

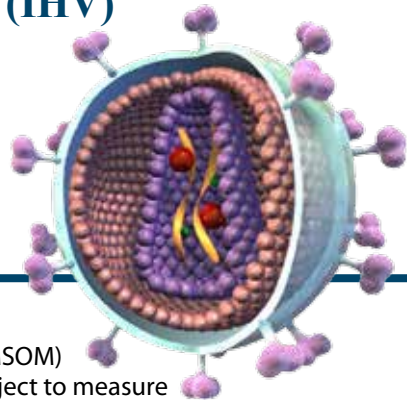


Discovery

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Institute of Human Virology (IHV) will undertake the Largest HIV Survey ever conducted in a Single Country

\$100 Million Project Will Enable Researchers to Better Understand HIV in Nigeria



The Institute of Human Virology (IHV) at the University of Maryland School of Medicine (UMSOM) announced that it is leading a \$100 million project to measure the reach and impact of HIV programs in Nigeria—the largest population-based HIV survey ever conducted in a single country.

“We are pleased that the CDC and the Government of Nigeria entrusted us to lead this critical epidemiological study to better understand the state of Nigeria’s current HIV epidemic,” said the study’s principal investigator, **Man E. Charurat, PhD, MHS**, Professor of Medicine and Director of the Division of Epidemiology and Prevention at IHV. “We look forward to building upon IHV’s 16-year partnership with Nigeria to measure the impact of PEPFAR’s programs in Nigeria, and to pave the way towards more effective prevention and treatment.”

The grant award is the result of a cross-collaboration between IHV’s Division of Epidemiology and Prevention led by Dr. Charurat and IHV’s Center for International Health, Education and Biosecurity led by **Deus Bazira, DrPH, MBA, MPH**, who is also Assistant Professor of Medicine.



The work is funded by the U.S. Centers for Disease Control and Prevention (CDC) through the President’s Emergency Plan for AIDS Relief (PEPFAR), in collaboration with the Government of Nigeria and the Global Fund to Fight AIDS, Tuberculosis and Malaria, to conduct the Nigeria AIDS Indicator and Impact Survey (NAIIS). IHV is leading the effort to measure the impact of HIV programs on the epidemic in Nigeria. The results of the survey will guide a strategy for Nigeria’s HIV prevention and treatment.

IHV is leading a consortium that includes ICF International, the Institute of Health Metrics and Evaluation at the University of Washington, and the African Field

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Director’s Message:

For this issue’s Director’s Message, I would like to reprint from the website (www.gvn.org) of the Global Virus Network (GVN) the following letter, which was also published as a shorter version by *The Lancet* on May 12, 2018. The letter was catalyzed by the 9th International Meeting in Melbourne, Australia on September 25-27, 2017 in partnership with the Peter Doherty Institute and the Institut Pasteur. Following the meeting’s impressive session on one of the most potent human carcinogens, human T cell leukemia virus subtype 1 (HTLV-1), a group of renowned scientists and activists called on the World Health Organization (WHO) to support the promotion of proven, effective transmission prevention strategies on this debilitating and deadly virus. The initiative was covered internationally in press by organizations such as CNN, *Newsweek*, ABC News (Australia), and *The Guardian*, among many others.



Robert C. Gallo, MD

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Institute of Human Virology faculty lead a team from the Government of Nigeria and the CDC to prepare HIV testing technology for household surveys.

Epidemiology Network, in collaboration with the Nigerian Federal Ministries of Health and the CDC. The Institute will receive \$30 million in the first year of the multi-year award. **Gambo G. Aliyu, MBBS, MS, PhD**, Project Director and Assistant Professor of Epidemiology and Public Health at IHV, will lead the project on-the-ground in Nigeria.



Man Charurat, PhD, MHS

“With this new grant, IHV has been awarded close to \$1 billion total in PEPFAR funds, a milestone that coincides with PEPFAR’s 15-year anniversary,” said Robert C. Gallo, MD, The Homer & Martha Gudelsky Distinguished Professor in Medicine, and co-founder and director of IHV.

Dr. Gallo is most widely known for his co-discovery of HIV as the cause of AIDS, and for the development of the HIV blood test. Dr. Gallo is also Co-founder and Scientific Director of the Global Virus Network (GVN). “We commend President George W. Bush, who signed PEPFAR into law, on this historical global health initiative, which has uniquely put a real dent in the global HIV/AIDS crises. We are also grateful to U.S. leaders for their continued support of PEPFAR.”

Dr. Gallo continued, “Dr. Charurat and his team are well-positioned to take on this pivotal, epidemiological study that encompasses not just HIV, but hepatitis B and C. I am pleased that IHV will continue to work closely with Nigerian colleagues in the fight against HIV and related viruses.”

In the first year, IHV will lead the consortium to survey 88,775 randomly selected households and 168,029 individuals in Nigeria to estimate HIV incidence, prevalence, viral load suppression among adults and children, and to determine hepatitis B and C prevalence. The study spans 37 states in Nigeria and includes training more than 2,900 Nigerians. The work will help inform the CDC and the Government

of Nigeria on the status of HIV in that country, and allow them to more effectively fight the epidemic.

“HIV remains an urgent public health problem in Africa and other parts of the world,” said **E. Albert Reece, MD, PhD, MBA**, Dean, University of Maryland School of Medicine, Executive Vice President for Medical Affairs at the University of Maryland, Baltimore, and the John Z. and Akiko K. Bowers Distinguished Professor. “IHV has worked relentlessly to save countless lives through both prevention and treatment, and this project will enable them to continue this extremely important work.”

Since 2004, through PEPFAR funds, the IHV has cared for more than 1.3 million individuals in Botswana, Ethiopia, Guyana, Haiti, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia.

“IHV’s work represents the highest aspirations of our university, to improve the human condition and serve the public good,” said **Jay A. Perman, MD**, president of the University of Maryland, Baltimore. “Of course this project is critical to our work in Nigeria, but it will have global impact as well. An unprecedented survey like this will give us invaluable insights into the prevention and treatment of HIV/AIDS around the world, and here at home.”

Map showing the 37 States of Nigeria





L to R: 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, Dr. 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.

Time to eradicate HTLV-1: an open letter to WHO—10, May 2018

On behalf of Human T Cell Leukemia Virus-1 (HTLV-1) positive patients, expert clinicians and scientists working in the field of HTLV-1 clinical and laboratory research.

Dear Dr. Tedros Ghebreyesus,

We are writing to you today to ask you to support the promotion of proven effective transmission prevention strategies against one of the most potent human carcinogens, Human T Leukemia Virus subtype 1 (HTLV-1).

As experts in this field, we offer our support to co-develop a WHO HTLV-1 webpage under Health Topics, and a WHO HTLV-1 Fact Sheet detailing specifically HTLV-1 prevention strategies. In addition, we would like to propose that information on HTLV-1 is included and updated on various WHO webpages such as Sexually Transmitted Infections, Blood Transfusion Safety and Breastfeeding.

With this letter, we hope to raise your awareness about several current shortcomings and potential solutions in this field.

Our global community has been slow to respond to the HTLV-1 predicament, a virus transmitted through body fluids, causing significant morbidity and mortality. This is almost certainly due to having to address many other pressing health priorities. However today we are encouraged by the WHO's mandate to value a healthy sexual life and the availability of many WHO fact sheets on other blood borne and sexually transmitted viruses such as Hepatitis B and C and HIV.

HTLV-1 is transmitted through the same routes as HIV-1 through infected body fluids, via condom-less sexual intercourse (1-4),

breastfeeding (5-7), sharing of needles (8-11) and the transfusion (12, 13) and transplantation of infected blood and organ donations (14-17).

Recently published prevalence data from Central Australia (where in some communities 45% of adults live with HTLV-1)(18), Japan (19) and Brazil (20, 21) report the importance of HTLV-1's sexual transmission. The sexual transmission of HTLV-1 was also highlighted in several presentations at the 18th International Retrovirology Conference in Tokyo in Japan in March 2017 (Satake, M. et al O-1-5, Morita, M. et al P-A-6, Fuchi, N. et al P-A-12) and at the 2017 Australasian HIV & AIDS and Sexual Health Conference in Canberra in Australia (22).

In 2012 Antoine Gessain and Olivier Cassar (23) published a systematic review of available data on HTLV-1 origin and prevalence, which we are drawing upon to provide you with an overview of the world distribution of HTLV-1. It is well understood that HTLV-1 originated from non-human primates. It is an ancient virus and its prevalence is complex, in that it is highly endemic in some parts of the world, but regrettably available surveillance data is not comprehensive, and in many regions, accounting for 6 billion persons, HTLV-1 prevalence remains unknown.

HTLV-1 has been detected in most parts of Africa. In Gabon, a HTLV-1 sero-prevalence of 5–10% has been observed in adults, 1-5% in pregnant women and in some villages up to 25% of older women are HTLV-1 positive. In Nigeria, an estimated 850,000 to 1.7 million people are infected with this virus. In Central African Republic, HTLV-1 infection has been reported in 7% of older, female Pygmies of Southern region.

In Japan, an estimated 0.8 million people are HTLV-1 positive and in Southern regions 30–40% of adults > 50 years of age and up to

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Director's Message *(continued)*

5.8% of pregnant women carry this virus.

In Jamaica, the estimated mean HTLV-1 sero-prevalence is 6.1% (1.7–17.4%) in the general population (including older persons) and is as high as 2–3.8% among pregnant women and blood donors. Other Caribbean islands that have been studied have similar prevalence rates.

In areas of Brazil, especially in people of African ancestry, HTLV-1 prevalence has been reported in 1.3% in blood donors, 1.8% in the general population and 1.05% in pregnant women with 33% of their family members including children found to be positive.

In Iran, up to 3% of adults are infected in the Mashad area but HTLV-1 is found across the country.

In Romania, the HTLV-1 prevalence has been reported to be 5.3/10,000 among first-time blood donors, and 3-25% in poly-transfused patients.

In non-endemic areas, due to the migration of people and the sexual transmission of the virus, HTLV-1 and 2 have also been detected. In the UK 20,000 - 30,000 people live with the virus, whilst in metropolitan France an estimated 10,000–25,000 people are HTLV-1 infected. In the USA, it is estimated that approximately 266,000 individuals are infected with HTLV-1 or -2, and that 3,600 people with HAM/TSP remain undiagnosed.

In a recent hospital-based cohort study in Central Australia, 635/1889 (33.6 %) tested Indigenous people were HTLV-1 positive. Only one of 77 (1.3 %) children tested positive but with age a sharp increase in prevalence rates were observed (15-29 years, 17.3 %; 30-49 years, 36.2 %; 50-64 years, 41.7 %), reaching 48.5 % in men older than 50 years of age (18).

As with most blood borne and sexually transmitted viruses the majority of HTLV-1 positive people transmit the virus unknowingly and are unaware that they are at risk of developing diseases caused by HTLV-1.

*HTLV-1 was the 1st infectious agent discovered to be the direct cause of human cancer and is the most carcinogenic of all oncoviruses (24). HTLV-1 causes Adult T Cell Leukemia/Lymphoma (ATL) which depending on subtype, timing of diagnosis and access to treatment, has a median survival of 8 to 10 months despite all the advances in chemotherapy and supportive therapy (25, 26). The lifetime probability of developing ATL is 4-5 in 100 people infected with HTLV-1 (27), but ATL only occurs as a consequence of mother to child transmission (MTCT), which contributes to 20-24% of all HTLV-1 infections (28). Therefore the lifetime probability of developing ATL is 1 in 4 HTLV-1-infected infants (28). Thus, it is a preventable malignancy and, in our opinion public health efforts to prevent its transmission should be comparable to other preventable cancers. For instance, the WHO's promotion and prevention strategies to reduce smoking related lung cancers are exemplary (WHO Health Topic: Tobacco), though the lifetime increased risk of developing lung cancer through smoking cigarettes is about 160/1000 (29).

