

### **MIKULSKI AND BOND DECRY SMALL NSF INCREASE; RENEW SUPPORT FOR DOUBLING**

Exclaiming that she was “taken aback” by the “spartan” FY 2003 budget request, Senator Barbara Mikulski (D-MD) declared her renewed support for doubling the National Science Foundation’s (NSF) budget in the next five years. The Senator, Chair of the VA, HUD, Independent Agencies Appropriations Subcommittee, was joined at the May 15 hearing by the panel’s Ranking Republican, Sen. Christopher Bond (R-MO), who also expressed disappointment with the Administration’s request and his support for doubling. NSF Director Rita Colwell, new National Science Board Chairman Warren Washington, and Presidential Science Adviser and head of the Office of Science and Technology Policy John Marburger were witnesses for the defense.

Mikulski, in a rhetorical flourish, compared NSF to NATO. Declaring NATO a “crucial institution” that helped end the Cold War and preserve the peace in the 20<sup>th</sup> Century, she noted that science and technology helped win World War II and that NSF helps provide future economic and national security by supporting basic research.

The Senator chastised the Administration for presenting “an illusion of creating an increase” by the transfer of three programs from other agencies. (See *Update*, March 4, 2002). (These transfers have been almost universally opposed by Congress and are unlikely to take place.) Mikulski, however, conveyed her pleasure with the proposed increases for nanotechnology, biocomplexity, and information technology, but was disappointed with the proposed budgets for the core sciences, especially physics and chemistry.

She also wondered about what’s happening to our young people and how we can attract them to careers in basic science. Noting that workforce readiness for the next generation of science is a “skill shortage” problem, Mikulski scolded NSF for reducing its budgets for undergraduate education and

programs for women and minorities, calling these cuts “short-sighted.”

Bond admitted that the doubling proposition has “a long way to go,” but noted that the long-term sustainability and competitiveness of the U.S. is dependent on support for basic research. He strongly chastised NSF for their management of the Major Research Equipment account, citing a recent study by the agency’s Inspector General (IG) questioning accounting and management routines used by the Foundation in the construction and maintenance of these large facilities. (NSF has strongly disputed some of the IG’s conclusions.)

Director Colwell defended her budget proposal by again falling back upon the argument of priority setting. She highlighted the Administration’s Math Science Partnership program as one answer to the science education problem and the increase in stipends for graduate students as one way to improve the workforce problem. In the research account, Colwell mentioned the NSF priority areas in information technology, nanoscience and engineering, mathematics and statistics, biocomplexity, and the social, behavioral, and

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economic sciences, as well as the Administration's proposed climate change initiative.

Marburger expressed his displeasure with the doubling-the-budget proposition. He criticized the doubling-for-the-sake-of-doubling idea for lack of specificity and prioritization. Faced with the balancing-the-portfolio issue once again, Marburger defended the Administration's science and technology priorities, health and defense. He suggested that subsequent year budgets will address the balance issue.

### Appropriations Stalled

The appropriations process for FY 2003 remains stalled as the Congress works its way through the Administration's FY 2002 supplemental appropriations bill. In the House version of the supplemental there is a provision that stipulates how much money the appropriations committees will have to work with in making their original allocation decisions. House Appropriations Committee chairman C.W. Bill Young (R-FL) has announced that this is \$9 billion less than his committee needs to make credible allocations.

On the Senate side, where unlike the House, the budget resolution has not made it to the floor, there is still debate on how much to stipulate for a total

discretionary budget figure, so that the appropriators in the Senate can go to work. It appears that even in this election year, when everyone agrees that Congress needs to finish its work early, the FY 2003 appropriations process might keep everyone in town a lot longer than they desire.

### DOUBLING NSF BILL EMERGES FROM HOUSE SCIENCE COMMITTEE

With the bells ringing signaling an impending vote on the House floor, the Science Committee, chaired by Rep. Sherwood Boehlert (R-NY), passed a number of bills unanimously with swift dispatch on May 22. Among them was H.R. 4664, the Investing in America's Future Act of 2002, also known as the National Science Foundation (NSF) reauthorization.

Calling it a "pathbreaking" piece of legislation, Boehlert noted that the bill provides NSF with a 15 percent increase over the next three years. The Committee hopes this will provide an impetus and a message to appropriators to double NSF's budget in the next five years. The Committee did not provide a five year authorization in order to maintain its oversight capability of the agency.

