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## **IMED 2016**

**New Emerging Health Threats:  
Zika Virus, MERS, Bird Flu  
and Antimicrobial Resistance**



**<http://imed.isid.org>**

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### Supplements:

#### USB-Stick :

- Press Information in English (and partly in German)
- High-resolution pictures

## **1. Welcome to the International Meeting on Emerging Diseases and Surveillance Global Conference to Examine Transmission, Prevention, and Reporting of Infectious Diseases New Emerging Health Threats: Zika Virus, MERS, Bird Flu and Antimicrobial Resistance**

**International Conference IMED 2016: November 4 – 7 in Vienna  
Transmission, Prevention, and Reporting of Emerging Infectious Diseases  
Hilton Vienna, Am Stadtpark 1, 1030 Vienna, Austria**

Since the last IMED, the International Meeting on Emerging Diseases and Surveillance in 2014, newly emerged diseases and outbreaks of familiar ones have continued to challenge doctors, researchers and parts of the population. The West African Ebola outbreak presented an unparalleled crisis of global proportions and there are many lessons yet to be learned from it. MERS coronavirus continued to challenge the Middle East, spreading dangerously in the healthcare setting, and showed its global threat with a major outbreak in the Republic of Korea, Zika Virus, which appeared in 2015 for the first time in America is a serious threat for pregnant women and the growing antimicrobial resistance is an obstacle to the adequate response to epidemics. The European migrant crisis has raised questions regarding the re-emergence of infectious diseases and the monitoring and screening of migrants arriving in Europe and elsewhere.

To explore and develop effective long term solutions that require global scientific exchange and cooperation, the International Society for Infectious Diseases (ISID) and its Program for Monitoring Emerging Diseases (ProMED) will convene the world's most renowned scientists, researchers, and thought leaders in emerging infectious diseases to present new data and discuss potential responses to emerging disease threats at the International Meeting on Emerging Diseases and Surveillance (IMED) from November 4 – 7 2016 in Vienna, Austria. The meeting fully embodies the "One Health" model of emerging diseases, recognizing the commonality of human, environmental and animal health.

New approaches to vaccination and isolation, the uses of novel data sources and genomics, novel laboratory methods, rapid point-of-care diagnostics, risk communication, political and societal responses to outbreaks have all seen innovation and change that will be explored at IMED 2016. There will be plenary sessions, invited symposia and roundtables, and both oral and poster presentations of submitted abstracts.

### **Planned Session Topics include:**

- Emerging infectious diseases in humans and animals and the "One Health" concept
- Global migration, refugee and immigrant health and questions regarding the re-emergence of diseases and screening of migrants to Europe and elsewhere
- Technology, big data and disease surveillance
- Ebola, Zika and beyond
- Antimicrobial resistance
- Future epidemics: drivers of emerging diseases, human-animal interface, ecosystems and environment
- Prevention of and response to emerging diseases and epidemics
- Advances in science and their applications: rapid and advanced diagnostics
- Data sharing during outbreaks and beyond
- Laboratory biosafety and agents of bioterrorism/biological warfare

### **Highlight Hackathon, November 3 to 5, 2016**

For the first time, IMED 2016 will be preceded by a hackathon. To accelerate the development of innovative approaches to detect, predict and prevent the next outbreak, the hackathon will bring together multidisciplinary teams to develop practice-oriented solutions at the intersections of climate change, migration, technology, medicine, the public and private sectors, and social economy. Prototype projects will be presented to an international audience during IMED.

Link: <http://www.hackathon.isid.org>

### **About IMED**

Since its beginning, IMED has been a health forum bringing together healthcare professionals of human and veterinary medicine, policy makers and researchers from around the world to discuss how to detect and

prevent emerging infectious disease threats. While new pathogens emerge, our methodologies to prevent, control and treat infectious diseases constantly evolve.

Link: <http://imed.isid.org>

#### **About ISID**

The mission of the International Society for Infectious Diseases (ISID) is to support infectious disease practitioners from around the world in their work to prevent the spread of infectious diseases and investigate and manage infectious disease outbreaks when they occur with a focus on countries that disproportionately bear the burden of infectious diseases. ISID has a membership of over 81,000 from 201 countries.

Link: [www.isid.org](http://www.isid.org)

#### **About ProMED**

The Program for Monitoring Emerging Diseases (ProMED) is one of the largest publicly available emerging disease and outbreak alert systems in the world. ProMED follows the One Health model of covering emerging diseases and toxin exposures in plant, animal, wildlife and humans. One of the early innovators in using informal information sources to identify unusual health events around the world, ProMED emphasizes transparency, is open to all sources, is free of political constraints, and is available to anyone free of charge.

Link: [www.promedmail.org](http://www.promedmail.org)

**More information**, including a list of speakers and topics: <http://imed.isid.org>

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[www.isid.org](http://www.isid.org)

[www.promedmail.org](http://www.promedmail.org)

## 2. IMED 2016 Highlights:

The Sixth International Meeting on Emerging Diseases and Surveillance, IMED 2016 is being held in Vienna, Austria from November 4 - 7, 2016.

Since its inception, IMED has been a summit that unifies our approach to pathogens in the broadest ecological context. Embracing the “One Health” model of emerging diseases that recognizes the commonality of human and animal health, IMED 2016 will once again bring leading human and veterinary health clinicians, scientists, and policy makers to Vienna to present new knowledge and breakthroughs and discuss how to discover, detect, understand, prevent, and respond to outbreaks of emerging pathogens.

