



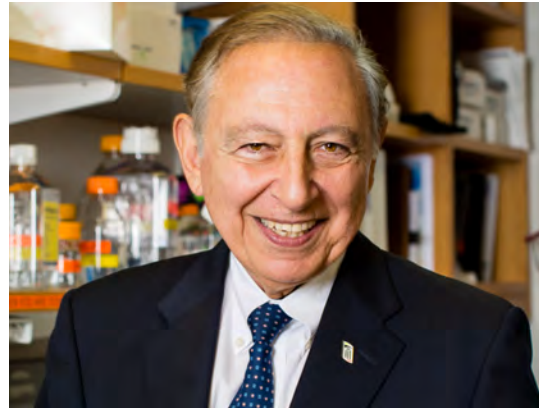
**GLOBAL VIRUS NETWORK**

**GVN**

**VIRION  
NEWS**

## **A Letter from the GVN Scientific Director and Chair, Scientific Leadership Board**

When the Global Virus Network (GVN) was founded in 2011, our mandate was to safeguard mankind from a potential catastrophic and devastating pandemic virus. To accomplish this, we assembled a network of experts from across the globe to share information, collaborate on research, train virologists, and encourage advocacy among government leaders, the private sector and the scientific community. Since then, we have made great strides in building this worldwide network and educating the next generation of virologists.



One important headline is that we have a new leader. In October of 2017, GVN appointed Dr. Christian Bréchet as the next president of GVN. With his extraordinary experience and commitment, Dr. Bréchet is the perfect choice to lead us forward. He has spent his career working on some of the viruses that we are trying to vanquish. Most recently, he has served as president of the Institut Pasteur.

Not only does Dr. Bréchet have extraordinary ability in public health and basic science virology, he is also an experienced administrator. His relentless dedication and boundless energy, as well as his breadth of international experience, will help enable GVN to realize its great potential. We are very pleased to have him.

As we move forward, the GVN continues to focus on understanding and planning for viral epidemics. We've created several task forces to focus on specific viruses, including Zika and HTLV-1, and are closely watching developments related to MERS,

Ebola, West Nile virus, polio, measles, and pandemic influenza. Our 10th International GVN Meeting in Annecy, France on November 28-30, 2018 will also center on this issue -- the "Eradication and Control of (Re-)Emerging Viruses."

Since the International GVN Meeting in Melbourne last September, we collaborated with patient advocates and international experts on an open letter to World Health Organization (WHO) Director-General Elect Dr. Tedros Ghebreyesus. In it, we asked the WHO to do more to fight HTLV-1 and proposed several transmission prevention strategies. A short version of the letter was published May 10 in *The Lancet* and a longer version of the letter is found on the GVN website.

We also continue to focus on education. As we have since 2013, the GVN is again this year offering the Short Course to early-career scientists and physicians from around the world. In recent years, there has been a distressing decrease in the number of people going into virus research. This is particularly worrisome since viral threats are on the rise, and we want to help make sure there are as many highly-trained virologists as possible.

Taught by experts from our GVN Centers of Excellence, the one-week intensive GVN Short Course, which will take place in Baltimore in August this year, allows participants to study with the best in the field and to get to know experts from all over the world. Going forward, we plan to offer these courses in other places in the world too.

We're accomplishing many of our goals, but much more must be done. We continue to collaborate with other global health organizations to advance our goals. One such partnership we're currently working on is becoming the scientific arm of Coalition for Epidemic Preparedness Innovation (CEPI), and working together on threats such as Lassa virus.

We're working hard to secure more funding and to focus on getting more grants so that we can expand the depth and breadth of our work. Having the unprecedented expertise, inspired vision and consummate leadership of Dr. Bréchet will help us reach those goals

**-Robert C. Gallo, MD**  
**The Homer & Martha Gudelsky Distinguished Professor in Medicine**  
**Co-Founder & Director Institute of Human Virology at the**  
**University of Maryland School of Medicine**  
**Co-Founder & Scientific Director, Global Virus Network (GVN)**

## Letter From the GVN President



Since its founding the Global Virus Network has sought to help create a coordinated global response to the world's most dangerous viruses. GVN has accomplished a great deal. As the new president, I am privileged and honored to be able to help continue this urgent effort.

So much has been accomplished since the GVN's founding: The establishment of a global network of experts, the education and training of a promising new generation of virologists, and an increased focus on research and development. I look forward to building on that fantastic work, and to continuing my collaboration with GVN's co-founder and scientific director, Dr. Robert Gallo, as well as with all the GVN members who make this inspiring endeavor possible.

