International Alliance for Biological Standardization

65 ANNIVERSARY

eBook

Scientific Conference

New Paths for Sustainable Solutions to Tackle Global and Emerging Infections Threats

Without Borders Between Human and Veterinary Medicines

27th & 28th February, 2020

ENS of Lyon

École Normale Supérieure of Lyon

65.iabs.org

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About the Conference

The aim of this meeting is to provide a state-of-play of the promises, existing gaps and future challenges of global approaches that tackle emerging and re-emerging infectious diseases, with a particular focus on human and veterinary vaccines. Many trans-sectorial and multidisciplinary issues dealing with vaccine development, field impact assessment, partnerships and networking, and pharmaco-economical studies will be presented and discussed through plenary talks and roundtables involving high profile stakeholders from academia, industry, governmental and non-governmental organizations.

Scientific & Organizing Committees

Marc Bonneville
Institut Mérieux, France

Marie-Paule Kieny
Inserm, France

Rick Hill
IABS, U.S.A.

Paul Henri Lambert
University of Geneva
Switzerland

Michel Goldman
I3H Institute, Université
Libre de Bruxelles, Belgique

Christine Delprat
Université Lyon 1, France

Nathalie Garçon
BIOASTER, France

Pieter Neels
University of Namur, Belgium

Jean-Christophe Audonnet
Boehringer Ingelheim, France

Laurent Mallet
European Directorate for the
Quality of Medicines, France

Penny Heaton
Bill & Melinda Gates Medical
Research Institute (Gates MRI),
U.S.A.

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Dartmouth College
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Boehringer Ingelheim
France

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Zoetis
Spain

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GSK
United States

T. Breuer
GSK
Belgium

C. Cassetti
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G. Chee
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G. Gifford
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Canada

B. Graham
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United States

P. Heaton
Gates MRI
USA

I. Knezevic
WHO
Switzerland

I. Longini
University of Florida
United States

M. Makanga
EDTCP
Netherlands

P. Meulien
IMI
Belgium

O. Olesen
EVI
Belgium

L. Oostvogels
CureVac
Germany

S. Plotkin
University of Pennsylvania
United States

A. Pollard
University of Oxford
United Kingdom

J. Roth
Iowa State University
United States

S. Sagar
Sanofi Pasteur
France

M. Saville
CEPI
United Kingdom

JP Sevilla
Harvard T.H. Chan School
United States

L. Simonsen
Roskilde University
Denmark

E. Soubeyran
VetAgro Sup
France

E. Torreele
MSF
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Scientific Program

Thursday February 27th

École Normale Supérieure - Gerland - Charles Mérieux Auditorium

8:00 Arrival

8:30 Welcome & Introduction

8:45 Stanley PLOTKIN (University of Pennsylvania) - Opening lecture

9:30 **Session 1 - Context : promises, gaps and challenges of a global health approach to tackle emerging/re-emerging infectious diseases**

- Kathryn EDWARDS (Vanderbilt University) - Global impact of vaccines : successes and challenges
- James A. ROTH (Iowa State University) - Prevention and control of animal infectious diseases that threaten global food security and public health

11:00 Coffee break

11:30 **Session 2 - Innovations in basic and applied vaccine research for an improved understanding of vaccine / adjuvant mode of action and standardized design & production**

- Penny HEATON (Gates MRI) - The translational challenges of vaccine development
- Andrew J. POLLARD (Oxford University) - Deliberate infection with typhoid for good

12:30 Lunch

14:00 **Session 2, cont. - Innovations in basic and applied vaccine research for an improved understanding of vaccine / adjuvant mode of action and standardized design & production**

- **Margaret ACKERMAN (Dartmouth College)** - Systems serology and new standardized ways to predict vaccine efficacy development
- **Barney GRAHAM (NIAID)** - Precision vaccinology through structure-guided protein engineering

15:00 **Roundtable** - "Technological innovations in vaccine development : an industrial outlook"

Chair : Nathalie GARÇON (BIOASTER)
Participants : **Matthew BOTTOMLEY (GSK), Lidia OOSTVOGELS (CureVac), Monica BALASCH (Zoetis), Sangheeta SAGAR (Sanofi Pasteur)**

16:30 **Coffee break**

17:00 **Session 3 - Novel approaches to anticipate pandemics and improve the design, implementation and efficacy assessment of vaccine field studies**

- **Ira LONGINI (University of Florida)** - Reactive vaccination strategies to contain global and emerging infectious threats
- **John EDMUNDS (London School of Tropical Hygiene & Medicine)** Real-time modelling and outbreak response
- **Ruben DONIS (BARDA)** - Molecular epidemiology of influenza pandemics : implications for preparedness and response
- **Lone SIMONSEN (Roskilde University)** - Pandemics of the past, present and future

19:00 **End of Day 1 - Bus leaves for Reception at Musée Gallo-Romain**

Friday February 28th

École Normale Supérieure - Gerland - Charles Mérieux Auditorium

8:30 **Session 4 - Holistic and networks approaches to prevent infections**

- **Cristina CASETTI (NIAID) -** Lessons learned from Zika and Ebola and current preparedness and response research efforts
- **Ivana KNEZEVIC (WHO) -** Standardization of vaccines for public health emergencies : WHO initiative
- **Pierre MEULIEN (Innovative Medicine Initiative) -** Addressing challenges in vaccine development through Public-Private Partnerships

10:00 **Coffee break**

10:30 **Roundtable -** " Examples of networks to address transdisciplinary issues related to infectious disease prevention and vaccine development "

Chair : Ivo CLAASSEN (EMA)
Participants : **Jean-Christophe AUDONNET (ZAPI), Melanie SAVILLE (CEPI), Ole OLESEN (EVI), Glen GIFFORD (OIE), Emmanuelle SOUBEYRAN (VetAgroSup)**

12:00 **Lunch**

13:30 **Session 5 - Sustainable approaches based on pharmaco-economical considerations**

- **Grace CHEE (R4D) -** Sustainable immunization financing in low and middle income countries

- **Mark FEINBERG (IAVI) -** Evolving partnership models to enable the development and availability of vaccines and biologics targeting global health threats
- **Joseph Patrick SEVILLA (Harvard University)** - The full health, economic, and social benefits of vaccination