Aside from the 15 percent increases, the legislation also calls for NSF to provide an annual plan to the Committee on the allocation of funding. The report is to include a description of how allocating the funding: 1) will affect the average grant size and duration of research grants supported by the Foundation by field of science, mathematics, and engineering; 2) will affect trends in research support for major fields of science, mathematics, and engineering, including for emerging multidisciplinary research areas; and 3) is designed to achieve an appropriate balance among major fields and subfields of science, mathematics, and engineering. Provisions 2 and 3 are broadened from the earlier version of the bill, which expressed concern only about the physical sciences.

Science Committee staff hope the bill will reach the House floor sometime in June. The Senate reauthorization process has begun (see next story) with a hoped for resolution sometime this summer. Of course, authorizations provide guidelines; the actual funding allocations are made by the

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appropriators, who are often much more constrained in their decision making.

## **SENATE SUBCOMMITTEE'S 'ROLLICKING RIDE' ON SCIENCE AND TECHNOLOGY**

Senator Ron Wyden (D-OR), Chairman of the Science, Transportation and Space Subcommittee, summed up his panel's hearing on May 22 as a "rollicking ride" through the science and technology issues facing the nation. With former House Speaker Newt Gingrich and former Clinton White House Chief of Staff John Podesta sitting side-by-side as key witnesses, both Wyden and Ranking Republican Sen. George Allen (R-VA), conducted the hearing as a rally for increased investment in these important areas.

In the bipartisan spirit of the hearing, Gingrich, as he has done frequently since leaving the Congress, heaped praise on former President Clinton. Podesta, in turn, had some nice words for current President Bush, praising him for increasing overall science and technology spending in the proposed FY 2003 budget.

The former Speaker championed the National Science Foundation (NSF), decrying what he called the "circle of timidity," proclaimed that NSF's annual budget should be increased to \$15 billion (which would triple its current funding). He declared that NSF could "productively absorb" this enormous boost. He also referred to the Hart-Rudman report that called increased investment in science and technology a key to the nation's future national security.

Gingrich, who is now honorary chairman of the Nanobusiness Alliance, spoke strongly about the miracles that nanoscience will provide in the near future, including cures for cancer and a pollution-free environment. Wyden asked about the social implications of nanoscience advances and the former Speaker replied that there are always by-products of scientific advances, but that should not stop cutting-edge research. He also strongly encouraged the need to understand the implications of engineered biologies, before others with evil intent beat us to it.

Podesta joined the chorus, which includes Wyden, of those who want the NSF budget doubled (see other stories). He noted that "Getting on the

path to double the NSF's budget will strengthen our nation's economy and security by providing support for advancements in science and technology research across all disciplines." Agreeing with the current Administration, Podesta also asked the Congress to resist the temptation to earmark research and development funding to specific institutions. Acknowledging Congress' right to set priorities, he strongly supported the peer review system for competitively awarding research funds.

The former White House Chief of Staff called for support of scientific freedom and openness, suggesting that the Bush administration shows "a strong policy preference for tilting the balance in favor of secrecy." He noted that this culture of secrecy "is bound to influence the direction of discovery, the efficient advancement of scientific knowledge, and the public's opportunity to assess the costs that come from a science program unchecked by public scrutiny."

Chairman Wyden inquired as to how his colleagues in the Congress could get excited about science and technology. Podesta noted how the Office of Science and Technology Policy would provide former President Clinton with two-page summaries of the latest scientific and technological advances every Sunday night. Wyden thought getting such summaries to the Congress would do some good.

Podesta also argued for a restoration of the Office of Technology Assessment (OTA), an office that provided reports to the Congress, but was abolished when the Republicans took over control of Congress in 1995. Gingrich, who had a major role in eliminating OTA, disagreed. He called for Congress to contract with the National Academy of Sciences, so that the members of Congress could relate directly with Ph.D. scientists.

The hearing also featured NSF Director Rita Colwell, who defended her FY 2003 budget priorities and noted the priority in the social, behavioral and economic sciences. Presidential Science Adviser John Marburger also testified, once again deflecting the restore-the-balance-in-the-science-portfolio argument. He asserted that the Administration believes in setting priorities and that this year it was the National Institutes of Health and the Department of Defense's turn for significant budget increases. Next year may be different. Alan

Leshner, Chief Executive Officer of the American Association for the Advancement of Science (AAAS), who also testified, decried this “taking turns” approach.

