



Overview of the Global Virus Network

“We represent centers of excellence for research in virology from across the globe. Our work is dedicated to understanding, preventing and eradicating viral disease threats to mankind. Today, we affirm the need for new programs to coordinate, support and promote research that bridges the gap between virus surveillance and public health implementation. We gather in Washington, D.C. to support goals and ideals of the Global Virus Network, a new approach to fostering true collaboration among all regions and all peoples of the world. Seeking to improve the immediate responses to emerging viral threats, train future generations of virologists, and advise governments or non-governmental organizations on viral disease threats and their control, the Global Virus Network fills a critical need in international health for today and into the future.”

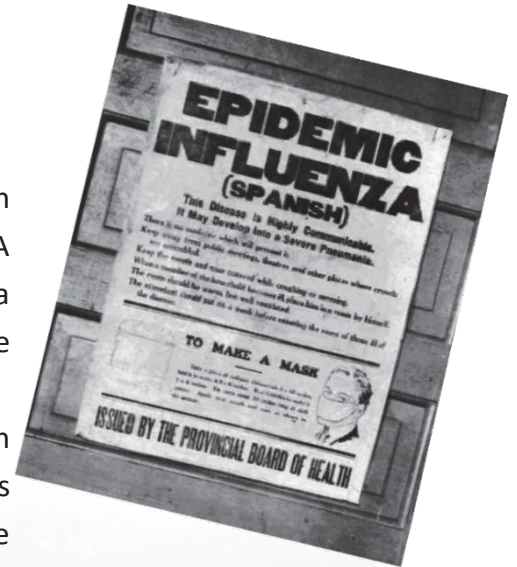
GVN declaration of support was signed
March 3, 2011, Washington, D.C.

Table of Contents

PATH TO THE CURRENT COVID-19 PANDEMIC.....	3
THE GENESIS OF THE GVN	5
THE VISION.....	6
THE MISSION	6
GVN LEADERSHIP.....	6
THE NETWORK.....	6
BENEFITS OF MEMBERSHIP	8
GVN HEALTHCARE & PHARMA CENTERS OF EXCELLENCE COALITION	9
GVN REGIONAL HEADQUARTERS	10
RESEARCH	10
INTERNATIONAL ANNUAL MEETINGS	10
REGIONAL MEETINGS	11
TASK FORCES	11
SARS-COV-2 RESPONSE TASK FORCE.....	11
LONG COVID TASK FORCE	12
PUBLIC HEALTH AND HYGENE TASK FORCE	12
DENGUE TASK FORCE	12
ZIKA TASK FORCE	12
HTLV-1 TASK FORCE	13
CHIKUNGUNYA TASK FORCE	14
MONKEYPOX TASK FORCE.....	15
VIRUS WATCH GROUPS	15
EMERGING PATHOGENS WATCH GROUP	15
TRAINING & EDUCATION	15
GVN ACADEMY	15
GVN POSTDOCTORAL FELLOWSHIP TRAINING PROGRAM	15
GVN RISING STAR MENTORSHIP PROGRAM	16
SHORT COURSE FOR EMERGING LEADERS IN VIROLOGY	16
GVN ONLINE SHORT COURSE: EMERGING LEADERS IN VIROLOGY	17
GVN ALUMNI NETWORKING SERIES.....	17
GVN HIGH SCHOOL VIROLOGY RESEARCH INTERNSHIP	17
HCV PROVIDER TRAINING IN INDIA	17
HEPATITIS B STUDY	17
GVN MEMBERSHIP PORTAL	18
ADVOCACY & PUBLIC EDUCATION.....	18
CONCLUSION	19



“The 1918-1919 influenza pandemic killed more people in absolute numbers than any other disease outbreak in history. A contemporary estimate put the death toll at 21 million, a figure that persists in the media today, but understates the real number. Epidemiologists and scientists have revised that figure several times since then. Each and every revision has been upward. Frank Macfarlane Burnet, who won his Nobel prize for immunology but who spent most of his life studying influenza, estimated the death toll as probably 50 million, and possibly as high as 100 million. A 2002 epidemiologic study also estimates the deaths at between 50 and 100 million (Johnson and Mueller, 2002). The world population in 1918 was only 28 percent of today’s population. Adjusting for population, a comparable toll today would be 175 to 350 million. By comparison, at this writing [2005] AIDS has killed approximately 25 million, and an estimated 40 million more people are infected with the virus.” [John Barry, “[1918 Revisited: Lessons and Suggestions for Further Inquiry](#).” From the 2005 Institute of Medicine Workshop, “[The Threat of Pandemic Influenza. Are We Ready?](#)”]



PATH TO THE CURRENT COVID-19 PANDEMIC

In hindsight, the world of 1918 might be excused for having been so quickly and devastatingly overwhelmed by a new virus emerging from the cauldron of World War I. Yet, a century later, nations and global health agencies still are routinely surprised by the sudden emergence of a novel virus from some obscure jungle, pig, chicken, bat, tick, or mosquito. It happens with surprising regularity.