The IMED 2016 is organized by the International Society for Infectious Diseases (ISID) and its Program for Monitoring Emerging Diseases (ProMED). Emerging infectious diseases are at the center of the world’s attention. The current threats posed by Zika, Yellow Fever, MERS, and pandemic influenza, the recent Ebola outbreak that devastated West Africa, and the realization that new infectious diseases may be recognized at any time, in any place, has dramatically increased public awareness of infectious diseases and underscored the need to understand emerging pathogens.

Important questions were raised by the Ebola outbreak and the current spread of Zika. What are the most important emerging disease threats? What biological, ecological, social, and other factors lead to their emergence? How can we quickly detect their occurrences in order to respond in timely and appropriate ways? In addition, as climate change and the ongoing global crisis of displaced persons pose new challenges, how will the infectious disease community address them? IMED 2016 will present new research and novel approaches that contribute to answering these questions.

### IMED Highlights:

IMED opens with plenary talks addressing **One World – One Health: Trans-Boundary Emerging Diseases in Humans, Animals and Wildlife** Co-chairs: **Jon Cohen (UK), Larry Madoff (USA)**

Friday, November 4, 2016 - 14:20-17:15hrs

AIDS, Avian flu, SARS, MERS, Ebola, Zika are diseases that originated in animals and passed to humans. While many of these have been well studied, there remain significant gaps in understanding the linkages of infection. An integrated ‘One Health’ framework to address these gaps and develop interventions to prevent current and future spillover of zoonotic diseases is needed. Newest developments, challenges in surveillance, and advances in understanding the origins of emerging diseases will be discussed during the opening plenary and opening session.

Ab Osterhaus will ask the question, “What next?” in regard to emerging diseases in humans, animals, and wildlife. With the majority of human infectious diseases originating from animals, emerging pathogens transmitting disease from animals to people presents a significant global health burden. Christine Kreuder Johnson’s plenary talk will focus on zoonotic spillover, amplification, and spread of diseases, and Rudovick Kazwala and Julio Pinto will examine zoonotic diseases at the human - domestic animal - wildlife interface and the prospects for development of disease surveillance and early warning system.

Additional sessions throughout the conference will cover topics related to the theme “**One World – One Health.**” These include:

- **Tracking Emerging Diseases** Co-chairs: *Paula Caceres (France), Marjorie Pollack (USA)*  
Saturday, November 5, 2016, 14:30-16:00hrs
- **The Farthest Reach: The challenge of Nomadic and Remote Populations to Emergency Response, Emerging Disease Surveillance, and Eradication** Co-chairs: *Rana Hajjeh (Egypt), TBD*  
November 5, 2016, 14:30-16:00hrs
- **Pandemic Preparedness and what we Learned from Ebola** Co-chairs: *Daniel Lucey (USA), Boubacar Maïga (Mali)*  
Saturday, November 5, 2016, 16:30-18:00hrs

IMED continues with sessions devoted to discussion of current outbreaks and innovations in disease detection including:

**Flaviviruses - an Expanding Global Threat** Co-chairs: *Oyewale Tomori (Nigeria), Laura Kramer (USA)*

Saturday, November 5, 2016, 08:30-10:30hrs

This session addresses the ongoing Zika virus epidemic in the Americas and other regions of the world and the Yellow fever virus outbreak in Africa; both are flaviviruses.

A major concern of the Zika virus epidemic is the association of maternal infection with birth defects, a complication that has not been seen with flavivirus infections in humans in the past. James MacLachlan will discuss what we can learn from animals where timing and pathogen genetics are critical in the development of central nervous system malformations.

Vanessa van der Linden, a pediatric neurologist from Recife, in North Eastern Brazil. Recife is among the areas hardest hit by the Zika epidemic. Dr. van der Linden was one of the first to recognize the microcephaly epidemic in North Eastern Brazil and has seen more than 70 babies with microcephaly and other congenital malformations since the start of the epidemic.

Gerardo Chowell will talk about the role of mathematical models in understanding the spread of the Aedes mosquito, the vector that transmits Zika virus and other flaviviruses such as dengue, chikungunya and yellow fever and how those models can help us understand an epidemic and predict how it will spread.

The session will end with a talk by Dr. Oyewale Tomori who will discuss the yellow fever re-emergence in countries in East and Central Africa and what can be done to control the outbreak. He will highlight the risk of yellow fever spreading to Asia, where Aedes mosquitoes, the vector that transmits yellow fever are abundant and the population has no protective immunity putting the region at high risk for an epidemic. To make things worse, supply of yellow fever is limited. As Dr. Tomori puts it "The absence of YF in Asia, despite the presence of an appropriate vector for urban transmission of the disease, remains an enigma."

**Epidemics Without Borders: From Challenges to Opportunities for Better Emergency Response** Chair: Marc Mendelson (South Africa)

Saturday, November 5, 11:00-11:45hrs

Rapid urbanization, mass population movements, climate change, and resistance to pesticides and available treatments can and will increase the risk of epidemics in the future, argues **Dr. Mercedes Tatay** from Doctors Without Borders. In her plenary talk on Saturday, Nov 5 she will discuss what it will take to prevent the next epidemic and how to close the gap between theory and practical implementation of emergency response measures.

**Tracking Emerging Diseases** Co-chairs: *Paula Caceres (France), Marjorie Pollack (USA)*

Saturday, November 5, 2016, 14:30-16:00hrs

The session "Tracking Emerging Diseases" will discuss innovations in disease surveillance. "There is a transformation of citizen engagement in public health through systems that enable users to directly report on symptoms of disease via email and smartphone technology" says Mark Smolinski, the Chief Medical Officer and Director of Global Health Threats at the Skoll Global Threats Fund. These new and innovative systems provide early warning for outbreaks and other health and safety issues, and have the potential to transform rapid risk assessment and epidemiological studies. Dr. Anna Thorner will talk about how physician's search terms can be used to detect outbreaks early on before cases are reported and confirmed.