We remain dedicated to our overarching goal -- to create partnerships between a wide range of networks and organizations across the globe, and in so doing, to better prevent and respond to viral infections as well as viral pandemics. With GVN Centers of Excellence and Affiliates all over the world, we can rapidly bring together top experts -- in high-level research, virology, zoonosis, veterinary medicine, and more -- to decide on the best course of action, on the ground and in the lab.

We will continue to provide support and scientific expertise to a variety of global organizations, such as the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), the Coalition for Epidemics Preparedness and Innovation (CEPI), etc., and around the world. As a highly respected, independent, evidence-based organization, GVN has the unique capacity to bring the relevant expertise together, so they can more effectively identify pathogens and implement vaccines, diagnostic tools, prevention strategies, and adequate treatments.

We continue to be on the cutting edge of the field. Our task forces -- on Zika, HTLV-1, Chikungunya, Lassa fever, and other viruses -- are comprised of the foremost experts in the field and are leading the fight against these threats. But we are working to be even more forward facing: we've also created the new Task Force on

Unknown Viruses so that we can be prepared for the next viral pandemic. We know it will come and we want to be as prepared as possible.

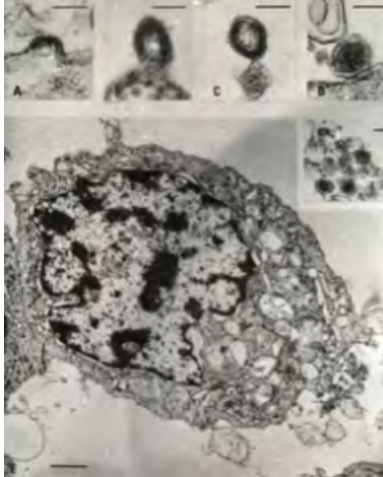
Another way we are preparing is by continuing our core mission to educate and train the next generation of virologists. Our programs in Baltimore, including the annual GVN Short Course, continue to offer expert instruction to researchers from throughout the world. We are working to expand this training to other countries as well so that early career virologists have even more opportunities to learn from more experienced scientists.

As this suggests, we are working hard to make the GVN even more global. While Baltimore will remain the hub of what we do, we want to expand the capabilities of our GVN regional offices. The power of our shared work lies in our global reach, the depth and rigor of our science, and our relentless commitment to solving the urgent viral challenges we face across the world.

Please join us in Annecy, France on November 28-30, 2018 for the 10th International GVN Meeting to continue to work together towards these goals.

**Christian Bréchet, MD, PhD**  
**President, Global Virus Network (GVN)**

# Deadly, But Largely Unknown: GVN Spurs Efforts to Combat HTLV-1



As reported in PNAS by Poiesz et al. in 1980, images A-D show HTLV-I in the stages of budding and image E shows an ATL leukemic

Thirty-eight years ago, Dr. Robert Gallo and his colleagues discovered Human T-cell Leukemia Virus 1 (HTLV-1), the first known human retrovirus and the first virus shown to cause cancer. This breakthrough is perhaps best known because it led another momentous discovery, the identification of HIV.

But HTLV-1 itself causes harmful, often lethal diseases such as adult T-cell leukemia (ATL) and HTLV-1 associated myelopathy/tropical spastic paraparesis (HAM/TSP) and affects an estimated 10-20 million people worldwide. Up to ten percent of the millions infected with HTLV-1 develop debilitating and sometimes deadly diseases associated with the virus. Despite this, the virus has not received the attention it deserves.

“HTLV-1 is underrecognized and underappreciated,” says Dr. Gallo, who is the co-founder and the scientific director of the GVN and director of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine. “When HIV came along we focused our attention on that epidemic, but HTLV-1 remains a strong threat to global health. Now it’s time to refocus our energy on HTLV-1.”

## Effective, Proven Intervention Strategies Need to Be Promoted

HTLV-1 is transmitted through the same routes as HIV-1 -- including unprotected sex, breastfeeding, needle sharing, blood transfusion and organ transplantation. Most people with HTLV-1 don’t know of their infection, or that they are transmitting it to others.

“HIV and hepatitis are serious public health problems, and they’ve deserved the attention they’ve gotten. But HTLV-1 needs the same high level of concern and funding,” says Fabiola Martin, MD, MDRes, FRCP, FHEA, a member of the GVN HTLV-1 task force, and a specialist in sexual health, HIV and HTLV medicine. “The suffering caused by HTLV-1 has been underplayed for decades because, unfortunately, it has

had a much lower profile internationally than other viruses and it has tragically often been seen as a harmless virus.”