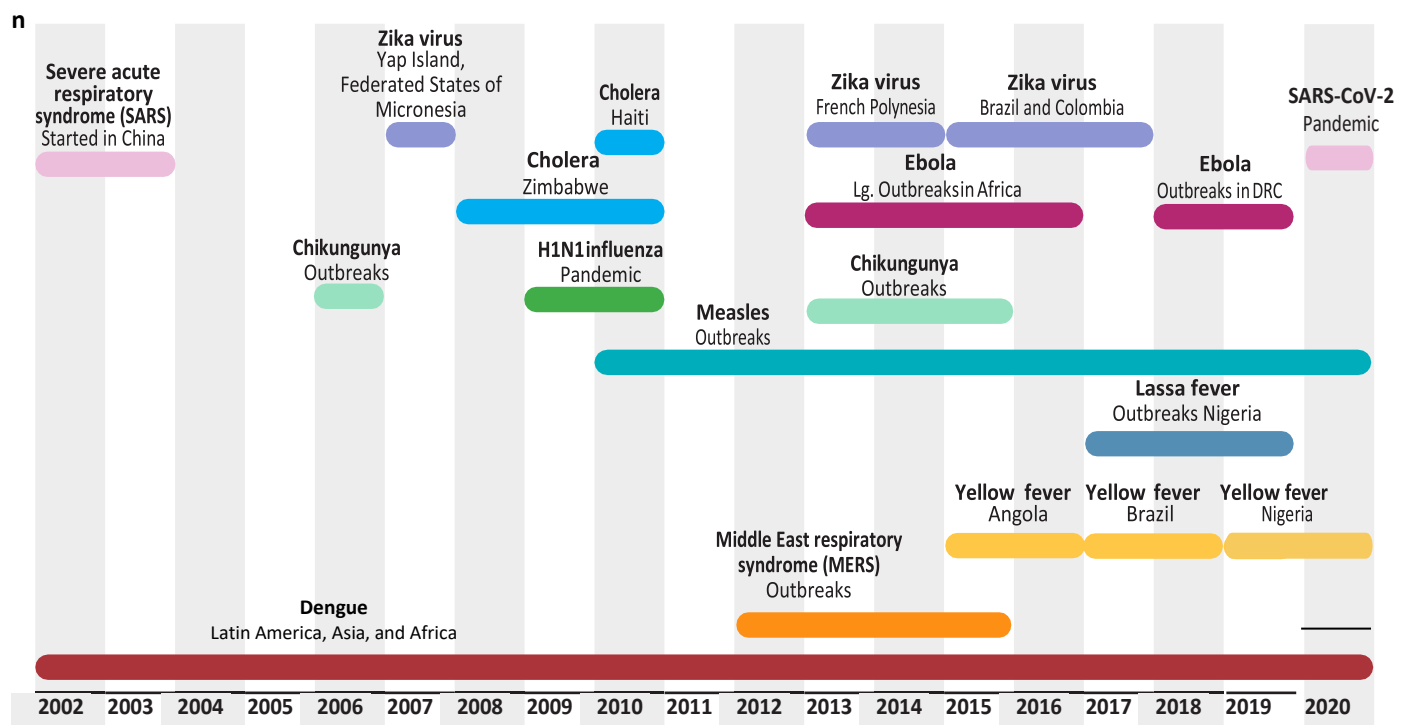
In just the last few years, two mysterious mosquito-borne viruses (Chikungunya and Zika) have invaded the Western Hemisphere to cause serious chronic arthritis and microcephaly, respectively. Other newly discovered viruses (i.e., Middle East respiratory syndrome coronavirus and highly pathogenic avian influenza viruses) have the potential to cause epidemic respiratory illnesses with high mortality. A 2016 report from the Commission on Global Health Risk

Framework for the Future estimated that the expected annual loss from potential (word missing – health costs?) is more than \$60 billion, and the Commission proposes an incremental spending of about \$4.5 billion per year to respond to those pandemic risks, only a fraction of what we expend on other risks to humankind.

Emerging and re-emerging viruses and their vectors continue to represent a major national and international security concern. Although we have had a vaccine for Yellow Fever for many years, we are still unable to fully control this infection. In 2022, the Ebola virus spread within the Democratic Republic of the Congo and posed a potential major threat.

In late fall 2019, a novel acute respiratory disease called coronavirus disease 2019 (COVID-19) emerged in Wuhan, China. COVID-19 is caused by severe acute respiratory syndrome–coronavirus 2 (SARS-CoV-2). COVID-19 was declared a pandemic by the World Health Organization on March 11, 2020, and continues to evolve and infect people across the globe. Consequently, the current COVID-19 pandemic has impacted global health and economies at unprecedented levels, indicating that we are still lacking infrastructure for global health, research and surveillance. For each new outbreak since its inception, like Chikungunya, Zika, and in particular COVID-19, the GVN quickly organized collaborative meetings for leading global experts of virology and vaccinology in its Centers of Excellence and Affiliates and has provided scientific knowledge and strategies to contain the pandemic to the general public and policy makers. Some highlights include the creation of the SARS-CoV-2 Task Force to (1) implement international efforts and promote cooperative activities in response to the current SARS-CoV-2 pandemic, (2) translate research into practical applications to improve diagnostics, disinfectants, and effective therapies and to develop vaccines, (3) facilitate clinical trials between industrial partners and center scientists, and (4) serve as a world-wide resource to governments and international organizations seeking advice regarding the current COVID-19 outbreak. The GVN’s collaborative efforts also extend to prepare for future pandemics.

Major Emerging and Reemerging Infectious-Disease Outbreaks, Epidemics, and Pandemics, 2002 through 2020



Adapted from Sands P. et al, *N Engl J Med.* 2016

THE GENESIS OF THE GVN



Robert C. Gallo, MD

Co-founder

International Scientific Advisor and Chair

Scientific Leadership Board

Global Virus Network

The concept of a Global Virus Network (GVN) began back in the 1980s when a small group of virologists realized that virtually no working virologists had a global directive for researching the cause of AIDS during the earliest years of the epidemic. Conversely, important groups such as the World Health Organization, which did have a global mandate for combatting the new disease, had virtually no resident expertise in the kind of virus that was subsequently shown to be the cause of AIDS, namely, a retrovirus. Examining the history of other great epidemics of the 20th century, Influenza and Polio, reveals similar disconnects between available expertise and the urgent public need to identify causation and prevention modes.