**A Refugee's Journey from Insecurity to Stability** Co-chairs: *Giuseppe Cornaglia (Italy), Vladimir Krcmery (Slovakia)*

Sunday, November 6, 2016, 08:30-10:30hrs

The European migrant crisis has raised questions regarding the re-emergence of infectious diseases and the monitoring and screening of migrants arriving in Europe and elsewhere. In a session presented in collaboration with ESCMID, physicians from Germany and Turkey, both countries with a recent high influx of refugees, will talk about their countries' challenges and experiences in providing health care and preventive services to refugees and asylum seekers. They call for uniform screening practices and early access to primary and

specialized healthcare. They are joined by colleagues from Italy and Switzerland discussing the related topics of disease surveillance and tracing antibiotic resistance in mobile populations.

**Antimicrobial Resistance in the One Health Context Co-chairs: Jacques Acar (France), Damien Joly (USA)**

Monday, November 7, 2016, 08:30-10:30hrs

Antibiotic resistance is a major global public health concern and resistance is growing faster than new drugs are being developed. This session will examine antibiotic resistance in the One Health context recognizing that the health of humans is connected to the health of animals and the environment.

The focus of attention is expanding even further, from human and animal antibiotic use to the human influence on resistance in the environment. Dr. Ursula Theuretzbacher: "The link between the animal and human sector is well studied and led to policy changes in some parts of the world. Such regulatory initiatives are still missing in the environmental field which is usually not included in the One Health approach to tackle the global resistance problem." She also notes that "The direct release of multidrug resistant bacteria from healthcare settings and animal farms into the environment as well as the pollution of the environment with high concentrations of antibiotics create a dangerous resistance reservoir."

The importance of the food chain as a source for emergence and spread of antimicrobial resistance between animals and humans is highlighted in a nation-wide study in Lebanon. Dr. Matar denotes that a direct transfer of resistant determinants in bacterial clones from animal food products to humans was noted.

Derek MacFadden and his team created a web-based platform to support antibiotic resistance surveillance globally. The platform generates estimates comparable to traditional surveillance data and may prove useful in under-resourced regions that are disproportionately affected by the spread of antimicrobial resistance.

**The Farthest Reach: The challenge of Nomadic and Remote Populations to Emergency Response, Emerging Disease Surveillance, and Eradication Co-chairs: Rana Hajjeh (Egypt), Benson Estambale (Kenya)**

November 5, 2016, 14:30-16:00hrs

In this session, we will learn about how migration, whether among traditional nomadic peoples, the victims of natural disasters or conflicts, or those seeking greater economic opportunity, affects public health. Joel Montgomery will discuss the challenges nomadic and remote populations pose to emergency response, emerging disease surveillance, and efforts at infectious disease eradication. Victoria Gammino will offer an interdisciplinary approach to the evaluation of health care access among nomadic populations in Northeastern Kenya and its effect of disease eradication and elimination. Joseph Amon will examine the challenges posed by climate change and migration and the need to develop effective strategies to reach mobile populations across various public health, outbreak response, disease control and elimination programs.

### 3. General Information

#### What are emerging infectious diseases?

An emerging infectious disease is an infectious disease that has newly appeared in a population or that has been known for some time but is rapidly increasing in incidence or spreading to new geographic areas. If the disease had been present at the location in the past and was considered eradicated or controlled, the disease is considered to be re-emerging.

Examples of new human infections:

- MERS-CoV
- Avian Influenza
- West Nile fever
- Rift Valley fever

Examples of infections affecting different populations and regions than in the past:

- Dengue fever
- Chikungunya
- Ebola
- Lyme disease

Examples of re-emerging infections:

- Infections related to antimicrobial resistance such as MRSA, gram-negative infections and syphilis

Factors that contribute to disease emergence include population growth, changes in land use, deforestation, climate change, international travel and trade, and under-funded public health systems.

Not every newly identified infectious disease outbreak has major public health implications, but a few have resulted in significant morbidity and mortality as well as significant economic losses and interruptions in trade and travel (Avian influenza, Ebola).

The majority of emerging infectious diseases in humans are zoonotic infections caused by viruses.

#### What are zoonotic infections?

Zoonotic infections are diseases that pass from animals to humans.

Examples include:

- Rabies
- West Nile fever Virus
- Ebola
- Salmonella
- Avian Influenza

When it comes to carrying viruses that can jump from one species to another, bats stand out. Bats are the natural host species for Ebola and a variety of viruses, many of which can be fatal when transmitted to humans. More than 100 viruses have been identified in bats and this number is rising each year.

#### What is the One Health concept?

The One Health concept recognizes that the health of people is closely linked to the health of animals and the environment. Plant diseases affect food security and the economy with consequences for animal and human health; animal diseases affect human health indirectly through food security and directly through zoonotic diseases and the economy; and human diseases affect animals directly through reverse zoonosis and indirectly



through neglect. The One Health approach encourages the collaborative efforts of the human health, veterinary health, and environmental health communities working locally, nationally, and globally, to achieve optimal health for people, animals, and our environment.

The One Health concept has become more important in recent years because many factors such as population growth, globalization of commerce, finance, production, and services, environmental changes such as climate change and deforestation, ever-increasing movement of people, animals, plants, food, and feed have altered the interactions among humans, animals, and the environment. These changes have caused the emergence and reemergence of many diseases.

