

## **U.S. Senate Committee on Appropriations**

### **Full Committee Hearing**

#### **“U.S. Government Response: Fighting Ebola and Protecting America”**

**Wednesday, November 12, 2014**

#### **Testimony submitted by: Global Virus Network (GVN)**

Robert C. Gallo, MD, GVN Co-Founder and Scientific Director, and Director of GVN Center of Excellence at the Institute of Human Virology (IHV), University of Maryland School of Medicine; Stanley Plotkin, MD, GVN Senior Advisor, University of Pennsylvania; Diane Griffin, MD PhD, GVN Center of Excellence Director at the Johns Hopkins Bloomberg School of Public Health and Member, GVN Scientific Leadership Board; Erica Ollmann Saphire, PhD, GVN Center of Excellence Co-Director, The Scripps Research Institute; Alan L. Schmaljohn, PhD, GVN Affiliate Member of the IHV Center of Excellence, Timothy C. Moynahan, Esq., Chairman, GVN Board of Directors; and Sharon H. Hrynkow, PhD, GVN President.

Contact: Dr. Sharon Hrynkow, GVN President, 801 W. Baltimore Street, Suite 519, Baltimore, MD. [shrynkow@gvn.org](mailto:shrynkow@gvn.org), Tel: 410-706-1966.

Chairwoman Mikulski and Members of the Committee:

Thank you for the opportunity to provide perspectives on the U.S. Government response to the current outbreak of Ebola virus in West Africa. The Global Virus Network is a coalition of leading medical virologists based in 31 GVN Centers of Excellence in 25 nations, including the U.S., India, China, Sweden, Germany, Italy, South Africa, the U.K., Argentina and Russia -- and it is growing. The GVN mission is to advance research on all viral diseases, including those with pandemic potential; to train the next generation of medical virologists; to educate the public on viral threats and scientific responses; and to advocate for support for the medical virology field. GVN is a non-profit, apolitical organization with expertise through its network on all viruses causing disease in man. GVN Ebola experts\* in the United States are from The Scripps Research Institute; University of Texas Medical Branch, Galveston; and, the Institute of Human Virology, University of Maryland School of Medicine.

#### **GVN’s Proposition to Enhance Preparedness and Response to Ebola**

The emergence of any new virus coupled with rapid spread across populations causes panic for individuals, families, and economies. We learned this lesson in the 1980’s as HIV/AIDS was recognized and as it spread around the world. As a global community, we are still working to finally stop the spread of HIV and AIDS. The U.S. Government response to Ebola drew on lessons learned from HIV/AIDS and prior outbreaks of other viral pathogens, including SARS and influenza (both H1N1 and H5N1), incorporating a whole-of-government approach. We applaud this comprehensive response to Ebola, involving health agencies, security agencies, the diplomatic corps and development agencies. But much more needs to be done:

--Expand resources for basic research. Many questions remain unanswered about Ebola, including the effects of the multiple mutations that separate the 2014 Ebola virus from earlier strains, sources of these outbreaks (whether bats or primates or other animals are involved), whether transmission occurs prior to symptoms, how long the virus is viable in the spectrum of bodily fluids and in untreated wastewater, how the virus damages cells, what type of immune response promotes recovery, what drug targets are likely to be the most effective, and what are the early biomarkers of infection. As to the all-important issue of vaccination, the definition of correlates of protection will be key, and if the vaccines work, will they have any safety issues. If vaccines are effective, the duration of their effectiveness will be crucial to planning their use in public health.

--Build on successes of previous U.S. Government investments. Advances made in federal laboratories and in universities supported by federal grants and contracts should be made more widely available to the broad scientific community. Federal laboratories, for example, are rich resources for research materials, findings and tools that would assist virologists globally. In light of the current outbreak, incentives and transfer agreements to speed up translation of basic discoveries into products should be developed. US taxpayer dollars are not used effectively when promising vaccine and drug treatment candidate against viral pathogens remain under-developed in federal or university laboratory freezers.

--Develop rapid early-diagnostic tests. There are a number of rapid tests to detect the presence of Ebola when symptoms occur. But, patients presenting with fever, one of the early symptoms, may be misdiagnosed with any number of other infectious diseases unless appropriate diagnostics are available. In addition, there are no tests available today to identify Ebola infection in patients who are not symptomatic. Development of affordable and easily usable diagnostic tests that provide rapid and accurate results, and that identify infections before symptoms occur, is an urgent priority. Expanded support to the Biomedical Advanced Research and Development Authority (BARDA) is a critical means to accelerate the development and deployment of these diagnostic tests as well as therapies and vaccines.

--Strengthen communications about risk. Few issues captivate the public attention and pose as many communications challenges as viral outbreaks. Communicating about risk of infection requires specific skills. Health professionals and scientists must do a better job of communicating with the public about the risks they face, using real data based on sound science. Journalists play a key role as well. We propose that training for journalists, scientists, public health officials and opinion leaders alike be included as a part of a comprehensive strategy to enhance public understanding of viral diseases.

--Expand training opportunities for medical virologists and health professionals working to support virology research in low- and mid-income nations. Training programs that provide broad skills in detection and analysis of multiple viruses, using interdisciplinary approaches, will be invaluable in creating a cadre of future virology leaders positioned to respond to viral challenges to human health, including those that could become pandemics. Programs focused on research scientists, health care providers as well as veterinarians will enhance capacity to anticipate, detect and respond to novel viruses. Programs to train managers in biosafety laboratory practices and in safe handling of blood products have broad utility.