In March 2011, thirty of the world's leading virologists gathered in Washington, DC to pledge their support for a coalition of virology institutions worldwide, poised to act in times of viral outbreaks and committed to advancing knowledge on human pathogenic viruses. The Global Virus Network is that outcome.

GVN was co-founded by Robert Gallo, MD of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine, William Hall, MD, PhD of University College Dublin and the late Reinhard Kurth, MD, PhD, of the Robert Koch Institute. GVN was "incubated" within the IHV until it became fully organized in 2011. IHV is led by one of the GVN co-founders, Dr. Robert Gallo, who is renowned for pioneering the discoveries of human retroviruses (HTLV-1/HTLV-2) and in particular with his co-discovery of HIV as the cause of AIDS and development of the ELISA HIV blood test, which enabled health care workers for the first time to screen and rapidly diagnose for HIV. Dr. Gallo's personal and institutional support for the GVN has allowed the coalition to take shape and to become operational. GVN's mission is also advanced by the commitment and dedication of its Centers of Excellence. Christian Bréchet, MD, PhD, former President of France's internationally renowned Institut Pasteur, assumed the GVN Presidency on October 1, 2017.

GVN Centers, with strong working relationships among them, are poised to engage in any outbreak situation by providing the world's only network of top basic virologists from around the globe covering all classes of human, and many animal, viral threats. GVN is also committed to training the next generation of virologists in order to meet the critical need posed by the graying of members of our own discipline, and to inform and educate policymakers and members of the public about the role of virologists in mitigating viral illness and preventing infections from taking hold in populations. This is especially important as my colleagues and I have noticed a significant decline in students entering the field of virology.

GVN is an apolitical organization, driven by science, a catalyst for truth. We hope you will join our mission.

THE VISION

The GVN vision is “A world prepared to prevent, contain and control viral epidemic threats, through the collaboration of a global network of expert virus laboratories.”

THE MISSION

The GVN mission is to strengthen medical research and response to current viral causes of human disease and to prepare for new viral pandemic threats.

The GVN mission is achieved by:

Research

- Offering scientific expertise to promote development of pathogenesis discovery, better diagnostics, antiviral drugs and vaccines.

Training and Education

- Providing young scientists, the opportunity to study virology at the world's top centers of excellence

Advocacy and Public Education

- Working with governments and funding agencies to ensure research and training budgets meet the critical demands of today
- Providing authoritative science-driven information to the public and policymakers about viruses and vaccines

GVN LEADERSHIP



Of all the challenges that threaten the world's population, biosecurity – including highly infectious viruses being used as biological agents to harm mankind – poses one of the greatest global risks. Viruses cause millions of deaths each year. The old, young, rich, and poor – all are susceptible to these silent killers.

The Global Virus Network (GVN) is an essential and critical defense against viruses that pose a clear and present threat to public health. It is a coalition comprised of eminent virologists spanning nearly 40 countries worldwide working to advance knowledge about how to identify and diagnose such viruses, how they spread and make us sick, as well as how to develop drugs and vaccines to prevent illness and death while providing patients with the best treatments.

No single institution in the world has expertise in all viral areas except the GVN. GVN coalesces the best medical virologists to leverage individual strengths and to focus global teams of specialists on key scientific problems. The power of GVN lies in its global reach, the depth of its science, and its commitment to solving viral challenges facing the human population.

GVN has an important role to play in our preparedness and response to emerging viral threats, especially in the aspects related to research and development, working in close coordination with national and international institutions.

It has been a great honor for me to be appointed President of the Global Virus Network. I am pleased to be a part of growing and developing the GVN, scientifically, operationally and financially as well as to working with Dr. Robert Gallo (GVN Co-Founder and International Scientific Director) and all GVN members without whom the GVN would not have been possible.

I hope you will join me.

Christian Bréchet, MD, PhD

President - Global Virus Network (GVN)



Having been privileged to serve as Secretary and Treasurer since the organization’s founding, I am incredibly honored to have been elected Chairman of the Global Virus Network. I could not be more appreciative nor more grateful for the opportunity of working closely with Dr. Gallo and Dr. Bréchet, the GVN team and with my distinguished colleagues on the Board of Directors to advance and further the mission and consequence of the GVN.

The COVID-19 pandemic has conclusively demonstrated the absolute and compelling need for a global and apolitical organization committed to the preparedness, defense and first research response to emerging, existing and unidentified viruses that pose a clear and present threat to public health. The GVN was created to address that threat by coalescing eminent virologists, epidemiologists, infectious disease experts and public health specialists throughout the world, working collaboratively and accretively to advance knowledge about how to identify and diagnose pandemic viruses, mitigate and control how such viruses spread and make us sick, train the next generation of virologists, facilitate the development of drugs, vaccines and treatments to combat them as well as addressing the pervasive and often politicized public disinformation and misinformation. The GVN can and must be the definitive go-to authority and resource to anticipate, respond and mitigate global viral threats, as well as a beacon for advocacy, education, enlightenment and insight based solely upon science.

The GVN is at a critical inflection point. Thanks to the outstanding acumen and expertise as well as the relationships and resources of the members of the GVN’s board of directors, we are now in a position to make the critical and consequential decisions necessary to advance and further the sustainability of the GVN, both financially and operationally, to ensure the future viability of the organization and make sure that the world will never again be unprepared, untrained, ill-equipped and uninformed to deal with pandemic viruses.”