15:00 **Roundtable** - " Socio-economical issues linked to vaccine development"

Chair : **Stanley PLOTKIN (University of Pennsylvania)**
Participants : **Penny HEATON (Gates MRI), Thomas BREUER (GSK), Michael MAKANGA (EDTCP), Els TORREELE (MSF)**

16:30 **End of meeting**

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Upcoming IABS Conferences and Workshops 2020

- Maintaining the Quality of Vaccines Through The Use of References Standards: Current Challenges and Future Opportunities
  June 8-9, 2020 - Ottawa, Canada

- Cross Learning Experience Human and Animal Vaccine Licensure Based On Technology Platforms. A joint CEPI/IABS/ZAPI Workshop
  March 16-17, 2020 - Brussels, Belgium

- Autogeneous Veterinary Vaccines, Quality of Production and Movement in a E.U. Market, co-organized with EMAV
  September 14-16, 2020 - Munich, Germany

- 6th IABS Statistics Workshop : Approaches for Improving Statistical Partnership in CMC Development, Manufacturing, and Regulation of Biologicals
  November 3-4, 2020 - USP, Rockville, USA

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Biosketches

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Thomas Breuer
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CEPI - United Kingdom

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Harvard T.H. Chan School
United States

Lone Simonsen
Roskilde University
Denmark

Emmanuelle Soubeyran
VetAgro Sup - France

Els Torreele
MSF - Switzerland

Biosketch
Margaret Ackerman

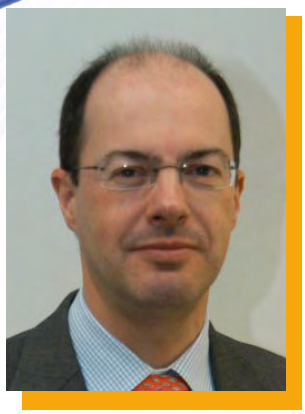
Dartmouth College
United States

Margie Ackerman, PhD is a Professor of Engineering at the Thayer School of Engineering.

Following receipt of a PhD in Molecular Engineering from MIT, she spent a year as a Harvard Center for AIDS Research Fellow before moving to Dartmouth, where she now also holds appointments in Microbiology and Immunology, Chemistry, and the Program in Quantitative Biological Sciences.

The Ackerman laboratory conducts interdisciplinary research at the interface of biomedical and engineering sciences : developing high throughput tools to evaluate and enhance the antibody response in disease states ranging from infection to cancer in order to aid in therapeutic antibody and vaccine design and development.

These efforts aim to define and improve upon the protective mechanisms of antibodies using approaches grounded in fundamental engineering principles and utilizing protein evolution, molecular biology, and mathematical modeling.



Biosketch
Jean-Christophe AUDONNET

Boehringer Ingelheim
France

Jean-Christophe AUDONNET obtained his DVM degree at the Veterinary School in Alfort, Paris, France in 1980. After 2 years of practice, mainly in the large animal production field, he went back to the University for a Ph.D. in Molecular Bacteriology. Dr. Audonnet also has a degree in Molecular Virology from Institut Pasteur Paris, France, and Masters certificates in Molecular Biology, Genetics, and an Immunology.

After 3 years spent at Virogenetics, Albany, New York, U.S.A. as a member of the research team who did the pioneering work on the modified vaccinia (NYVAC) and canarypox (ALVAC) vaccine vectors, Dr. Audonnet came back to Lyon, France where he held a number of positions as Head of research labs and Head of Discovery Research for Rhône-Mérieux and then Merial between 1992 and 2008. During these years, Dr. Audonnet has been in charge of various veterinary vaccine research projects which led to the development of successful commercial products, Vaxxitek being a key one. He was then, as Head of Research Strategy and Key Alliances for Bio R&D, in charge of scouting and assessing new technologies in the fields of vaccinology and immunogens expression platforms.

From 2013 to 2017, as Head of EU & Asia External Innovation & Research Strategy, Merial R&D, Dr. Audonnet was in charge of assessing new opportunities, establishing new collaborative R&D projects, and setting up innovative partnerships. He was also in charge of the Merial China R&D program team and was supervising the Merial PDC site in Singapore.
2017-2018 : International R&D (China, Brazil, Mexico).
2019 : Vaccines R&D, External Innovation.
Coordinator of the IMI ZAPI 5-year project (20 partners) since March 2015.

Biosketch
Monina BALASCH

Zoetis
Spain

Previously, Monica was EU Regional Vaccines Group Manager in VMRD, leading and coordinating projects intended for EU registration in several species, a position she held since 2011. Prior to that, since 1997, she was Project Leader at Fort Dodge Veterinaria S.A., before Pfizer acquisition of Wyeth group. In this role, she was responsible for the execution of studies for the registration of vaccines in the EU, as well as developing laboratory techniques needed for the execution of these projects.

Her experience includes veterinary pathology and histopathology, virology, immunology and molecular biology. Although she has worked with many animal species, her expertise has mainly been developed in swine diseases.

Monica received a DVM Degree (1992) and a PhD degree (1996) in Veterinary Medicine from the Veterinary School of the Autonomous University of Barcelona. Since 2007 she has been a Diplomate of the European College of Porcine Health Management.

Biosketch
Matthew BOTTOMLEY

GlaxoSmithKline
United States

Matthew Bottomley is Function Head of Vaccine Design & Characterization at GSK, Maryland, U.S.A., where he leads a team of 15 pre-clinical research scientists.

Matthew grew up in the UK and was awarded his first degree in Biochemistry at Trinity College, University of Oxford. He obtained his PhD in Structural Biology at University College London. He was awarded European fellowships to perform post-doctoral research at the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, and at the Istituto di Ricerche di Biologia Molecolare in Rome, Italy, which led to numerous scientific advances and publications. Indeed, he became a firm believer in the value of mobility in research and has supervised several trans-European junior scientists.

Since 2010, Matthew has worked in the field of vaccine research to protect humans against infectious diseases. In particular, he has pioneered the use of three-dimensional (3D) structural biology information in the design of new vaccine antigens, an approach termed Structural Vaccinology. Matthew has published research findings for vaccines against numerous pathogens, including Staphylococcus aureus, Clostridium difficile, Groups A and B streptococcus, and respiratory syncytial virus (RSV), and is proud to have worked on the team that developed the first approved genome-derived recombinant protein vaccine against serogroup B Neisseria meningitidis.

