

# Science + Technology

## IN CONGRESS

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### Climate Change on Senate Agenda

Sens. John McCain (R-AZ) and Joseph Lieberman (D-CT) continue to seek a legislative vehicle to attach their Climate Change Stewardship Act of 2003 (S. 139) and force a floor vote before the end of the 108<sup>th</sup> session. A number of hearings were held this spring to educate and build interest in their bill, which calls for a reduction of greenhouse gas production in the United States.

At a Senate Commerce hearing, Dr. Lee Hannah, a research fellow with the Climate Change Biology Center for Biodiversity Science Conservation International, and Dr. Lara Hansen, a senior scientist for the World Wildlife Fund (WWF) Climate Change Program, both spoke on the impact to biodiversity.

Dr. Hansen testified that as of 1997, corals in all of the world's coral oceans have experienced bleaching to some degree. Bleaching occurs when the colorful symbiotic algae that provide energy through photosynthesis die, due to some stress response. In localized events, these stresses have been attributed to changing salinity levels and pollution, while the global occurrence of bleaching has been linked to rising water temperatures. The bleaching of coral reefs, which is usually fatal to the coral, affects the entire reef ecosystem as it serves as a nursery and habitat for many aquatic species.

"Climate change is the major new threat to biodiversity this century," according to Dr. Lee Hannah, and will translate into a complete disappearance of the habitat, or will prevent the species, plant or animal, from following the climate shift, due to geographic barriers, thus making the area in which it can thrive considerably smaller.

Already Arctic communities are seeing changes in their climates, where ice forms later in the season and breaks up earlier, according to Dr. Robert Corell, chairman of the Arctic Climate Impact Assessment

(ACIA) and senior fellow of the American Meteorological Society. He spoke on the effects of global warming in the Arctic, which evolve more quickly than in other areas of the globe. Animals, such as the robin, are being seen further north where its existence in those latitudes is so unprecedented that the natives of the region have no word for it. Furthermore, sea levels are rising as the polar ice caps melt, causing villages that once stood along the shore to move further inland.

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### R&D Agencies Prepare for Cuts in FY 2006

The Office of Management and Budget (OMB) notified federal agencies that if President Bush wins reelection, next year's fiscal year (FY) 2006 budget request would cut spending for nearly all domestic programs as projected in February's FY 2005 budget, and that agencies should prepare to make cuts for most domestic programs when they prepare their initial FY 2006 proposals. The OMB memo leaked to the media in early June as agencies began preparing their FY 2006 requests.

Nearly all federal R&D programs outside the priority areas of defense, space, and homeland security would see their budgets decline in FY 2006 under the scenario that OMB directs agencies to follow, even programs that would receive increases in FY 2005.

The Bush Administration's plan to reduce the federal deficit in half over the next five years would cut R&D funding for 9 out of the 12 largest R&D funding agencies in real terms over the next five years, with the steepest cuts in FY 2006 after this year's elections.

For FY 2006, the OMB guidance memo means all R&D funding agencies except the Department of Defense (DOD), the National Aeronautics and Space Administration (NASA),

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*"A worry is that financial ties between federal scientists and outside pharmaceutical or biotech firms may introduce bias into the research process."* TURN TO PAGE 2

# Conflict-of-Interest Issues at the NIH

The National Institutes of Health (NIH) has been battling an onslaught of negative press from the revelation that many high-level scientists at the NIH have received large compensation payments from biotechnology firms and drug companies.

Under current policies, NIH employees are able to accept compensation from awards or private-sector consulting while they retain federal employment. Congress, which has its own narrow regulations regarding external compensation, has shown great concern over the potential improprieties or the appearance of ethical abuses with such activities in the NIH. A worry is that financial ties between federal scientists and outside pharmaceutical or biotech firms may introduce bias into the research process.