**This paragraph has been updated in light of a recent publication from a GVN HTLV-1 Task Force member (Dr. Graham Taylor).*

In addition, HTLV-1 causes chronic, progressing, disabling and painful conditions such as myelopathy and polymyositis as well as chronic inflammatory pulmonary disease, uveitis and dermatitis (30).

The lifetime risk of HTLV-1-Associated Myelopathy/Tropical Spastic Paraparesis (HAM/TSP) approaches 4 in 100 infected people (31-36), with an average of 8 years delay in diagnosis and treatment due to lack of awareness and testing (37). Patients with HAM/TSP suffer from decades of progressive walking disability, chronic severe back and leg pain, incontinence and urinary retention, severe constipation and sexual dysfunction, all of which lead to social isolation. HAM/TSP affects both adults and children but mostly women, and has been associated with the acquisition of HTLV-1 through organ donation (17) (18th International Retrovirology Conference in Tokyo in Japan in March 2017: Yuzawa K. et al O-5-7).

Despite its distinct etiology and distinctive pattern there is no International Classification of Disease Code (ICD code) for HAM/TSP, an extraordinary state of affairs for a disease described for the first time by Eric Cruickshank in 1956 (38), linked to HTLV-1 in 1985 and for which WHO has had diagnostic criteria since 1989 (39). Patients living with HTLV-1 and/or suffering from HAM/TSP find this omission incredulous. We truly hope that you can help us rectify this serious oversight in order to reduce the under-diagnosis and under-reporting of this disease.

HTLV-1 was discovered 37 years ago (40), just before the AIDS epidemic. It is acknowledged that HTLV-1 research led to the idea that AIDS might be caused by a new retrovirus and therefore greatly abetted the identification of HIV-1. It is disappointing that despite the significance of HTLV-1 research in the fight against AIDS, in comparison to HIV-1, people who are infected with HTLV-1 have received very little attention in form of publicity, development of international clinical guidelines or financial investment into drug development and clinical trials (41).

Worldwide it is mostly women, who carry the burden of HTLV-1 infection and its associated diseases: Women, who become infected through condom-less sex, and their babies, who are infected through breastfeeding. Therefore HTLV-1 is highly concentrated in families [1:3 to 1:4 of family members carry the virus (42, 43)].

In your speech on 3 July 2017 you fearlessly stated that the WHO is fully committed to 'Every Woman Every Child'. You asked for quality, equity and dignity in services for sexual and reproductive health, equal rights and the empowerment of women, girls and communities. Today we are asking you to include families at risk of HTLV-1 in your list of goals to improve global health.

We would like to support the WHO by using published evidence on HTLV-1's prevalence and mode of transmission together with the established understanding of effective transmission prevention strategies against blood borne and sexually transmitted viruses, to produce a clear and evidence-based WHO HTLV-1 Fact Sheet, which would inform WHO web-users world-wide.

Director's Message (continued)

A recent review of WHO's website revealed that the information on HTLV-1 could benefit from an evidence-based update, supported by HTLV-1 experts and patient representatives living with this virus. We need to visibly share the information that about 80% of HTLV-1 infection is transmitted sexually [4000 cases/annum of sexual transmission in Japan alone (19)] with most of the remaining 20% of transmission being attributed to mother to child transmission, predominantly through breastfeeding [up to 32% risk to the infant depending on the duration of breastfeeding (44)]. We would like to see an emphasis on the fact that HTLV-1 is highly transmissible through infected blood and that the risk through organ transplantation may be 100% with 2 out of 3 organ recipients thus infected developing HAM/TSP within 4 years (18th International Retrovirology Conference in Tokyo in Japan in March 2017: Yuzawa K. et al O-5-7).

So far, an astounding 17 different prevention strategies have been identified to reduce the risk the transmission of other blood borne and sexually transmittable viruses, such as Hepatitis B & C and HIV (Table 1) but not for HTLV-1.

Table 1: List of potentially available strategies to prevent the transmission of blood borne and sexually transmitted viruses. There has been a case report of HIV cure through stem cell transplantation but this intervention is risky, carries considerable morbidity and is not a realistic option as a global strategy. Legend: Not available = NA; The intervention is available = ✓; The intervention could be available = (✓); Could be effective but not researched = ?.

	HBV	HTLV	HIV	HCV
DISCOVERED	1965	1980	1983	1989
Vaccine	✓	NA	NA	NA
Test	✓	✓	✓	✓
Routine blood product screening	✓	✓	✓	✓
Routine organ transplant screening	✓	(✓)	✓	✓
Routine antenatal screening	✓	(✓)	✓	✓
Routine sexual health screening	✓	(✓)	✓	(✓)
Treatment or Cure	✓	(✓)	✓	✓
Mother to child transmission prevention	✓	(✓)	✓	(✓)
Partner notification	✓	(✓)	✓	✓
Needle exchange programs	✓	(✓)	✓	✓
Condoms	✓	✓	✓	✓
Strategies for condom-less anal sex	(✓)	?	✓	(✓)
Post-exposure prophylaxis	(✓)	?	✓	?
Pre-exposure prophylaxis	(✓)	?	✓	?
Voluntary medical male circumcision	NA	?	✓	NA
Testing and treating sexually transmitted infections	✓	✓	✓	✓
Education of medics, patients, population	✓	(✓)	✓	✓
Total number of widely available interventions	12/16	4/12	16/17	10/13

Without a doubt, the availability and level of access to these strategies varies significantly from region to region, but there is a very clear directive from the WHO that they work and should be implemented. Especially in combination, they are so effective that many nations are now planning the eradication of three of these viruses.

There is irrevocable evidence that the transmission of HTLV-1 would be averted by

- using condoms when having sex,
- avoiding the transfusion and transplantation of infected blood and organs,
- advising HTLV-1 antibody positive mothers not to breast-feed their babies (if deemed safe) or reducing duration to 3–6 months,
- using sterile needles, and
- by educating healthcare professionals and the population about preventions strategies.

For HTLV-1, some of the aforementioned strategies are implemented inconsistently most probably due to a lack of an international consensus and directive. For example, universal antenatal care (ANC) screening is implemented only in Japan. In Brazil, HTLV-1 ANC screening is recommended in some regions but not necessarily implemented. In the UK, ANC screening is not recommended at all, despite recent evidence that it would be cost effective to identify positive mothers and counsel against breastfeeding and therefore prevent HTLV-1 transmission and ATL disease in their children long-term (18th International Retrovirology Conference in Tokyo in Japan in March 2017: Malik B. et al O-3-2, submitted for publication). If we add to this the prevention of other HTLV-1 diseases the cost effectiveness would be still greater.

In Japan, it is permitted to transplant HTLV-1 positive organs despite recent evidence showing that 63% of recipients of HTLV-1 positive kidneys developed HAM/TSP [(17), 18th International Retrovirology Conference in Tokyo in Japan in March 2017: Yuzawa K. et al O-5-7].

Nowhere that we know of is HTLV-1 part of routine sexually transmitted infection screening or needle exchange programs despite indisputable knowledge of its mode of transmission.

Here we propose the universal HTLV-1 testing of blood and organ donors, and the prevention of HTLV-1 positive blood transfusion and organ transplantations. We offer to support the WHO to develop a HTLV-1 Fact Sheet which provides clear advice that HTLV-1 is an oncovirus and can cause severe inflammation. We wish to inform HTLV-1 infected people that they need lifelong clinical and laboratory monitoring (HTLV-1 pro-viral load, lymphocyte count etc.), so that they are diagnosed early when they develop HTLV-1 diseases, so they can access treatment and clinical trials in a timely fashion. We encourage the WHO to support the recommendation that all people living with HTLV-1 are informed, that HTLV-1 is sexually transmitted and that their partners need to be notified and tested. HTLV-1 positive patients need to be informed that HTLV-1 can be transmitted through breastmilk and we need to advise to have their children tested for HTLV-1.

Director's Message (continued)

We are pleased to report that even the variable usage of some of these intervention strategies against HTLV-1 have led to a measurable change in the HTLV-1 prevalence profile. In Japan since the introduction of HTLV-1 ANC in 1987 in the Nagasaki region the HTLV-1 prevalence in mothers has reduced from 7.2% to 1% (http://www.med.nagasaki-u.ac.jp/gyneclgy/now/now_htlv-1.html). Following the national roll out of ANC screening the mother to child transmission has reduced from 20% to 2.5% in Japan (45). In 2017 Dr Lezin reported a significant reduction in HAM/TSP incidence due to ANC and blood donor screening in the French island of Martinique, in the West Indies (46).

Therefore, we propose a **WHO HTLV-1 Vision** for the prevention of HTLV-1 transmission: **'Let's eradicate HTLV-1 together!'** and a **WHO HTLV-1 Mission**:

'Intervention strategies to achieve the eradication of HTLV-1'.

This may be achieved with the implementation of **5 strategies**:

Strategy #1 protects the sexually active population:

Routine HTLV-1 testing in sexual health clinics should be available to all attendees. 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. We need to 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.

Strategy #2 protects blood and organ donors and recipients:

We need to test donors and not use products potentially infected with HTLV and make medical follow up and CMPC available to those infected.

Strategy #3 protects mothers, babies and fathers:

We need routine antenatal care testing and advise against breastfeeding by mothers who are HTLV-1 positive where safe, alternative methods of infant feeding are available. Alongside we need to promote CMPC.

Strategy #4 protects people who inject drugs:

We need to promote HTLV-1 testing and provide free safe needles through needle exchange programmes together with CMPC promotion.

Strategy #5 supports the population and health care providers:

Access to up-to-date and evidence-based WHO HTLV-1 Fact Sheet and its diseases will allow health care providers to diagnose HTLV-1 and its diseases more often and in a timely fashion. Informed people are more likely to protect themselves and ask for a HTLV-1 test.

Words are important. We need to change the way we talk about HTLV-1 to increase its visibility and are guided by the beautiful language used for the USA National HIV/AIDS Strategy:

Vision: International HTLV Strategy

"Our world will become a place where new HTLV infections are very rare and when they do occur, every person, regardless of age, gender, race/ethnicity, sexual orientation, gender identity or socio-economic circumstance, will have unfettered access to high quality, life-extending care, free from stigma and discrimination."

Thank you for considering our point of view and we are looking forward to hearing from you and to support your efforts to increase the visibility of people living with HTLV-1.