**Dr. Robert Gallo leads a panel discussion on the status of HTLV-1 research during the 9th International GVN Meeting in Melbourne.**

HTLV-1’s transmission can be prevented in the same way as other blood borne and sexually transmitted viruses such as HIV-1 and hepatitis B and C. While global investment and proactive public health interventions have helped prevent and treat both HIV-1 and hepatitis, efforts to control HTLV-1 have lagged far behind. This means that thousands of cases of HTLV-1 and associated diseases go undiagnosed each and every year. “What is most unsettling,” says Dr. Martin, “is that the transmission of HTLV-1 is very easily and effectively prevented, but this hasn’t been promoted. All we need is the determination and concentrated international effort to eradicate HTLV-1, just like HCV and HIV.”

### **HTLV-1 Affects People Around the World**

HTLV-1, which originated from non-human primates, appears to have existed for thousands of years. It tends to be concentrated in families because of the way it’s sexually transmitted from partner to partner and through breastfeeding from mother to child. Indigenous communities in Central Australia have one of the highest infection rates: In a hospital-based cohort study, 48 percent of indigenous people tested positive for HTLV-1. High rates also exist in Japan, Brazil, Iran, Romania, Peru, Central African Republic, Gabon, Nigeria, Jamaica and other Caribbean islands. Rates in many parts of the world remain unknown because of lack of testing.

Though not as prominent in the Europe and the United States, HTLV-1 rates maybe on the rise in as travel and global migration has become much more prevalent in recent decades. Researchers estimate that thousands of people live with the virus in the UK, France and United States.

## **GVN Focuses Renewed Attention on HTLV-1**

In its efforts to foster renewed attention to the virus, GVN created the HTLV-1 Task Force. More recently, in September 2017 at its 9th International Meeting in Melbourne, Australia, GVN sought to highlight the importance of combating HTLV-1. In a May 10, 2018 open letter to World Health Organization (WHO) Director-General Elect Dr. Tedros Ghebreyesus, the GVN HTLV-1 Task Force, led on this initiative by Dr. Martin and Dr. Gallo in collaboration with patient advocates and international HTLV-1 experts, asked the WHO to do more to fight the virus and proposed several public health intervention strategies to prevent its transmission. Lancet published a shorter version of the letter, Time to eradicate HTLV-1: an open letter to WHO, May 10th online and in its May 12th issue.

In its letter to WHO, the GVN HTLV-1 task force recommended several distinct intervention strategies against the transmission of HTLV-1:

- Routine HTLV-1 testing in sexual health clinics should be available to all attendees.
- Promote CMPC: Counsel & Monitor HTLV-1 positive patients, notify Partners and promote Condom usage. This strategy also supports HTLV-1 positive parents to test their children for HTLV-1.
- Testing of donors and not using products potentially infected with HTLV.
- Routine antenatal care testing and advise against breastfeeding by mothers who are HTLV-1 positive where safe, alternative methods of infant feeding are available.



**Dr. Damian Purcell of the Doherty Institute, Dr. Lloyd Einsiedel of the Baker Institute, Dr. Yutaka Tagaya of the Institute of Human Virology at the University of Maryland School of Medicine, Dr. Charles Bangham of Imperial College London, Dr. William Hall of University College Dublin, Toshi Watanabe of St. Marianna University School of Medicine, David Yurick - a PhD student, and Dr. Fabiola Martin of University of Queensland, join a group photo following discussions on the idea of an open letter to WHO during the 9th International GVN Meeting.**

- Promote HTLV-1 testing and provide free safe needles through needle exchange programs together with CMPC promotion.
- All people diagnosed with HTLV-1 need to be followed up medically and monitored clinically, immunologically and virologically to be able to access treatment promptly.

To promote these strategies to healthcare professionals and patients around the globe, the Open Letter asks the WHO to collaboratively develop a HTLV-1 Fact Sheet with clear advice about the dangers of HTLV-1 and its associated diseases and effective ways to prevent transmission. “We are trying to make people aware of what can be done for people living with HTLV-1 and that there are effective ways to prevent transmission,” says Dr. Martin. “To do that, it’s really important that we offer our support and expertise to WHO.” Currently there is no international guidance for HTLV-1, but a WHO HTLV-1 Fact Sheet could provide that.