The World Health Organization (WHO), the Food Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE), the Centers for Disease Control (CDC), and the European Union all support the adoption of the One Health approach to respond to emerging infectious diseases and outbreaks. Without a One Health approach to understanding all the inter-related factors affecting transmission and spread of emerging infectious diseases, prevention, management and elimination will remain beyond our reach.

The Program on Monitoring Emerging Infectious Diseases (ProMED) and the International Meeting on Emerging Diseases (IMED) strongly support the One Health concept. ProMED-mail covers emerging and re-emerging infectious diseases and toxic exposures of interest to the plant, animal, and human health sectors. IMED brings together experts of multiple disciplines - infectious diseases physicians, veterinarians, public health officials, plant biologists, virologists, environmental scientists and microbiologists - to come up with solutions to address the challenges and threats posed by emerging infectious diseases.

#### **What is disease surveillance?**

Disease surveillance is the ongoing collection, validation, analysis, and interpretation of health and disease data that are needed to develop plans and implement strategies relevant to the prevention and control of diseases and disease outbreaks.

#### **Why is disease detection important?**

The detection of disease - whether it is termed “emerging” or not - is critical for monitoring public health and informing decision makers as they respond to outbreaks. Surveillance systems are necessary for forecasting future events, outbreaks, disease incidence, morbidity, and mortality, and are essential for evaluating the efficacy and cost-effectiveness of response and containment strategies. Although these actions are often viewed in terms of human public health, they also apply to plant and animal health.

#### **What are traditional methods for disease surveillance?**

Disease surveillance traditionally begins with health care providers such as physicians, veterinarians, infection control practitioners, laboratorians, and medical examiners. These professionals are required by local and state health codes to report cases of certain specified infectious disease, referred to as “notifiable” diseases. Health department officials verify the disease reports they receive, track disease incidence, monitor trends to identify possible outbreaks, disseminate information, and, when necessary, issue alerts.

#### **What are the limitations of traditional disease surveillance?**

While traditional surveillance remains the backbone of public health surveillance for communicable diseases, it has proven to be less effective in ensuring prompt recognition of emerging problems.

Burgeoning globalization of commerce, finance, production, and services has fostered ever-increasing movement of people, animals, plants, food, and feed. With the freedom of passage of people and goods comes the widespread dispersion of the microbes that cause infectious diseases. Outbreaks that begin in the most remote parts of the world now spread swiftly to urban centers in countries far away. Rapid recognition and response to potential pandemics and emerging diseases have become essential global health priorities, but public health efforts to expand and improve the collection of data and speed the sharing of information have lagged behind, hindered by the failure of the economic and trade sectors to embrace the urgency of supporting a parallel globalization of public health. In addition, delays in the reporting of data through official channels can negatively impact the timely communication of vital information.

This is where non-traditional forms of disease surveillance become important.

What is non-traditional disease surveillance?

Non-traditional disease surveillance is defined by the CDC as the collection and analysis of health-related data that precede diagnosis and signal with sufficient probability of a case or an outbreak to warrant further public health response.

The rapid global reach in telecommunications and internet access allows public health professionals, physicians, nongovernmental organizations and the public to communicate quickly and effectively. Reports on disease outbreaks can now be published earlier than confirmed by official sources, challenging national disease surveillance authorities which were once the sole source of such information.

#### **What are non-traditional forms of disease surveillance systems?**

Critical components of non-traditional surveillance systems include broad sources of information, personnel trained in field epidemiology and digital disease detection, and regional and interdisciplinary networks of infectious disease stakeholders to foster communication and coordinated response.

Examples of systems for non-traditional disease surveillance include:

- ProMED (International Society for Infectious Diseases)
- EpiCore (International Society for Infectious Diseases)
- HealthMap (Children's Hospital, Harvard Medical School)
- Global Public Health Intelligence Network (GPHIN- Public Health Agency of Canada)
- Medisys (European Union)

#### **What is ProMED-mail, the System for Monitoring Emerging Diseases?**

The International Society for Infectious Diseases' (ISID) Program for Monitoring Emerging Diseases (ProMED), is one of the largest publicly available emerging disease and outbreak alert systems in the world. ProMED-mail publishes via the Internet reports of infectious disease outbreaks and toxic exposure incidents with commentaries from a worldwide staff of expert moderators on a real-time basis around the clock. One of the early innovators in using non-traditional/informal information sources to identify unusual health events around the world, ProMED's guiding principles include:

- Transparency and a commitment to the unfettered flow of outbreak information
- Freedom from political constraints
- Free availability to all
- Commitment to One Health
- Service to the global health community

ProMED-mail's reach has increased every year since its founding in 1994, and now extends to over 70,000 subscribers with readership in every country on the globe. ProMED reports are also available through its website, Twitter, Facebook, and RSS feeds. Intensive users of ProMED include international, federal, and

regional public health agencies (CDC, WHO, OIE, ECDC, FAO, etc.), NGOs, news media, physicians, veterinarians, researchers, travel clinics, pharmaceutical and vaccine manufacturers, biosecurity firms, and many others. In addition to its global English-language service, ProMED has also built regional networks in the Middle East and North Africa, East and Southern Africa, and South Asia, and offers local language coverage of emerging infectious diseases in the Portuguese- and Spanish-speaking countries of Latin America, in Francophone West Africa, and in the Russian-speaking independent states of the former Soviet Union.