Yours sincerely,

Fabiola Martin, MD, MRes, FRCP, FHEA

Sexual Health, HIV, HTLV Physician

Head of MD Program Admissions

Faculty of Medicine

The University of Queensland, Brisbane, Australia

Honorary Senior Lecturer in HIV Medicine

University of York, York, United Kingdom

Member, Global Virus Network HTLV-1 Task Force



GLOBAL VIRUS NETWORK

Robert Gallo, MD

Co-Founder & Scientific Director

Global Virus Network

The Homer & Martha Gudelsky Distinguished

Professor in Medicine

Co-Founder & Director Institute of Human Virology at the
University of Maryland School of Medicine

Signatories

1. Fabiola Martin, The University of Queensland, Australia and Global Virus Network HTLV-1 Task Force, Fabiola.martin@uq.edu.au
2. Kristy Blackeborough-Wesson, HTLV-1 Patient representative, UK
3. Sandra Do Valle, HTLV-1 Patient representative, Brazil
4. Shane Schincke, HTLV-1 Patient representative, Australia, shyam@iinet.net.au
5. Scott McGill, Acting CEO, Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine, Australia, Scott.McGill@ashm.org.au
6. Stuart Aitken, Sexual Health Society of Queensland, Australia, drsaitken@gmail.com



9th International GVN Meeting in Melbourne, Australia



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



7. Graham Neilsen, Sexual Health and HIV Physician, The University of Queensland, Australia, gneilsen@gmail.com
8. Caroline Harvey, Sexual Health and Reproductive Health Physician, Australia, Caroline.Harvey@iuih.org.au
9. Yutaka Tagaya, Institute of Human Virology at the University of Maryland School of Medicine, USA, and Global Virus Network HTLV-1 Task Force, YTagaya@ihv.umaryland.edu
10. Christian Bréchet, Global Virus Network, USA, christian.brechot@pasteur.fr
11. Edward McSweegan, Global Virus Network, USA, emcsweegan@gvn.org
12. Viviana Simon, Icahn School of Medicine at Mount Sinai, USA, and Global Virus Network HTLV-1 Task Force, viviana.simon@mssm.edu
13. Claudine Pique, Institute Cochin, France, claudine.pique@inserm.fr
14. Charles Bangham, Imperial College London, UK and Global Virus Network HTLV-1 Task Force, c.bangham@imperial.ac.uk
15. Sören Andersson, Örebro University, Sweden, Soren.Andersson@oru.se
16. Olivier Hermine, Hôpital Necker-Enfants Malades, France and Global Virus Network HTLV-1 Task Force, ohermine@gmail.com
17. Ali Bazarbachi, American University of Beirut-Medical Center, Lebanon and Global Virus Network HTLV-1 Task Force, bazarbac@aub.edu.lb
18. Anne Van Den Broeke, University of Liège, Belgium, anne.vandenbroeke@bordet.be
19. Carol Hlela, University of Cape Town and Red Cross Children's Hospital, South Africa, carol.hlela@uct.ac.za
20. Marina Martins, Fundação Hemominas, Brazil, marina.martins@hemominas.mg.gov.br
21. Anna Bárbara Proietti, Fundação Hemominas, Brazil, annaproietti@gmail.com
22. Umberto Bertazzoni, University of Verona, Italy and Global Virus Network HTLV-1 Task Force, umberto.bertazzoni@univr.it
23. Roberto Accolla, Università degli Studi dell'Insubria, Italy, and Global Virus Network HTLV-1 Task Force, accolla.roberto@gmail.com
24. Renaud Mahieux, Ecole Normale Supérieure de Lyon, France and Global Virus Network HTLV-1 Task Force, renaud.mahieux@ens-lyon.fr
25. Madeleine Duc Dodon, Ecole Normale Supérieure de Lyon, France, mdugdodo@ens-lyon.fr
26. Jean-Marie Peloponese, University of Montpellier, France and Global Virus Network HTLV-1 Task Force, jean-marie.peloponese@irim.cnrs.fr
27. Houshang Rafatpanah, Mashhad University of Medical Sciences, Iran, RafatPanahH@mums.ac.ir
28. Beatrice Macchi, University of Rome Tor Vergata, Italy and Global Virus Network HTLV-1 Task Force, macchi@med.uniroma2.it
29. Maria Fernanda Rios Grassi, Fundação Oswaldo Cruz, Brazil, grassi@bahia.fiocruz.br Top of FormBottom of Form
30. Jean-Claude Twizere, University of Liège, Belgium, jean-claude.twizere@ulg.ac.be
31. Jordana Graziela Alves Coelho dos Reis, FIOCRUZ, Brazil, jordana.reis@minas.fiocruz.br
32. Noreen Sheehy, University College Dublin, Ireland and Global Virus Network, noreen.sheehy@ucd.ie

Director's Message *(continued)*

33. Lucy Cook, CNWL NHS Foundation Trust, UK, lucy.cook5@nhs.net
34. Hideki Hasegawa, Hokkaido University, Japan and Global Virus Network HTLV-1 Task Force, hasegawa@nih.go.jp
35. Paul Fields, Guy's and St Thomas' NHS Foundation Trust, UK, Paul.Fields@gstt.nhs.uk
36. Toshi Watanabe, University of Tokyo, Japan and Global Virus Network HTLV-1 Task Force, tnabe@ims.u-tokyo.ac.jp
37. Vincenzo Ciminales, University of Padova, Italy and Global Virus Network HTLV-1 Task Force, v.ciminales@unipd.it
38. Stephane Olindo, Centre Hospitalier Universitaire de Bordeaux, France, stephane.olindo@chu-bordeaux.fr
39. Raymond Cesaire, The University Hospital of Martinique, France, raymond.cesaire@chu-martinique.fr
40. Agnes Lezin, The University Hospital of Martinique, France, agnes.lezin@chu-martinique.fr
41. Eduardo Gotuzzo, Universidad Peruana Cayetano Heredia, Peru and Global Virus Network HTLV-1 Task Force, eduardo.gotuzzo@upch.pe
42. Mitsuki Yoshida, Japanese Foundation for Cancer Research, Japan, yoshimx@jfc.or.jp
43. Masao Matsuoka, Kyoto University, Japan and Global Virus Network HTLV-1 Task Force, biwako18@gmail.com
44. Yamano Yoshihisa, St. Marianna University School of Medicine, Japan and Global Virus Network HTLV-1 Task Force, yyamano@marianna-u.ac.jp
45. Genoveffa Franchini, National Institutes of Health, USA, franchig@mail.nih.gov
46. Bernardo Galvao-Castro, Bahiana School of Medicine and Public Health, Salvador, bgalvaocastro@gmail.com
47. Johan Van Weyenbergh, The Katholieke Universiteit Leuven, Belgium and Global Virus Network, johan.vanweyenbergh@kuleuven.be
48. Abelardo Araujo, Universidade Federal do Rio de Janeiro, Brazil, abelardo.araujo@gmail.com
49. Damian Purcell, The Peter Doherty Institute for Infection and Immunity at The University of Melbourne, Australia and Global Virus Network HTLV-1 Task Force, dfjp@unimelb.edu.au
50. Luc Willems, University of Liège, Belgium and Global Virus Network HTLV-1 Task Force, luc.willems@uliege.be
51. Steve Jacobson, National Institutes of Health, USA, and Global Virus Network HTLV-1 Task Force, jacobsons@ninds.nih.gov
52. Shaan Shiva Bassi, BSc., patient advocate (www.htlvaware.com)
53. Ed Murphy, University of California, San Francisco, USA and Global Virus Network HTLV-1 Task Force, ed.murphy@ucsf.edu
54. John Kaldor, The University of New South Wales, Australia and Global Virus Network HTLV-1 Task Force, Jkaldor@kirby.unsw.edu.au
55. Masao Matsuoka, Kyoto University, Japan and Global Virus Network HTLV-1 Task Force, mamatsu@kumamoto-u.ac.jp
56. Antoine Gessain, Institut Pasteur, France and Global Virus Network HTLV-1 Task Force, antoine.gessain@pasteur.fr
57. Lloyd Einsiedel, Baker Institute, Australia and Global Virus Network HTLV-1 Task Force, Lloyd.Einsiedel@nt.gov.au
58. Graham P Taylor, Imperial College London, UK, and Global Virus Network HTLV-1 Task Force, g.p.taylor@imperial.ac.uk
59. William Hall, University College Dublin and Global Virus Network HTLV-1 Task Force, William.hall@ucd.ie
60. Robert C. Gallo, Institute of Human Virology at the University of Maryland School of Medicine and Global Virus Network HTLV-1 Task Force, rgallo@ihv.umaryland.edu

Participants of the 9th International GVN Meeting in Melbourne



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IHV's Center for International Health, Education, and Biosecurity (CIHEB) Helps Facilitate A Global Health Elective in Zambia

Medical students now have an opportunity to complete an infectious disease rotation in Lusaka



The Institute of Human Virology (IHV) at the University of Maryland School of Medicine (UMSOM) has been engaged in public health and HIV initiatives in Zambia since 2005. Situated within the central southern region of Africa, Zambia is a landlocked country covering nearly a million square kilometers. The country has an estimated population of 16.5 million and is home to, Lusaka, one of the fastest developing cities in southern Africa.

Lusaka is the nucleus of government, commerce, and education in Zambia. The University Teaching Hospital (UTH) is the largest hospital and principal medical training institution in the country. The 1,655-bed facility is the site of medical training for the University of Zambia (UNZA) School of Medicine and serves as the country's referral center. UTH is a major national asset and resource, providing a full range of primary, secondary, and tertiary medical services to millions of Zambians.



Robert L. Sheneberger, MD

Robert L. Sheneberger, MD, Assistant Professor of Family and Community Medicine, Center for International Health, Education, and Biosecurity

(CIHEB), IHV, has been based full time in Zambia since the early days of the President's Emergency Plan for AIDS Relief (PEPFAR) initiative. Initially, IHV partnered with local clinics in Zambia to improve treatment outcomes pertaining to HIV/AIDS, however Dr.

Sheneberger noticed the need for advanced training and expertise in HIV. By 2005, the country had only 646 doctors in government facilities, with little expertise in HIV management. In response to this crisis, the University of Maryland, Baltimore (UMB) developed a model partnership with the Zambian Ministry of Health to address the HIV epidemic by training and deploying healthcare professionals to meet the health care needs of Zambia. This partnership led to development of the country's first post-graduate training program in HIV medicine and infectious diseases, and a comprehensive 5-year residency program, also in advanced HIV medicine, internal medicine, and infectious diseases.



Devang M. Patel, MD

Diseases Fellowship Program, University of Maryland Medical Center (UMMC), joined the IHV in 2008, and with his colleague Christopher Bositis, MD, a former IHV faculty member, partnered with UNZA to spearhead the residency program. Dr. Patel works extensively with UMSOM medical students and UMMC residents, many of whom expressed interest in a global health elective. IHV's CIHEB has programs operating in several countries, but Zambia seemed to be the best fit for

Devang M. Patel, MD, Assistant Professor of Medicine, Division of Clinical Care and Research, IHV and Associate Director, Infectious



Lottie Hachaambwa, MBChB and a student at the hospital

such a rotation based on existing faculty in-country, living facilities, and safety.

This initiative currently has two faculty members who are board-certified infectious disease physicians overseeing the medical student and resident electives course in Zambia. **Lottie Hachaambwa, MBChB**, Assistant Professor of Medicine, CIHEB, IHV provides technical support for several IHV care and treatment programs and graduate medical education programs at UNZA. Dr. Hachaambwa graduated from UNZA School of Medicine and finished his internal medicine residency at Kettering Medical Center in Ohio, as well as an infectious diseases fellowship at the University of Rochester Medical Center in Rochester, New York. In 2012, Dr. Hachaambwa set up an infectious diseases clinical service at UTH.

Cassidy Claassen, MD, MPH, Assistant Professor of Medicine, CIHEB, IHV spent most of his childhood overseas

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Dr. Cassidy (far left) and students at the hospital

in West Africa. Dr. Claassen returned to the states for undergraduate studies and completed his medical training at UMSOM and his infectious disease fellowship at UMMC. In addition to Zambia, Dr. Claassen has worked throughout sub-Saharan Africa, primarily focusing on HIV care and treatment, and health system capacity development. "I have been a beneficiary of several international health rotations, and one of my career goals was to create something similar so that I could give back to the next generation of medical students," said **Dr. Claassen**.

In 2015, Dr. Claassen, Dr. Hachaambwa, and Dr. Patel agreed that UTH would be an excellent opportunity for an international medical rotation elective. In 2015, the first two UMMC residents came to Zambia for a one-month rotation. Last year, the rotation was accepted as an official elective for medical students.