In addition, the authors recommend that WHO create an International Classification of Disease Code (ICD) for HAM/TSP. Despite its distinct etiology and distinctive pattern there is no ICD code for HAM/TSP. The lack of an ICD code is surprising, given the fact that the has been linked to HTLV-1 for more than three decades. An ICD code will help reduce the under-diagnosis and under-reporting of HTLV-1 associated diseases.

### **Prevention Efforts Have Significant Results**

HTLV-1 prevention strategies are currently being implemented in a few countries, though inconsistently, most likely because of a lack international consensus. Japan is now the only country offering HTLV-1 screening for all pregnant women. To promote research, the country is also providing grants for clinical trials and patient registries focused on ATL and HAM/TSP. In Brazil, HTLV-1 screening for pregnant women is recommended, but not always provided in all parts of the country.

Such efforts have had significant results. Since Japan introduced HTLV-1 screening for pregnant women, mother-to-child transmission rates have dropped sharply. Martinique has seen a major reduction in HAM/TSP since it began screening for pregnant women and blood donors.

The promotion of these prevention strategies, along with education of healthcare professionals and the public about the virus, would help to significantly reduce the HTLV-1 infection and disease rates. “This destructive and lethal virus is causing much devastation in communities with high prevalence,” says Dr. Gallo, “But it’s just



not on the radar – not on the public’s radar, and not on the public health radar. That has to change. It’s just too big of a problem.”

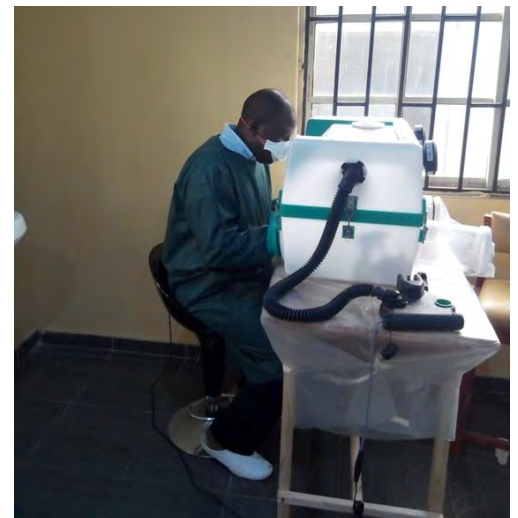


**Participants of the 9th International GVN Meeting in Melbourne, Australia gather for a group photo**

## **GVN Fights Lassa Fever Epidemic in Nigeria**

Outbreaks of Lassa fever used to be limited to northern Nigeria. An acute viral haemorrhagic virus transmitted by rodents, Lassa can cause severe damage to the liver, spleen, kidneys and other organs. For the last few years, though, the virus has spread to other parts of the country and fatalities have increased significantly. This year, the outbreak has been even much worse than usual.

The disease has spread throughout the country, and in just the first three months of 2018 the Nigerian Center for Disease Control (NCDC) had reported 1,613 confirmed cases and 134 deaths. In all of 2016 there were only 79 reported cases of Lassa fever and 35 deaths, and a little more than that in 2017.

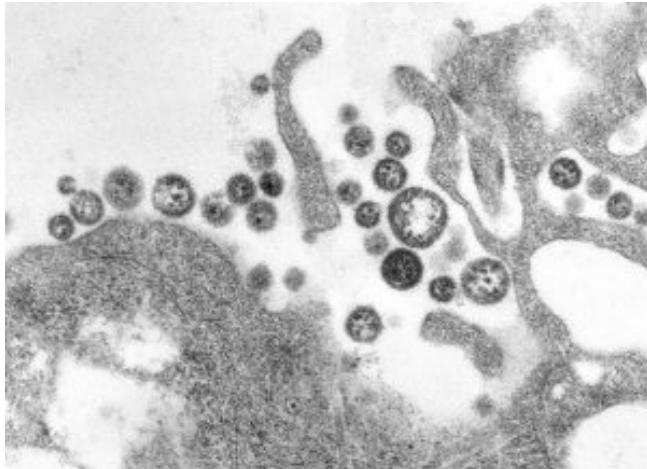


**A PhD candidate at the Institute of Human Virology-Nigeria, a**

### **Global Virus Network Joining the Fight Against Outbreak**

The Global Virus Network (GVN) has joined authorities in Nigeria and other world health organizations to fight against this outbreak. The Institute of Human Virology, Nigeria (IHVN), a GVN Affiliate, and other GVN Centers of Excellence, with expertise

in the science of such viruses, have partnered with the World Health Organization (WHO), the Nigerian Center for Disease Control (NCDC) and the Coalition for Epidemic Preparedness Innovations (CEPI) to support fieldwork, surveillance, laboratory diagnostics, contact tracing and prevention education. Using its network of experts and laboratories, GVN has helped to validate simple rapid tests that are being used at rural clinics in villages and to support research to understand transmission patterns and find an effective vaccine.