Both Wyden and Allen also noted the importance of training the next generation of the scientific workforce. From Allen’s perspective, the challenge the U.S. faces is “to continue the innovation economy,” with a talented workforce as the key. Gingrich called the problems with math and science education as big a crisis as terrorism. Marburger noted the President’s Math and Science Partnership program and Colwell referenced NSF’s priority on Learning and the 21<sup>st</sup> Century Workforce, which includes the creation of multidisciplinary Science and Learning Centers.

The Subcommittee, as part of the Commerce, Science and Transportation Committee, shares jurisdiction over NSF reauthorization with the Health, Education, Labor and Pensions Committee, which is expected to hold a hearing on the matter in early June.

### **CONGRESS DISCUSSES ROLE OF LIFESTYLE IN THE PREVENTION AND INTERVENTION OF DISEASE**

On May 16 and 21, Congress, in an increasing awareness of the need to prevent diseases through behavioral and environmental interventions, held hearings to discuss stress management in reducing heart disease and childhood obesity, lifestyle risk factors associated with premature death.

#### **The Role of Stress Management in Reducing Heart Disease**

On May 16 the Senate Appropriations Committee on Labor, Health and Human Services and Education examined the role of stress management in reducing heart disease. The hearing was chaired by Ranking Member Arlen Specter (R-PA), who noted personal experiences have led him to appreciate the value of stress management.

Attention to this issue would benefit public health, explained Peter Kaufmann of the National Heart, Lung and Blood Institute. He also noted that the results from years of research supported by the

NHLBI make clear that several modifiable behavioral and psychosocial factors play a significant role in the development, treatment, and prevention of diseases.

Kaufmann emphasized that because the evidence of acute effects of stress on cardiac events is well-established, and because the results of the initial clinical trials of stress management interventions for patients with established coronary disease appear promising, it seems prudent to integrate stress management approaches with cardiac rehabilitation programs for patients who want to avail themselves of these interventions. According to Kaufmann, while definitive evidence of beneficial effects of stress management on the progression of heart disease is not currently available, “we do know with certainty that altering several other behavioral risk factors – namely high fat diets, smoking, sedentariness, and overweight – can play a very substantial role in reducing heart disease.”

It is hard to separate out the effects of stress alone on heart disease, explained David Abrams of Brown Medical School. “Usually stress management is combined with other lifestyle and medical components to reduce heart disease.” He underscored that “if we are going to prevent heart disease in the first place, we must target people throughout their entire lifespan starting at a young age. This means giving everyone in the country messages in behavioral health and help with changing their behavior.”

He further noted that the power of changing behavior in the entire population is not fully appreciated. Small changes, stressed Abrams, can result in huge reductions in the absolute numbers of those with disease burdens. He cautioned, however, that this takes years to see. These opportunities must be viewed at many levels from health services to physician and patient behavior, Abrams explained, adding that public health and medical care delivery is weakest in prevention. The recent threat of bioterrorism has brought the need for a stronger infrastructure into sharp focus. Accordingly, Abrams called for an increased capacity to address health promotion and disease prevention as well as bioterrorism.

Abrams informed the Committee that continued progress depends on multidisciplinary research that focuses on both fundamental science and its

translation into practice and policy. He further noted that if all relevant target audiences can be reached with best practices, “scientific discoveries will yield an enormous return on the investment of the National Institutes of Health.”

Over 60 percent of patients’ visits are related to stress and psychosocial factors, explained Harvard Medical School’s Herbert Benson. Stress increases metabolism, heart rate, blood pressure, and rate of breathing. It can have major effects on the heart and circulation and related diseases. It directly influences hypertension, heart attacks, angina pectoris, and cardiac arrhythmias, Benson told the Committee.

Harvey Eisenberg expressed his concern that currently 90 percent of our health care dollars are allocated to “downstream interventions.” The inventor of a diagnostic imaging machine, Eisenberg emphasized that the integration of preventive, non-invasive imaging with biomedical and behavioral strategies holds great promise. “Advances in biomedical and behavioral science continue to yield improved treatments that can, under ideal conditions, prevent and even reverse the progression of heart disease,” Eisenberg told the Committee. If implemented widely, he emphasized, these treatments could reduce the health and financial burdens of heart disease at a national level. He stressed the need to “reach citizens earlier before the symptoms appear that signal the ‘downstream’ result of advanced heart disease.”