The House Energy and Commerce Subcommittee on Oversight and Investigations has held two hearings to explore NIH ethics and conflict-of-interest policies. A third

hearing, in mid-June, delved further into specific cases and showcased a new proposal by the NIH Director, Dr. Elias Zerhouni.

appeared unsatisfied with the perceived leniency of the panel's suggestions and concerned over possible loopholes in the proposed new guidelines. At both hearings, former and current administrators at the NIH defended the practice of outside consulting. Dr. Zerhouni and others asserted that public-private collaborations are essential to the advancement of public health and the translation of knowledge into medical practice. They also argued that compensation from and interaction with the private sector is crucial to recruit and retain top scientific talent. A member of the Blue-Ribbon Panel, remarked that without outside income, NIH scientists would be underpaid compared to their contemporaries in the private-sector and more likely to leave federal employment. This line of reasoning was insufficient for the subcommittee, and Rep. Diana DeGette (D-CO) who remarked that she, like other Congresspersons, earn much less than their private colleagues of the same experience level.

In the second hearing, Congress examined a specific conflict-of-interest case involving two scientists, one from the National Cancer Institute (NCI) of the NIH, the other from the Food and Drug Administration (FDA). The federal scientists had worked as co-principal investigators with a private firm to develop and commercialize an ovarian cancer screening tool. The scientists were subsequently recruited for outside consulting purposes by a competitor of the private partner. The scientists' requests to consult with the competing firm, which also developed technology to detect biomarker patterns, were approved by the FDA and NCI. The private partner, voicing objections, brought the issue to the attention of the NCI Deputy Director but the consulting arrangement was, nonetheless, re-approved.

The subcommittee felt that even the appearance of ethical improprieties as in this case and others merited changes to NIH policies. Rep. James Greenwood (R-PA) affirmed that when situations like this occur, damage is done to both the partnership and to public trust of the agency. Rep. DeGette suggested that the situation may even warrant a "ban on outside compensation." The subcommittee decided to press for even

greater transparency in private-sector activities and to require a larger number of employees to report financial disclosure than the Blue Ribbon Panel had suggested.

Dr. Zerhouni took notice of the subcommittee's discontent. He returned to Congress on June 22<sup>nd</sup> as a witness in the third hearing with a new proposal containing more restrictive and broader ethics regulations. The Director's plan aims to further limit the type of employees available

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*The subcommittee decided to press for even greater transparency in private-sector activities...than the Blue Ribbon Panel had suggested.*

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for outside consulting and restrict the type and amount of compensation received by employees who can consult. Dr. Zerhouni also proposed setting up a publicly-available, institute-wide financial disclosure database that would cover all NIH scientists.

Subsequent to the second NIH hearing, the FDA announced plans for a comprehensive assessment of its policies regarding employee involvement with outside activities. While the FDA has more stringent regulations concerning its employees' interactions with firms in industries it regulates, the case of the cancer screening biotech competitors revealed that the FDA may also be in need of a policy review. The Oversight and Investigations Subcommittee is concerned that ethical violations may be occurring throughout the federal government and recently sent out a letter to 15 agencies requesting information on employee involvement with outside entities.

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#### FOR MORE INFORMATION:

*NIH Conflict of Interest Website* [http://www.nih.gov/about/ethics\\_COI.htm](http://www.nih.gov/about/ethics_COI.htm)

*House Energy and Commerce Subcommittee on Oversight and Investigations* [http://energycommerce.house.gov/108/subcommittees/Oversight\\_and\\_Investigations.htm](http://energycommerce.house.gov/108/subcommittees/Oversight_and_Investigations.htm)

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hearing, in mid-June, delved further into specific cases and showcased a new proposal by the NIH Director, Dr. Elias Zerhouni.