Mathew L. Evins

GVN Chairman & Treasurer

THE NETWORK

The Global Virus Network (GVN) is a coalition of top experts in virology in nearly 40 countries on six continents, collectively working to advance knowledge about how viruses cause disease, and to develop diagnostics, drugs, and vaccines to prevent illness and death. No single institution in the world has expertise in all viral areas that can initiate epidemics. GVN brings virologists together in innovative ways to leverage individual strengths and to focus global teams of scientists on key scientific problems. The power of GVN lies in its global reach, the depth of its science, the speed with which it can tackle new research problems, and its commitment to solving viral challenges facing the human population.

No other entity exists like the GVN. The GVN is a unique non-profit 501(c)3 organization because it is global, science driven, proactive and independent. GVN is integrated by more than 69 Centers of Excellence and 11 Affiliated Institutions in more than 37 countries (see map on next page). In addition, the GVN has now initiated Virus Watch Groups and Regional Chapters, reinforcing surveillance and collaboration with existing institutions.

Map of Centers of Excellence and Affiliated Institutions



Centers of Excellence		
Argentina	IBBM—National University of La Plata	
Australia	Peter Doherty Institute for Infection & Immunity, University of Melbourne; The Australian Infectious Disease Research Centre (AIDRC), University of Queensland	
Belgium	Northern Europe Consortium, Gembloux Agro-Biotech; Rega Institute for Medical Research, University of Leuven	
Brazil	Scientific Platform Pasteur-USP	
China	Chinese Consortium; Wuhan Institute of Virology, Chinese Academy of Sciences	
Colombia	Universidad Nacional de Colombia-Medellin	
Denmark	University of Southern Denmark	
France	Institut Pasteur (all locations)	Mérieux Foundation (all locations)
Germany	Robert Koch Institute Berlin; Technical University of Munich; Philipp University Marburg; University of Veterinary Medicine Hannover	
Ghana	West African Centre for Cell Biology of Infectious Pathogens (WACCBIP), Univeristy of Ghana	
India	Amrita Institute of Medical Sciences, Kerala; Rajiv Gandhi Biotechnology Centre; Manipal Academy of Higher Education (An Institution of eminence deemed to be University); Dr. GM Nair Institute for Advanced Virology	
Ireland	University College Dublin	
Israel	Tel Aviv University	
Italy	Italian Consortium	
Japan	National Institute of Infectious Diseases (NIID-Tokyo)	
Netherlands	Erasmus University Hospital; Radboud University Medical Center	
Peru	The Tropical Medicine Institute “Alexander von Humboldt” of the Universidad Peruana Cayetano Heredia	
Russia	Moscow Center for HIV/AIDS Prevention and Treatment; Russian Smorodintsev Research Institute of Influenza (SRII); Smorodintsev Research Institute of Influenza of the Ministry of Health of the Russian Federation; Peter the Great St. Petersburg Polytechnic University	
Senegal	IRESSEF	
Singapore	Duke-NUS Medical School	
South Africa	National Institute for Communicable Diseases, Johannesburg; CAPRISA	
South Korea	International Vaccine Insitute; Korea National Institute of Health’s Center for Infectious Diseases Research; Institut Pasteur Korea (IPK)	
Spain	Centro de Biología Molecular Severo Ochoa (CBMSO), Madrid; Centre de Recerca en Sanitat Animal (CRESA), Barcelona	
Sweden	Scandinavian-Baltic Consortium, Karolinska Institute	
Uganda	Uganda Virus Research Institute (UVRI)	
U.K.	MRC-University of Glasgow, Scotland; The Pirbright Institute, England	
USA	University of California San Francisco; Scripps Research Institute; J. Craig Venter Institute; Colorado State University, Fort Collins; University of Miami; Emory University; Tulane University School of Medicine; Institute of Human Virology at the University of Maryland; Johns Hopkins Bloomberg School of Public Health; University of Michigan; Icahn School of Medicine at Mt. Sinai; University of Rochester Medical Center; University of Buffalo; University of Pittsburgh Cancer Institute; UTMB Galveston National Laboratory; University of Nebraska Medical Center; University of Wisconsin-Madison (UW-Madison) Global Health Institute; U.S. Food and Drug Administration/Office of Vaccines Research and Review, FDA/OVRR; Wyss Institute for Biologically Inspired Engineering at Harvard University; Lerner Research Institute at Cleveland Clinic; Harvard T.H. Chan School of Public Health/The Broad Institute; University of Arizona – Aegis Consortium	

Affiliated Institutions	
Estonia	University of Tartu
Grenada, W.I.	St. George’s University
India	Molecular Virology Laboratory Rajiv Gandhi Centre for Biotechnology; Dr. GM Institute for Advanced Virology
Jamaica	University of the West Indies, Mona
Monaco	Scientifique Centre de Monaco (CSM)
Nigeria	Institute of Human Virology-Nigeria
Trinidad and Tobago	University of West Indies, St. Augustine campus
Uzbekistan	Research Institute of Virology Ministry of Health of the Republic of Uzbekistan
Vietnam	National Institute of Hygiene and Epidemiology, Hanoi
Zambia	Africa Center of Excellence for Infectious Diseases of Humans and Animals (ACEIDHA), School of Veterinary Medicine, University of Zambia
Zimbabwe	Antiviral Pharmacology Laboratory and Clinical Trials Research Center Virology Program at the University of Zimbabwe

BENEFITS OF MEMBERSHIP

- ❶ **Research Collaboration:** Opportunities to identify new collaborations with leading virologists from around the world. Members of the GVN meet annually to share information and ideas, including pre-publication data, and to work as teams on critical issues. Regional meetings offer additional opportunities for networking and coalition building, in addition to webinars and other Internet-based forums. Joint grant applications involving multiple GVN Centers have been submitted or are on the drawing board. Individual Centers will benefit from working collaboratively through the network on priority programs and projects.
- ❷ **Training Future Virologists:** Intensive Short Course in Virology, one-week course taught by GVN leaders. To be adapted for non-US settings.
- ❸ **New Strategic Partners:** GVN brings new partners and resources into the field, thereby leveraging funds and expanding impact.
- ❹ **Visibility and Impact:** GVN members are associated with a leading scientific brand. GVN outreach activities, including those with the press, receive significant attention.
- ❺ **Participate in joint initiatives:** work in collaboration on grant application, regional units, joint grant applications, Virus Watch Groups and Task Forces.

