Testimony of
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Before the
Senate Committee on Health, Education, Labor, and Pensions
Senator Edward M. Kennedy, Chairman
Senator Michael B. Enzi, Ranking Member
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Thank you, Chairman Kennedy and Ranking Member Enzi for the invitation to speak to the Committee today. I am here to speak about the National Science Foundation (NSF), an important federal agency supporting science research and education and about the importance of the U.S having a sustained investment in science research.

In the recent FY 2008 Omnibus appropriations bill, science research was not funded at a level that will ensure our ability to compete globally. The U.S. must make adequate yearly investments in science research, and these investments must be stable over the long-term. Dependable increases allow for planning, infrastructure development, feasible expectations, a manageable pipeline of graduate and post doctoral students, and the creation of positions that can be sustained over time. A predictable pattern of funding will facilitate a continuous stream of high level research and researchers.

We should be developing a mechanism that ensures year over year funding that supports the continued growth and competitiveness of the U.S. science enterprise instead of the practice of doubling agency budgets over some time period. After reaching a goal of doubling an agency's budget, the temptation is to consider the "job" done and at best to level fund the agency for a considerable number of years in the future. This mode of funding ignores the expectations of the scientific community supported through the agency as well as the loss of positions and opportunities for researchers and students. Current funding methods have a tendency to create imbalances in the U.S. science portfolio.

As the primary source of federal support for non-medical basic research in colleges and universities, the NSF is the only federal agency whose mission includes comprehensive support for all the sciences, mathematics, and engineering. Equally important are investments in people who will apply new knowledge and expand the frontiers of science, mathematics, and engineering. Through its support of research and education programs, the agency plays a vital role in training the next generation of scientists, engineers, and mathematicians.

Over the past half century the NSF has had monumental impact on our society. The NSF investment has paid dividends in building the infrastructure of the individual scientific disciplines, as well as laid the groundwork for innovative interdisciplinary research to meet modern day scientific and technical challenges. Many new methods and products arise from the NSF investment in research, such as geographic information systems, World Wide Web search engines, automatic heart defibrillators, product bar codes, computer aided modeling (CAD/CAM), retinal implants, optical fibers, magnetic resonance imaging technology, and composite materials used in aircraft. NSF-sponsored research has triggered huge advances in understanding our planet's natural processes. This has provided a sound scientific framework for better decision-making about Earth's natural environment. These methods, products, and advances in understanding accrue from basic research performed over many years, not always pre-determined research efforts aimed toward a specific result. Furthermore, the NSF traditionally receives high marks for efficiency; less than four percent of the agency's budget is spent on administration and management.

Even with all its success in supporting cutting edge research, the NSF has not received adequate funding in the last several years. The 2.5 percent NSF budget increase from 2007 to 2008 has put pressure on many NSF programs and NSF projects. A few impacts of the FY 2008 budget are: 1,000 fewer new research grants and 230 fewer Graduate Research Grants will be awarded; several major program solicitations and new facilities will be delayed for at least a year, and some existing facilities will be reduced; the Faculty Early Career Development and Research Experiences for Undergraduate programs will be reduced; and start-ups of several planned centers will not occur in FY 2008.

In 2002 the Congress passed and the President signed the NSF Authorization Act of 2002 (Public Law 107-368). Among other things this Act authorized the doubling of the NSF budget in the five year span 2002-2007, which would have brought the NSF budget to $9.84 billion in 2007. Note that the NSF FY 2008 budget is $6.03 billion. In 2007 the America's Competes Act

(PL 110-69) was passed into law. This bill implicitly implied a doubling of the NSF in seven years. The first installment, $6.6 billion, was authorized for FY 2008 and $7.33 billion is authorized for FY 2009 in contrast to the FY 2009 Budget Request mark of $6.85 billion. It is unlikely that the NSF will see $7.33 billion in the next fiscal year.

Using the 1998 NIH budget as the baseline, the Congress focused on doubling the NIH budget by the 2003 appropriation. During this time of doubling, the NIH budget grew at an annual rate of 14.63 percent. However, from 2003 to 2008 the NIH budget increased only at an annual rate of approximately 1.7 percent. This means that over the ten year span from 1998 to 2008, the NIH budget grew at an annual rate of approximately 8 percent.

In retrospect, a better approach would have been to steadily increase the NIH budget at around 8 percent a year or some other sustainable rate. Ramping up the budget in five years raised expectations and promoted increases in the pipeline of students and the number of post doctoral and research positions in universities. Once this dramatic influx stopped, many of these scientists were put in jeopardy, and research labs could not be sustained at previous levels.

We need to develop an index of growth that makes the funding of federal agencies transparent. This index should be based on economic, competitive, and sustainability factors as well as U.S. goals. Without such an index, we will continue to have up cycles followed by down cycles. This is not good for research; it is not good for enticing students to study science, engineering, and mathematics; and it is not good for U.S. competitiveness.