This medical rotation elective provides a clinical experience in tropical infectious diseases in a resource-limited setting for medical students with an interest in global health. Students gain a basic understanding of the treatment

of HIV, tuberculosis, and other common diseases in a resource-limited setting, and learn how they can incorporate global health activities into their future careers. Students are expected to participate in clinical activities, including hospital rounds and clinic, as well as educational conferences, while contributing to the educational program at UNZA. "It is a two-way street. Zambian residents learn from our medical students and our medical students learn from Zambian resident—a wonderful opportunity for cultural exchange and medical education," said **Dr. Patel**.



Deus Bazira, DrPH, MPH, MBA

in pursuing global health later in their careers," said **Deus Bazira, DrPH, MPH, MBA**, Assistant Professor of Medicine

and Director of IHV's CIHEB. "This includes spending time either training in the country at one of the partner academic institutions, or becoming involved in CIHEB ongoing projects, and then using those projects for capstone and other student projects. We currently have established more than 10 Memoranda of Understanding with academic institutions in Botswana, Kenya, Nigeria, Rwanda, Tanzania, and Zambia, in order to develop high level partnerships with them."

To date, 26 trainees have rotated in Zambia at UTH including Internal Medicine residents, Infectious Diseases fellows, pharmacy students, nursing students, pharmacy residents, and 10 UMSOM medical students. Very few of these trainees have been sponsored by grants or have received additional funding. "I would absolutely recommend this elective to other medical students who are interested in broadening their understanding of the practice of medicine. Just because we learn and perform medicine one way in our institution doesn't mean that somebody else isn't doing an alternative or even greater version of that practice elsewhere," said medical student **Samantha Dizon**. "From the moment I walked through the doors of the University Teaching Hospital in Lusaka, I knew my potential for learning would be endless," said medical student **Elena Donald**. "I would encourage other medical students to pursue this course because it is important to recognize the structure of other health care systems and medical cultures. We get lost in our vast amount of resources and seldom use our own eyes and hands to make assessments of our patients with a physical exam." Ms. Dizon and Ms. Donald will be graduating this year and look forward to careers in global health and infectious diseases.

To learn more about this course or how to support, contact the School of Medicine Office of Student Affairs: studentaffairs@som.umaryland.edu

Institute of Human Virology Co-Founder Dr. Robert Redfield Becomes CDC Director

Renowned Clinical AIDS Researcher, Public Health Expert and Chief of Infectious Diseases Has Decades of Experience

This past March, the Institute of Human Virology (IHV) congratulated its co-founder and associate director, **Robert R. Redfield, MD**, on his appointment to be the next director of the U.S. Centers for Disease Control and Prevention (CDC).

"Dr. Robert Redfield, a close colleague for more than 40 years, is an excellent choice to be head of the CDC," said **Robert C. Gallo, MD**, the Homer & Martha Gudelsky Distinguished Professor in Medicine, co-founder and director of the IHV and co-founder and scientific director of the Global Virus Network (GVN). "While it will be a big loss for the Institute, we are at a time in our nation's history when Dr. Redfield's skills will best be utilized as head of the CDC. He has been an outstanding leader as head of the Institute's Clinical Care and Research Division, and a major force in establishing our clinical public health programs in Baltimore to confront the HIV and hepatitis C epidemics in our City and State. With his leadership, Dr. Redfield has also contributed greatly to the Institute's global health programs."

Dr. Redfield is a renowned infectious disease expert, beginning his career in the late 1970's at the Walter Reed Army Medical Center. He then co-founded IHV in 1996. During his military service, Dr. Redfield made several important scientific contributions to the early understanding of HIV/AIDS. Under his leadership, the Institute's patient base has



Dr. Redfield treated patients following the devastating earthquake in Haiti in January 2010

grown from just 200 patients to approximately 6,000 in Baltimore and Washington, D.C., and more than 1.3 million in African and Caribbean nations. At IHV, Dr. Redfield's research focused on novel strategies to innovatively target host cell pathways to treat and prevent HIV infection and other viral diseases. He was also the Robert C. Gallo, MD Endowed Professor in Translational Medicine, Chief of Infectious Diseases and Vice Chair of Medicine for Clinical Affairs in the UMSOM Department of Medicine.

"Dr. Redfield was one of my early collaborators in co-discovering HIV as the cause of AIDS and demonstrating heterosexual transmission of AIDS," said Dr. Gallo. "He is a dedicated and compassionate physician who truly cares about his patients and is deeply committed to ensuring patients receive the highest quality of care possible. Dr. Redfield has served his country well, and consistently demonstrates strong public health instincts that are grounded in science and clinical medicine. In my view, despite the loss to the Institute, I believe this makes him the ideal candidate to direct the CDC."

"Dr. Redfield is eminently qualified for this critical position," said **E. Albert Reece, MD, PhD, MBA**, Executive Vice President for Medical Affairs, UM Baltimore, and the John Z. Akiko Bowers Distinguished Professor and Dean, University of Maryland School of Medicine. "He has made a lifelong commitment to advancing biomedical research and human health through discovery-based medicine. As co-founder of the University of Maryland School of Medicine's Institute of Human Virology with Dr. Robert Gallo and Dr. William Blattner, he has been one of the most accomplished scientists and public health advocates in the nation in increasing our understanding of the prevention and treatment of infectious disease. His significant contributions have led to the treatment of more than a million HIV patients by the Institute in the U.S. and around the world. We wish him great success in this vital role as the nation's chief protector against the growing threat of infectious disease."

"Dr. Redfield's longstanding commitment to clinical research and treatment of people with chronic viral infections speaks for itself," said



Robert R. Redfield, MD

Jay A. Perman, MD, president of the University of Maryland, Baltimore. "Through his vision and leadership, the university's expertise has been leveraged to treat and care for hundreds of thousands of HIV/AIDS patients throughout Africa and in the Caribbean, and here in our region. I have no doubt that Dr. Redfield will serve this nation extraordinarily well as the leader of its health security agency, the Centers for Disease Control."

"Dr. Redfield is so deserving of this wonderful honor and opportunity," said **Stephen N. Davis, MBBS**, the Dr. Theodore E. Woodward Professor and Chair of Medicine at UMSOM. "Dr. Redfield has made landmark contributions, consistently, to the Department of Medicine at the University of Maryland School of Medicine. His fund of medical knowledge is incredible. He is a compassionate, thoughtful and astute physician. His innovative research has led him to become a renowned national and international expert on diagnosing, prevention and management of infectious diseases at both a population and individual level. His exceptional skill as a clinical researcher has allowed him and his teams to make transformative medical breakthroughs both in the US and worldwide. Dr. Redfield is also an immensely talented teacher and skillful administrator. We will miss him tremendously but are so delighted that he will be able to focus his unique abilities on improving the health of this great nation, and indeed the world."

"Dr. Redfield's appointment to Director of CDC is a brilliant recognition of a great public health advocate, an excellent researcher, and one that has a life of dedication to public service," said **Terry Lierman**, Chairman of IHV's Board of Advisors. "This appointment is refreshingly not about politics, but about quality, competence and compassion. Dr. Redfield encompasses all of those qualities and more."

IHV Makes Key Appointments to Clinical Care and Research Leadership Positions

Institute Names Dr. Shyam Kottlil and Dr. Anthony Amoroso to Replace Dr. Robert Redfield, Now Director at CDC

On May 2, **Robert C. Gallo, MD**, the Homer & Martha Gudelsky Distinguished Professor in Medicine and co-founder and director of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine (UMSOM), along with **Stephen Davis, MBBS**, the Dr. Theodore E. Woodward Chair and Professor in the Department of Medicine, and **E. Albert Reece, MD, PhD, MBA**, Executive Vice President for Medical Affairs, UM Baltimore, and the John Z. and Akiko K. Bowers Distinguished Professor and Dean, announced that **Shyam Kottlil, MBBS, PhD**, professor of medicine at UMSOM and head of IHV's Clinical Research Unit, became director of IHV's Division of Clinical Care and Research, as well as chief of the Division of Infectious Diseases in the UMSOM Department of Medicine.

These positions were formerly held by **Robert R. Redfield, MD**, who last March was named the new director of the U.S. Centers for Disease Control and Prevention (CDC).

"Dr. Kottlil has been a terrific leader at the Institute, and has greatly strengthened our clinical research capacity since his arrival in 2014," said Dr. Gallo, who is also co-founder and scientific director of the Global Virus Network (GVN) "I have no doubt that he will build upon the foundation laid by Dr. Redfield and continue to advance IHV's clinical research portfolio to extend beyond HIV and hepatitis B and C."

Dr. Kottlil has worked for over a decade on viruses that cause chronic infection. From 2000 until 2014, he worked at the National Institute of Allergy & Infectious Diseases (NIAID), focusing on hepatitis B virus (HBV), hepatitis C virus (HCV) and HIV. His current work has targeted the pathogenesis of HBV and HCV



Shyam Kottlil, MBBS, PhD

infections, as well as developing novel treatments for these diseases.

In 2009, he became scientific director of the NIH-District of Columbia Program for AIDS Progress, a program targeting HIV, HCV and HBV treatment and prevention in Washington D.C. He will continue in this capacity after assuming his new role. While at NIAID, Dr. Kottlil established himself as an

international leader in the development of new therapeutic strategies to treat and manage chronic viral diseases. He conducted several pivotal studies in HCV that led to simplifying HCV treatment.

In addition, he served as one of the members of the US National Hepatitis C Treatment Guidance Panel, and a Fellow of the American College of Physicians, the Infectious Diseases Society of America and the American Society of Clinical Investigation. He has received numerous awards, including the NIAID Meritorious service award for Innovations in Science, in 2014, and NIH Outstanding Mentor award, in 2013.

"We are thrilled to appoint Dr. Shyam Kottlil to this important and significant position as head of the Division of Infectious Diseases at the University of Maryland School of Medicine," said Dr. Davis. "Dr. Kottlil is an exceptional clinical and translational researcher with a national and international reputation. He is also a superb and skillful leader whom will build upon the wonderful



Dr. Kottlil discusses clinical research results with a colleague at the IHV

legacy left by Dr. Robert Redfield and enable the Division of Infectious Diseases to continue on its outstanding upward trajectory."

In addition, **Anthony Amoroso, MD**, who is currently associate professor of medicine and associate director of IHV's Division of Clinical Care and Research, has been appointed as head of Clinical Care Programs at IHV. Dr. Amoroso is also newly appointed as associate chief of the Division of Infectious Diseases in the Department of Medicine. Dr. Amoroso will head the clinical care practices at both IHV and the Department of Medicine.

"Dr. Amoroso will be an excellent leader for our physicians and staff," said Dr. Gallo. "At the Institute, he will apply his decades-long experience to continue providing compassionate, cutting-edge care to more than 5,000 Baltimoreans."

Dr. Amoroso has been on the faculty of both IHV and the UMSOM Division of Infectious Disease since 2000. He has been the chief of the Infectious Disease Section for the VA Maryland Health System since 2007, and achieved an outstanding record in HIV and HCV



Anthony Amoroso, MD



Dr. Amoroso treated patients following the devastating earthquake in Haiti in January 2010

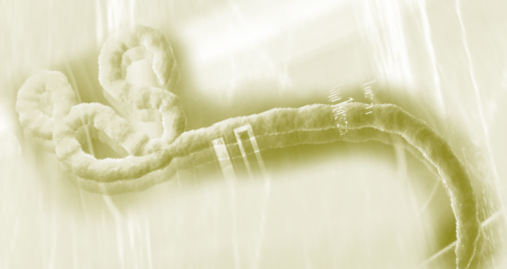
patient care and education. Working closely with Dr. Redfield over the past 20 years, he has played a critical role in developing the foundation and providing medical leadership for many of the Institute's key clinical programs, including its highly successful President's Emergency Plan For AIDS Relief (PEPFAR) programs, the JACQUES Initiative, the Saint Gabriel's Project, and the initial HIV clinic at the Midtown Campus, now the University of Maryland Center for Infectious Disease.

