state, along with nearly every Congressional district, receives NIH research funding. Approximately 11 percent of our budget funds nearly 7,000 intramural scientists working at the NIH campus in Bethesda, in laboratories in Baltimore, Rockville and Frederick, Maryland; at Research Triangle Park near Raleigh, North Carolina; at the Phoenix Epidemiology and Clinical Research Branch in Phoenix, Arizona; and at the Rocky Mountain Laboratories in Hamilton, Montana.

Public Health Benefits:

NIH basic research and translational and clinical advances have sparked a revolution in the diagnosis, treatment, and prevention of disease. Biomedical research funded by NIH has prevented immeasurable human suffering and yielded economic benefits as well as helping tens of thousands of U.S. citizens live longer, healthier, and more productive lives. These benefits include:

- a nearly 70 percent reduction in the death rate for coronary disease and stroke in the last half century;
- a nearly 30 percent decline over the last three decades in the age-standardized prevalence of chronic disability among American seniors;
- a 40 percent decline in infant mortality over 20 years; and
- more than 150 FDA-approved drugs and vaccines, or new uses of existing drugs.[1]

Just a month ago, the Centers for Disease Control and Prevention (CDC)r

measure due to NIH-funded research that has enabled us to better understand and manage this disease.[3] But it also underscores the urgency of NIH's research mission: we must fight the obesity epidemic in our population and prevent type 2 diabetes in the first place.

DPCPSI and the Common Fund:

The NIH Reform Act established DPCPSI to identify research that addresses important areas of emerging scientific opportunity, emerging public health challenges, and knowledge gaps. Research addressed by DPCPSI must merit special emphasis, benefit from additional research hnal

be considered unconventional and high-risk, but if successful, might transform our understanding of a wide range of biomedical problems, develop transformative tools and methods, or establish new clinical paradigms. The HRHR program emphasizes early stage investigators, who often have the most innovative ideas, but don't have the research "track record" to qualify for funding from more traditional grant mechanisms.

As directed by the Reform Act,

III. Priority Setting:

With the responsibility to set scientific priorities comes an obligation to explain how we do this and demonstrate that we are being good stewards of taxpayer dollars. Let me discuss the four principles that govern how we set our research priorities.

First and foremost, NIH responds to public health needs. These needs, whether an emerging infectious disease or the growing burden of chronic disease management on patients, our health care system and our economy, are addressed through a complex balance among basic, translational, and clinical sciences. The incidence, severity, cost, and sheer human suffering associated with specific conditions are also factors in how we set research priorities.

Secondly, NIH applies stringent critical peer review, provided by outside scientists who are experts in a given field, to rank the scientific opportunity and quality represented by the research proposals submitted. This intense competition has always assured that NIH research is of the highest scientific quality.

Thirdly, scientific history has repeatedly demonstrated that significant research advances occur when new findings, often completely unexpected, open up new experimental possibilities and pathways. We constantly are assessing our research portfolio in light of what the latest science suggests. Frustratingly, not all disease or scientific problems are equally ripe for new advances, nor do such advances come at the same rate across the portfolio, no matter how pressing they might be for the public's health.

Finally, we strive to ensure the diversity of NIH's research portfolio. We simply cannot predict the next scientific revelation or anticipate the next opportunity. If you think of scientific priority-setting as a series of thousands of doors that we might open—when we cannot know what is behind any one door—you can appreciate the challenge of setting priorities and the need for a broad research portfolio.

IV. Technology is Driving Science: NCATS as NIH Response

The new structures, mechanisms, and flexibility given to NIH by the Reform Act came at an especially opportune moment in scientific history. The technological revolution that we are seeing in biomedical research and the flexibilities have enabled us to respond more nimbly to what I consider the major challenge in getting therapies to patients.

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curve for sequencing is dropping at a breathtaking rate, sequencing speed has increased

even faster than computer processing speed. What's

brain in the mice and, over time, spread from cell to cell to other areas of the brain in a pattern very similar to the earliest stages of human Alzheimer's disease. The discovery of the tau pathway could influence the direction of future research and give investigators a target for drug development that might arrest Alzheimer's disease progression at very early stages when the disease is most amenable to treatment.[11]

decade or more. And we are building new public-private partnerships to speed drug development by repositioning abandoned compounds.

Precision Medicine for Cancer:

Mutations in the genome of individual cells are what cause cancer, most often in response to something encountered in the environment, and cause good cells to go bad. Advances in DNA sequencing are now making it possible to identify the precise mutations that cause a normal cell to become malignant. The Cancer Genome Atlas is moving swiftly to sequence the tumor genomes of hundreds of cases of each of the twenty most prevalent forms of cancer. Such new knowledge is enabling us to discover new pathways and develop entirely new forms of targeted therapy. Soon, we may be able to apply this technology to allow every tumor in every cancer clinical trial to be sequenced within a few days of biopsy, allowing for a choice of the optimal therapy for each patient. Another opportunity we are pursuing is the development of new cancer biomarkers, including DNA circulating in the bloodstream, to identify responses to a given therapy. We hope to then use our knowledge of these responses to apply combination-targeted therapies and aim not only for response, but for cure.

Reverse the National Epidemic of Obesity:

The rising prevalence of obesity in the United States, especially in children, threatens to erase the gains in longevity achieved over the past decades. And, as I mentioned earlier, an increase in obesity brings an increase in its twin epidemic, diabetes.

To stem this epidemic, we are working to develop an evidence-based approach to helping

remained the same: to apply the best science and medicine to end preventable human suffering from disease and disability.