In response to the initial congressional outcry, Dr. Zerhouni formed a Blue-Ribbon Panel to analyze the current conflict-of-interest policies and offer recommendations. The subcommittee, already aggravated by the health agency's slow response to their request last December for consulting information, questioned both Dr. Zerhouni and members of the panel during the first hearing. The panel's report, released in early May, recommends improving the transparency of outside activities, banning the use of stock options for compensation, and completely prohibiting some high-level employees from consulting activities. Several Members of the subcommittee ap-

# Effort to Maintain US Super-Computing Edge

A flurry of activities over the last few months in both the executive and legislative branches of government has highlighted the critical national importance of high performance computing (HPCs). In May, a White House Task Force released its report, the *Federal Plan for High End Computing*, outlining steps to improve computing research and development (R&D). The House recently passed two bills, introduced by Rep. Judy Biggert (R-IL), to coordinate and leverage HPC investments: the High Performance Computing Revitalization Act of 2004 (H.R. 4218) and the Department of Energy High-End Computing Revitalization Act of 2004 (H.R. 4516). In the Senate, the Energy (DOE) and Natural Resources Energy Subcommittee held a hearing to discuss S.2176, the Senate companion to H.R. 4516.

The *Federal Plan for High End Computing*, which addresses the inadequacy of the

processing to aircraft engineering and atmospheric modeling.

The House Committee on Science, sharing similar concerns, held a hearing in May to address H.R. 4218. Dr. Rick Stevens, director of the National Science Foundation's (NSF) Teragrid Project and the Mathematics and Computer Science Division at Argonne National Laboratory—located in Biggert's district—warned that the U.S. will be unable to maintain a leadership status in the future. He stressed that many of the sciences, such as materials science, genomics, astrophysics, climate modeling, high-energy physics, and cosmology rely on access to supercomputers for progress and advancement. Dr. Stevens further asserted that U.S. dominance in scientific research is directly proportional to supercomputer investment and availability.

H.R. 4218 amends the High Performance Computing Act of 1991 (Public Law 102-194) and creates a HPC R&D program, under the leadership of NSF and DOE, however it does not allocate any funding. The program would advance the capacity and ca-

pability of HPCs for use by researchers through R&D targeted to systems, networks, and network applications relevant to the public and private sectors. It establishes security standards and practices for systems and mandates an increase in the amount of graduates and undergraduates studying software engineering, computer science, computer and network security, applied math, library, and information and computational sciences.

While H.R. 4218 is endorsed by Dr. Jack Marburger, director of the White House Office of Science and Technology Policy, Dr. Stevens expressed concern that an over emphasis on research instead of deployment would allow firms to comply without actually providing new hardware. Dr. Stevens, nonetheless, voiced support for the overall goals of the bill.

On the other hand, H.R. 4516 mandates R&D in computing architectures and software development; sustained access to HPCs by the research community; technol-

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*many of the sciences, such as materials science, genomics, astrophysics, climate modeling, high-energy physics ... rely on access to supercomputers for progress and advancement.*

current federal program to meet the country's research needs, notes that scientists lack access to the latest, cutting-edge, high performance computers. It asserts that the private sector's current focus on developing computers for personal and business applications has led to a dearth of investment in scientific computing resources. This has created a high-cost, low-volume market that provides economic disincentives for industry to devote scarce resources to develop HPCs. Thus, HPCs today, especially those made from commercial-off-the-shelf components lack sufficient computing ability to solve current complex scientific challenges, ranging from weapons simulation and satellite data

## Animal Rights and Science

In May, Senate Judiciary Committee Chairman Orrin Hatch (R-UT) convened a hearing to take testimony about a pattern of intimidation and harassment against business and research enterprises that use animals. These actions are being carried out by the extremist wing of the animal rights movement, often with support from mainstream groups. Though the majority of scientists agree that the use of animals in research has played a part in many of today's medical treatments and continues to be integral to biomedical progress; animal rights groups argue that animal research is both unnecessary and unethical.

The Senate hearing focused on whether these activities have crossed the line between free expression and criminal behavior, and addressed the adequacy, or lack thereof, of current statutory law to meet these new challenges.

Witnesses at the hearing included individuals whose institutions or companies have been subject to attacks. William Green,

senior vice president and general counsel of Chiron Corporation—a biotech company that develops vaccines and other health products—testified that not only had Chiron been bombed twice, but its employees had become “victims of a sustained campaign of intimidation, harassment and extortion.” Actions against its employees include posting credit card numbers on the Internet; vandalism; and threatening and obscene phone calls. Further, the conveners of a scientific conference were warned of acts of violence if a Chiron employee was allowed to speak.