Matthew's professional ambition is to help improve global human health by design of innovative effective vaccines that combat disease.

Biosketch Thomas BREUER

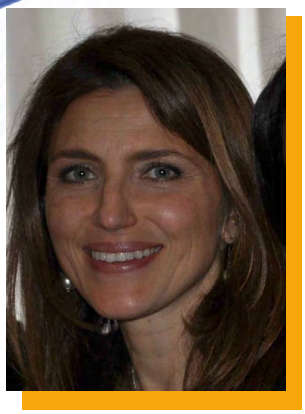
GlaxoSmithKline Vaccines
Belgium

Thomas Breuer is GSK Vaccines Chief Medical Officer and the lead physician of the company.

He leads the Vaccines Medical organization with medical affairs, safety and pharmacovigilance, and patient access functions such as health economics and epidemiology in the regions. In addition, he leads all Global Health activities of the company. Since 2004, Thomas is a member of the management team of GSK Vaccines (VET) and frequently presents GSK Vaccines in the external environment.

From 2007 to 2015 Thomas ran the Vaccines Development Organization and has been instrumental in the development and licensure of many of GSK's vaccines. Before joining the company in 2001, Thomas had a career in internal medicine and public health. After six years in patient care he worked at the US Centers for Disease Control (CDC) in Atlanta, before joining the German Public Health Institute (Robert Koch-Institute) as Head of Infectious Disease Epidemiology in Berlin.

Thomas has a doctorate in medicine from the University of Cologne, Germany. He is board certified in internal medicine and has a Master of Science degree in Epidemiology from the University of Texas.



Biosketch
Cristina CASSETTI

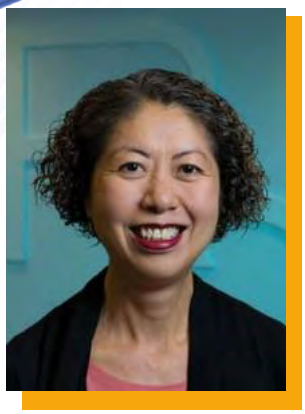
National Institute of Allergy and
Infectious Diseases (NIAID)
United States

Cristina Cassetti is the Deputy Director of the Division of Microbiology and Infectious Diseases (DMID) at the National Institutes of Allergy and Infectious Diseases (NIAID), a component of the US National Institutes of Health (NIH).

Dr. Cassetti has a Ph.D. in virology from the University of Rome, Italy. After her postdoctoral training at the NIH on poxvirus research, she joined Rutgers University as a research associate to study influenza virus. She subsequently joined the Pharmaceutical Company Wyeth as a senior research scientist in the Vaccine Discovery Department where she participated in the development of a therapeutic vaccine against papillomavirus.

In 2003 she returned to the NIH as a Program Officer to direct extramural research programs on several emerging viral diseases of global health importance including influenza and dengue. In 2016, she was appointed to coordinate the Zika research response in extramural NIAID and to oversee translational research in the Virology Branch.

In 2017 she was appointed as Chief of the Virology Branch where she was responsible for the overall scientific direction, administration and management of the NIAID extramural Program focused on viral diseases. She held this position until 2019 when she become the Deputy Director of DMID.



Biosketch
Grace CHEE

R4D
United States

Grace Chee is a health economist with over 20 years' experience across Asia and Africa in health system strengthening, health financing, costing and cost-effectiveness analysis, and evaluation of global health programs. She is currently a Senior Program Director at Results for Development Institute.

Ms. Chee leads the R4D team that coordinates the Learning Network for Countries in Transition (LNCT,) a network that brings countries transitioning away from Gavi, the Vaccine Alliance support together with their peers and technical experts to address challenges to sustainable childhood immunization programs. The LNCT works with global experts to facilitate collaborative learning so countries program managers can work with peers to develop practical strategies for addressing program sustainability challenges.

Prior to her role on LNCT, Ms Chee led the health systems strengthening and equity team for USAID's flagship Maternal and Child Survival Program (MCSP) and served on MCSP's executive management team. She provided technical leadership to the program to incorporate health system strengthening approaches to improve equity, access and sustainability of maternal and child health programs in low- and middle-income countries around the world. Before joining R4D, Ms. Chee was a Principal Associate at Abt Associates, working on program evaluation, health system strengthening and encouraging private sector participation in health care.

Ms. Chee holds a BS in economics from the University of Pennsylvania's Wharton School of Business. She speaks English and Chinese.

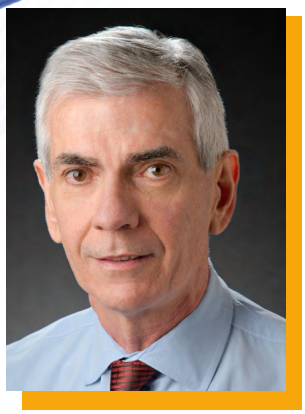
Biosketch
Ivo CLAASSEN

European Medicines Agency (EMA)
Netherlands

He has over 30 years of experience in vaccine production, QC/QA, R&D and regulatory affairs, both for human and veterinary vaccines.

He has been a member of the Committee for Medicinal Products for Veterinary Use (CVMP).

He has developed and contributed to projects in Asia, Africa and the Middle-East on capacity building of institutional infrastructure for veterinary infectious disease control, providing support for local vaccine development and production. He has experience in managing multi-stakeholder projects and programmes on disease control, food security and antimicrobial resistance.



Biosketch
Ruben DONIS

Biomedical Advanced Research and Development Authority (BARDA)
United States

Since joining BARDA's Influenza Division, Dr. Ruben Donis oversees the implementation of influenza medical countermeasure advanced development programs including universal influenza vaccines and the expansion of domestic manufacturing infrastructure.

He also oversees BARDA Influenza Division operations, including pre-pandemic vaccine stockpile management and accountability reporting. Prior to his role with BARDA, Dr. Donis worked at the Centers for Disease Control and Prevention as Associate Director for Policy Evaluation and Preparedness and Chief of the Molecular Virology and Vaccines Branch.