**Lassa Fever Virus**

“There’s an enormous amount of work to be done,” says Alash’le G. Abimiku, M.Sc, PhD, a professor at the Institute of Human Virology (IHV) at the University of Maryland School of Medicine, a GVN Center of Excellence, and executive director of the International Research Center of Excellence (IRCE) at IHV. “We are doing whatever we can to assist the government of Nigeria to get this epidemic under control.”

### **Virus, Transmitted Through Rodents, Spreads Rapidly**

Crowded living conditions and poor sanitation have helped spur the outbreak, especially in densely populated southern Nigeria. Climate change, too, has contributed to the outbreak by creating an environment that allows rodents to thrive year-round.

The virus, which was discovered in the 1950s, is transmitted to humans through contact with food or household items contaminated with rodent urine or feces. It can also be spread between humans -- of all ages and sexes -- through direct contact with blood, urine, feces, or other bodily secretions. About 80 percent of people who become infected with Lassa virus have no symptoms. But one in five infections result in severe disease.

Because the symptoms of Lassa fever are varied and non-specific, clinical diagnosis is often difficult, especially early on. The incubation period ranges from six to 21 days. Initially, it presents with symptoms -- sore muscles, high fever, malaise -- that resemble malaria. Patients often take malaria medicine, which has no effect on

Lassa. After the incubation period, Lassa can worsen very quickly, causing internal bleeding, seizures, disorientation, hearing loss, coma, and death. The mortality rate for Lassa fever has increased from about five percent to eight percent so far this year. This number may increase still, however, since the mortality rate for 2016 was of 44 percent, with fewer people infected.

### **Infection Prevention Strategies Key to Controlling Epidemic**

Lack of proper infection prevention and control practices in hospitals and among families are the biggest reasons that Lassa fever spreads. Hygiene is key -- covering food and grains to keep rodents out, properly disposing of garbage, washing hands and using hand sanitizers, and disinfecting and fumigating surroundings. Family members and healthcare workers must be careful to avoid contact with blood and body fluids while caring for those infected with the virus.

“The problem is that many people do these things very sporadically,” says Dr. Abimiku. “They need to practice consistent, sustained preventative measures.” To promote these simple but effective preventative strategies, the IHVN is supporting the NCDC and the Nigerian government in creating education campaigns.

Ribavirin, an antiviral drug, is an effective treatment for Lassa fever, when given early on in the course of clinical illness. But the drug is very expensive and not always readily available. No Lassa vaccine currently exists, although research is being done on one, with the hope that a vaccine will exist in five years or so.



**Dr. Alash'le Abimiku**

### **Lassa Epidemic Showing Signs of Slowing**

There is some good news: according to the WHO and Dr. Chikwe Ihekweazu, the national coordinator and NCDC director, the rate of new infections seemed to be slowing as of the end of March. This suggests that public health strategies to promote transmission are having an impact.

“It seems that the epidemic is slowing down,” says Christian Bréchet, MD, PhD, the new president of GVN. “But we have to be prepared for the next outbreak of Lassa or the next viral pandemic that comes our way. We need to be ready.”

Dr. Abimku agrees: “We have to be more proactive. We need to do the research on how transmission works and understand what kind of preventative measures can be put into place before an outbreak, rather than running around after the fact trying to control it once it gets going.

## **GVN Short Courses Train Next Generation of Virus Researchers**



**GVN Short Course Participants**

Worldwide, the number of deadly viral threats are on the rise. Yet the number of people entering the field of virology, including basic and medical research, around the world has been declining. “My colleagues and I have noticed a disturbing, declining trend in those entering the field of virus research,” says Robert Gallo, MD, co-founder and scientific director of the Global Virus Network (GVN), the Homer & Martha Gudelsky Distinguished Professor in Medicine and director of the Institute of

Human Virology (IHV) at the University of Maryland School of Medicine, a GVN Center of Excellence. “This decline is unacceptable, particularly as deadly viral threats are on the rise.” GVN hopes to help counter this trend – and ensure that there are enough highly-trained virologists across the globe – by supporting and training virologists early in their careers.

