

Testimony of
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On
FY 2010 Appropriations for the Department of Energy Office of Science

Submitted to the
House Committee on Appropriations
Subcommittee on Energy and Water Development
Congressman Peter J. Visclosky, Chair
Congressman Rodney P. Frelinghuysen, Ranking Member

April 3, 2009

On behalf of the **Federation of American Societies for Experimental Biology (FASEB)**, I **respectfully request an FY 2010 appropriation for the Department of Energy Office of Science (DOE SC) of 8% over FY 2009**. This increase will provide the Office of Science with the ability to sustain support for critical research programs that spur scientific innovation, fuel the economy, move the nation towards energy independence and improve human health.

FASEB is composed of 22 societies with more than 80,000 members, making it the largest coalition of biomedical research associations in the United States. Our mission is to advance health and welfare by promoting progress and education in biological and biomedical sciences, including the science supported by DOE SC.

“[T]he Office of Science is commit[ed] to invest in some of the most exciting and daring research that humankind has ever conceived, from explorations into the origins of our universe and the constituents of life, to the scientific knowledge that will deliver new, clean, and abundant sources of energy to meet world needs for 10 billion people by the year 2050.”

This bold statement from the DOE SC *Strategic Plan*¹ highlights DOE SC’s unique role in serving as a catalyst for discoveries in basic energy research and in environmental and life sciences as well as computational science. The research programs and facilities at DOE SC support further cutting-edge science and technological innovations that safeguard our nation, strengthen our economy, and improve the daily lives of the American people.

Each year, more than 25,000 researchers from universities, other government agencies and private industry use DOE SC’s extraordinary system of national laboratories and research facilities. DOE’s state-of-the-art facilities comprise the most advanced research system of its kind in the world and permit the agency to support unique and vital programs in climate change, geophysics, genomics, materials and chemical sciences, and life sciences. The Office of Science’s emphasis on interdisciplinary scientific research supports and extends the basic

¹ United State Department of Energy. 2004. Office of Science Strategic Plan.
http://www.er.doe.gov/about/Strategic_Plan/Feb-2004-Strat-Plan-screen-res.pdf

research that other federal agencies sponsor, and much of the research that non-DOE science agencies fund could not occur in the absence of DOE's highly specialized research infrastructure.

DOE's contribution to research and science extends beyond the benefits of its national laboratories. The Office of Science is also a principal supporter of graduate students and early career postdoctoral researchers at U.S. colleges and universities. Almost 50 percent of DOE SC's research funding supports research at over 300 colleges, universities and institutes nationwide.

Discoveries that Improve Health & Well-Being

Scientists whom DOE has supported have uncovered a wealth of basic biological knowledge and have produced astounding health technologies.

- ***Restoring Function to Patients with Disabilities:*** Office of Science funding led to the bion® microstimulator, a miniature rechargeable and implantable neurostimulator that may benefit 50 million Americans who suffer from debilitating conditions by stimulating viable nerves and muscles to prevent muscle deterioration and help restore nerve and muscle function. The device can address a wide variety of diseases and disorders, including incontinence, chronic headaches, peripheral pain, angina and epilepsy.
- ***Targeted Cancer Therapies:*** DOE scientists have developed the Cesium-131 Brachytherapy Seed, one of the most significant advancements in brachytherapy (short distance treatment involving the use of carefully placed, radioactive "seeds") for cancer treatment in nearly 20 years. In treating prostate and other cancers, it delivers a highly targeted therapeutic dose of radiation to the tumor quickly and with potentially fewer side effects.

Although research DOE SC has funded has already positively influenced our lives and health, opportunities on the horizon are even more exciting. For example, the DOE-SC Artificial Retina Project is developing an artificial retina that can restore sight in patients who are blind; the technology can also help persons who are deaf as well as those who have spinal cord injuries, Parkinson's disease and almost any other neurological disorder. Additionally, researchers at the Argonne National Laboratory and the University of Chicago are engineering an "ice slurry" to cool organs; the slurry may help save stroke or cardiac arrest patients from the destruction of their brain and heart cells.

Cleaner and More Secure Energy Future

Fundamental discoveries in basic energy sciences funded by DOE SC are already having an impact on the energy we use daily and are continuing to pave the way for the next generation of environmentally-conscious, sustainable energy sources. As a recent report² on future energy needs produced by DOE stated, "Major new discoveries are needed, and these will largely come from basic research programs."

² United States Department of Energy, Basic Energy Sciences Advisory Committee. 2003. *Basic Research Needs to Assure a Secure Energy Future*. http://www.sc.doe.gov/bes/reports/files/SEF_rpt.pdf

- ***Building Better Batteries:*** DOE SC discoveries resulted in lithium batteries that offer high-energy storage capacity in an environmentally benign package. Lithium batteries are widely used in both consumer and defense applications, such as cellular telephones and notebook computers. Moreover, DOE researchers have generated a solid-state, fluoride-based battery that is safer than traditional batteries in high-temperature applications such as oil, gas and geothermal drilling.
- ***Hydrogen Technologies:*** At the Argonne National Lab, scientists have constructed the world's fastest commercially producible hydrogen sensor that can be used in hydrogen-powered cars to detect unsafe levels of hydrogen. Scientists have also developed materials resistant to metal dusting degradation, which will be used to make more durable equipment in plants that manufacture hydrogen.

Researchers are also on the brink of developing new technologies to meet our most pressing energy needs. In an effort to increase the amount of solar power in the nation's energy supply, DOE SC is investing in research aimed at improving conversion of solar energy to both electricity and chemical fuels. Moreover, fundamental research awards have been made to institutions nationwide as scientists work to overcome key hurdles in hydrogen production, storage and conversion in an effort to increase the feasibility of hydrogen fuel.

Recognizing the Importance of DOE Research

The passage of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education and Science (COMPETES) Act of 2007 renewed our nation's commitment to science and technology and established a seven year doubling path for the budget of DOE SC. In 2009, generous funding provided in the Omnibus Appropriations Act and the American Recovery and Reinvestment Act began to fulfill the commitment Congress has made to scientific and technological innovation. In 2010, we ask that this support continue, both to protect the investments that have been made, and to realize the potential of the scientific enterprise. An FY 2010 funding level for DOE SC of 8% over FY 2009 will allow DOE to greatly enhance its groundbreaking research portfolio and permit it to confront current and future energy and health challenges. Scientists who have received DOE SC funding have made and continue to make extraordinary breakthroughs that contribute to the quality of our lives and facilitate advances that drive our nation's innovative technologies.