As a virologist in academia, Dr. Donis made important contributions to influenza and flavivirus reverse genetics, antivirals and vaccines. As a public health virologist, Dr. Donis with his team and collaborators contributed to the discovery of canine influenza virus (2005), the identification of broadly neutralizing human monoclonal antibodies binding to the stem region of the influenza hemagglutinin (2010), and the discovery of bat influenza virus –including two new HA and NA subtypes (2012) in bats.

Dr. Donis contributed leadership in science policy and emergency responses for the Influenza Division, NCIRD, and the CDC. As Branch Chief, Dr. Donis expanded CDC capabilities for characterizing and monitoring novel influenza viruses, and implemented innovative approaches towards development of pandemic and pre-pandemic vaccines.
His virology and public health research contributions are reflected in many peer reviewed publications in the scientific literature.

Biosketch
John EDMUNDS

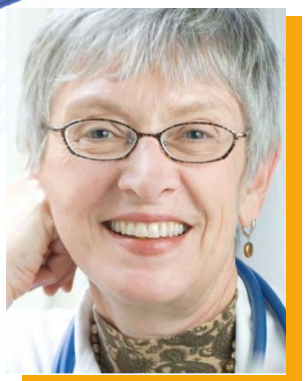
London School of Hygiene & Tropical Medicine (LSHTM)
United Kingdom

John Edmunds is Professor of Infectious Disease Modelling at the London School of Hygiene & Tropical Medicine. John's research focuses on modelling the spread of infectious diseases and the design of efficient control programmes.

A focus of the work has been the careful parameterization of mechanistic models of disease transmission through Bayesian methods and the use of these models often in conjunction with economic analyses to inform public health decision-making. He has published over 250 scientific articles in his field including a number of paradigm shifting papers on the development of more realistic mathematical models through the use of social contact data; the use of dynamic models in economic evaluations of infectious disease control programmes; and more recently on novel trial design.

He has been involved in helping the UK Government to plan and prepare for pandemic flu and similar emergencies over a number of years. He works closely with colleagues at Public Health England on vaccine and influenza-related issues, and advises policy-makers on these topics.

He is a member of a number of national and international advisory committees, including WHO's Polio Research Committee, the UK's New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) and various subcommittees of the Joint Committee on Vaccines and Immunisation (JCVI).



Biosketch Kathryn EDWARDS

Vanderbilt University
United States

Kathryn M. Edwards, MD is the Sarah H. Sell and Cornelius Vanderbilt Professor of Pediatrics. Dr. Edwards joined the Vanderbilt Vaccine Program in 1980 and has conducted many pivotal vaccine studies since that time. She has had an extensive experience in leading NIH-funded multicenter initiatives; in designing, conducting, and analyzing pivotal Phase I, II, and III clinical studies on vaccines and therapeutics; in facilitating networking with basic and clinical investigators with a wide range of interests and expertise; and in mentoring many of the young investigators who currently work within her research unit.

She initially focused her efforts on conducting studies of Haemophilus influenzae, type b capsular polysaccharide protein conjugate vaccines in infants within the NIH-funded VTEU. In 1985, she received NIH-funding to conduct a comparative influenza efficacy trial of live attenuated and inactivated influenza vaccines in 3000 children and adults each year for five years. These studies documented the safety and efficacy of both inactivated and live attenuated influenza vaccines in a very large number of children and adults. In 1990, she coordinated the NIH-funded Multicenter Acellular Pertussis Trial comparing 13 different acellular pertussis vaccines produced by different manufacturers throughout the world with two whole cell pertussis vaccines produced in the United States. In these studies, more than 2000 infants were enrolled at six VTEU sites in the United States, and the safety and immunogenicity of the vaccines were compared.

In the late 1990s, she conducted additional studies on bacterial vaccines when she studied pneumococcal conjugate vaccines in 260 young infants and determined their role in preventing colonization and disease.

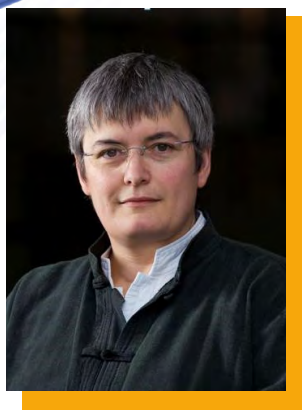
Biosketch
Mark FEINBERG

International AIDS Vaccine Initiative (IAVI)
United States

Mark Feinberg is President and CEO of the International AIDS Vaccine Initiative (IAVI) where he leads a global team working to advance the development of vaccines and other biomedical innovations to protect against infection with HIV, TB and other infectious diseases that disproportionately impact low income countries.

Prior to joining IAVI in late 2015, Mark served as Chief Public Health and Science Officer with Merck Vaccines. In this role, he helped advance the development and global availability of vaccines against rotavirus, human papillomavirus and other infectious diseases. He also led a range of research initiatives to address unmet health needs in low income countries including the establishment of the MSD-Wellcome Trust Hilleman Laboratories and the coordination of a private-public partnership to expedite Ebola vaccine development. Previously, he spent more than 20 years exploring HIV/AIDS pathogenesis, treatment and prevention research and the biology of emerging diseases in both academia and government.

Mark holds an MD and a PhD from Stanford University, and BA degree from the University of Pennsylvania. He pursued a post-graduate medical training in at the Brigham and Women's Hospital and postdoctoral fellowship training in the laboratory of Dr. David Baltimore at the Whitehead Institute. He has previously served as a faculty member at the University of California, San Francisco and the Emory University School of Medicine and as a Medical Officer in the Office of AIDS Research at the National Institutes of Health. Mark is a member of the NIAID Council and the CEPI Joint Coordinating Committee. He is also a member of the Council on Foreign Relations and the Association of American physicians, as well as a fellow of the American College of Physicians.



Biosketch
Nathalie GARÇON

BIOASTER
France

Nathalie Garçon is currently the Chief Executive Officer (CEO) and scientific officer (CSO) of BIOASTER. She joined BIOASTER, the French technology research institute for infectiology and microbiology as Chief Scientific Officer in July 2014.