The attacks on Chiron reflect a relatively new tactic used by animal rights groups, called third-party or tertiary targeting. Chiron was singled out because it once was a customer of Huntingdon Life Sciences, a contract testing company that has been besieged by animal rights groups for several years.

These and other attacks are now facili-

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## R&D Agencies Cuts in FY06

*Continued from page 1*

the Department of Energy (DOE), and the Department of Homeland Security (DHS) must plan for cuts to their R&D portfolios as they begin preparing their FY 2006 requests, even for programs that are proposed to receive increases in FY 2005. The National Science Foundation (NSF) and the National Institutes of Health (NIH), proposed to receive increases in FY 2005, would see their gains reversed in FY 2006.

Although the FY 2005 budget process has started at a snail's pace in Congress, federal agencies have already started formulating their FY 2006 budget requests. Federal agencies and OMB will be working together to draft agencies' FY 2006 requests from now until the official release of the FY 2006 budget proposal next winter. Although the specific program cuts outlined in the AAAS analysis are not binding, the OMB guidance memo tells agencies the broad budgetary targets they must hit; this year's memo leaves agencies with little room to maneuver because it states that any increases to a program above the projected FY 2006 level would have to be offset by a cut in another program in the agency.

While the internal give-and-take between OMB and the agencies is just beginning and will involve several months of negotiations and appeals, it appears clear that the first budget of the potential second term of this Bush Administration would follow the course outlined by the President earlier this year: cuts in domestic spending accompanied by increases in defense and homeland security, further tax cuts, and unrestrained growth in entitlements spending. Although the specific program cuts outlined in the budget projections will change over the next several months of negotiations, it is clear that nondefense R&D outside NASA and DHS would decline steeply in FY 2006 unless there is either a change in the White House or a major change in Bush Administration policy.

### FY 2006 R&D Projections

Below are some highlights of the projections for FY 2006, illustrating the scenario that OMB directs the federal agencies to follow:

- While NASA, DOD, DHS, and DOE would see increases in their R&D funding between

the proposed FY 2005 budget and the projected FY 2006 funding level, all other R&D agencies would see their R&D funding decline next year.

- NIH must plan for a 2 percent or \$600 million cut in FY 2006 after a 2.6 percent increase in FY 2005, leaving the agency with a total budget of \$28.2 billion, barely above this year's \$28.0 billion budget. After factoring in expected inflation, NIH's FY 2006 budget would be 2 percent below this year's funding level.

- NSF would see its proposed gains in FY 2005 reversed the next year with a 2 percent or \$85 million cut for its R&D programs in FY 2006, leaving NSF R&D below this year's funding level after adjusting for inflation.

- Although DOE would see a gain in its R&D budget in FY 2006 because of projected increases for its defense and energy R&D portfolios, DOE's Office of Science would see its budget fall 2.4 percent or \$81 million in FY 2006 following a proposed cut in FY 2005. The Office of Science would see its R&D budget fall 5.4 percent in just two years after adjusting for inflation.

- Other R&D funding agencies would see further cuts in FY 2006 following proposed cuts in FY 2005. R&D in the U.S. Department of Agriculture (USDA, down 8.3 per-

cent over two years after inflation), the Environmental Protection Agency (EPA; down 11.6 percent), Commerce's National Oceanic and Atmospheric Administration (NOAA, down 6.2 percent), Commerce's National Institute of Standards and Technology (NIST, down 13.8 percent), and the Department of the Interior (down 8.4 percent) would decline two years in a row, even before inflation.