According to Eisenberg, the specific challenge is to reach those who are currently healthy, but are in the early stages of cardiovascular and other diseases, with the best prevention tools from biomedical and behavioral medicine. Screening and treatment for lifestyle related risk factors (e.g. smoking, stress, obesity, poor diet, and physical inactivity), he related to the Committee, can make a measurable impact on preventing, slowing, or reversing the progression of heart disease.

### **Information Is Not Sufficient To Change Behavior**

“We tend to think of advances in medicine as a new drug, a new surgical technique, a laser, something high-tech and expensive. We often have a hard time believing that the simple choices that we make each day of our lives – what we eat, how we

respond to stress, whether or not we smoke, how much we exercise, and the quality of our social relationships – can make powerful differences in our health and well-being, even in our survival, but they often do,” explained Dean Ornish (Preventative Medicine Research).

Ornish added that “providing health information is important but not usually sufficient to motivate lasting changes in behavior unless the underlying psychosocial issues are also addressed.” He requested that the Senate Appropriations Committee consider substantial increases in funding for rigorous scientific research into the effects of emotional stress on health and disease, nothing that emotional stress affects the health and productivity of almost all Americans.

Karen Matthews (University of Pittsburgh School of Medicine), a director of one of five scientific mind/body centers established by NIH in 1999 at the encouragement of the Senate Appropriations Committee, also called for an increase in research in this area. Matthews’ center (Pittsburgh Mind-Body Center) is dedicated to understanding how stress and other psychological factors translate into risk for diverse diseases, including heart disease. She underscored three points:

- 1) Psychological stress is typically considered a process and not a single event. It can trigger ischemia, heart attack, and premature death.
- 2) Adequate tests of the impact of stress management interventions in heart disease patients have been few in number, but combining together the data from small clinical trials shows that psychosocial interventions can be a useful adjunct to other therapies.
- 3) The science of behavior change and practical knowledge of how to conduct clinical trials have advanced sufficiently so that now is an opportune time to conduct high quality studies on the impact of stress reduction on preventing or reversing heart disease.

Few people in the United States have adopted lifestyles that are associated with very low risk for heart disease, in part because of the difficulty of changing well-practiced behaviors later in life and in part because stress may interfere with altering behaviors to more health-promoting forms. Matthews emphasized that we need a better understanding of the role of stress in the acceleration

disease risk early in life and how stress management interventions might impact early risk trajectories. Stress management combined with promoting healthy life styles in adolescence and young adulthood may have long term economic and social and advantages, she added.

### **An Obesity Epidemic**

On May 21 the Senate Health, Education, Labor and Pensions Committee held a hearing on the problem of obesity, particularly among young people. The hearing was chaired and called by Senator Jeff Bingaman (D-NM) to discuss legislation he and his colleagues are drafting to combat the nation's obesity problem. (See *Update*, January 28, 2002).

"The rising rates of obesity are accompanied by a host of health consequences, including heart disease, some cancers and stroke," said Bingaman in his opening statement. He emphasized that "equally compelling is the fact that many health problems that are typically thought of in the context of adults, including early warning signs of heart disease such as high cholesterol and high blood pressure, and type 2 diabetes, are becoming increasingly prevalent in children."

Bingaman observed that "although obesity has increased across all populations, this increase is occurring at disproportionate rates among at-risk, medically underserved populations that include racial and ethnic minority groups and persons of lower income status."

"Perhaps most disturbing are the increases among America's young people," exclaimed Senator Bill Frist (R-TN), noting that in Tennessee, nearly 12 percent of high school students are overweight and 82 percent reported eating fewer than the five recommended servings of fruits and vegetables per day. Poor nutrition and physical inactivity are among the factors that are responsible for an even greater percentage of deaths today. The good news, explained Frist, is that obesity for the most part is preventable. "While there is no single solution, we know that much progress can be made by providing better information, healthier nutrition options, and increased opportunities for physical activity," he added.

The government has a role to play both through leadership and legislation, said Frist, echoing Bingaman's call for more research to "find new solutions and better target known interventions." He also called for more resources to expand successful programs. "Enhanced oversight, better coordination of existing programs, and limited pilot programs can help us find innovative, cost-effective ways to reduce and prevent obesity," the Senator said.