In this role, Dr Garçon directs the scientific aspect of the institute with the objective of accelerating the access to new technologies in infectious diseases that patients can benefit from. She was promoted to CEO in April 2015. Dr Garçon is a biological Pharmacist by training, and following the successful completion of two Ph.Ds, one in Pharmaceutical science and one in immunotoxicology / immunopharmacology, Dr Garçon moved to the UK for 1 year as a postdoctoral research fellow (the Royal Free Hospital London) undertaking research on liposomes in vaccines.

After 4 years spent as a postdoctoral research fellow, then as research assistant professor at Baylor College of Medicine in Houston, Texas, working on vaccine delivery systems and immunopotentiators, Dr Garçon joined SmithKline Beecham Biologicals now GlaxoSmithKline Vaccines in 1990, where she set up and led the vaccine adjuvant and formulation group. She moved from this position to head of formulation technologies, head of research, vice president, head of global research and North America RD; and vice president, head of the global adjuvants and delivery systems centre for vaccines. In her last role within GSK vaccines before joining BIOASTER, Dr Garçon held the position of vice president, head of adjuvants and technologies innovation center, where she provided leadership within GSK vaccines in the fields of new vaccines technologies, from discovery to registration and commercialization.

Dr Garçon's expertise in vaccinology extends from research to manufacturing, in particular immunology, adjuvant and formulation technologies, analytical methods, animal experimentation and toxicology/safety evaluation and testing.

Biosketch
Glen GIFFORD

World Organisation for Animal Health (OIE)
Canada

Dr Gifford is a veterinarian who was formerly National Manager of the Canadian Centre for Veterinary Biologics, Canadian Food Inspection Agency in Ottawa, Canada. Since 2016, he has been working on a secondment to the World Organisation for Animal Health (OIE) where he works in the Antimicrobial Resistance and Veterinary Products Department at the OIE Headquarters in Paris.

The OIE is the intergovernmental organisation which is responsible for improving animal health worldwide. Through its staff at Headquarters and Regional Offices, and a network of experts in Collaborating Centres and Reference Laboratories, the OIE develops science-based international standards, guidelines and recommendations for animal health and veterinary products. It also delivers a broad range of disease monitoring, technical training, and capacity-building activities for its 182 Member Countries.

Dr Gifford's main responsibilities at the OIE involve contributing to the development and revision of OIE technical standards for vaccines and other animal health products, which are published in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. He serves on several vaccine-related advisory committees, and is currently working with a group of bovine tuberculosis experts to coordinate an international collaborative study to evaluate potential replacements for the OIE's International Standard Bovine Tuberculin.

Biosketch
Barney GRAHAM

National Institute of Allergy and
Infectious Diseases (NIAID)
United States

Dr. Graham is Deputy Director of NIAID Vaccine Research Center and Chief, Viral Pathogenesis Laboratory.

Undergraduate at Rice University, MD from University of Kansas School of Medicine, PhD in Microbiology & Immunology, Internal Medicine residency, chief residencies, and fellowship in Infectious Diseases from Vanderbilt University School of Medicine.

He directs basic laboratory research on structural basis for antibody-mediated viral neutralization and basic mechanisms of T cell function and regulation. He also provides oversight for advanced development of candidate VRC vaccines and designs novel vaccine approaches for respiratory virus infections and emerging viral diseases including RSV, influenza, MERS, Nipah, and Zika.

Biosketch
Penny HEATON

Bill & Melinda Gates Medical Research Institute (Gates MRI)
United States

Dr. Penny M. Heaton is the Chief Executive Officer of the Bill & Melinda Gates Medical Research Institute (Gates MRI), a non-profit biotechnology organization that applies translational science to combat diseases that disproportionately impact the poor in low- and middle-income countries.

Dr. Heaton leads the institute's work to capitalize on new strategies and partnerships to optimize therapeutics, vaccines and monoclonal antibody candidates, accelerate progress from the lab to the clinic and develop them through proof of concept in target populations. The mission of the Gates MRI is to advance or develop products that will help eradicate malaria, accelerate the end of the tuberculosis epidemic, prevent diarrheal deaths from occurring in children and improve maternal and neonatal health outcomes.

Prior to this role, Dr. Heaton served as Director of the Bill & Melinda Gates Foundation's Vaccine Development and Surveillance team, which provided strategic and technical support to the foundation's vaccine development programs against several diseases including HIV, TB, malaria, pneumonia, enteric diseases, and polio. She has more than 15 years of experience l eading vaccine clinical research and development for companies including Novartis, Merck and Novavax.

Dr. Heaton began her career at the U.S. Centers for Disease Control and Prevention conducting diarrheal disease surveillance and investigating outbreaks of foodborne and diarrheal diseases, influencing her life-long passion for vaccine development. Notably, Dr. Heaton co-developed RotaTeq® during her time at Merck & Co., Inc., a rotavirus vaccine which has been licensed in more than 100 countries and universally recommended by the World Health Organization for infants worldwide.

Biosketch
Ivana KNEZEVIC

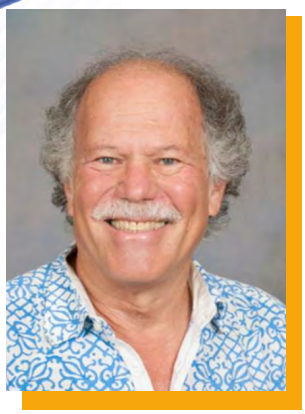
World Health Organization
Switzerland

Position: Scientist, Technical Standards and Specifications Unit; Group Lead, Norms and Standards for Biologicals; Health Product Policy and Standards Department (HPS); Access to Medicines and Health Products Division (MHP); World Health Organization (WHO), Switzerland.

Dr Knezevic is Specialist in Medical Microbiology and Parasitology. She received her MD from the University of Novi Sad, MSc in Medicine (Microbiology) and PhD in Medicine (Virology) from the University of Belgrade, Republic of Serbia. Dr Ivana Knezevic has 27 years of professional experience in standardization, scientific and regulatory overview of biologicals.

Dr Knezevic is a Scientist at the WHO Biological Standardization Programme, which she joined in September 2000, and since then her activities have been devoted to the standardization and evaluation of biologicals at the global level. Since 2006, she has been leading the team for standardization of vaccines and biological therapeutics in WHO Headquarters. Main aspects of the work include development and establishment of WHO International Standards as well as the assistance to regulators, manufacturers, academia and other users of these standards.