In addition, he has maintained a leadership role in the growth of the Infectious Disease clinical programs at UMMC, serving as chief of Transplant Infectious Disease Service and then associate chief of Infectious Disease. His research interests include improving HIV treatment outcomes in difficult-to-treat populations, as well as the treatment of HIV and other viral infections in solid organ transplantation.

"We are delighted to have Dr. Amoroso as associate chief of the Division of Infectious Diseases, and congratulate him on his appointment as head of clinical care programs in the Institute

of Human Virology," said Dr. Davis. "Anthony is an extraordinarily accomplished clinician, teacher and clinical researcher whom has a renowned national and international reputation. Together with Dr. Kottlilil, he will provide superb leadership that will continue Dr. Redfield's outstanding work, in Baltimore and around the world. Together Drs. Kottlilil and Amoroso are well-positioned to introduce novel breakthroughs in clinical care globally."

"Dr. Redfield built a fantastic foundation here," said Dean Reece. "Dr. Kottlilil and Dr. Amoroso have the dedication, experience and vision to continue his impressive legacy for years to come. IHV and the School of Medicine are pleased to have them in their new positions."



Legendary Grammy-Winning Musician and HIV/AIDS Activist Dionne Warwick Visits Institute of Human Virology



Ms. Dionne Warwick and Dr. Robert Gallo at the IHV

In May, IHV Board of Advisors Member Mr. **Franco Nuschese**, who is also owner of Georgetown Entertainment, coordinated a visit to the Institute of Human Virology (IHV) at the University of Maryland School of Medicine from legendary Grammy-winning musician and HIV/AIDS activist, Ms. **Dionne Warwick**. She began her day meeting with researchers to discuss topics on vaccine research (**Robert Gallo, MD**, the Homer & Martha Gudelsky Distinguished Professor in Medicine, Director of IHV, Divisions of Basic Science and Vaccine Research), treating HIV in limited resource settings overseas (**Deus Bazira, DrPH, MBA, MPH**, Assistant Professor of Medicine, Director of IHV's Center for International Health, Education, & Biosecurity), health disparities and the opioid epidemics in Baltimore and the District of Columbia (**Shyam Kottlil, MD, PhD**, Professor of Medicine, Director, Division of Clinical Care & Research), community engagement to end the HIV epidemic in Baltimore (**Anthony Amoroso, MD**, Associate Professor of Medicine, Associate Director, Division of Clinical Care & Research), and, beyond prevention of mother to child

transmission of HIV (**Alash'le Abimiku, PhD**, Professor of Medicine, Division of Epidemiology and Prevention).

Ms. Warwick said in an address to IHV, that when AIDS first began, she and her friends noticed that they were losing many in the music industry to this strange, new disease. She described losing her valet to AIDS, prior to knowing what AIDS was. She said, "Long before President Reagan decided to give me my ambassadorship, I made a vow that I wanted to know what was going on. I wanted to know. I started making inquiries about this new thing because we were all being affected by this disease." Ms. Warwick said that her friends suggested that she get involved in politics to really "get something done." Ms. Warwick said that when President Reagan offered her an ambassadorship, "I refused a full ambassadorship because if I had not, I would have been handcuffed and not been able to say the things that I wanted to say, or needed to say, to get things done." She went on to describe how she persuaded President Reagan to finally say the word "AIDS" in public. Ms. Warwick ended her IHV address by saying, "I got on this train ride at the beginning, and the ride is continually going on, and on, and on. We were all breathing a sigh of relief when we thought the AIDS virus seemed to disappear until we all found out that it doesn't just have one face, it has many faces. We continue to look for ways to combat it, educate people—let them know that it does not matter how old you are, how young you are, which station in life you happen to hold, what color you are, how thin you are, how beautiful you are. HIV/AIDS does not care. It loves you. And, it's the kind of love you don't really need. I am so proud and pleased to be a part of IHV and to be educated to continue to carry the message." She finalized her afternoon

address by thanking folks saying, "You can always count on me."

Ms. Warwick later in the day joined an intimate group of patients, clinicians and staff for lunch at the **IHV JACQUES Initiative's (JI)** new JACQUES Journey Center (a grand opening is planned for September 20). During the lunch, JI staff presented creative vignettes about each aspect of their program, including, the Treatment Adherence Center; Routine Testing & Linkage to Care; Education, Prevention & Community Outreach; Corrections Outreach; and, Data Management. Next, three clients spoke about their journeys to wellness. Combining creativity, humor and sincerity, client, **Ms. Joy Winslow**, quoted Ms. Warwick when she spoke of her triumph towards self-acceptance. **Ms. Nicole Edwards**, a previous client of JI and now a proud JI staff member, bravely spoke about her experience with extreme illness due to AIDS as a young woman and how she willed herself to live with the support of her JI treatment coach, **Ms. Kathy Bennett**, who is also HIV positive. Ms. Warwick's JI visit ended with a plant being designated in her name in the JI community garden followed by photographs on a red carpet.



Mr. Franco Nuschese

In the evening, Mr. Nuschese hosted a fantastic, private dinner at his Washington, D.C. restaurant, Café Milano, with Ms. Warwick for approximately 60 guests from varying industries. In remarks following the dinner, Ms. Warwick was emotional describing her time spent earlier at the JACQUES Journey Center. She described her “most incredible day” saying that she finally found the end of her “train destination” in working towards ending HIV/AIDS. The dinner was featured by Roxanna Roberts in *The Washington Post*. Not only did Ms. Warwick’s visit to IHV make for a memorable day with IHV’s researchers, clinicians and patients, but IHV had quite the effect on Ms. Warwick as well. All those in contact with Ms. Warwick were impressed with her knowledge and passion to end HIV/AIDS worldwide.



Ms. Dionne Warwick meets with clients and staff of IHV's JACQUES Initiative



Ms. Dionne Warwick poses with IHV faculty and staff

Institute of Human Virology adds Team of Top Cancer Immunotherapy Experts

Drs. Yang Liu and Pan Zheng Establish and Lead IHV's New Division of Immunotherapy

This past February, **Robert C. Gallo, MD**, the Homer & Martha Gudelsky Distinguished Professor in Medicine and Co-Founder & Director of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine (UMSOM), announced that a team of leading scientists in the growing area of immune therapeutics for cancer treatment and organ transplantation, led by internationally-recognized cancer researchers **Yang Liu, PhD**, and **Pan Zheng, MD, PhD** joined the IHV with academic appointments in the UMSOM Department of Surgery.

The team includes a 19-person laboratory with eight faculty appointments as well as major public and private sector research funding. Dr. Liu established and now directs IHV's newly formed Division of Immunotherapy.

Dr. Gallo made the announcement in conjunction with University of Maryland School of Medicine Dean **E. Albert Reece, MD, PhD, MBA, Rajabrat**



Yang Liu, PhD

Sarkar, MD, PhD, Barbara Baur Dunlap Professor of Surgery and Physiology and Interim Chair, Department of Surgery, and **Kevin J. Cullen, MD**, the Marlene and Stewart Greenebaum Distinguished Professor in Oncology and Director of the UM Marlene and Stewart Greenebaum Comprehensive Cancer Center (UMGCCC).

"Drs. Liu, Zheng and their laboratory comprise the biggest, most impactful recruitment in the history of IHV," said Dr. Gallo, who is also Co-Founder and Director of the Global Virus Network. "Their science will add greatly to our immunotherapy programs on campus and their research on organ transplantation should lead to significant interactions between the IHV and the Department of Surgery. Drs. Liu and Zheng have a strong reputation of fostering collaborations and mentoring others. Their generosity extends to all areas of their work."

"The recruitment of Dr. Liu and Zheng will have a significant impact on the future of surgical treatment of life-threatening disorders such as cancer and organ failure," said Dr. Sarkar. "The impact of these distinguished investigators on our Department of Surgery will be substantial in terms of research collaborations and new translational therapeutics to help us treat patients who we cannot help today."

Dr. Liu's contributions to the field include pioneering work in the concept of T cell co-stimulation and cancer immunity, the relationship between innate and adaptive immunity, and non-self-discrimination by the innate immune system. Many of the discoveries by Drs. Liu and Zheng are being translated into

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immunotherapeutic approaches for cancer and autoimmune diseases, with a first-in-class immunotherapeutic now in a phase II clinical trial.

Dr. Zheng's research includes tumor immunology, pathology, and stem cell biology. As a physician scientist, she specializes in translational research and has co-invented new approaches for immunotherapy of cancer, autoimmune diseases and stem cell aging, as well as therapeutic elimination of cancer stem cells.



Pan Zheng, MD, PhD

"We are delighted that Dr. Liu and Dr. Zheng are joining the growing tumor immunology and immunotherapy program of the Marlene and Stewart Greenebaum Comprehensive Cancer Center," said Dr. Cullen. "Their expertise in regulation of the immune system has profound implications in cancer treatment, organ transplantation, and auto immune diseases."

Dr. Liu received his PhD from the John Curtin School of Medical Research of Australian National University. After postdoctoral training with Charles A. Janeway Jr. at Yale University, he started his independent laboratory in 1992 at New York University Medical Center, where he became a tenured associate professor of Pathology in 1997. He was a recipient of a Markey Scholar award in 1992 and the Searle Scholar Award in 1993. In 1998, he was promoted to full professor and awarded the Kurtz endowed Professorship at the Ohio State University School of Medicine. In 2006, he went to the University of Michigan Medical Center to head their Division of Immunotherapy, and to fill the inaugural Charles B DeNancrede Professorship. In 2012, he moved to the Children's National Medical Center in Washington DC, as the Bosworth Chair and Director of the Center for Cancer and Immunology Research. Dr. Liu has published over 200 peer-reviewed publications, which span from immunology to cancer biology. He was elected as a fellow of the American Association for Advancement of Science in 2004.

"We are very honored and grateful for the opportunity to join the teams of world leaders at the IHV, the Department of Surgery, and UMGCCC, and to contribute to fundamental and translational research to make a positive impact on patients' lives," said Dr. Liu. "It is a 'once-in-a-lifetime' opportunity to learn from Dr. Gallo, the giant who has changed modern medicine in too many ways to count, and to whose work has saved millions and millions of lives. It is also a privilege to live and work in the great city of Baltimore."

Dr. Zheng is a physician-scientist who received her medical training at Peking Union Medical College. She received her PhD at Yale University and did her residency in pathology

at the New York University School of Medicine. In 1998, Dr. Zheng became assistant professor of pathology at the Ohio State University; five years later, she was promoted as tenured associate professor. Dr. Zheng moved to the University of Michigan in 2006 and became a full professor for years later. In 2013, she became the McKnew Chair of Cancer Biology at the Children's National Medical Center. Over her career, she has published over 120 papers.

"We are extremely excited to join the great institution of the University of Maryland, Baltimore," said Dr. Zheng. "It is a privilege and an honor to work under IHV leadership with a remarkable visionary, Dr. Gallo, during the dawn of immunotherapy and a changing landscape for cancer treatment."