GVN HEALTHCARE & PHARMA CENTERS OF EXCELLENCE COALITION

In 2019, we created the GVN Health Care and Pharma Centers of Excellence Coalition which was officially launched with the announcement of Abbott as the inaugural member. GVN successfully expanded the Coalition with the participation of Sanofi, Gilead, Moderna, Unilever, and Johnson & Johnson. The Coalition is an initiative to bring together the world's foremost virologists and prominent companies to catalyze and facilitate the development, evaluation, and testing of diagnostics, therapeutics, treatments and vaccines for viral epidemics and pandemics that pose a threat to public health. Importantly, the Coalition continues to pursue collaborative networks for monitoring emerging and re-emerging pathogens for current and future pandemics.

ADDRESSING LOCAL PROBLEMS BY THE CREATION OF THE REGIONAL GVN CHAPTERS

The GVN is developing Regional GVN Chapters. Although the GVN is headquartered in Baltimore, we believe our presence needs to be truly global and therefore each regional GVN needs to meet specific geographic challenges found particularly in Southeast Asia, Central and South America, Europe, and Africa. The idea is to move towards a more flexible, global organization.

We established the Africa GVN Regional Unit during a meeting co-Organized by Dr. Pontiano Kaleebu, Director, UVRI and Dr. Glenda Gray, President, MRC South Africa. We strategically outlined the local programs in an effort to:

1. Build local capacity
2. Identify the local gaps
3. Build consensus with key stakeholders



First Africa GVN meeting, Entebbe, Uganda, May 2019.

GVN REGIONAL HEADQUARTERS

The GVN Regional Headquarters offices collaborate with the GVN global headquarters. Each regional headquarter provides organizational support and leadership by (1) acting as an “ambassador” of GVN in their respective region to promote and support GVN’s mission and goals, (2) offering administrative and financial support for the daily operation of the regional office, (3) supporting and promoting research in virology and advocating for public health in their regions and (4) supporting training and mentoring the next generation of regional and global leaders in virology and infectious diseases. University of South Florida Health is the first regional headquarters named by GVN to provide organizational and leadership support for GVN’s Global Headquarters.

Research

INTERNATIONAL ANNUAL MEETINGS

GVN’s Scientific leadership meets annually in order to address the Network’s priorities and foster global collaboration of the GVN. The GVN has convened annual meetings of the network on ten occasions, including the launch of the GVN in 2011 (2011—DC, USA and Dublin, Ireland; 2012—Naples, Italy and Baltimore, USA; 2013—Munich, Germany and Moscow, Russia; 2015—Beijing, China; 2016—Sapporo,

Japan; 2017—Melbourne, Australia; 2018—Annecy, France; 2019—Barcelona, Spain; 2020-GVN Special Annual meeting (zoom), and 2021-Monaco (GVN-Monaco COVID-19 Diagnostic Conference). Since the formal establishment of the GVN, the annual meetings have become a critical platform for identification of program priorities and the exchange of ideas. Please visit www.gvn.org for upcoming meeting dates and information.



Drs. Bosch, Gallo, and Brechot participating in the press conference during the 2019 GVN meeting in Barcelona,

REGIONAL MEETINGS

GVN supports regional research activity by holding regional meetings and promoting networking activities among the regional scientists. GVN initiated the GVN Latin America-Caribbean Regional Meeting in March and June 2021 and the GVN Africa Regional meeting in July 2021. The major aims of the meetings are to obtain updates on research and education programs and other activities, to learn more about the regional capacity among our Centers and Affiliates, and to look for potential collaborative opportunities.

TASK FORCES

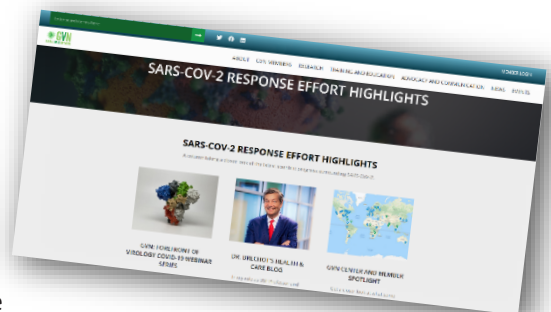
SARS-CoV-2 RESPONSE TASK FORCE

Following the outbreak of SARS-CoV-2, the GVN launched a COVID-19 Task Force with representatives from 40 GVN centers in 16 countries. The task force meets privately through conference calls monthly to share the most recent and advanced research findings, and to discuss developments in diagnostic, serological tests, therapeutics and vaccines.