Being responsible for 8 WHO Collaborating centers for standardization and evaluation of vaccines and other biologicals, Dr Knezevic initiated numerous scientific projects of importance for global public health. In 2012, she created a network of the institutions that are playing a leading scientific and regulatory role in their countries (UK, Japan, Australia, USA, Republic of Korea, Canada, China and Germany).



Biosketch
Ira LONGINI

University of Florida
United States

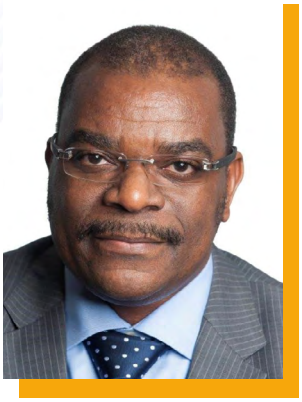
Dr Longini received his Ph.D. in Biometry and Biomathematics at the University of Minnesota in 1977.

He began his career with the International Center for Medical Research and Training and the Universidad del Valle in Cali, Colombia. Following that, he was a professor biostatistics at the University of Michigan, Emory University and the University of Washington.

He currently is a professor of biostatistics at the University of Florida. His research interests are in the area of stochastic processes applied to epidemiological problems. He has specialized in the mathematical and statistical theory of epidemics--a process that involves constructing and analyzing mathematical models of disease transmission, disease progression and the analysis of infectious disease data based on these models. He works extensively in the design and analysis of vaccine and infectious disease prevention trials and observational studies.

Dr. Longini has worked on the analysis of epidemics of Ebola, influenza, HIV, Lassa fever, MERS, tuberculosis, cholera, dengue fever, Zika and other infectious agents. Dr. Longini is also currently working with the World Health Organization on the statistical and mathematical methods for the control of international infectious disease threats.

He is is author or coauthor of over 205 scientific papers and one book. He is a Fellow of the American Statistical Association and a Fellow of the American Association for the Advancement of Science.



Biosketch
Michael MAKANGA

European & Developing Countries Clinical Trials Partnership (EDCTP)
Netherlands

Dr. Makanga is a clinician-scientist with 26 years of professional experience of working on health and poverty-related infectious diseases in Africa. This includes 22 years of work experience on medical product development and clinical regulatory activities.

He holds a Medical Degree from Makerere University, Uganda, and has been in various clinical and research positions before and after undertaking a Master's Degree at the University of Liverpool, and a PhD Clinical Pharmacology at the Liverpool School of Tropical Medicine, United Kingdom. He is also a Fellow of the Royal College of Physicians of Edinburgh, Scotland.

Before joining EDCTP, Dr Makanga was first in clinical practice and academia, and later clinical research and research management. He joined EDCTP in 2004 and has served in different progressive management positions prior to his current appointment.

During the last 15 years at EDCTP, he has built up significant experience in global health, research for health capacity development, quality assurance, project management and evaluation, health and research management as well as diplomacy and engagement with policy makers, health and regulatory authorities in sub-Saharan Africa and Europe.

Moreover, he has served in various scientific and policy advisory boards for international product development, philanthropic organisations, World Bank and pharmaceutical companies involved in developing medicinal products for poverty related and neglected diseases.

Biosketch
Pierre MEULIEN

Innovative Medicines Initiative (IMI)
Belgium

Pierre Meulien is executive director of the Innovative Medicines Initiative (IMI), a €5 billion public-private partnership between the European Union and the European pharmaceutical industry.

At IMI, he is responsible for the overall management of the program, which works to improve and accelerate the drug development process by facilitating collaboration between the key players involved in health research. Previously, Dr Meulien was president and CEO of Genome Canada, where he raised money and oversaw the launch of novel projects and networks in the field of genomics-based technologies.

Prior to that, he was chief scientific officer for Genome British Columbia and was the founding CEO of the Dublin Molecular Medicine Center. Dr Meulien also worked with the French biotechnology company Transgene and with Aventis Pasteur (now Sanofi Pasteur). He has a Ph.D. in molecular biology from the University of Edinburgh and carried out a postdoctoral fellowship at the Institut Pasteur in Paris.

Biosketch
Ole OLESEN

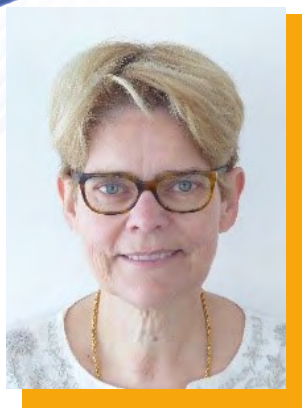
European Vaccine Initiative (EVI)
Belgium

Dr Ole F. Olesen is Executive Director of the European Vaccine Initiative (EVI).

EVI is a non-profit organization that develops new and improved vaccines for neglected and poverty-related diseases through collaboration with an extensive network of academic and industry partners in more than 30 countries across the world. Ole has studied at the universities of Aarhus, Denmark and Cambridge, UK, as well as at Copenhagen Business School, and he holds a PhD degree in Molecular Biology and an HD degree in international economics.

Ole has worked for 10 years in the pharmaceutical industry as group leader and later as Global Project Director for pre-clinical and clinical development of vaccines and injectables. He has considerable work experience in conducting and managing large international projects on pharmaceutical product development.

Before joining EVI, Ole worked as Director of International Cooperation at the European & Developing Countries Clinical Trials Partnership (EDCTP), and Principal Scientific Officer for Global Health at the European Commission's Directorate-General for Research & Innovation. Ole also holds a position as affiliated professor at Copenhagen University.



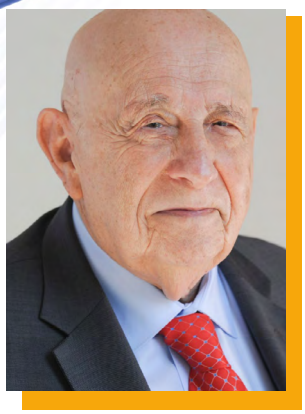
Biosketch
Lidia OOSTVOGELS

CureVac
Germany

Dr. Lidia Oostvogels is a physician specialized in pharmaceutical medicine.