“We want to motivate people,” agrees Ab Osterhaus, DVM, PhD, director of the Research Center for Emerging Infections and Zoonosis, professor at the University of Veterinary Medicine in Hannover, Germany, a GVN Center of Excellence, and CEO of Artemis One Health Foundation. “We want to show them what a big difference they can make in this field to help society,” says Dr. Osterhaus, who comes to Baltimore every year to teach at the GVN Short Course.

## **Education and Training Central to GVN's Mission**

This drive to teach is central to GVN. "Education and training is key to our mission," says Christian Bréchet, MD, PhD, and the new president of GVN. "We want to educate the next generation of virologists." That's why GVN offers an annual, week-long short course designed to keep virologists apprised of the latest developments and innovations in the field and to have opportunities to interact with virologists from all over the world.



**Dr. Ab Osterhaus presents on a "One Health Approach" during last year's GVN Short Course.**

Every August for the past five years, 15 to 20 early-career scientists and physicians from around the world have gathered in Baltimore to learn about new developments and broaden their skills in medical virology from preeminent experts in the field. This year's 5<sup>th</sup> annual GVN Short Course will take place August 5 to 11, 2018 in Baltimore, MD. The one-week intensive GVN Short Course focuses on state-of-the-art research and best practices in the field of medical virology as well as on the policies informing that work. It gives participants an opportunity to gain new knowledge, broaden their expertise, and interact with peers and experts from all over the globe.

## **Courses Draw From Professionals in Diverse Fields**

The course draws from professionals in a variety of fields – including veterinarians, doctors and experts in virology, zoonosis and pharmacology. GVN brings these experts together so they can interact and learn from one other. "I have a background in drug discovery," says Christina Gavegnano, PhD, an assistant professor in the Laboratory of Biochemical Pharmacology in the Department of Pediatrics at Emory University. "In recent years, I have been working in the area of drug development, and I realized I wanted to learn more about what was going on in virology."

Prof. Gavegnano works in the lab of Raymond F. Schinazi, PhD, co-director of the Virology and Drug Discover Core at the Emory University Center for AIDS, a GVN Center of Excellence, and member of the GVN Board of Directors. She studies the

use of Jak inhibitors to treat HIV infection and attended the GVN Short Course in 2015. "I really liked seeing what other people are doing," says Prof. Gavegnano, "and I liked hearing about the discovery of HIV from the person who played such a central role in that story – Robert Gallo himself. Getting to hear him speak in person was an amazing experience."



**Dr. Marcelo Jacobs-Lorena at Johns Hopkins Bloomberg School of Public Health leads a tour of their Insectary Core Facility**

### **A Range of Topics Covered**

The GVN Short Course has covered a range of topics, including the latest research on hepatitis, Ebola, Marburg, Lassa, Zika, HIV, measles, HPV, and other viruses as well as on focus areas such as biosurveillance, bioinformatics, drug development, and a "one health" approach to combating animal virus threats. The course has also included a tour of Johns Hopkins School of Public Health's insectary and a trip to Washington, DC to meet with policymakers and program officials from the National Institutes of Health (NIH).

"It was one of the best experiences of my life," says Julian Ruiz-Saenz, MSc, PhD, DVM, professor of veterinary medicine at the Cooperative University of Colombia, and president of the Colombian Association for Virology, who attended the GVN Short Course in 2014. "I got to meet so many experts and researchers and to visit the NIH,

which was an amazing experience because it's one of the places that we rely on for guidance on research policy."

### **Learn From Authorities on the Subject**

Those who teach the courses see the value of the sessions, too. "It gives them a chance to interact with people who are setting the priorities for research in the field of virology," says Diane Griffin, MD, PhD, professor and former chair, Department of Molecular Microbiology and Immunology at the Johns Hopkins Bloomberg School of Public Health, who has taught at the GVN Short Course every year since it began. Dr. Griffin lectures on the viral, cellular and immunologic determinants of diseases caused by alphaviruses and the measles virus, one of her areas of expertise.

“People have forgotten how devastating measles is,” says Dr. Griffin. “It’s important to provide them with a perspective on how we got to where we are today.”