"Dr. Liu and Dr. Zheng exemplify the relentless pursuit of clinically relevant knowledge that is central to our mission at the University of Maryland School of Medicine," said Dean Reece, who is also University Executive Vice President for Medical Affairs and the John Z. and Akiko K. Bowers Distinguished Professor. "Their work has the potential to save thousands of lives, and we are extremely excited that they are now part of our expanding stable of internationally renowned scientists."



L to R: Kevin Cullen, MD, Amy Burwen, Dave Wilkins, Michael Greenebaum, Anthony Fauci, MD, James Kaper, PhD, Steve Burwen, George Lewis, PhD, Robert Gallo, MD, and Shyam Kottlil, MBBS, PhD

Dr. Anthony Fauci Keynotes IHV's Greenebaum Annual Lecture

The Fourteenth Annual Marlene and Stewart Greenebaum Lecture presented by the Institute of Human Virology at the University of Maryland School of Medicine hosted guest lecturer, **Anthony S. Fauci, MD** this past April in Westminster Hall, a beautiful historic building located in downtown Baltimore. Dr. Fauci is Director of the U.S. National Institute of Allergy and Infectious Diseases (NIAID). In 2015, Dr. Fauci received IHV's Lifetime Achievement Award for Scientific Contributions and Public Service for his research and education efforts that, since the beginning of the AIDS epidemic, have contributed tremendously in putting an end to AIDS.

Since his appointment as NIAID director in 1984, Dr. Fauci has overseen an extensive research portfolio devoted to preventing, diagnosing, and treating infectious and immune-mediated diseases. Dr. Fauci also is chief of the NIAID Laboratory of Immunoregulation, where he has made numerous important discoveries related to HIV/AIDS and is one of the most-cited scientists in the field. Dr. Fauci serves as one of the key advisors to the White House and Department of Health and Human Services on global AIDS issues, and on initiatives to bolster medical and public health preparedness against emerging infectious disease threats such as pandemic influenza. He

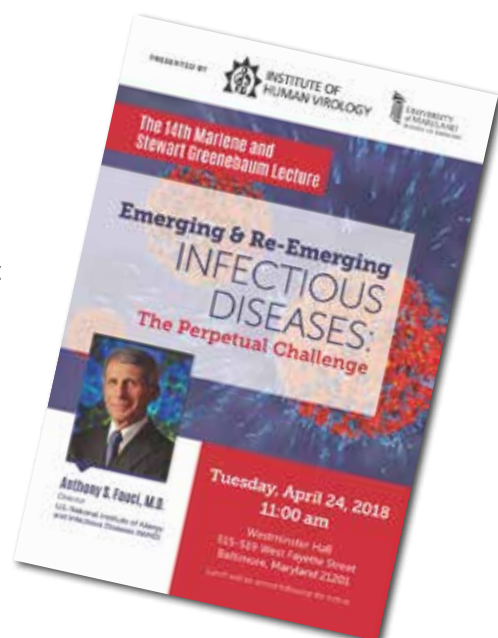
was one of the principal architects of the President's Emergency Plan for AIDS Relief (PEPFAR), which has already been responsible for saving millions of lives throughout the developing world.

Dr. Fauci is a member of the US National Academy of Sciences and is the recipient of numerous prestigious awards for his scientific and global health accomplishments, including the National Medal of Science, the Mary Woodard Lasker Award for Public Service, and the Presidential Medal of Freedom. He has been awarded 38 honorary doctoral degrees and is the author, coauthor, or editor of more than 1,200 scientific publications, including several major textbooks.

With more than a hundred and fifty in the audience during the Greenebaum Lecture, Dr. Fauci spoke about "Emerging & Re-Emerging Infectious Diseases: The Perpetual Challenge." The Greenebaum family sponsors IHV's series of prominent annual Greenebaum lectures insisting that the keynote speaker be someone who has made substantial scientific contributions, while caring for the betterment of the human condition.



Anthony S. Fauci, MD



Publications



Clement A. Adebamowo, BM, ChB, ScD, FWACS, FACS, Professor of Epidemiology and Public Health, Division of Epidemiology and Prevention and Associate Director of Population Science, the Marlene and Stewart Greenebaum Comprehensive Cancer Center is a co-author on 24 The Cancer Genome Atlas (TCGA) papers published April 5, 2018 in Cell, Cancer Cell, Cell Reports, Cell Systems and Immunity. Members of the TCGA Consortium examined the molecular clustering of tumors, how key oncogenic processes contribute to tumor development, how certain signaling pathways are altered in cancer, and more. The papers are available on the TCGA portal on Cell.



Robert C. Gallo, MD, (pictured left) the Homer & Martha Gudelsky Distinguished Professor in Medicine, director, Institute of Human Virology, Division of Basic Science and Division of Vaccine Research, and **Yutaka Tagaya, PhD**, (pictured right) Assistant Professor of Medicine, Head of the Laboratory of Cell Biology, Head of the Flow Cytometry & Cell Sorting Core Facility, Division of Basic Science, published "Time to eradicate HTLV-1: An Open Letter to WHO," in The Lancet on May 12. The full Open Letter to WHO was posted on the Global Virus Network (GVN) website at <http://gvn.org/who/>



Devang Patel, MD, Assistant Professor of Medicine, Division of Clinical Care & Research, was featured in the Infectious Diseases Society of America (IDSA) newsletter for his work in founding the University of Maryland School of Medicine Infectious Diseases Interest Group (IDIG). IDIG, among other things, hosts lectures to expose students to the University of Maryland's extensive history in the

field of infectious diseases. The students have taken over the organization of IDIG utilizing mentors such as Dr. Patel.



Maria Salvato, PhD, Professor of Medicine, Head, Laboratory of Arenavirus Disease & Preventive Vaccines, Division of Basic Science, is editor of a new book, Hemorrhagic Fever Viruses, which was published November 4, 2017 by Springer Publishers in New York. The book contains 30 chapters with cutting-edge methods and taxonomic information about Hemorrhagic Fever Viruses. The

chapter authors include global experts in emerging viruses of medical and bio-threat interest.



Mohammad Sajadi, MD, Associate Professor of Medicine, Division of Clinical Care & Research, published "Identification of near pan-neutralizing antibodies against HIV-1 by deconvolution of plasma humoral responses" in Cell online May 3, 2018 and in the June 14, 2018 issue.



Lectures

Robert C. Gallo, MD, the Homer & Martha Gudelsky Distinguished Professor in Medicine, director, Institute of Human Virology, presented the keynote lecture entitled “Nightmares of an Aging Viral Oncologist” at the Venetian Institute of Sciences during the XV European LeukemiaNet Symposium of Viruses, Genes and Hematological Cancers held March 19-22, 2018 in Venice, Italy. **Dr. Gallo** presented the keynote lecture, “A Career in Virology as it Relates to Lymphocytes, Cancer, and Immune Deficiency,” at the Infection Biology for the 21st Century: Today’s Giants Meet Tomorrow’s Leaders. The keynote was presented at the ZIBI Summer Symposium 2018, Humboldt Graduate School in Berlin, Germany held Wednesday, June 27, 2018.

HONORS



Clement A. Adebamowo, BM, ChB, ScD, FWACS, FACS, Professor of Epidemiology and Public Health, Division of Epidemiology and Prevention and Associate Director of Population Science, the Marlene and Stewart Greenebaum Comprehensive Cancer Center, was named a 2018 Fellow of the American Society of Clinical Oncology (ASCO). Dr. Adebamowo was honored at the opening session of the ASCO annual meeting on June 2, 2018 in Chicago. ASCO is the world’s leading professional organization for physicians and oncology professionals caring for people with cancer. ASCO Fellows are awarded this prestigious award in recognition for their extraordinary volunteer service, dedication, and commitment to the clinical oncology association.

Devang Patel, MD, Assistant Professor of Medicine, Division of Clinical Care & Research, has been awarded the Walter J. McDonald Award for Early Career Physicians from the American College of Physicians (ACP), a national organization of internists. The award was presented at ACP’s Convocation Ceremony on April 19, 2018, at the Ernest N. Morial Convention Center, where ACP hosted its annual scientific conference, Internal Medicine Meeting 2018, through April 21. Established by ACP’s Board of Regents in 2003, the award recognizes outstanding achievement by a physician member who is within 16 years of graduating medical school and who is not an ACP Medical Student Member or Resident/Fellow Member.



Grants



Alash'le Abimiku, PhD

Alash'le Abimiku, PhD, Professor of Medicine, Division of Epidemiology and Prevention, Executive Director, International Center of Research Excellence, Institute of Human Virology, Nigeria (IHVN), has been awarded an National Institutes of Health (NIH) grant, \$250,000, to support efforts for, "Breast Milk Microbiota Influence on Infant Immunity and Growth (BEAMING)." This study will

focus on how breast milk affects the gut bacteria in infants exposed but un-infected by HIV, their growth, and their ability to respond to childhood vaccinations.

Clement A. Adebamowo, BM, ChB, ScD, FWACS, FACS, Professor of Epidemiology and Public Health, Division of Epidemiology and Prevention and Associate Director of Population Science, the Marlene and Stewart Greenebaum Comprehensive Cancer Center, was recently awarded \$1.25M for five years to support efforts for "African Female Breast Cancer Epidemiology." This award is conducting breast cancer research in Nigeria to understand the epidemiology and genomic determinants of incident breast cancer and its molecular subtypes, and the role of diet in etiology of breast cancer in Nigeria.

Clement Adebamowo, BM, ChB, ScD, FWACS, FACS, Professor of Epidemiology and Public Health, Division of Epidemiology and Prevention and Associate Director of Population Science, the Marlene and Stewart Greenebaum Comprehensive Cancer Center, was recently awarded \$1.25M for five years to support efforts for the International Center, NIH training grant entitled, "Entrenching Training and Capacity in Research Ethics in Nigeria (ENTRENCH)." This training grant is designed to further develop research ethics Master degrees at Nigerian institutions, and he is leading a research ethics H3 Africa supplement grant focused on building research ethics capacity in genomics, epigenomics and microbiomics of persistent hrHPV and cervical cancer in Nigeria.



Clement Adebamowo, BM, ChB, ScD, FWACS, FACS



Anthony Amoroso, MD

Anthony Amoroso, MD, Associate Professor of Medicine, Associate Director, Head, Clinical Care Programs, Division of Clinical Care & Research, has been awarded \$452,500 for five years for the JACQUES Initiative (JI), a program of the IHV. The JI will continue to support long-standing HIV outreach and supportive service organizations in Baltimore.

They will achieve this through comprehensive HIV testing, prevention, and linkage to care through a campus-wide, systematic approach to achieve viral suppression in West Baltimore.

Manhattan Charurat, PhD, MHS, Professor of Medicine, Director, Division of Epidemiology and Prevention, has been awarded a Centers for Disease Control and Prevention (CDC) Supplement for \$1,037,000, to support efforts for, "Improving the Quality of HIV Service Delivery and Other Priority Public Health (SHIELD)." This study will focus on how to improve the quality of HIV service delivery through instituted M&E processes and evaluation studies.



Manhattan Charurat, PhD

Manhattan Charurat, PhD, MHS, Professor of Medicine, Director, Division of Epidemiology and Prevention, has been chosen as Principal Investigator to lead a CDC \$100M project to support efforts for, "Nigeria Population-based HIV Impact Assessment: NPHIA (NAIS)." This study will focus on conducting population-based HIV impact assessments for Nigeria, to determine national and state level HIV prevalence, incidence, and key populations (MSM, FSW, PWID) size estimation using network based scale-up.

Manhattan Charurat, PhD, MHS, Professor of Medicine, Director, Division of Epidemiology and Prevention, has been awarded a Global Funds grant, \$515,754, to support efforts for, "Investing for Impact against Tuberculosis and HIV."