Learn more about ProMED at [www.promedmail.org](http://www.promedmail.org)

### **How can we stop outbreaks?**

Barring the complete elimination of specific microbes from the environment (such as the successful effort to eradicate smallpox), we probably cannot prevent outbreaks of infectious disease. However, we can contain the spread of disease even in a profoundly interconnected world. To do so requires that we make plans for appropriate and efficient responses when outbreaks do occur, prepare health workers through training and practice, and earmark financial reserves to support active vigilance for signs of outbreak, speedy recognition of its presence, rapid diagnosis of its microbial cause, and coordinated global implementation of strategies and resources.

### **The International Society for Infectious Diseases (ISID)**

ISID is a global, not for profit, professional member organization with more than 80,000 members from every country in the world.

The mission of ISID is to support health professionals, non-government organizations, and governments around the world in their work to prevent, investigate, and manage infectious diseases and outbreaks when they occur. This is done through initiatives such as the Program for Monitoring Emerging Diseases (ProMED), scientific conferences, a research journal, small grant programs, and networking support for professionals. ISID's work focuses on countries that are resource limited and disproportionately bear the burden of infectious diseases.

Recognizing that infectious diseases cross all political and geographic boundaries, effective long-term solutions to understanding, monitoring, and controlling emerging and re-emerging disease outbreaks necessitate international scientific exchange and cooperation.

<http://www.isid.org>

## 4. Zika Virus Disease Fact Sheet

Information is current as of October 17, 2016

### What is Zika Virus Disease?

Zika virus (ZIKV) disease is a mosquito borne illness that was declared a public health emergency of international concern by the World Health Organization because of its link to birth defects such as microcephaly and other central nervous system malformations.

As of 22 Sep 2016, 72 countries and territories have reported evidence of vector-borne Zika virus transmission. Regions with the highest case numbers are South and Central America followed by the Western Pacific Region.

### What causes Zika virus disease?

Zika virus disease is caused by a Flavivirus. It was first isolated in 1947 from a monkey in the Zika forest in Uganda.

### How is Zika virus transmitted?

Zika virus is primarily transmitted to people through the bite of infected Aedes mosquitoes, the same mosquitoes that also transmit dengue, yellow fever and chikungunya virus. These mosquitoes are aggressive daytime biters but can also bite at night.

Additional ways of transmission have been identified and include:

- Materno-fetal transmission – the virus can be passed to the fetus by the mother
- Sexual transmission - documented in several instances

There is a potential risk of Zika virus transmission through blood transfusion and organ transplantation.

### Zika virus has been around for more than 50 years, what is different now?

Before 2007, regions with reported Zika virus circulation included tropical Africa and South East Asia. The first documented outbreak detected outside of Asia and Africa was on Yap island, Federated States of Micronesia in 2007. Between 2013 and 2015, several outbreaks were reported from islands in the Pacific Region, including a large outbreak in French Polynesia. In 2014/15, Zika virus emerged in South America.

There are two factors that contribute to the rapid transmission and high case numbers in South America:

- The Aedes mosquito that transmits Zika virus is widespread in the region
- The entire population is susceptible (lacking defense) to the virus since this is a new virus to the region

### What are the symptoms?

Most infected individuals remain asymptomatic. If symptoms develop, they are usually mild and short lasting, from 2 to 7 days. The most common symptoms include a skin rash, mild fever, fatigue, conjunctivitis, headache and joint or muscle pain.

Neurological and autoimmune complications are infrequent, but have been described in the outbreaks in Polynesia, in Brazil and, more recently, in other countries of the region.

Unusual increases of Guillain–Barré syndrome (GBS) incidence, coinciding with the Zika virus outbreaks, have been documented in several countries in the Americas and French Polynesia. GBS is a rapid-onset muscle weakness that initially involves the arms and legs and can also affect the muscles that control breathing requiring mechanical ventilation. Symptoms can last from weeks to several months and sometimes prove fatal.

Zika virus infection during pregnancy can cause severe birth defects, including microcephaly and severe fetal brain abnormalities, ophthalmologic (eye) and hearing abnormalities.

### **Who is at risk of getting Zika virus disease?**

You can be exposed to Zika virus by:

- Traveling to or living in an area where there is epidemic or endemic Zika virus transmission
- Having sex with a partner who has traveled to or lived in an area with epidemic or endemic Zika virus transmission
- Receiving a blood transfusion/organ transplant from a donor with Zika virus disease.

### **What about sexual transmission of Zika virus?**

Sexual transmission of Zika virus has been documented in several instances.

The World Health Organization (WHO) recommends that:

- Men and women returning from areas where transmission of Zika virus is known to occur should adopt safer sex practices or consider abstinence for at least 6 months upon return to prevent Zika virus infection through sexual transmission.
- Couples or women planning a pregnancy, who are returning from areas where transmission of Zika virus is known to occur, are advised to wait at least 6 months before trying to conceive to ensure that possible Zika virus infection has cleared.
- Sexual partners of pregnant women, returning from areas where transmission of Zika virus is known to occur, should be advised to practice safer sex or abstain from sexual activity for at least the whole duration of the pregnancy.

### **How is Zika virus disease diagnosed?**

Diagnosis is primarily based on the detection of viral RNA from clinical specimens (mainly blood, urine and cerebrospinal fluid) allowing for direct virus detection during the first 3 to 5 days after the onset of symptoms. Serological testing can be conducted from day 5 after the onset of disease by detection of Zika-specific IgM antibodies followed by confirmatory tests. Results of serological testing must take into account exposure to other flavivirus infections such as dengue, West Nile and Japanese encephalitis.

Testing for Zika virus is difficult and needs to be improved.

### **Is there a vaccine to prevent Zika virus disease?**

There is no approved vaccine currently but research is ongoing.