She has been working in pharmaceutical research since more than 25 years, including in clinical drug development in Boehringer Ingelheim, and vaccine development at GSK.

Since March 2018, she works for CureVac AG, based in Germany, now as VP Therapeutic Area Head for the Infectious Diseases area.



Biosketch
Stanley PLOTKIN

University of Pennsylvania
United States

Dr. Stanley A. Plotkin is Emeritus Professor of the University of Pennsylvania, and Adjunct Professor of the Johns Hopkins University. Until 1991, he was Professor of Pediatrics and Microbiology at the University of Pennsylvania, Professor of Virology at the Wistar Institute and at the same time, Director of Infectious Diseases and Senior Physician at the Children's Hospital of Philadelphia. He maintained laboratories at both CHOP and Wistar.

In 1991, Dr. Plotkin left the University to join the vaccine manufacturer, Pasteur-Mérieux-Connaught (now called Sanofi Pasteur), where for seven years he was Medical and Scientific Director, based at Marnes-la-Coquette, outside Paris. He left France in 1998, and is now consultant to many vaccine manufacturers, biotechnology companies and non-profit research organizations as principal of Vaxconsult. He also continues to teach at the University of Pennsylvania.

Dr. Plotkin attended New York University, where he received a B.A. degree, and then the State University of New York Medical School in Brooklyn, where he received an M.D. degree in 1956. His subsequent career included internship at Cleveland Metropolitan General Hospital under Fred Robbins, residency in pediatrics at the Children's Hospital of Philadelphia and the Hospital for Sick Children in London and three years in the Epidemic Intelligence Service of the Centers for Disease Control of the US Public Health Service.

While in EIS in the 1950s he worked on the development of oral polio vaccine and on the efficacy of a vaccine against inhalation and cutaneous anthrax.

He has been chairman of both the Infectious Diseases Committee and the AIDS Task Force of the American Academy of Pediatrics, liaison member of the Advisory Committee on Immunization Practices and Chairman of the Microbiology and Infectious Diseases Research Committee of the National Institutes of Health.

Biosketch
Andrew POLLARD

University of Oxford
United Kingdom

ANDREW J POLLARD, BSc MA MBBS MRCP(UK) FRCPCH PhD DIC FHEA FIDSA FMedSci, is Professor of Paediatric Infection and Immunity at the University of Oxford, Honorary Consultant Paediatrician at Oxford Children's Hospital and Vice Master of St Cross College, Oxford.

He obtained his medical degree at St Bartholomew's Hospital Medical School, University of London in 1989 and trained in Paediatrics at Birmingham Children's Hospital, UK, specialising in Paediatric Infectious Diseases at St Mary's Hospital, London, UK and at British Columbia Children's Hospital, Vancouver, Canada. He obtained his PhD at St Mary's Hospital, London, UK in 1999 studying immunity to Neisseria meningitidis in children and proceeded to work on anti-bacterial innate immune responses in children in Canada before returning to his current position at the University of Oxford, UK in 2001. He chaired the UK's NICE meningitis guidelines development group, the NICE topic expert group developing quality standards for management of meningitis and meningococcal septicaemia. His research includes the design, development and clinical evaluation of vaccines including those for meningococcal disease and enteric fever and leads studies using a human challenge model of (para)typhoid.

He runs surveillance for invasive bacterial diseases and studies the impact of pneumococcal vaccines in children in Nepal and leads a project on burden and transmission of typhoid in Nepal, Bangladesh and Malawi, and co-leads typhoid vaccine impact studies at these sites. He has supervised 37 PhD students and his publications includes over 500 manuscripts and books on various topics in paediatrics and infectious diseases. He chairs the UK Department of Health and Social Care's Joint Committee on Vaccination and Immunisation and the European Medicines Agency scientific advisory group on vaccines and is a member of WHO's SAGE.

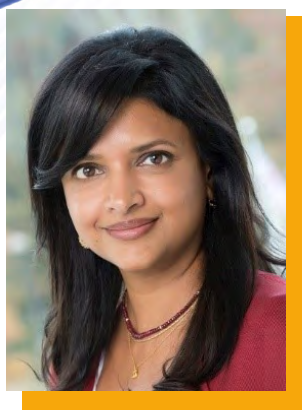
Biosketch
Jim ROTH

Iowa State University
United States

Jim Roth is a Distinguished Professor in the Department of Veterinary Microbiology and Preventive Medicine in the College of Veterinary Medicine at Iowa State University and a member of the US.

National Academy of Medicine. He received the DVM (1975) and PhD (1981) degrees from Iowa State University and is a Diplomate in the American College of Veterinary Microbiologists. He worked as a veterinarian in a mixed animal practice from 1975 until 1977. He is the Director of the Center for Food Security and Public Health and the Institute for International Cooperation in Animal Biologics; both are World Organization for Animal Health (OIE) Collaborating Centers. He has received five teaching awards and was named Clarence Hartley Covault Distinguished Professor in 1995. Dr. Roth's primary area of research expertise is immunity to infectious diseases of food producing animals. He has served as the major or co-major professor for 54 MS and PhD students. He has authored or co-authored more than 220 refereed journal articles and book chapters and has edited 16 monographs.

Dr. Roth received the Distinguished Veterinary Immunologist Award from the American Association of Veterinary Immunologists, the Distinguished Veterinary Microbiologist Award from the American College of Veterinary Microbiologists, the Public Service Award from the American Veterinary Medical Association, the USDA APHIS Administrator's award for lifetime achievements in animal health and the Senator John Melcher, DVM Leadership in Public Policy Award from the American Association of Veterinary Medical Colleges. Dr. Roth served on the Interagency Weapons of Mass Destruction (WMD) Counter Measures Working Group – Animal Pathogens Research and Development Subgroup (2003-2004), and the White House Office of Science and Technology Policy (OSTP) Blue Ribbon Panel on the Threat of Biological Terrorism Directed Against Livestock (Dec 2003- March 2004), (Chair, Immunotherapeutics Working Group).



Biosketch
Sangeetha SAGAR

Sanofi Pasteur
France

Sangeetha Sagar is an accomplished leader, scientist, product development expert, communicator, and biochemical engineer, with 25+ years' experience in vaccines and biologics.

