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To: Editors, Reporters and Producers

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Subject: Fauci Presents Roadmap for Infectious Disease Research in 21st Century

A generation ago, it was suggested that the time had come to "close the book" on infectious diseases. With the availability of a growing arsenal of antibiotics and vaccines, some policymakers argued that biomedical research resources should be diverted from infectious diseases to other concerns.

Today, the folly of this position is clear: infectious diseases are the second leading cause of death and the leading cause of disability-adjusted life years worldwide (one disability-adjusted life year is one lost year of healthy life). Together, the five leading infectious causes of death -- acute lower respiratory infections, HIV/AIDS, diarrheal diseases, tuberculosis, and malaria -- took more than 11.5 million lives in 1999 alone.

Rather than becoming a minor concern, "The discipline of infectious diseases will assume added prominence in the 21st century in both developed and developing nations," writes Anthony S. Fauci, M.D., director of the National Institute of Allergy and Infectious Diseases in the March 1 *Clinical Infectious Diseases*. "To an unprecedented extent, issues related to infectious diseases in the context of global health are on the agendas of world leaders, health policymakers, and philanthropies."

He notes that infectious diseases, long viewed solely as humanitarian concerns, are now seen by leaders in the context of foreign policy because of their deleterious effects on economic development and political stability. He suggests that infectious diseases and the biological sciences will be increasingly important to the development and execution of foreign policy in the 21st century.

In his article, Dr. Fauci reviews key scientific challenges facing infectious disease researchers in the new millennium, including the following:

- The threat of emerging and re-emerging diseases. Recent examples include the HIV/AIDS pandemic, West Nile virus in the United States, "mad cow" disease and new variant Creutzfeldt-Jakob disease in Europe, and the ever-present threat of pandemic influenza
- The spread of drug resistance seen in all classes of microbial pathogens
- The need for a better understanding of certain chronic diseases once considered to be "non-infectious," such as ulcers and certain cancers, which are actually caused directly or indirectly by infectious microbes
- The threat of bioterrorism

Fortunately, Dr. Fauci writes, “Interest in global health has led to increasing levels of financial support, which, combined with recent technological advances, provide extraordinary opportunities for infectious disease research in the 21st century.”

In the 21st century, the technological advances that will serve as the foundation for the control of established, emerging, and re-emerging diseases will include:

- Genomics and proteomics
- Synthetic chemistry/robotics
- Computer/mathematical modeling
- Molecular epidemiology
- Genetic epidemiology
- Information technology

In particular, Dr. Fauci notes that “the sequencing of human and microbial genomes and advances in functional genomics will underpin significant progress in many areas, including understanding human predisposition and susceptibility to disease, microbial pathogenesis, and the development new diagnostics, vaccines, and therapies.”

Dr. Fauci’s article, entitled “Infectious Diseases: Considerations for the 21st Century” is a shortened and edited version of an address Dr. Fauci delivered at the 38th annual meeting of the Infectious Diseases Society of America on September 7, 2000 in New Orleans. Video of the lecture is available at <http://www.niaid.nih.gov/director/director.htm>.

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