland Security:*  
[www.dhs.gov](http://www.dhs.gov)

## Genetic Discrimination

*Continued from page 1*

the House will pass the Senate legislation as is and send it to President Bush, who has announced his support for it. It is unclear, however, whether House leaders will go along with such a plan. H.R. 1910, a more stringent bill authored by Rep. Louise Slaughter (D-NY) and backed by House Administration Committee Chairman Bob Ney (R-OH), has collected 228 co-sponsors from both sides of the aisle. ●●●

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### FOR MORE INFORMATION:

*National Partnership for Women & Families:* [www.nationalpartnership.org/Content.cfm?L1=5&L2=2.0](http://www.nationalpartnership.org/Content.cfm?L1=5&L2=2.0)

*Health Insurance Association of America:*  
[www.hiaa.org/search/content.cfm?ContentID=25124](http://www.hiaa.org/search/content.cfm?ContentID=25124)

## AAAS NOTES

- **SCIENTIST ON TRIAL**  
*Thomas Butler, a researcher at Texas Tech University, stands accused of breaking laws on the handling of biological agents. News reporters for Science have posted a free blog chronicling the trial.*  
<http://sciencenow.sciencemag.org/feature/data/butlertrial.shtml>
- **R&D IN THE ENERGY BILL**  
*An analysis of R&D funding in the energy reform bill is now available on the AAAS R&D Web site.*  
<http://www.aaas.org/spp/rd/doe04auth.htm>

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# Frontiers in Science



**Overcoming Fear** • A recent study by neuroscientists at Emory University has found a drug that can help people overcome a fear of heights. Many neurobiologists consider the process of overcoming fears to be a type of learning, and so the researchers thought that the drug D-cycloserine, which enhances a brain receptor thought to play an important role in learning, might help people with acrophobia. To test the idea, a group of study participants were given virtual reality goggles that simulated a ride in a glass elevator—a terrifying experience for many acrophobes—and encouraged to ride the virtual elevator as high as they could bear. As hypothesized, those given the drug were better able to overcome their fear than those given a placebo. "This is the first example of a new way of doing psychiatry," says Mark Barad, a psychiatrist and neuroscientist at UCLA, "by using drugs not to treat the illness but as a way of making therapy work."

---> *ScienceNow*, November 10, 2003

**Another Meteorite That Caused Trouble?** • Among geologists, it is widely accepted that a meteorite landing in the Gulf of Mexico

65 million years ago triggered the extinction of the dinosaurs. Now, some geologists are arguing that the Permian-Triassic (P-T) mass extinction 251 million years ago, the largest mass extinction of all time, was also caused by the impact of a meteorite. University of Rochester, N.Y., researchers have discovered small pieces of a meteorite in Antarctica which they believe date to the P-T era. The claim is highly controversial, however, as many geologists believe that the fragments could not have survived unaltered for 251 million years.

---> *Science*, November 21, 2003

**Nanocircuits** • A new breakthrough by chemists at Harvard University offers promise for researchers who hope to use nanoscale transistors to develop smaller computer chips than can be made with current technology. The Harvard team has in the past constructed circuits made up of nanoscale wires in a "crossbar" array resembling the lines in a tic-tac-toe board. Each intersection of two wires can act as a transistor, in which a signal in one wire can regulate the current in the perpendicular wire. However, each wire crosses several intersections, making the circuit less than ideal for computing. Now the researchers have found a way to make the transistors inactive unless they are subjected to a particular chemical reaction. By directing such a reaction to specific sites on the circuit, they were able to steer electrical signals to particular destinations.

---> *Science*, November 21, 2003