

Position Statement, Association of American Physicians

The imperative to invest in science has never been greater

In order to sustain and improve the health of Americans, to ensure our ability to overcome new health challenges, and to realize the economic benefits of a vigorous scientific economy, we encourage our government to implement three actions. First, establish predictable, managed growth in the US scientific enterprise by establishing a sustainable and predictable real annual increase in science funding. This will require additional investments in the proven NIH-university partnership to maintain our world-leading position in biomedical science. Second, preserve the current cadre of well-trained junior scientists, including physician-scientists, and maintain a pipeline of young scientists motivated to innovate and improve health. Third, analyze changing health needs and priorities for health science-related investments in order to address ongoing shifts in population demographics and diseases, opportunities for improved prevention or treatment, and the availability of new scientific tools and disciplines.

It is in the nation's best interests — for good health, for a robust economy, and for scientific leadership — to advocate for strong federal support of biomedical science in America's great research universities. Translation of this science yields enormous benefits to our nation's health and to the economy.

Over the last 60-plus years, since the creation of the NIH and other federal agencies that fund science at research universities and intramurally, the US has led the world by investing in the scientists and the research that has profoundly improved our health. The return on this investment has been realized in three ways. First, life expectancy of Americans has almost doubled over the past century, from 47 years to over 80. Scientific advances and translation into impact — through public health and medicine — has contributed significantly to this remarkable statistic. Second, new diagnostic tests, medical treat-

ments, minimally invasive surgeries, and other approaches to improve population health have enhanced disease prevention, uncovered cures for many diseases, and improved health and quality of life. Third, the US has led the world scientifically, catalyzing the biotechnology revolution as well as the health revolution.

These benefits have been translated into an economic engine that has created jobs, innovative businesses, and a healthier workforce. This momentum has also attracted young scientists interested in devising new interventions to improve health through their own research and intellectual enterprise.

Scientific, health, and medical advances have occurred because of a dynamic partnership between federal agencies and America's great research universities, jointly supporting the world's leading health scientists and their innovative research. Neither sector could have achieved these benefits alone. Because universities are committed to the advancement of knowledge and to free and open access to new ideas, the vibrancy of this partnership has been the foundation for peerless scientific leadership. The critical mass of expertise in our universities, and their linkage to patients' lives and public health improvement, has connected basic science — from the study of cells to society — to improved medical care and improved population health.

The American public is justifiably proud that our physicians can now deliver important lifesaving treatments. Vaccines prevent dozens of diseases that ravaged previous generations. Heart disease has plummeted because of preventive strategies, including lowering cholesterol levels and effective interventions such as angioplasty (1). Lifesaving treatments are available for infectious diseases, including daunting viruses such as HIV. All of these have been discovered through NIH-funded science in universities, with critical leadership provided by physician-

scientists trained and sustained by the university model. Patients with arthritis, diabetes, heart failure, mental disorders, and myriad other chronic diseases now have treatment options never imagined a few decades ago — treatments that could not have emerged from the private sector alone. Studies of the genetic causes of cancer are yielding new treatments that are targeted specifically to the cause of the tumor. We now transplant kidneys, livers, hearts, and lungs with high success rates. Each of these advances, and many others, can be traced from research advances at universities, to new standards of medical care and disease prevention, to population-based ways to protect all of our health, and finally to a robust private sector. Our breadth of scientific capabilities — from bench to bedside to neighborhoods — is unparalleled and is essential to ongoing good health and economic prosperity.

Many unsolved and emerging health needs remain, however, demanding new solutions. Despite advances, we are not keeping up. Of deep concern is that US health status has declined in recent years to the lowest among peer nations (2). Just as we face many economic challenges, we are confronted by changing health needs, yet at the same time, we have science on the verge of breakthroughs. Investing in the science of the future will matter deeply. It is clear that now is the time to build on our immense capabilities, and not let them lapse. Furthermore, the complexity of our health needs demand building on the new capabilities with high likelihood of health impact, such as specific cancer and immunologic breakthroughs, while discovering effective prevention for emerging conditions, such as obesity and Alzheimer's, that will preserve Americans' health into the oldest ages. The organization of science into broad, interdisciplinary collaborative enterprises can catalyze breakthroughs and ensure competitiveness. The model of success for the US that has worked so well as a basis for addressing changing opportunities has been our commitment to the NIH-university-scientist leadership partnership.

To preserve our dominant leadership in science, we need to make sure that the US sustains the pipeline of young physician-scientists and ensures the strength of the research universities that make the greatest and most impactful science possible. We cannot risk losing our research infrastructure and an entire generation of young scientists by diminished support for research. Other countries have recognized this need. China has identified biotechnology as one of seven key strategic initiatives and plans to fund biomedical research at twice US levels within five years (3, 4). Even countries with smaller economies, including Korea, Singapore, and Taiwan, are outpacing the US's investment in life sciences, providing more than three times the funding (proportionate to GDP) than the US (3, 4).

Strong businesses respond to financial downturns by both tightening their

belts *and* investing in their long-term future. The federal government needs to do the same regarding our investment in science for our nation's health. The alternative is to lose our economic engine, our global standing of scientific leadership, and our health.

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