Dr. Osterhaus focuses on the topic of combating animal virus threats through a “one health” approach. This idea argues that viruses often treat animals and humans as interchangeable vectors for infection. “There’s a whole list of human viruses that spread from the animal world,” says Dr. Osterhaus. “We are just another animal species – that’s my message.” Dr. Osterhaus, who has discovered more than 50 new viruses in humans and animals and has helped to combat major outbreaks such as SARS and pandemic influenza, encourages attendees to take a collaborative approach to preparing for the next pandemic. “The key question,” he says, “is what can we do, how can we be prepared for the next emerging infectious diseases?”

### **A Global Reach**

In addition to the annual course in Baltimore, GVN is working on plans to offer short courses in other places around the world. “The program in Baltimore has been excellent,” says Dr. Bréchet, “and we want to build on it and expand it to other countries as well.” Wherever the courses take place, past participants say, they want to take part. “I would love to come back,” says Prof. Ruiz-Saenz with a laugh. “Or send another Colombian researcher.”

**When: August 5-11, 2018**

**Where: Institute of Human Virology at the University of Maryland School of Medicine, Baltimore, MD**

**Learn more: [www.gvn.org](http://www.gvn.org) or contact Natalia Mercer, PhD, course coordinator at [nmercerc@gvn.org](mailto:nmercerc@gvn.org)**

## GVN Welcomes New Zambia Affiliate



**The team in Zambia collect mosquitoes and set mosquito traps.**

In January, the Africa Center of Excellence for Infectious Diseases of Humans and Animals (ACEIDHA) at the University of Zambia (UNZA) in Lusaka, Zambia became the newest GVN Affiliate member. ACEIDHA will partner with two longtime GVN Centers of Excellence, Hokkaido University (HU) in Sapporo, Japan and University College Dublin (UCD) in Dublin, Ireland. As an Affiliate, ACEIDHA will strengthen GVN's presence in Africa and support the network's mission of preparing the world for future outbreaks of viral disease.

"We are very proud of being accepted as an Affiliate member of the GVN," says Aaron Mweene, PhD, MSc, BVM, director of ACEIDHA, and professor of virology at the University of Zambia. "Africa is the epicenter of emerging and zoonotic viral diseases," says Prof. Mweene. "But we don't have adequate capacity, infrastructure, or resources to combat these diseases. Partnering with GVN will allow us to do much more than we otherwise could."

ACEIDHA has a fixed biosafety level 2 (BSL-2), BSL-3 and mobile BSL-3-equivalent facilities, which allow for the study of avian influenza, hemorrhagic fever, African swine fever, as well as the isolation and characterization of rabies viruses. It also has infrastructure and capacity to diagnose Ebola, Marburg, Yellow fever, Rift Valley fever, Crimean-Congo hemorrhagic fever, dengue, West Nile fever, chikungunya, Zika, and many arenavirus infections.



## Partnership Allows for Pooling of Expertise

The partnership allows for the pooling of expertise in different areas in veterinary, clinical and basic research. Together, ACEIDHA, HU and UCD have developed programs to identify new, emerging and re-emerging viruses. These research activities include mosquito collection and analysis by conventional polymerase chain reaction and next-generation sequencing as well as classical virus isolation and characterization. In addition, HU has close ties with the Japanese pharmaceutical industry, which will provide access to screening for a wide variety of antiviral drugs. The collaboration between these institutions will help GVN in its efforts to mitigate the urgent epidemic and pandemic threats posed by viral agents.



**The team in Zambia research bats from a cave.**

The University of Zambia and HU have had a long partnership, as have Hokkaido and UCD. For over 30 years, many of the University of Zambia's faculty have trained at HU, and numerous Japanese faculty have had positions at the University of Zambia, working closely with their African colleagues. "I first visited Zambia in 2005," says Hirofumi Sawa, MD, PhD, who is the Deputy Director of the Research Center for Zoonosis Control (CZC) at Hokkaido University, as well as professor of molecular pathobiology at the University. "I have visited the country over 50 times since then, and consider it a second home. My laboratory in Sapporo includes young Zambian scientists and we conduct field trips three or four times a year."



**Dr. Aaron Mweene**

Prof. Mweene, the director of ACEIDHA, is one of those who trained at Hokkaido University: he received his PhD at HU in 1997 and did a post-doc there as well. After completing his studies in Japan, Prof. Mweene returned to Zambia to work in the field of viral zoonosis. His scientific and educational efforts at the UNZA eventually led to the establishment of ACEIDHA.