Recent developments of the task-force include: the contribution of research updates from GVN Centers and Affiliates, including key actions taken in response to SARS-CoV-2; Updates on emerging variants of concerns and their characterization, long COVID, and vaccine efficacy and effect of boost on protective immunity; GVN Center collaboration in multiple clinical trials, advancing treatment and vaccine research; and the launch of GVN's virtual biobank, working with 10 centers to validate and interpret serological assays, and analyze immune responses and genetic variability of the virus. Instead of centralizing sample storage, samples are kept at the site of origin. The GVN will offer the necessary coordination and connect centers and partners that need certain samples with the centers that have collected samples. The approach is based on three scopes:

1. Creation of a virtual biobanking network of GVN centers, with the intent to share documents/protocols/information to cope with regulations and hurdles that affect sharing of samples



2. Setting up bilateral collaborations among centers and with partners. This will be achieved using a GVN database, with the information provided by centers.
3. Providing assistance to centers that are interested in acquiring on-site capacity, providing proper protocols, information on proper storage of samples, etc., connecting them with more established centers; reinforcing the human resources. The GVN's webpage also presents many resources available to the public by highlighting the GVN's key insights and distributing information regarding COVID-19. This includes Dr. Brechot's GVN-USF Blog, GVN SARS-CoV-2 Perspective pieces, GVN The other side of virology: Beyond the COVID-19 Pandemic, GVN Center & Member Spotlights, and further resource sharing. Most recently, GVN began hosting its "Forefront of Virology Webinar Series", featuring the work of leading virologists at GVN Centers of Excellence. These resources can be found at the **SARS-CoV-2 response page** at gvn.org.

LONG COVID TASK FORCE

The COVID-19 pandemic is providing an unprecedented challenge and burden to public health. Clinical evidence is evolving on the long-term effects of COVID-19. In particular, long COVID-19 (post-acute sequelae of SARS-CoV-2, PASC) is affecting the quality of individuals' life with lingering and debilitating symptoms. The longer the pandemic endures, the more people will experience PASC. Furthermore, spread of the Omicron variant is taking another turn in this pandemic. Its consequence on long-COVID-19 is currently uncertain. Global collaborations from multi-disciplinary teams are crucial to understanding the causes, mechanisms, and risks to develop preventive measures. The GVN is in an outstanding position to tackle this issue with each Long COVID-19 Task Force's Center's experts (virologists, clinical scientists, and epidemiologists) and resources.

PUBLIC HEALTH AND HYGENE TASK FORCE

Infectious diseases have become important issues in global health with a significant economic impact. The GVN has organized collaborative meetings for leading global experts of public health, virology, and epidemiology in the Centers of Excellence and its Affiliates and has provided scientific knowledge and strategies to protect the public from infectious diseases. The GVN has initiated the Global Health Task Force to (1) implement international efforts and promote cooperative activities in response to emerging and existing infectious diseases, including the current COVID-19 pandemic, (2) translate research into practical applications to develop effective disinfectants and standard operating procedures, (3) facilitate collaborative efforts between industry partners and center scientists, and (4) provide a world-wide resource to assist public, cooperatives and organizations seeking intervention strategies to prevent infectious diseases.

DENGUE TASK FORCE

GVN established this task force with leading scientists of Dengue viruses to commit to finding solutions to the challenges we currently face. This group aims to provides (1) genomic surveillance of dengue viruses (2) development of innovative vaccines and therapeutics, (3) technical support to low- and middle-income countries, and (4) collaboration opportunities between the GVN academic centers and industrial partners.

ZIKA TASK FORCE

The GVN Zika Task Force's objective is to implement international efforts to catalyze cooperative activities that can make a difference in response to this emergency.

Activities include: (1) development of a FAQ sheet, an electronic survey on Zika and flavivirus research taking place at each institution and at the GVN Centers and Affiliates, as well as unique resources and expertise available, (2) coordination with Welcome Trust on Data sharing in public health emergencies, (3) co-organization with Emory University Bridging the Sciences (Zika Virus Meeting, May 1-3, 2016), (4) hosting a Webinar with Burson Masteller, and (5) Implementation of Zika Serum Bank. The effort is led by the GVN's Zika Task Force Chair, Dr. Scott Weaver, at the University of Texas Medical Branch (UTMB) in Galveston, a GVN Center of Excellence, and the site of the World Reference Center for Emerging Viruses and Arboviruses.

GVN Zika Task Force map



HTLV-1 TASK FORCE

The mission of the HTLV Task Force is to speed the pathway to discovery of drugs that will stop virus transmission or progression from infection to disease and to educate the public about the nature of these viruses, the diseases they cause, and the preventive measures to mitigate their spread. This force has experts from 11 countries, led by Dr. Robert Gallo, GVN co-founder and international scientific advisor and director of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine.

GVN HTLV-1 Task Force Map



Members of the GVN Task Force on HTLV published an opinion piece in the journal *Blood* on the need for better screening of transplantation donor organs in order to prevent new cases of HTLV-associated diseases. The commentary—screening transplant donors for HTLV-1 and -2 - was published online on November 9, 2016 in *Blood*'s First Edition section.

In addition, members of the GVN Task Force on HTLV published a review article on November 11, 2016 in *Antiviral Research* entitled, "Reducing the global burden of HTLV-1 infection: An agenda for research and action."

Finally, in March 2021, catalyzed by GVN's initiative and commitment by its members, the WHO published several articles recognizing HTLV-1 as a relevant pathogen to humans.



CHIKUNGUNYA TASK FORCE

The GVN Chikungunya Task Force is a group of leading scientists from around the world committed to finding solutions to the growing problem of Chikungunya (CHIK) virus. Activities of the CHIK TF include: (1) evaluation of the state of the science and potential research opportunities on animal models of infection and disease, candidate vaccine constructs, new anti-viral drugs, and seroepidemiology studies for previously unrecognized cases of CHIK, including a focus on the Caribbean, (2) identification of potential funding sources to support international collaborative research and address gaps in knowledge, (3) training the next generation of researchers to study the interactions between viruses and mosquito vectors, and (4) providing expertise and visibility as GVN speaks about this challenge to a variety of audiences.