- Although DOD, DHS, and NASA would see increases every year over the next five years in their R&D portfolios, some of their programs would not be as fortunate. DOD would cut its support of "S&T" (basic and applied research plus technology development) steeply in FY 2005 and by another percentage point in FY 2006, leaving the DOD S&T portfolio 18 percent smaller after inflation than in FY 2004. And while NASA R&D would increase overall in FY 2006 to ramp up its moon-and-Mars activities, NASA funding for biological and physical research and earth science would fall steeply in FY 2006. •••

Prepared by Kei Koizumi

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#### FOR MORE INFORMATION:

*AAAS R&D Budget and Policy Program:*

<http://www.aaas.org/spp/rd/>

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## Super-Computing

*Continued from page 3*

ogy transfer to the private sector; and coordination among federal agencies. The bill allocates \$50 million in FY 2005 and increases funding to \$60 million in FY 2007.

Supporters hope to build upon the DOE's grant of \$25 million to the Oak Ridge National Laboratory for the construction of a new supercomputer capable of 50 trillion floating point operations per second (teraflops). The total cost is expected to lie between \$150 and \$200 million and would be faster than the Earth Simulator, a supercomputer developed in Japan in 2002. The Japanese supercomputer acted as a catalyst to renew U.S. leadership in supercomputing, prompting H.R. 4218, S. 2176 and the White House task force.

HPCs are critically important to DOE's National Nuclear Security Administration

(NNSA) whose mission is to safely maintain the U.S. nuclear weapons stockpile. Dr. Dimitri Kusnezov, director of Advanced Simulation and Computing at NNSA, testified before a June Senate Energy Subcommittee hearing that HPCs are critical to ensure the security and reliability of our nations nuclear weapons stockpile without the need for underground testing. Computing intensive simulations are used to assess and extend the life of nuclear weapons, according to Dr. Kusnezov.

H.R. 4218 and H.R. 4516 were recently passed by the House as part of the GOP competitiveness agenda. •••

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#### FOR MORE INFORMATION:

*House Science Committee:* <http://>

[www.house.gov/science/welcome.htm](http://www.house.gov/science/welcome.htm)

## CONGRESSIONAL RESEARCH SERVICE

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

- **Network Centric Warfare: Background and Oversight Issues for Congress (RL 32411)**  
This report discusses Network Central Warfare (NCW), a key component of DOD planning for restructuring of the military, which relies on computer processing power and networked communications technology to provide a shared awareness of the battle space for U.S. forces. It outlines potential oversight concerns for Congress, such as efforts to improve interoperability of computers and communication systems, and whether the DOD has considered unanticipated outcomes resulting from an over-reliance on high technology.
- **Computer Security: A Summary of Selected Federal Laws, Executive Orders, and Presidential Directives (RL32357)**  
This report provides a short summary of federal law, executive orders, and presidential directives currently in force that govern computer security, as well as the roles and responsibilities assigned to federal agencies. The report addresses differences between securing national security systems as compared to other federal computer systems. Finally, it outlines the role of the federal government with respect to non-government systems, the medical and financial industries, and investigation and prosecution of federal computer crimes.
- **Hubble Space Telescope: NASA's Decision to Terminate Shuttle Servicing Missions (RS21767)**  
This report provides an analysis of NASA's decision to terminate shuttle missions to service and repair the Hubble Telescope. The report indicates the decision is a result of reduced funding for astronomical research in favor of human and robotic exploration of the solar system. The report discusses the impacts and reaction to the decision, such as public support to reverse the decision or find other means of servicing Hubble.

## 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.*

- **Watershed Management: Better Coordination of Data Collection Efforts Needed to Support Key Decisions (GAO-04-382)**  
This report describes the importance of reliable and complete data for watersheds assessment, and provides an overview of (1) the key entities that collect water data, the types of data collected, how data is stored, and how data is accessed. The GAO found that coordination of water quality data has fallen short of its potential and concludes that designating a lead organization with sufficient authority could help alleviate these problems and ensure that watershed managers have better information upon which to base critical decisions.

- **Defense Space Activities: Continuation of Evolved Expendable Launch Vehicle Program's Progress to Date Subject to Some Uncertainty (GAO-04-778R)**  
This report discusses the importance DOD's Evolved Expendable Launch Vehicle (EELV) program, to meet the nation's critical space mission needs and including the launch of government satellites. The report states that though the EELV program has been successful in providing assured access to space and cost-saving goals, the program continues to face risks and cost increases. It found that program costs increased over the 2002 program baseline of \$18.8 billion, due to a variety of factors.