Joel V. Chua, MD, Assistant Professor of Medicine, Division of Clinical Care and Research, has been awarded \$189,906 for one year to support efforts for "Phase II Open-Label Study of Ledipasvir/Sofosbuvir for 12 Weeks in Subjects with Hepatitis B Virus Infection (APOSTLE)" to provide technical assistance in connection with the Gilead's proprietary drug, Harvoni.



Cassidy Claassen, MD

Cassidy Claassen MD, MPH, Assistant Professor of Medicine, Technical Director, Center for International Health, Education, and Biosecurity (CIHEB) has been awarded a \$5,000 one-year award to support efforts for "IAS Differentiated Service Delivery Best-Practice Model Documentation." This program will use the IAS funding to finance activities to create professional documentation of the model.

Niel Constantine, PhD, MT(ASCP), Professor of Pathology, Division of Epidemiology and Prevention, was awarded \$498,976 for one year to support efforts for "The USAID Global Health Supply Chain QA Program" to assess the performance characteristics of diagnostic test kits and to provide technical assistance.



Niel Constantine, PhD



Erik de Leeuw, PhD

Erik de Leeuw, PhD, Assistant Professor of Biochemistry & Molecular Biology, Division of Basic Science, was awarded \$103,000 by the Center for Maryland Advanced Ventures (CMAV) Life Sciences Fund for his work on the development of Small Molecule Lipid II Inhibitors.



Wuyuan Lu, PhD

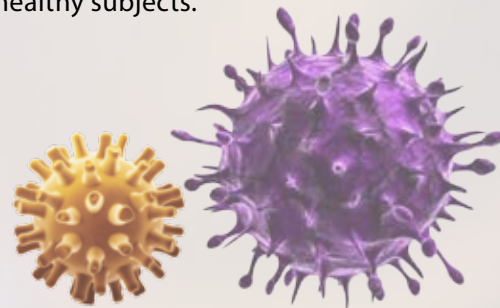
Wuyuan Lu, PhD, Professor of Biochemistry and Molecular Biology, Co-Director, Division of Basic Science, received a two-year, \$92,700 sub agreement from Rutgers, The State University (R01 prime PI: Theresa Chang) for "Role of IFN epsilon in immune modulation and HIV infection." As a subrecipient, Dr. Lu will lead the protein purification and the folding process for the entire

project and provide biological active interferon epsilon proteins and the inactive linear counterpart. Elucidating the properties and functions of IFNε promises to expand our knowledge of virus-host interactions crucial for HIV prevention and control of viral reservoirs and immunopathogenesis.

Wuyuan Lu, PhD, Professor of Biochemistry and Molecular Biology, Co-Director, Division of Basic Science, received a one year, \$92,731 sub-agreement from Tel Aviv University (prime PI: Isaac Witz) for "Targeting Drivers and Inhibitors of Melanoma Brain Metastasis." A brain derived protein induces apoptosis in multiple cell lines of human melanoma. As a subrecipient, Dr. Lu will intend to isolate and identify this brain factor and examine its anti-melanoma activities in vitro and in vivo.

Bhawna Poonia, PhD, Assistant Professor of Medicine, Division of Clinical Care & Research, has been awarded a \$486,012 one-year grant to support efforts for "TLR8 Phase 1b Agonist in Chronic Hepatitis B Patients." In this study, Dr. Poonia will evaluate the immune cell responses to TLR8 stimulation in subjects with chronic hepatitis B.

Bhawna Poonia, PhD, Assistant Professor of Medicine, Division of Clinical Care & Research, has been awarded a \$247,000 one-year grant to support efforts for "TLR8 Agonist in Healthy Volunteers." In this study, Dr. Poonia will evaluate the immune cell responses to TLR8 stimulation in healthy subjects.



continued on pg 26

Grants *(continued)*



Maria Salvato, PhD

Maria Salvato, PhD, Professor of Medicine, Head, Laboratory of Arenavirus Disease & Preventive Vaccines, Division of Basic Science, has been awarded a \$50,000 one-year subcontract for efforts for “Construction and efficacy testing of novel recombinant vaccine designs for eliciting both broadly neutralizing antibodies and T cells against

Lassa virus: To use a murine system to test Lassa fever vaccines at BSL-2 in four adoptive-transfer experiments using 120 mice.”

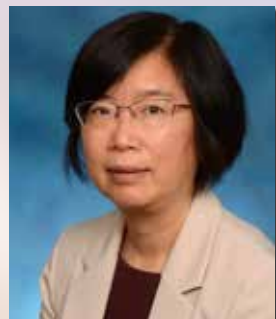
Nicholas Stamatatos, M.D., PhD, Assistant Professor of Medicine, Division of Clinical Care and Research, was awarded an R01 from the National Institute of Allergy And Infectious Diseases (NIAID) in the amount of \$2,562,639 over 5 years to conduct research on the “Influence of polysialic acid on leukocyte migration.” This grant was awarded under the High Priority Immunology Grants program and aims to understand how a specific carbohydrate modification on the surface of cells of the immune system influences the function of these cells during states of inflammation and infection.



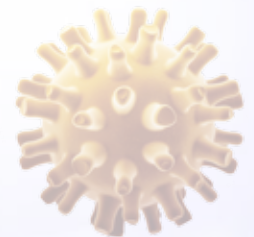
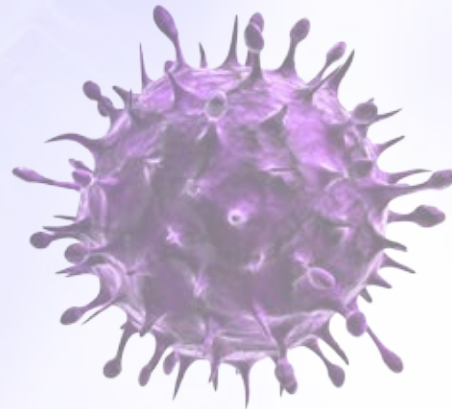
Nicholas Stamatatos, M.D., PhD

Pan Zheng, MD, PhD, Professor, Division of Immunotherapy, has been awarded a \$450,000 two-year grant to support efforts for “DAMPening Immunotherapy Adverse Events in Melanoma.” The program will test this hypothesis using well-characterized mouse melanoma models that grow in mice with intact immune system and response to immunotherapy,

and a fusion protein CD24Fc that can activate this negative regulating pathway, in combination with checkpoint inhibitors.



Pan Zheng, MD, PhD





Mr. John Evans

John Evans Joins Terry Lierman as Board of Advisors Co-Chair

Dr. Robert Gallo, The Homer & Martha Gudelsky Distinguished Professor in Medicine and co-founder and director of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine, appointed longtime Board of Advisors member, **Mr. John Evans** of Evans Telecommunications as Co-Chair of the IHV Board of Advisors alongside **Mr. Terry Lierman**, who has served as Chair since 2012. Mr. Lierman will continue to contribute to the IHV as a prominent Marylander, who has much passion and great abilities leading to substantive partnerships and counsel for the Institute.

Mr. Evans has an extensive history with the IHV since its inception and his expertise in policy, his prominent leadership roles in other industries including at the University of Michigan, among others, will compliment Mr. Lierman's leadership. Dr. Gallo, said, "We have stellar leadership at the helm of the IHV Board, and I am so pleased to have Terry and John's continued leadership, commitment, and service. IHV is growing and

thriving. We are pleased and grateful to have each be a part of its exciting future."

Mr. Evans is an internationally recognized expert in the telecommunications industry and a leader in technological innovation. He is perhaps best known as one of the co-founders of C-SPAN in 1977 and is frequently called upon by universities and other groups around the world to speak about the broad implications of the movement from the analog to the digital age, the convergence of high-speed computers, new broadcast and wireless technologies, and the growing universe of the Internet. As founder of the John D. Evans Foundation, Mr. Evans is committed to AIDS and cancer research, protection of the environment, and improving the quality of life through technological innovation, education, and the arts.



Dr. John McHutchison

John McHutchison Appointed Officer of the Order of Australia

IHV Board Member, **John McHutchison, AO, MD**, Chief Scientific Officer and Head of Research and Development at Gilead Sciences, Inc., was recently appointed as an Officer of the Order of Australia. Dr. McHutchison was recognized for his "distinguished service to medical research in gastroenterology and hepatology, particularly through the development of treatments for viral infections, and to the biopharmaceutical industry."



IHV Adds New Board of Advisors Members



Dr. Christian Bréchet

Christian Bréchet, M.D., Ph.D., Global Virus Network (GVN)

Dr. Christian Bréchet is President of the Global Virus Network (GVN). Bréchet holds MD and PhD degrees. Beginning in 1981 he studied molecular biology, virology, and cellular biology at the laboratory of Pierre Tiollais at the Pasteur Institute, and at the Necker Faculty of Medicine; he obtained his PhD in biochemistry from the University of Paris VII in 1985. In 1989, he became full professor of Cell Biology and Hepatology, and in 1997 he was appointed head of the clinical department of liver diseases at the Necker-Enfants Malades Hospital. He was head of a research unit at the Necker Faculty of Medicine, jointly supported by Inserm, Paris Descartes University, and the Pasteur Institute; he was also head of the National Reference Centre on viral hepatitis from 1998 to 2001. From 2001 to 2007, Bréchet was General Director of Inserm, the French National Agency for biomedical research. In 2008, he was appointed as Vice-President of Medical and Scientific Affairs of the Institut Merieux company, where he merged the efforts of four sectors including in vitro diagnostics, preventive vaccines, therapeutic vaccines, as well as food safety (Biomérieux, Transgene, Merieux Nutrisciences, Advanced Bioscience Laboratory). From October 2013-September 2017, Bréchet served as President of the Institut Pasteur developing programs to

recruit eminent scientists, implementing an international multidisciplinary education and teaching program, fostering collaborative research and training strategies with major universities and research organizations, coalescing the international network of 33 Pasteur Institutes to encompass a global scientific vision and coordinated training activities, and positioning an ambitious and internationally oriented strategy for technology transfer and fundraising. Prior to becoming President of the GVN, Bréchet's previous research focused on viral hepatitis: hepatitis B (HBV) and C (HCV), particularly about their role in liver cancer (Hepatocellular carcinoma: HCC) and to the molecular mechanisms that drive liver regeneration and cancer (in particular, cell cycle deregulation). He has been the member of numerous scientific committees and societies and has received prestigious awards. Bréchet is the author of over 350 articles published in medical and scientific journals. In addition, his research activities have led him to obtain 13 patents and to contribute to the creation of two biotech companies: Rarecells and ALFACT Innovation.



Dr. Robert Caret

Robert L. Caret, Ph.D., University System of Maryland

Dr. Robert Caret joined the University System of Maryland (USM) as chancellor on July 1, 2015. He was inaugurated as the system's fourth chancellor on November 19, 2015. No stranger to Maryland, Caret is a former president of Towson University, a USM institution. During his 20 years of public higher education leadership, Caret has earned respect for his successful work in several areas, including helping to ensure college affordability, academic excellence, and the efficient use of resources. In addition, he is credited with emphasizing university partnerships to enhance students' experiences and to impact regional progress in economic and workforce development and other areas. Before joining USM as chancellor, Caret was president of the University of Massachusetts System (UMass) from 2011 until 2015. Prior to joining UMass, Caret was president of Towson University (TU) from 2003 to 2011, where he also served as a faculty member, dean, executive vice president and provost during his more than 25-year tenure there. From 1995 to 2003, Caret served as president of San Jose State University (SJSU), part of the California State University System. He is credited with bringing a vision for SJSU as the metropolitan university of Silicon Valley. Caret also serves on many boards in Maryland, including the Greater Baltimore Committee, Baltimore Council

on Foreign Affairs, Economic Alliance of Greater Baltimore, University of Maryland Medical System, College Savings Plans of Maryland, World Trade Center Institute, Maryland Council on Economic Education, BioHealth Innovation, Inc., and the Maryland Economic Development Corporation. Additionally, he serves on The Center Club Strategic Planning Advisory Committee and the Mary Christie Foundation Board of Directors and Council of Experts. Caret holds a Ph.D. in organic chemistry from the University of New Hampshire and a bachelor's degree in chemistry from Suffolk University in Boston.