Chikungunya Task Force Map



MONKEYPOX TASK FORCE

In Spring 2022, as the world was still addressing the COVID-19 pandemic and its consequences, an outbreak of Monkeypox occurred that would eventually affect more than 100 countries. The GVN promptly assembled a task force that includes internationally recognized poxvirus researchers. The range of expertise in this task force spans basic research to epidemiology, clinical research, and vaccines. The group identified key issues of this outbreak: protection of vulnerable populations, availability of antivirals and vaccines, the necessity of monitoring infection rates, implementation of measures to prevent community transmission, and prevention of the establishment of animal reservoirs in non-enzootic areas. The task force articulated their vision in a publication paper submitted for publication and meets regularly to update knowledge on the spread of the outbreak, and coordinate international efforts to advance research studies towards therapeutic and preventive approaches to contain and end Monkeypox transmission.

VIRUS WATCH GROUPS

In 2019, GVN created international Virus Watch Groups (VWG), comprised of seven highly pathogenic virus categories: respiratory, retroviruses, oncogenic, arbovirology, hemorrhagic fever viruses, gastrointestinal and zoonotic. Group member selection was based upon region, gender-balance, and resource- limited representation. The Anticipation and Preparedness Task Force Leadership Chairs and Co-Chairs lead the seven respective virus watch groups, with participation of the group members.

The Leadership oversees Chairs and team members, the latter who are responsible for writing detailed summary reports on the state of each virus. These reports include new research findings, as well as current and novel surveillance techniques. Each group focuses on improving upon and filling in research gaps, learning lessons/ improving upon first research responses, contributing ideas for new vaccines, therapeutics and diagnostic developments, and methods for the prediction of potential re-emerging or unknown viruses in various hot-zones of the world. VWG research reports will be made available to private/public health institutions (i.e. CEPI, WHO, USAID, CDC, Wellcome Trust) and, during epidemics, presented in the form of health alerts or advisories.

EMERGING PATHOGENS WATCH GROUP

This program aims to identify new pathogens and to build research capacity by creating a network with low-and middle-income countries and supporting their clinical and laboratory staff, instrumentation, and biorepository facilities. In each center, clinical samples and data will be collected and stored and processed for antigenic and molecular testing and genomic surveillance. Genomic analysis for collected raw data will be processed in the centralized core facilities, and then processed data and bioinformatics will be available through the established database system. This program will be directed by Dr. Gene D. Morse (Director of University at Buffalo, SUNY GVN Center of Excellence) and Dr. Gavin Cloherty (Director of Infectious Diseases at Abbott Laboratories).

TRAINING & EDUCATION

GVN ACADEMY

Training and educating the next generation of virologists is part of the long-lasting mission of GVN. GVN senior virologists are committed to sharing their invaluable expertise with junior virologists through mentorship and intensive training to better prepare the next generation for future global viral threats. To advance this mission, GVN established the GVN Drs. Yang Liu & Pan Zheng Academy programs in 2021. GVN Academy facilitates supporting and training of early career virologists with well-coordinated and organized programs. GVN Drs. Yang Liu & Pan Zheng Academy includes the following individual programs:

GVN Postdoctoral Fellowship Training Program

This program aims to train three postdoctoral researchers for a two-year term with the option to rotate two GVN Centers of Excellence. Participants of the program participate in GVN annual and regional meetings during their training, thus having opportunities to interact with well-established virology experts for cutting-edge research

initiatives. Fellows can also have an opportunity to collaborate with GVN's growing list of industry partners.

GVN Rising Star Mentorship Program

This program is designed to mentor 15 bright, junior scientists over the course of two years and to connect each mentee with a GVN senior virologist to provide one-on-one research and career guidance. Participants of the program also participate in the elite GVN annual and regional meetings.

Short Course for Emerging Leaders in Virology

There is a critical need for highly skilled, broadly educated virologists worldwide. This course meets one of GVN's core goals: to ensure emerging leaders in virology receive topflight training and have opportunities to engage with partners globally. It supplements existing skills and provides new knowledge and avenues for broadening expertise and collaborations.

The initiative includes a one-week intensive course on basic, translational, and clinical aspects of viruses of great importance to human health. This includes lectures led by virologists drawn from the ranks of GVN Centers of Excellence globally, didactic courses on state-of-the-art aspects of research on specific viruses, and significant time for discussion and interaction with virology leaders as well as opportunities to meet with policymakers and program officials from funding agencies in Washington, DC.

Leading virologists from across the GVN centers participate in this course. Previous speakers include:

Drs. Robert Gallo, Diane Griffin, Robert Redfield, Konstantin Chumakov, Yutaka Tagaya, Shyam Kottilil, Ken Olson, Scott Weaver, and Ab Osterhaus. To date, the GVN has trained 90 scientists from around the world.



6th GVN Course participants and speakers

GVN Online Short Course: Emerging Leaders in Virology

Over the past 7 years, this in-person one-week short course has trained more than 90 scientists globally. By partnering with the University of South Florida, we are creating the online version of the course. The course aims to benefit students who are interested in virology, immunology, epidemiology, public health, and biomedical research by allowing all participants the flexibility of anytime, anywhere online learning.

GVN Alumni Networking Series

GVN is dedicated to supporting the GVN Alumni by creating its Networking Series with a variety of programs and initiatives for enhancing the development of their career. We provide several programs and initiatives for alumni to connect with and learn from one another, as well as from other senior scientists and leaders in the network. It will be a high-impact hybrid series that will provide GVN alumni with insight, information, and connections to help them launch, grow, and expand their bright future.

GVN High School Virology Research Internship

The current COVID-19 pandemic is just one of the reasons educators should refocus their efforts on virology education. The continued emergence of new pathogens demonstrates the importance of developing talent in the field of virology. Our 8-week paid internship program was created to help high school students get exposed to and discover a career in virology. This is accomplished through an intensive syllabus that assists our interns in identifying their core areas of interest and how to pursue them. results.