## 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)).*

- **Children's Health, the Nation's Wealth: Assessing and Improving Child Health (ISBN: 0-309-09249-3)**  
This report provides a detailed examination of the information about children's health that is needed to help policy makers and program providers at the federal, state, and local levels. The report recommends establishing a framework for children's health; establishing children's health as a national priority; improving measurement of children's health; and providing research to better understand children's health and its influences.
- **Academic Health Centers: Leading Change in the 21<sup>st</sup> Century (ISBN: 0-309-08893-3)**  
This report describes the enormous changes facing Academic Health Centers that will impact their roles in education, research, and patient care. An aging and diverse population will create new health care needs, while rapid advances in technology will fundamentally alter the health care systems' capabilities. The report explores how AHCs will redirect each of their roles in order to meet the burgeoning challenges of health care. The report recommends a close examination of the methods used in preparing health professionals, as well as the relationship among research programs and the design of clinical care.
- **New Treatments for Addiction: Behavioral, Ethical, Legal, and Social Questions (ISBN: 0-309-09128-4)**  
This report describes research advances on promising new means of treating drug addiction using immunotherapies and sustained-release (depot) medications. The aim is to develop medications that can block or significantly attenuate the psychoactive effects of such drugs for weeks or months at a time. Despite their potential benefits, however, several characteristics of these new methods pose distinctive behavioral, ethical, legal, and social challenges.

# scientific definitions

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

## CLIMATE CHANGE TERMS

**CLIMATE CHANGE** Refers to changes in long-term trends in the average climate, such as changes in average temperatures. In IPCC usage, climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. ([www.pewclimate.org](http://www.pewclimate.org))

**GLOBAL WARMING** An increase in the average temperature of the Earth's atmosphere, especially a sustained increase sufficient to cause climatic change. ([dictionary.com](http://dictionary.com))

**GREENHOUSE EFFECT** The warming of the Earth's atmosphere attributed to a buildup of carbon dioxide or other gases; some scientists think that this buildup allows the sun's rays to heat the Earth, while making the infra-red radiation atmosphere impermeable to infra-red radiation, thereby preventing a counterbalancing loss of heat. ([sciencedictionary.org](http://sciencedictionary.org))

**GREENHOUSE GASES** gaseous components of the atmosphere that contribute to the greenhouse effect. The major natural greenhouse gases are water vapor, which causes about 60% of the greenhouse effect on Earth, carbon dioxide (about 26%), and ozone. Minor greenhouse gases include methane, nitrous oxide, sulfurhexafluoride, and halocarbons such as perfluoromethane, Freon, and other CFCs. ([wordiq.com](http://wordiq.com))

**KYOTO PROTOCOL** a proposed amendment to an international treaty on global warming, the UNFCCC. Countries that ratify the protocol will commit to reduce their emissions of carbon dioxide and other greenhouse gases, which are linked to global warming. ([wordiq.com](http://wordiq.com))

**FOSSIL FUELS** hydrocarbon fuels or hydrocarbon-containing fuels such as petroleum (including natural gas) and coal. The burning of fossil fuels is the major source of emissions of carbon dioxide. ([wordiq.com](http://wordiq.com))

**BIOMASS FUEL** all organic matter of vegetable and animal origin which can be burned as fuel. Includes woodchips, sewage sludge, municipal waste, and vegetable oil. (<http://www.eubusiness.com/afp/040527153517.4pa6wj5r>)

**RADIANT ENERGY** (radiation) Energy propagated in the form of electromagnetic waves. These waves do not need molecules to propagate them, and in a vacuum they travel at nearly 300,000 km/sec. (<http://www.wrcc.dri.edu/ams/glossary.html>)