The expansion of medical virology within the United States and in partner nations not only strengthens preparedness against all viral threats, but it strengthens local economies, since research grants support salaries of scientists, scientists-in-training, laboratory assistants and support teams. It has been estimated that every \$1 of NIH funding generates about \$2.21 in local economic growth. Nations have an enlightened self-interest of protecting human health while also protecting economic growth.

### **Building on Success**

We applaud the U.S. Government response to send supplies and personnel to West Africa in order to stop the spread of Ebola at its epicenter. The U.S. Agency for International Development, Department of Defense, the Centers for Disease Control and Prevention (CDC), and other components of the Department of Health and Human Services all provided essential resources to confront the outbreak in its path. Although the outbreak continues, it is evident that the situation would be much worse had the U.S. Government not stepped in.

The U.S. Government response to the crisis rests on the firm foundation of basic research that has been supported over decades by the National Institutes of Health (NIH), and the National Institute of Allergy and Infectious Diseases (NIAID) in particular, the Department of Defense (DoD), and applied research on key pathogens at the CDC. Many of the GVN Center Directors and affiliated scientists now working on the Ebola virus are recipients of NIAID, DoD and CDC research support, which has been vital to advancing knowledge on how Ebola infects cells and causes disease. This knowledge is the very underpinning of therapeutic and prevention measures, including essential vaccines.

As an example, with NIAID support, one GVN Center of Excellence, Scripps Research Institute, has provided the molecular structures of nearly every protein encoded by the Ebola virus and has united the entire field of Ebola scientists into a single collaboration to develop Ebola antibody therapeutics. The ZMapp antibody treatment, provided to Ebola-infected US citizens returning from West Africa, is proof that a global collaboration is the most effective means to identify and test Ebola drug therapies. This level of global collaboration of scientists for a single purpose is unprecedented and it reflects the desire and ability of NIAID-funded scientists, working in the GVN network, to collaborate and to place new findings into the public domain in order to cure disease.

In addition, NIH and CDC have demonstrated records of success in training epidemiologists and laboratory scientists in the U.S. and globally. The capacity building programs of the John E. Fogarty International Center of the NIH are exemplary. These programs have, over decades, built expertise in science in poorer nations, contributing to international collaborations and new understandings of viral disease. The AIDS International Research and Training Program, working through the IHV in Nigeria, helped train scientists and health professionals who were in place and ready to respond when Ebola struck. They were a ready cadre of highly skilled professionals, known and trusted to colleagues globally, who contributed significantly to identifying Ebola cases and preventing the spread of Ebola in Nigeria.

As we consider successes at the macro-level, we are reminded as well of the acts of individual USG employees to stem the spread of Ebola. One example is the fast action of Dr. Samuel Adeniyi-Jones of DHHS working with Dr. Clement Adebamowo of IHV-Nigeria. Working with colleagues in the Ministry of Health of Nigeria, they were key in helping contain the spread of Ebola when the first patient in Nigeria was identified. Drawing on CDC recommendations, their collaborative efforts likely saved many lives and prevented the spread of Ebola. There are hundreds of such stories of U.S. Government employees who have gone the extra mile, and who are still on the ground in West Africa fighting to protect lives. We applaud their service, sacrifice, and dedication.

## **Conclusion**

The current crisis is a wake-up call for governments, businesses, and families. We must consider with great urgency how to protect ourselves, our communities and our economies against emerging viruses which threaten the very stability of our nations. Even as we work to stop the current outbreak, we must prepare for the next outbreak, be it Ebola, a pandemic strain of influenza or other viral foes yet to be identified. It is not a matter of if another virus will threaten us with a rapidly-spreading, worldwide epidemic -- but when. GVN is committed to addressing Ebola and other new viral pathogens which threaten the health of the global community. We stand ready with all partners, including U.S. Government agencies and governments globally, private sector groups, international organizations and strategic allies in civil society to meet our shared goals of safeguarding human life from viral enemies.

## **More about GVN**

GVN was co-founded by Dr. Robert Gallo, the late Dr. Reinhard Kurth of Germany, and Dr. William Hall of Ireland, joined by noted medical virologists from around the world. Dr. Gallo noted at the time of GVN's launch in 2011 that "the world should never again be as unprepared in the face of a new virus as we were when AIDS struck." Today, the GVN coalition is a vital safety net against the spread of new viruses even as it tackles well-known killers, including Ebola, influenza, hepatitis, HIV, measles, enteroviruses, and others. GVN works increasingly with strategic partners, including the World Health Organization; national public health agencies, including the CDC, medical research funding agencies, including the NIH and the Pasteur Institute; foundations; pharmaceutical companies and other corporate entities, in part through a newly launched Business Leadership Council. GVN scientists are located in the following countries: Argentina, Australia, Belgium, Brazil, China, Estonia, France, Germany, Grenada, India, Ireland, Israel, Italy, Japan, Lebanon, Netherlands, Nigeria, Russia, South Africa, Spain, Sweden, United Kingdom, United States and Vietnam. \*GVN Ebola experts are: Stephan Becker, Ph.D., Institute for Virology, Philipps University of Marburg, Germany; Janusz T. Paweska, DVM, National Institute for Communicable Diseases, South Africa; Erica Ollmann Saphire, Ph.D., The Scripps Research Institute, La Jolla, California; Thomas W Geisbert, Ph.D., University of Texas Medical Branch (UTMB), Galveston, Texas; Alan Schmaljohn, Ph.D., University of Maryland School of Medicine, Baltimore, Maryland; Alexander Bukreyev, Ph.D., UTMB-Galveston National Labs, Galveston, Texas. **[www.gvn.org](http://www.gvn.org)**