Working together, UNZA/ACEIDHA, HU and UCD have identified and characterized a novel hemorrhagic nairovirus from bats. They have also collaborated on surveillance for orthopoxviruses in wildlife, such as rodents and shrews – a study showing that significant numbers of wild animals, in rural areas near human areas of habitation, had serological evidence of exposure. The team has also conducted extensive viral metagenomic analyses and identified novel picornaviruses, parvoviruses and paramyxoviruses, polyomaviruses and simian immunodeficiency viruses from animal reservoirs. Extensive surveys of arbovirus diversity in mosquitoes in remote areas are ongoing and, notably, West Nile virus has recently been isolated for the first time in Zambia.

### **Dr. William Hall**

As well as collaborative programs between HU, UCD and ACEIDHA to identify new, emerging and re-emerging viruses, GVN has emphasized improving molecular diagnostics. These measures include point-of-care testing approaches that dramatically decrease the turnaround times in the reporting of results and can be used in remote locations without access to laboratory infrastructure.

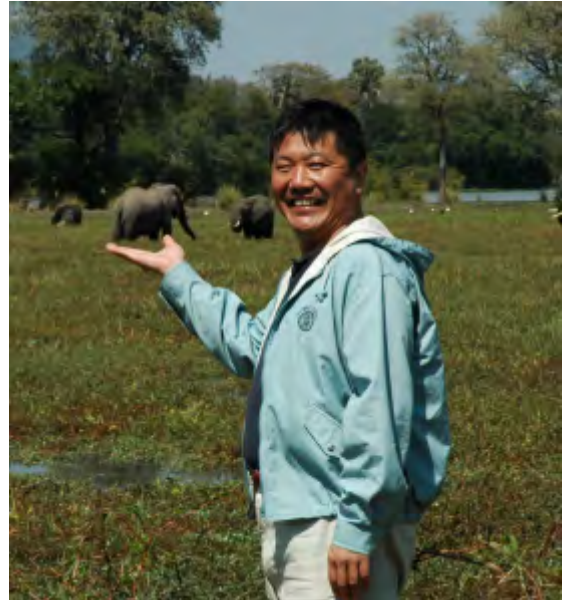
“HU and UCD have been collaborating for more than twenty years on virus research, and this new partnership with ACEIDHA is an extension of our success,” says William Hall, MD, PhD, co-founder of the GVN and professor of microbiology at UCD. “While the GVN will be able to provide ACEIDHA with many resources through our network, we look forward to working with ACEIDHA in its new capacity as an Affiliate member of GVN.”



**Dr. William Hall**

## Training Next Generation of Virologists

The partnership is also helping UNZA train the next generation of virologists in Zambia and other African countries. Using a \$6 million loan from the World Bank, ACEIDHA is training new virologists at the post-graduate (MSc and PhD) and post-doctoral levels, as well as highly skilled lab technicians. UNZA already provides short courses in virology to experts who are working in the field, particularly at Ministries of Health across Africa. The first cohort of graduate students will begin at UNZA in August 2018.



**Dr. Hirofumi Sawa**

“This will greatly assist the training of the next generation of virologists,” says Prof. Sawa. “It will also help decrease the burden of emerging and re-emerging viral diseases, which, as we know from numerous recent examples, have no respect for international borders and can spread rapidly.”

## Zambia Affiliate Represents GVN's Global Outlook

This global outlook is precisely what makes GVN affiliates such as ACEIDHA so important. “As a GVN affiliate,” says Prof. Mweene, “our focus and our achievements will not just be about Zambia, but will radiate through the rest of Africa and the rest of the world.”

Christian Bréchet, MD, PhD, and the new president of GVN agrees. “ACEIDHA will really strengthen GVN's presence in Africa,” says Dr. Bréchet. “Its expertise in both human and veterinary science, paired with our Centers of Excellence in Japan and Ireland will significantly support GVN's efforts to understand and prepare for the next generation of emerging viral epidemics.”

## REGISTER NOW: NOVEMBER 28-30, 2018

### 10th International Global Virus Network Meeting: Eradication and Control of (Re-)Emerging Viruses

Please join us for the 10th International Global Virus Network (GVN) Meeting to be held November 28-30, 2018 in Annecy, France. The meeting will be co-hosted by GVN Centers of Excellence, the FondationMérieux (FM) and the University of Veterinary Medicine Hannover (TiHo), and led by FM's Dr. Hubert Endtz, TiHo's Dr. Ab Osterhaus and GVN's Dr. Christian Bréchet.

Register here: <https://www.fondation-merieux.org/en/events/10th-international-global-virus-network-meeting/>