### **Coordinated Policy and Environmental Changes Required**

William H. Dietz, Director of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, informed the Committee that in the last 20 years obesity rates have increased by more than 60 percent in adults. Since 1980, rates have doubled in children and tripled in adolescents, Dietz said. Approximately 50 million adults are obese and almost 15 percent of America's children and adolescents are overweight, approximately eight million young people.

By the way of comparison, obesity has roughly the same association with chronic health conditions as does 20 years of aging, and the costs of obesity were recently estimated to exceed the health care costs of smoking and problem drinking, Dietz explained.

He further asserted that the "rapidity with which obesity has increased can only be explained by changes in the environment that have modified caloric intake and energy intake." Given the size of the population that we are trying to reach, said Dietz, we cannot rely solely on individual interventions that target one person at a time. "The prevention of obesity will require coordinated policy and environmental changes that affect large populations simultaneously," he stressed.

According to Dietz, at least four behavior change strategies appear justified by the current state of our knowledge: 1) the development of sophisticated marketing messages designed to increase health behaviors among youth, 2) the promotion of breast feeding and efforts to increase its duration, 3) reduced television viewing in children and adolescents, and 4) increased physical activity for the population.

## Lifestyle Diseases

Kelly D. Brownell, Yale University Professor of Psychology, Epidemiology and Public Health, emphasized that the “combination of prevalence with medical and social/ psychological consequences surrounding obesity equals a crisis.” The environment is the key contributor to the obesity epidemic, he stressed. Until we recognize that the current obesity epidemic is being caused by an environment of toxic food and physical inactivity, we will lose the battle, Brownell informed the Committee.

We have to make philosophical choices, he said. Helping people already facing the problem is compassionate but will not treat the problem away. This necessitates prevention efforts aimed at children, he concluded.

Sally Davis, Director of the Center for Health Promotion and Disease Prevention at the University of New Mexico, observed that over the last 30 years she has seen lifestyle diseases such as obesity and diabetes increase at alarming rates and in younger ages than ever before. Paralleling these health trends is a decrease in school physical education and recess, an increase in the availability of calorie dense foods, and a less active lifestyle.

Davis discussed her Center’s most recent intervention, Pathways, with tribes and universities across the country. The program, said Davis was successful in increasing children’s knowledge about nutrition, physical activity, and health in general and positively affecting their related behaviors. Davis explained that since the program’s completion the Center has received more than 300 requests from across the country for the intervention materials and training in their use. Unfortunately, the Center does not have the funds for dissemination, she lamented.

The science of what we know about increasing physical activity and improving nutrition and particularly preventing obesity is very new and therefore very limited, cautioned Davis. If we are to identify solutions to the growing problems associated with obesity, it is important that programs like Pathways and others that are innovative, meet local needs, and are rigorously evaluated, be supported through funding and legislation. We need to find out what works and what doesn’t work in the

prevention of obesity and the improvement of physical activity and nutrition, Davis concluded.

## Legislation Is Needed

To tackle the problem Bingaman, along with Senators Frist, Christopher Dodd (D-CT), Susan Collins (R-ME), and Ted Stevens (R-AK) are drafting legislation, *Improved Nutrition and Physical Activity (IMPACT)*, aimed at promoting better nutrition and increasing physical activity. “Obesity is a problem that will require a comprehensive, multi-faceted approach,” he told the standing room only audience.

## FARM BILL PASSED; IFAFS DEFINITION EXPANDED

On May 13, President Bush signed the Farm Bill, a 10-year, \$190 billion document that was the subject of much partisan wrangling.

The Bill reauthorizes the Department of Agriculture’s programs, including research accounts in the Cooperative State Research, Education, and Extension Service, the Economic Research Service, and the National Agricultural Statistics Service. Most of these programs were reauthorized at current levels.

The Initiative for Future Agriculture and Food Systems, however, which had been frozen by the 2002 Agriculture Appropriations Act was revived, and its research targets were expanded to include studies on rural economic and business and community development policy.

## COSSA TO HOLD BRIEFING ON THE GENETIC REVOLUTION

COSSA will hold a briefing entitled *The Genetic Revolution and the Meaning of Life: How will Society Respond to the Explosion of Knowledge* on June 7 from 8:30 to 10:30 a.m. in Room B-340 of the Rayburn House Office Building.

For more information go to our website at <http://www.cossa.org/ELSI.htm>.