She has led transformational global product prioritization and technical modernization initiative. Sangeetha has conceived, created and led end to end CMC organizations, including management, governance, technical reviews and problem solving, spanning pipeline (novels) and commercial products.

She has led transformational organizations to modernize and optimize commercial products. In her recent roles, she worked at Merck & Co., Inc. in all aspects of vaccines and biologics development and is currently the Head of CMC Innovation Technology and Quality at Sanofi Pasteur.

Biosketch
Melanie SAVILLE

Coalition for Epidemic Preparedness Innovations (CEPI)
United Kingdom

Melanie Saville joined the Coalition for Epidemic Preparedness Innovations (CEPI) in November 2017 initially as Head of Clinical development and now as Director Vaccine Development.

In her role, Melanie leads a technical team who have oversight of the CEPI funded vaccines in development. Melanie is a physician specialized in virology with 20 yrs of experience in the development and licensure of vaccines for the developed and developing world. Over the years, she has contributed to the development and licensure of several vaccines for seasonal and pandemic influenza, pediatric combinations, Rabies, Japanese Encephalitis and Dengue vaccine in Europe, US and the international area.

Joining Wyeth in 2000 in the UK, Melanie led the phase III clinical development of a live attenuated intranasal influenza vaccine. In addition, she contributed to several vaccine projects in early development involving adjuvants, immune modulators, viral vectors and conjugate technology.

In 2004 she joined Sanofi Pasteur in Lyon, France where she initially led the clinical influenza franchise having oversight of the clinical development of several differentiated seasonal influenza vaccine and pandemic vaccines. She then led the clinical development of a candidate dengue vaccine moving into phase III. Subsequently she became the Head of Clinical Development for a portfolio of vaccine projects managed out of the EU site. In 2013 she took on a broad role of Chief Medical and Clinical Officer Dengue having responsibility for the clinical development and licensure of the candidate Dengue vaccine.

Biosketch
Joseph Patrick SEVILLA

Harvard T.H. Chan School of Public Health
United States

JP Sevilla is a Senior Economist at Data for Decisions, LLC, an economics consultancy, and a Research Associate at the Harvard Chan School of Public Health in the United States. He is a health economist and works on the theory and empirics of the economic evaluation of vaccines.

He has received research funding from Pfizer, GSK, Merck, Sanofi Pasteur MSD, the Bill & Melinda Gates Foundation, and the World Health Organization. He has a Ph.D. in Economics from Harvard University.

Biosketch
Lone Simonsen

Roskilde University
Denmark

Lone Simonsen is a professor of population health sciences, at the Department of Science & Environment at Roskilde University in Denmark. She also holds a position as Research Professor in Global Health Epidemiology at George Washington University in DC.

She obtained a PhD in population genetics from University of Massachusetts, Amherst and later trained at the Centers for Disease Control (CDC) in infectious disease epidemiology. She was a senior epidemiologist at the National Institutes of Health, NIH in Maryland, USA, and later a senior fellow with the RAPIDD modeling research network at Fogarty-NIH. She is an elected member of the Danish Royal Academy of Sciences & Letters and of the American Epidemiological Society AES.

Over the past 25+ years she has worked as a researcher at the CDC, WHO and NIH on issues including unsafe medical injections, global patterns of HIV/AIDS, MDR-TB, pandemic threat evaluation (influenza, ebola, SARS etc), historical and contemporary pandemic influenza patterns, e-health, disease surveillance and vaccine program evaluation. She has published >200 papers, book chapters and commentaries, with a rich global network of collaborators.

She led a WHO multi-country effort to model the 2009 global pandemic mortality burden and co-organized an Ebola modeling workshop at the Fogarty-NIH, and delivered several key notes at international meetings about the Spanish Flu Centennial events in 2018. Her heart is in the study of signatures and mortality impact of historical epidemics, pushing back in time to get a better perspective on centuries of human experience with emerging threats.

Biosketch
Emmanuelle Soubeyran

VetAgro Sup
France

Emmanuelle Soubeyran has been appointed General Director of VetAgro Sup, a public institution of higher education and research, on 14 June 2016.

Emmanuelle Soubeyran is a veterinarian, graduated in 1990. She obtained a veterinary doctorate from the Toulouse Faculty of Medicine in 1993. After one year working in canine veterinary practice and 5 years living in Japan, she began her career in 1998 as a veterinary inspector at the Essonne and then Hauts-de-Seine departmental Veterinary Services directorates, from 2001 to 2003.

She then joined the Directorate General for Food (DGAL), where she was successively assistant (2002-2003), then office manager (2003-2007). She was technical advisor to the cabinet of Michel Barnier, Minister of Agriculture, from 2007 to 2009. In 2009, she became Deputy Director of quality and plant protection, then Head of Department for health actions in primary production, from 2010 to 2015, then Head of Food Services in 2015 and 2016.

Biosketch
Els TORREELE

Médecins Sans Frontière (MSF)
Switzerland

Els Torreele directs the Médecins Sans Frontières (MSF) Access Campaign, advocating to ensure that appropriate medicines, vaccines and diagnostics are developed, available, affordable and adapted to people's needs in MSF projects and beyond.

Torreele graduated as a bioengineer and obtained a PhD in biomedical sciences from the Free University Brussels. As R&D coordinator at the Flanders Interuniversity Institute for Biotechnology, she worked on innovation policy issues related to R&D agenda-setting, patenting of research, and the commercialization of biotechnology research. In 2000, Torreele joined the MSF Access to Essential Medicines Campaign in its pioneering years as chair of the Drugs for Neglected Diseases Working Group, a think tank to come up with new ideas to foster needs-driven R&D of treatments for diseases that primarily affect developing countries. A key outcome of this group was the creation in 2003 of the Drugs for Neglected Diseases initiative (DNDi), a nonprofit drug development organization which she joined as a founding team member.

At DNDi, Torreele was responsible for several R&D projects from discovery through clinical trials. In 2009, she joined the Open Society Foundations in New York to lead their Access to Medicines and Innovation work, advancing health and human rights in the area of medicines with a focus on transparency and accountability and supporting civil society voices in national, regional and global policy making that shapes access to medicines and innovation. She returned to MSF in March 2017 as their Access Campaign Executive Director.