### **Are there drugs to treat Zika virus disease?**

Currently, there are no drugs (e.g. antivirals) approved to treat Zika virus disease.

### **If there are no drugs approved for Zika virus disease, how are patients treated?**

Symptoms of Zika virus disease are being treated as they appear and include good hydration, pain relief, and anti-histamines for pruritic rash.

Severe cases of GBS might require intensive medical measures including mechanical ventilation.

Children born with severe forms of congenital Zika syndrome will likely need lifelong services from specialists including neuropediatricians, ophthalmologists, psychologists and nurses. The emotional, social, and economic impacts on the families from the long-term care required for those children will be enormous.

### **Should I travel to countries with Zika virus transmission?**

Pregnant women and women who are planning to become pregnant should postpone non-essential travel to areas with local transmission and those countries with adjacent borders where limited information is available to fully evaluate the risk of Zika virus infection. Other travelers are advised to protect themselves from mosquito bites.

### **How can I protect myself when traveling to a region with Zika virus transmission?**

Personal protection measures to avoid mosquito bites should be applied when in risk areas including use of mosquito repellents in accordance with the instructions indicated on the product label, wearing long-sleeved

shirts and long trousers to cover as much of the body as possible, sleeping in screened rooms, and use of insecticide-treated mosquito nets, even during the day. It is also advised to remove mosquito breeding sites in nearby outdoor/indoor premises.

**What to expect – when will the epidemic be over?**

Cases of ZVD will decrease in a region once a large proportion of the population has been infected and developed immunity and mosquito control measures have been successful. Researchers think that the epidemic in South America will be over within the next two years. However, small, localized outbreaks of Zika will continue to occur and it is important to acknowledge that Zika virus is now established in many regions of the world where it was not present previously.

**What needs to be done?**

It is crucial to invest in research to further understand the disease and its complications, improve diagnosis and develop a vaccine to protect vulnerable populations, especially women of childbearing age. The open sharing of data and results is essential.

Recognizing cases in new regions early on is vital to controlling the further spread. Equally important is the monitoring of the spread of Aedes mosquitoes around the globe. Mosquito breeding sites needs to be identified and eliminated and information needs to be provided to the public on how to avoid mosquito bites.

Testing and information needs to be provided to pregnant women and couples who wish to conceive, resources need to be provided to families with babies born with congenital Zika syndrome and these children need to be followed closely to understand the long-term sequelae of congenital Zika syndrome.

**Where can I get more information?**

European Centers for Disease Control (ECDC) <http://www.ecdc.europa.eu>

World Health Organization (WHO) <http://www.who.int>

U.S. Centers for Disease Control (CDC) <http://www.cdc.gov>

## 5. IMED 2016 Hackathon for healthcare innovation

The International Society for Infectious Diseases has partnered with the Zentrum fuer Public Health (MedUni Wien) and the Massachusetts Institute of Technology (MIT) Hacking Medicine to host the IMED 2016 Hackathon for healthcare innovation. Over 100 physicians, public health professionals, IT developers, engineers, and veterinarians from more than 52 countries will create programs at the nexus of information technology and healthcare that predict and visualize infectious disease outbreaks in relation to climate change. Small teams of four or five professionals will be mentored by entrepreneurs, healthcare providers, and start-up funders as they race against the clock to create the next breakthrough in infectious disease medicine. This event is the first healthcare hackathon of its sort in Austria.

MIT Hacking Medicine has facilitated over 80 innovation and entrepreneurship events around the world over the past 5 years including a healthcare-oriented hackathon in April 2016 that attracted attendees representing over 300 organizations from 22 different countries, the largest ever held. These events have inspired the formation of nearly 20 active companies that have raised over \$100M in funding. "We believe that entrepreneurship is entirely teachable," says MIT's Chris Lee, "regardless of whether you are an engineer, scientist, epidemiologist, clinician, designer, or developer."

The International Meeting on Emerging Diseases and Surveillance will bring leading scientists, clinicians, and policy makers to Vienna to present new knowledge and breakthroughs and discuss how to discover, detect, understand, prevent and respond to outbreaks of emerging pathogens. "Newly emerged diseases have continued to challenge us," notes Dr. Britta Lassmann, Program Director for ISID, "Ebola presented a crisis of global proportions, MERS spreading dangerously in the healthcare setting has continued to challenge the Middle East, and Zika virus has spread widely and proven to play a frightening role in fetal malformation. Nurturing connections between health experts, engineers, and entrepreneurs will open new avenues for addressing infectious disease that affect billions of people."

At the end of this two-day event, teams will present their prototype projects to a panel of judges. The winning team will be awarded the *Elsevier Grand Prize* of \$1,500 USD. Other top scoring teams will be offered workspace at the sektor5 startup incubator in Vienna and acceptance to the 5starts funding challenge this January. All teams will be encouraged to continue to work on their projects after the Hackathon and teams that demonstrate progress toward their goal will compete for the ProMED-mail Award, to be presented in mid-January 2017, that consists of \$1,000 USD and direct access to ProMED-mail's network of infectious disease and public health moderators as they work to turn their prototype into a fully developed program.

For event updates and to follow team progress, visit: [www.hackathon.isid.org](http://www.hackathon.isid.org) and follow us on twitter @ISID\_meetings.