Ms. Anna Laakmann

Anna B. Laakmann, Esquire, Greenberg Traurig LLP

Ms. Anna Laakmann focuses her practice on regulatory counseling, intellectual property, and litigation matters for pharmaceutical, medical device, healthcare, and biotechnology companies. Utilizing her training as both a doctor and an attorney, Laakmann possesses an in-depth understanding of the Food, Drug, and Cosmetic Act, healthcare fraud and abuse laws, the False Claims Act, the Hatch-Waxman Act, and the challenges and opportunities of the rapidly evolving medical technology marketplace. Laakmann has written and spoken extensively on the impact of civil litigation and government regulation on scientific research and the practice of medicine. Before joining the firm, Laakmann was an Associate Professor at Lewis & Clark Law School, where she taught medical technology law, bioethics and public health law, intellectual property survey, patent law and policy, and property. Earlier in her career, Laakmann was manager of technology development and commercialization at a medical research institute, where she negotiated licensing and collaborative research agreements, developed patent and commercialization strategies for biomedical discoveries, and managed an onsite business incubator for emerging life science companies. She has also served as a consultant for start-up pharmaceutical and medical device companies.



Mr. Thomas Lynch

Thomas Lynch, Ireland East Hospital Group

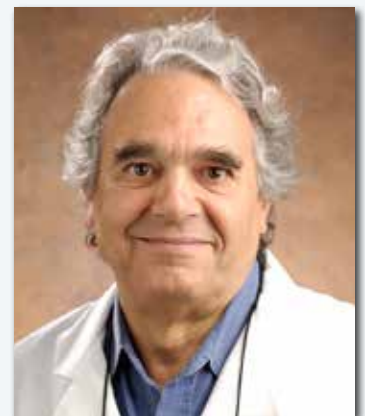
Mr. Thomas Lynch has extensive experience in life sciences and is Chair or Director of many biotechnology companies in the US, Ireland and UK. He started his career at KPMG and then worked at Elan Corporation plc where he led its transition from drug delivery to biotechnology. He founded a company that became Warner Chilcott plc (acquired by Allergan plc) and was Chairman and Chief Executive of Amarin Corporation plc which he successfully repositioned as a cardiovascular company. Lynch was a member of the board of Icon plc from 1994 to 2016 serving as Chairman from 2012 to 2016. He continues to serve as Chair of Amarin Pharmaceuticals Ireland Ltd., its principal operating subsidiary. Lynch currently serves as Chair of the Boards of Evofem Biosciences Inc, and Profectus Biosciences Inc (a spinoff company from IHV) and as a board member of GW Pharmaceuticals plc and Aerogen Limited. Lynch is Chair of the Ireland East Hospital Group, the Mater Misericordiae University Hospital and the Dublin Academic Medical Centre. He served, at the invitation of the Minister for Health, as a member of the Expert Group on Resource Allocation in the Health Service. Lynch currently serves as Chair of Clinical Research Development Ireland (a consortium of Ireland's medical schools). Lynch is a graduate in economics from Queen's University

Belfast and is a fellow of the Institute of Chartered Accountants in Ireland. He has received honorary doctorates from University College Dublin and Queen's University Belfast and was appointed a knight of Saint Gregory by Pope Benedict XVI.

IHV Adds New Scientific Advisory Board Members

Carlo M. Croce, M.D., The Ohio State University

Dr. Carlo Croce is Distinguished University Professor and The John W. Wolfe Chair in Human Cancer Genetics of the Department of Cancer Biology and Genetics, Director of the Human Cancer Genetics Program, and Director of the Institute of Genetics at The Ohio State University Comprehensive Cancer Center. His research has revealed the variety of mutated genes involved in leukemias, lymphomas and other cancers. During his career, he discovered the juxtaposition of the human immunoglobulin genes to the MYC oncogene, the deregulation of MYC in Burkitt lymphoma, the ALL1/MLL gene involved in acute leukemias, the TCL1 gene associated with T-cell leukemias, and cloned, named and characterized the BCL2 gene involved in follicular lymphoma. In 2002 he discovered the role of microRNA in the pathogenesis of human cancer and then demonstrated that microRNA dysregulation contributes to the pathogenesis of all tumors. His discoveries have led to revolutionary innovations in the development of novel and successful approaches to cancer prevention, diagnosis, monitoring and treatment, based on gene-target



Dr. Carlo M. Croce

Board News *(continued)*

discovery, verification and rational drug development. Croce is a member of the National Academy of Sciences, Institute of Medicine (National Academy of Medicine), American Academy of Arts and Sciences, an AAAS Fellow and Fellow of the AACR Academy. His awards and honors include: Outstanding Investigator Award, The National Institutes of Health; General Motors Cancer Research Foundation – Charles S. Mott Prize; Robert J. and Claire Pasarow Foundation Cancer Award; AACR-Pezkoller International Award for Cancer Research; G.H.A. Clowes Memorial Award; Albert Szent-Györgyi Prize for Progress in Cancer Research; Health Prize of the Fund InBev-Baillet Latour, Leuven, Belgium; Dan David Prize, Dan David Foundation at Tel Aviv University, shared with Prof. Mary-Claire King and Prof. Bert Vogelstein. He is principal investigator on several federal research grants, has more than 1100 peer-reviewed, published research papers and an H index of 214.



Dr. Peter Palese

Peter Palese, Ph.D., Mount Sinai School of Medicine

Dr. Peter Palese is Professor of Microbiology and Chair of the Department of Microbiology at the Mount Sinai School of Medicine in New York. His research includes work on the replication of RNA-containing viruses with a special emphasis on influenza viruses, which are negative-strand RNA viruses. Specifically, he established the first genetic maps for influenza A, B and C viruses, identified the function of several viral genes, and defined the mechanism of neuraminidase inhibitors (which are now FDA-approved antivirals). Palese also pioneered the field of reverse genetics for negative strand RNA viruses, which allows the introduction of site-specific mutations into the genomes of these viruses. This technique is crucial for the study of the structure/ function relationships of viral genes, for investigation of viral pathogenicity and for development and manufacture of novel vaccines. In addition, an improvement of the technique has been effectively used by him and his colleagues to reconstruct and study the pathogenicity of the highly virulent but extinct 1918 pandemic influenza virus. His recent work in collaboration with Garcia-Sastre has revealed that most negative strand RNA viruses possess proteins with interferon antagonist activity, enabling them to counteract the antiviral response of the infected host. Palese was elected to the National Academy of Sciences in 2000 for his seminal studies on influenza viruses. At present he serves on

the editorial board for the Proceedings of the National Academy of Sciences. He has been a Corresponding Member of the Austrian Academy of Sciences since 2002 and a Member of the German Academy of Sciences Leopoldina since 2006. Palese was president of the Harvey Society in 2004/2005 and president of the American Society for Virology in 2005/2006. He was the recipient of the Robert Koch Prize in 2006, of the Charles C. Shepard Science Award in 2008 and of the European Virology Award (EVA) in 2010. He is currently also a member of the Institute of Human Virology (IHV) at the University of Maryland School of Medicine Board of Advisors.



Jeffery Ravetch, MD, PhD

Jeffrey V. Ravetch, M.D., Ph.D., Rockefeller University

Dr. Jeffrey Ravetch is currently the Theresa and Eugene Lang Professor at the Rockefeller University and Head of the Leonard Wagner Laboratory of Molecular Genetics and Immunology. Ravetch, a native of New York City, earned degrees from Yale University, Cornell Medical College and The Rockefeller University and pursued postdoctoral studies at the NIH. From 1982 to 1996, Ravetch was a member of the faculty of Memorial Sloan-Kettering Cancer Center and Cornell Medical College. His laboratory has focused on the Fc domain of antibodies and their receptors, establishing their structural and functional diversity and the pre-eminence of FcR pathways in host defense, inflammation and tolerance. His work has been widely extended into clinical applications for the treatment of neoplastic, inflammatory and infectious diseases. Ravetch has received numerous awards including the William B. Coley Award (2007), Sanofi-Pasteur Award (2012), Gairdner International Prize (2012), Wolf Prize in Medicine (2015), Ross Prize in Molecular Medicine (2017) and the Robert Koch award (2018). He is a member of National Academy of Sciences (2006), the National Academy of Medicine (2007), a Fellow of the American Academy of Arts and Sciences (2008) and a Fellow of the American Association for the Advancement of Science (2009). Ravetch

has contributed extensively to the scientific community by serving as a member of the Scientific Advisory Boards of the Cancer Research Institute, the Irvington Institute for Medical Research, the Damon Runyon Foundation, the medical advisory board of Gairdner Foundation, the Sanofi-Pasteur Award Jury and the L'Oreal Women in Science Jury. He has been active in biotechnology for the last two decades, and currently serves as a consultant or member of the Scientific Advisory Boards of Harpoon, Janssen, Kleo, Momenta, Palleon, Portola and Xencor.

the JACQUES initiative

Changing Lives, Engaging Communities, Supporting Health Systems

Show Your Pride

your photos—your videos—your messages!



JACQUES Initiative staff work to address Baltimore's HIV epidemic by expanding access to comprehensive prevention

Be a friend to the JACQUES Initiative by creating your own giving page through JI's website. Ask friends, family, & colleagues to make a gift in your honor or in memory of a loved one lost to AIDS—to raise money for the JACQUES Initiative during 2018 Baltimore PRIDE!

Visit www.jacques.ihv.org/ShowYourPride to set up your fundraiser page today!

NOTE: Top fundraisers will be invited to join other special guests at the opening of the new JACQUES Initiative Journey Center in September 2018

Your **fundraiser** for the **JACQUES Initiative** provides:

\$10—a “risk reduction kit” with educational information and supplies

\$25—transportation to and from a doctor's appointment

\$50—emergency client funds to help with coverage of unforeseen expenses after a hospitalization

\$100—two weeks of support group meetings at the JACQUES Initiative Journey Center

\$250—medical supplies and educational materials for one day of community outreach

\$500—a full day of HIV and HCV testing in a Baltimore neighborhood

All gifts—no matter what the size—make a difference in the lives of Baltimore's most vulnerable citizens. Thank you!



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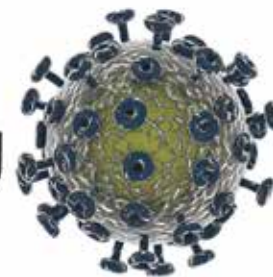
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IHV2018



INSTITUTE OF
HUMAN VIROLOGY

20th Annual International Meeting of the Institute of Human Virology



OCTOBER 22-25
Four Seasons Hotel
Baltimore, Maryland



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IHV2018 convenes a special joint international meeting with the Global Virus Network to address virus threats and cancer - with a focus on HTLV, the first discovered human retrovirus; translational science shaping diagnosis and treatment of cancer; emerging global health challenges surrounding viruses; PEPFAR advances in HIV epidemic control; targeting of early infection events, and approaches to eliminate persistent viruses. Abstract submissions will be accepted for poster presentation.



Dr. Robert C. Gallo
Director, Institute of Human Virology



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