HCV PROVIDER TRAINING IN INDIA

Hepatitis C is a serious liver infection caused by the hepatitis C virus. It is spread person-to-person through contact with blood. Most people who are infected with it do not experience any symptoms for years. India has a high prevalence of Hepatitis C Virus (HCV), but public health knowledge of the disease is limited. India also is host to a large network of community-based practitioners with limited specialist training but extensive experience in the primary management of front-line patients.

The purpose of this collaborative project between India and the Institute of Human Virology at the University of Maryland School of Medicine (IHV/UMB) is to develop an HCV training model for medical providers in India that can be applied to other areas of South Asia. Generic medications are available and approved to use in India, but only a few providers have any experience in the management of HCV with interferon/ribavirin, and there are no infectious disease specialists in the country with experience using new oral agents. Similar to when antiretroviral therapy was rolled out in the mid-2000s, India now has an acute need for providers to be trained in the management of HCV.

The collaboration with India utilizes a decentralized mentorship plan to build local capacity through high-level clinical mentoring to 50 physician and nurse mentors who will then be responsible for mentoring an average of 10 health care workers at each health facility, reaching more than 500 health care workers throughout

the country. The project focuses on building specific training for specialized populations (private patients versus community clinic patients) and on establishing settings (urban versus rural) in multiple sites in India.

IHV/UMB, a GVN Center of Excellence, serves as the primary clinical partner for clinical and operational research activities with Indian trainees. The project is managed by IHV/UMB professor, Shyam Kottlilil, MBBS, PhD. This collaborative effort is expected to have a major impact on the eradication of hepatitis C in India.

HEPATITIS B: A PILOT STUDY TO DEVELOP AN INTEGRATED CLINICAL DATABASE TO SUPPORT CURRENT AND FUTURE COMMUNITY-BASED CLINICAL PROJECT

This is a pilot study to develop an integrated clinical database to support an ongoing project in Arunachal Pradesh, India. GVN assists in developing, maintaining and facilitating collection of data and provides expertise in evaluating outcomes. Dr. Abhijit Chowdhury, the principal investigator of the parent project, will screen 30,000 marginalized populations for hepatitis B serologies to:

1. Provide HBV vaccinations for those who are not exposed to HBV.
2. Develop a longitudinal cohort of patients with chronic HBV for linkage evaluation and care.

Investigators who are assisting with the study at the GVN are faculty within the Division of Clinical Care and Research at the Institute of Human Virology (IHV) at the University of Maryland School of Medicine. The program implementing this grant is unique in that it combines community-based clinical care and academic research. Since 1996, the IHV in Baltimore has had a long-standing history of pioneering research in human virology. The HCV Clinical Research Program has conducted several landmark clinical trials using novel therapeutics. The DC-PFAP is a partnership for community-based clinical care and research whose aim is to reduce the incidence and prevalence of HIV/AIDS and its comorbidities. Since its inception, this program has established itself as a global leader in novel therapeutics for HCV, HIV and HVB. The investigations within this program were the first in the world to utilize IFN-free HCV regimens, demonstrate efficacy of novel combination DAA therapy, and use IFN- and RBV-free regimens in a HIV/HCV co-infected population. This project is supported by the John C. Martin Foundation.

GVN MEMBERSHIP PORTAL

The objective of the GVN Membership Portal is to create an online site for GVN members to connect, which serves to centralize scientific information shared among members for collaboration on global health issues. Members of the GVN community will be able to share new publications, research interests and activities, resources available, courses and job postings for career development, and information related to research efforts and activities. Through this connection and collaboration, the GVN's ability to respond to emerging threats and contribute to the global community is greatly enhanced and aids the scientific community.

ADVOCACY & PUBLIC EDUCATION

The GVN serves as a resource to government and international organizations seeking advice about viral disease threats, prevention or response strategies, advocates for research and training on virus infections and their many disease manifestations, and disseminates information to authorities and scientific communities throughout the world, including conducting workshops and webinars for journalists and the business community and providing Congressional testimony, opinion pieces, and journal articles. The goals are:

1. To build and sustain broad based awareness and understanding of the efficacy and benefits of diagnostics, antivirals and vaccines in the identification, treatment and prevention of viral pandemic threats.
2. To engender and enhance adoption and utilization of diagnostics, antivirals and vaccines by the public-at-large to prevent and mitigate viral disease and the spread of pandemic viruses.
3. To monitor and measure acceptance and use of diagnostics, antivirals and vaccines by the public-at-large.
4. To utilize the GVN's foremost virologists in target markets internationally to build public trust, to serve as public advocates and to champion the benefits of diagnostics, antivirals and vaccines to mitigate viral disease and the spread of pandemic viruses.
5. To develop and implement a methodology in select international target markets (Proof-Of-Concept Phase) that, if effectual, can be replicated in the most at-risk and vulnerable populations worldwide.



GVN IN 2021 & 2022

- 32 Press Releases
- 104 Unique News Articles
- 2 Press Conferences
- 88 Newsletters
- 41 Scientific Reviews
- 19 Webinar Series
- 12 Blog Posts



CONCLUSION

Since its inception, GVN has worked to bring together a coalition of leading virologists spanning over 40 countries worldwide, all working to advance knowledge about how viruses make us sick and to develop drugs and vaccines to prevent illness and death. It is a unique organization that brings the best virologists together to leverage individual strengths and to focus global teams of scientists on key scientific problems. The power of GVN lies in its global reach, the depth of its science, and its commitment to solving viral challenges facing the human population. No other entity exists like the GVN.



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