## 6. About Speakers and Interview Partners



**Gerardo Chowell, Ph.D.** is a Second Century Initiative Scholar (2CI) and a tenured Associate Professor of Epidemiology and Biostatistics at Georgia State University. He is also a Senior Fellow in the Division of International Epidemiology and Population Studies at the Fogarty International Center, NIH. Dr. Chowell holds a PhD in Biometry from Cornell University. After obtaining his PhD, he was awarded a Director's Funded Postdoctoral Fellowship to support his mathematical modeling research program at the Theoretical Division of Los Alamos National Laboratory. Dr. Chowell's academic career has primarily focused on the development and calibration of mathematical and computational models of infectious disease transmission to assess the transmission potential of emerging and re-emerging infectious diseases, generate disease forecasts, quantify the effect of control interventions, and test public health policy. Dr. Chowell has published over 130 peer-reviewed articles.



**Dr. Peter Daszak, Ph.D.**, is President of EcoHealth Alliance, a US-based organization that conducts research and outreach programs on global health, conservation and international development. His research focuses on the origins of emerging diseases, and on strategies to reduce the risk of new EIDs and benefit conservation. Dr Daszak is Editor-in-Chief of *EcoHealth*, a member of the editorial board of *One Health*, and is a member of the IOM's Forum on Microbial Threats, the NRC Advisory Committee to the US Global Change Research Program, and the Supervisory Board of the One Health Platform. He has authored over 300 scientific papers.



**Mosoka P. Fallah, PhD, MPH, MA** cannot attend because of visa issues! (Principal Investigator/Survivor Natural; History Study/NIAID/NIH; Founding Director, National Public Health Institute of Liberia, Ministry of Health; Founder/CEO, Refuge Place International/USA a. Liberia; Chairman, Biochemistry Department, A.M. Dogliotti College of Medicine, University of Liberia; Ebola Response/Public Health Consultant; Action Contre La Faim). Mosoka P. Fallah, PhD, MPH, MA is a public health consultant and was recently made a Visiting Scientist in the Department of global health and Population at the Harvard School of Public Health. He has recently being made the Principal Investigator for the largest Cohort study on Ebola Survivor in Liberia. During the Ebola crisis in Liberia he served as the Head of Case Detection in the Montserado Incident Management System



administering critical aspects of Liberia's Ebola response. In this capacity he has been providing technical support to the Montserrado County Health Team since the inception of the Ebola epidemic. Dr. Fallah provides training for surveillance, contact tracing, case management, and community mobilization. He was instrumental in developing the training of trainers workshops for health workers across the national response. In particular, Dr. Fallah recently lead contact tracing efforts to contain the St. Paul Bridge Cluster, a 22 case EVD cluster between December 2014 and February 2015 that may be one of the last active transmission lines of transmission in Liberia.

He is a member of the Harvard Global Health Institute and the London School of Hygiene and Tropical Medicine Independent Panel on the Global Response to Ebola, which includes Peter Piot, the co-Discoverer of Ebola, Chelsea Clinton and Julio Frenk, Dean of the Harvard Chan School of Public Health.

Previously, Dr. Fallah provided extensive consultancies in the areas of social science, public health, biomedical and translational research at top tier universities in the United States and in Liberia. He has experience in international development work including serving as a consultant on a USAID-funded project with Indiana University and the Liberia Ministry of Health and Social Welfare develop a program for the training of mid-level public health staff. Many of the students from his program are currently leading major Ebola response efforts throughout Liberia in surveillance and contact tracing. He has worked extensively with the Ministry of Health and Social Welfare of Liberia, medical centers, and other nonprofit organizations to initiate this flagship program in Liberia.

Dr. Fallah received his Doctor of Philosophy in Microbiology, Immunology, and Molecular Genetics from the University of Kentucky College of Medicine (2011); a Master of Public Health from the Harvard School of Public Health (2012); a Master of Arts in Evaluation and Measurement from Kent State University (2006); and a Bachelor of Science in Chemistry/Biology from the University of Liberia (2001). Dr. Fallah was a highlighted recipient of Time Magazine's title of Person of the Year in 2014 as an Ebola Fighter.



**Professor Kazwala** is a graduate of BVSc at Sokoine University of Agriculture, MVM (University College Dublin, Ireland) and PhD (University of Edinburgh, UK). He is the Professor of Ecosystems and Public Health in the Department of Veterinary Medicine and Public Health, College of Veterinary and Medical Sciences, Sokoine University of Agriculture, Morogoro, Tanzania. Prof. Kazwala is involved in a number of research projects particularly in area of bacterial and viral zoonoses. Prof. Kazwala has supervised more than 40 postgraduate students in over 15 research projects, and has published more than 100 articles in international journals. Prof. Kazwala is the Chairman of Veterinary Council of Tanzania, and is a member of the Tanzania Food and Drug Authority, Food Technical Committee. In addition, Prof. Kazwala supported the development of the Livestock Sector Development Strategy for Tanzania.

Prof. Kazwala is a member of the International Health Regulations, Roster of Experts in Veterinary Issues, Zoonoses, and coordinates the Bovine Tuberculosis Network for Africa

Since 2009, Prof. Kazwala has led the USAID Emerging Pandemic Threats Program PREDICT Project in Tanzania, supporting the development of a wildlife disease surveillance and early warning system for high-risk viral pathogens, and overseeing the development of a new molecular laboratory for emerging infectious diseases and pathogen discovery at Sokoine University of Agriculture.

**N. James Maclachlan** is Distinguished Professor in the School of Veterinary Medicine, University of California, and Extraordinary Professor in the Department of Veterinary Tropical Diseases, University of Pretoria, Republic of South Africa. He received his veterinary degree (BVSc) from Massey University, New Zealand, an MS in Microbiology (Virology) from the University of Missouri, and a PhD in Comparative Pathology from the University of California. Dr. Maclachlan is a diplomate and past-President of the American College of Veterinary Pathologists. Dr. Maclachlan studies viral diseases of animals, especially emerging viral diseases and including those that cause teratogenic defects following congenital infections.



