



## BIOLOGICAL SCIENCE AND BIOTECHNOLOGY IN RUSSIA: CONTROLLING DISEASES AND ENHANCING SECURITY (2006)

The international community clearly recognizes that disease-related developments in Russia have profound global implications. Many western countries have therefore initiated cooperative programs in Russia aimed at preventing the proliferation of biological materials and expertise to countries with hostile intentions. Other international efforts have been directed toward countering the possibility of terrorist groups acquiring biological capabilities. Still other programs have been driven by the conviction that shared scientific expertise leads to mutual benefits in the broader effort to improve public health. In addition to cooperative programs, the Russian

government is well aware of the need to improve the means of combating agricultural diseases, promote research and development, and support the emergence of biotechnology firms. However, because implementation of such concepts continues to be severely constrained financially, international financial support will continue to be important.

Of primary importance is the evolution of a stronger, more flexible public health system in Russia that is increasingly integrated into global networks as they respond to endemic and emerging diseases. These enhanced capabilities could contribute to a significant reduction of vaccine-preventable and drug-curable infections in both humans and animals in Russia, which would include: (1) more effective utilization of disease prevention measures; (2) increased effectiveness at national and local levels in controlling arthropod vectors and animals that serve as reservoirs for zoonotic diseases; and (3) a more effective global approach to combating infections through stronger and more active cooperation with international partners.

### FOUR PILLARS FOR COUNTERING INFECTIOUS DISEASE IN RUSSIA

Russia has the government institutions, legal framework, technical expertise, human resources, and distinguished tradition of scientific excellence needed to support these developments. But there is an urgent need to strengthen Russia's recently eroded capabilities in many areas. The report sets forth four key themes, or pillars, for countering infectious diseases in Russia.

#### Pillar One: Improving Surveillance and Response

- *Establish two model State Sanitary Epidemiological Surveillance Centers (SSESCs) for surveillance, diagnosis, analysis, and communication of information concerning infectious disease episodes.*
- *Integrate Russia's anti-plague network fully into the national public health surveillance system and then into global systems.*

#### Pillar Two: Meeting Pathogen Research Challenges

- *Concentrate financial support at carefully selected research groups that are, or have the potential to become, centers of scientific excellence.*
- *Upgrade laboratory facilities and equipment for appropriate infectious disease-related research at selected laboratories throughout the country.*

### Pillar Three: The Promise of Biotechnology

- *Develop a business environment that encourages investment in biotechnology activities in Russia.*
- *Promote investment in biotechnology niches that are well suited for activities based in Russia.*

### Pillar Four: The Human Resource Base

- *Encourage postdoctoral scientists to remain in Russia as practicing scientists through mentoring programs that prepare them for positions of leadership in various fields that support the control of infectious diseases.*
- *Continually expand the professional competence of specialists in fields related to infectious disease, particularly enhancing their ability to address multidisciplinary challenges through advanced training programs.*

### MODIFYING THE APPROACH TO BILATERAL COOPERATION

The following three initiatives are designed to improve the effectiveness of cooperation in bioscience and biotechnology in order to achieve both Russian and U.S. objectives:

- *Establish a bilateral U.S.-Russian intergovernmental commission on the prevention and control of infectious diseases.* An emphasis on cooperative programs that address infectious diseases of global significance to human and animal populations could be a very important focus of initial

cooperation. Subgroups of the commission might be established to consider the following topics: (1) epidemiology and surveillance of emerging diseases; (2) laboratory sciences, including detection, diagnosis, identification, and reference systems; (3) information systems and technologies; (4) biosafety and biosecurity; (5) advanced training; and (6) promotion of collaborative scientific relationships.

- *Complete the integration of former Soviet biodefense facilities that are no longer involved in defense activities into the civilian research and production infrastructure of the country.* A specific suggestion for achieving this goal is to increasingly involve those Russian specialists who did not participate in defense activities but who have important expertise related to disease prevention and control.
- *Focus U.S. and other western programs on establishing true partnerships in Russia.* Two specific steps toward achieving this goal are to: (1) increase the role of Russian scientists and science administrators in designing cooperative programs and projects; and (2) increase Russian financial contributions to cooperative programs as a key to sustainability and as evidence that the programs reflect Russian national priorities.

Collectively, the recommendations in this report could help restore Russia's ability to join with the United States and the broader international community in leading an expanded global effort to control infectious diseases. The proposed bilateral intergovernmental commission can play a pivotal role toward this end.

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### For More Information

Copies of *Biological Science and Biotechnology in Russia: Controlling Diseases and Enhancing Security* are available from the National Academy Press; call (800)624-6242 or (202)334-3313 (in the Washington metropolitan area), or visit the NAP website at [www.nap.edu](http://www.nap.edu). For more information on the project, contact staff at (202) 334-2359.