**RESERVOIR** A component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored. (UNFCCC)

**SINK** Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. (UNFCCC)

**SOURCE** Any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere. (UNFCCC)

## Climate Change

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At a May Senate Commerce hearing, Dr. William Curry of the Woods Hole Oceanographic Institution spoke on the role of ocean water circulation in climate change. Circulation in the ocean through vehicles such as the Gulf Stream helps to distribute heat trapped in the earth's atmosphere. Curry acknowledged that though the body of observational data is still young, only about 20 years, fresh water levels in the Polar Regions is already increasing as water stored in the ice caps begins to melt more readily. Furthermore, data shows that tropical waters are getting saltier as warmer weather accelerates evaporation, leaving a higher concentration of salt.

Despite incomplete data, scientists believe there is a precedent for the disruption of the ocean circulation to bring about abrupt climate change. These changes threaten the organisms that live with in it as well as potentially disrupting the circulation pattern important for maintaining a livable climate. Thus, more research is needed to more fully understand the role of the ocean in climate change, and include that knowledge into climate change models to enable better predictions.

The goal of S. 139 is to cap greenhouse gas emissions in two phases and to create a domestic market for trading pollution credits. The McCain-Lieberman bill would first reduce emission to year 2000 levels by 2010 and then further reduce greenhouse gases to 1990 levels by 2016 in the second phase. The bill was first introduced last fall, where it was defeated 43-55. In the House, Rep. Wayne Gilchrest (R-MD) introduced a narrower companion bill (H.R. 4067) that only contains Phase I reduction goals. The Gilchrest bill currently has 66 cosponsors.

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### FOR MORE INFORMATION:

**AAAS:** <http://www.aaas.org/news/releases/2004/0603climate2.shtml>

*American Geophysical Union Statement on Climate Change* [http://www.agu.org/sci\\_soc/policy/climate\\_change\\_position.html](http://www.agu.org/sci_soc/policy/climate_change_position.html)

*Arctic Climate Impact Assessment website:* [www.acia.uaf.edu](http://www.acia.uaf.edu)

*Woods Hole Oceanographic Institution:* <http://www.whoi.edu/>

## Animal Rights and Science

*Continued from page 3*

tated by the ease of communications made possible by the Internet, which has opened a new avenue for activists to expand their campaign. Messages and calls to action pass rapidly across the country, facilitating recruitment of sympathizers and providing an electronic resource for strategic offensive plans against selected institutions and individuals. At the same time, the Internet has been used to knock out a company's Web server by bombarding it with spam emails generated by automatic computer programs.

Two witnesses from the law enforcement community, John Lewis, deputy director of the Counterterrorism Division of the FBI, and McGregor Scott, U.S. Attorney for the Eastern District of California, expressed their frustration with current enforcement tools. The Animal Enterprise Protection Act of 1992 (AEPA) (18 USC 43), while a good first step, did not anticipate the evolving tactics of today's extreme activists made possible through technological innovation. In the past, law enforcement officials have relied on the 1951 Hobbs Act, which provides penalties for individuals who attempt to affect commerce through extortion, such as threats of violence or violent acts. However, in a recent decision involving anti-abortion activists (*Schiedler v. National Organization for Women*), the Supreme Court held that the actions did not constitute extortion as defined in the Hobbs Act.

The witnesses testified that while AEPA provides for penalties against those who engage in physical acts against animal enterprises, it is inadequate in addressing the economic damage against these enterprises by threats, coercion, and other acts of intimidation. The Department of Justice, therefore, is asking that the statute be amended to "prohibit the use of threats, vandalism, property damage, trespass, persistent and harassing communications, in-

timidation, or coercion in order to cause economic disruption to an animal enterprise."

Senator Hatch favors providing law enforcement officials with the means to prosecute the "egregious" actions of these groups and is expected to introduce an amendment to AEPA sometime in the fu-

ture. As of this writing, however, Democratic support on the committee is still being sought. •••

Prepared by Deborah Runkle  
AAAS Scientific Freedom, Responsibility, and Law Program: <http://www.aaas.org/spp/sfrl/>

## Politics & Science Policy

Science policy issues have taken an unusually high profile spot this summer in the Presidential race. Two issues that have garnered a tremendous amount of press recently are embryonic stem cell research and U.S. science and technology dominance.

A growing chorus of scientists, bipartisan politicians, and patient groups are urging President Bush to revise his August 2001 policy on embryonic stem cell research. This led Sen. John Kerry (D-CA) to issue a statement in support of an expansion of federal support, and the White House to counter with two new initiatives. The NIH recently announced the establishment of Centers of Excellence in Translational Stem Cell Research and the creation of a new National Embryonic Stem Cell Bank.

There also has been growing concern in the last few months over the loss of U.S. dominance in S&T innovation, causing industry and academic coalitions to warn that the lack of investment in basic research will cause future economic and workforce problems. Sen. Kerry publicly criticized the Bush Administration's S&T policies and its proposal to cut science funding over the next five years (see page 1). Kerry called for increasing R&D for the NSF and revealed a high-tech innovation agenda as part of his campaign platform. Both the White House and the House Research Subcommittee chairman, Nick Smith (R-MI), refuted Kerry's criticism, citing the current Administration's "stellar record of support for science and technology funding." •••

## AAAS NOTES

- **AAAS LEADERSHIP SEMINAR IN SCIENCE AND TECHNOLOGY POLICY**  
*November 15-19, 2004*

*The AAAS Leadership Seminar in Science and Technology Policy is a "crash course" in science and technology (S&T) policy, designed for those who need to know how S&T policy works. It is modeled after the highly acclaimed orientation program that AAAS provides for its new S&T Policy Fellows each fall, but distills the key material into 4 days instead of two weeks. Space is limited.*

*Visit the project website to learn more:*

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# Frontiers in Science



**Longevity, Genes, and Diet Linked** · Experiments on yeast, worms, and mammals indicate a reduction in calories increases lifespan, but until recently the mechanism was unknown. Two independent studies, from David Sinclair at Harvard Medical School, reported in the June 18<sup>th</sup> *Science*, and another from Leonard Guarente at MIT, reported in the June 3<sup>rd</sup> *Nature*, have linked aging and diet to a gene called SIRT1. Sinclair's study found SIRT1 restricted caloric intake in rats. According to Sinclair, "caloric restriction and genetic manipulations that extend lifespan typically protect cells from death." Guarente's study found SIRT1 caused fat shedding in mice. Guarente suggested that SIRT1 recognized food scarcity, and caused fat loss. He stated that "mice engineered to be lean live longer."

--->*The Scientist, June 18, 2004*

**Chimps Not Close Relatives** · New research has come to light showing the differences between humans and chimpanzees. International Chimpanzee Chromosome 22 Consortium reports 83%

of chromosome 22 proteins are dissimilar from humans. Yoshiyuki Sakaki, head of the consortium, believes the differences are much greater than previously thought. Early work thought there was about 1% to 5% genetic difference between chimps and humans. Not all agree these discrepancies imply drastic differences. Derek Wildman, from the Center for Molecular Medicine and Genetics at Wayne State University School of Medicine, states that the comparison showed him how similar humans and chimps really are.

--->*The Scientist, May 27, 2004*

**Hyperactivity Caused by Food Additives?** · Until recently, researchers had not found conclusive evidence that food additives exacerbate hyperactivity in children. John Warner, a pediatric allergist at the University of Southampton, U.K., recently examined a group of 277 three-year-olds. Half of these children were diagnosed with attention deficit hyperactivity disorder (ADHD). The children were observed while consuming additives in juice over a week, and then compared with behavior resulting from week-long consumption of juice without additives. Formal lab observations were unable to differentiate behavior, although parents detected significant differences, even in children without ADHD. Warner is now convinced parents should avoid food additives. Pediatrics professor Hugh Sampson of the Jaffe Food Allergy Institute at Mount Sinai College of Medicine agrees additives may have an effect on children's behavior, and suggests further study.

--->*Science Now, May 27, 2004*