**Dr. Barbara Mahon, MD, MPH**, received her undergraduate degree from Harvard, her medical degree from the University of California, San Francisco, and her public health degree from the University of California, Berkeley. She trained in the Epidemic Intelligence Service at the US Centers for Disease Control and Infection. She is a board-certified pediatrician and infectious disease epidemiologist with expertise in surveillance and outbreak control for vaccine-preventable diseases, enteric diseases, and sexually transmitted diseases. She has worked in several leadership positions in CDC's response to the Ebola epidemic since 2014, most recently as the CDC principal investigator for the Sierra Leone Trial to Introduce a Vaccine against Ebola (STRIVE).



**Dr. Ghassan M. Matar, Ph.D.**, is currently a Professor and Vice Chair in the Department of Experimental Pathology, Immunology & Microbiology and Laboratory Director of the Center for Infectious Diseases Research at the Faculty of Medicine, American University of Beirut (AUB). Professor Matar received his PhD in Basic Medical Sciences (Microbiology) from AUB and was a post-doctoral fellow (Fulbright) at the Centers for Disease Control Prevention (CDC) and Department of Microbiology and Immunology, Emory University in Atlanta, Georgia, USA. He was then appointed as Research Microbiologist at the Division of Bacterial and Mycotic Diseases, CDC. Professor Matar was also appointed as Assistant Dean at the Faculty of Health Science, AUB. In addition, he serves on Faculty of Medicine (FM) and University wide committees at AUB, in WHO as resource advisor in the Advisory Group on Integrated Surveillance of Antimicrobial Agents (AGISAR), and as American Society for Microbiology (ASM) Ambassador to Lebanon and Chair of ASM Ambassador Leadership Circle. Professor Matar's Laboratory is also a PulseNet Laboratory certified by CDC/NAMRU3. To present he served as an academic advisor to 40 graduate students, published 99 articles in reputable refereed international journals and presented 117 abstracts in international, regional and local conferences. Professor Matar received funding from various extramural sources such as: CDC, U.S. Department of Defense (DOD), WHO/AGISAR, PulseNet (CDC, WHO, MOPH) and others. Professor Matar's research interests include: 1) Molecular mechanisms of resistance to antimicrobial agents in pathogenic bacteria, namely methicillin resistance in *S. aureus*, macrolide resistance in *S. pneumoniae* and carbapenem resistance in ESBL and non-ESBL producing Enterobacteriaceae, 2) Potential Treatment with antibacterial agents singly or in combination of *E. coli* O157:H7 and *E. coli* O104:H4 infections in a mouse model, 3) Genetic basis of biofilm production in *P. aeruginosa* isolated from patients with nosocomial infections and potential inhibition of biofilm formation by antifungal agents in *in vitro* and *in vivo* studies, 4) Expression levels of virulence factors produced by pathogenic bacterial agents in relation to disease production, 5) Molecular epidemiology of foodborne diseases and nosocomial infections, 6) Assessment of combination therapy in infections caused by carbapenem resistant Enterobacteriaceae harboring various carbapenemase encoding genes, 7) Molecular characterization of *Listeria monocytogenes* from food items.

**Ziad Memish** is appointed Professor of Medicine at the Alfaisal University, Riyadh, Kingdom of Saudi Arabia and Adjunct Professor, in the Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, USA. He received his medical degree in Canada in 1987, completing both residency and fellowships (1987-93) at the University of Ottawa. Following this he returned to Saudi Arabia he was appointed head of Infectious Disease and chairman of Infection Control at the Saudi Arabian National Guard Health Affairs. From 2012 to 2014 he was appointed the first Deputy Minister of Health for Public Health in the Saudi Arabian Ministry of Health. He oversaw the MERS-CoV investigation in KSA.

**Dominique L. Monnet** joined ECDC in October 2007 to lead ECDC's Disease Programme on Antimicrobial Resistance and Healthcare-Associated Infections. He is also representing ECDC in the EU-US Transatlantic Task Force on Antimicrobial Resistance (TATFAR). Before joining ECDC, he worked in French hospitals, at the US Centers for Disease Control and Prevention (1993-1995) and at the Danish Statens Serum Institut (1997-2007) where he was coordinating surveillance of antimicrobial resistance and antimicrobial consumption in humans in Denmark.



**Prof. Dr. Patricia Schlagenhauf, PhD, FFTM, RCPSG (Glasgow)**, is a Professor and Senior Scientist at the University of Zürich, WHO Collaborating Centre for Travellers' Health, Institute for Epidemiology, Biostatistics and Prevention. Her research interests are epidemiology and prevention of travel-associated illness, mosquito-borne illness and gender issues in travel medicine. As part of the GeoSentinel Global Leadership Team she chairs the Tracking-Communications group. She is Editor-in-Chief of the *Journal of Travel Medicine and Infectious Disease* and has authored many travel medicine papers and books.



**Dr. Mark Smolinski, MD, MPH**, is the Chief Medical Officer and Director of Global Health Threats at the Skoll Global Threats Fund in San Francisco. Mark leads a team that is Ending Pandemics in our lifetime by applying technology to find, verify, and report outbreaks faster. Mark has worked for 25 years fighting emerging diseases across the globe. He is a medical doctor trained at the University of Michigan in Ann Arbor and is Board Certified in Preventive Medicine and Public Health from the University of Arizona in Tucson. Mark's past work includes the start up Google.org, the Nuclear Threat Initiative, the National Academy of Medicine, and Advisor to the World Health Organization and the U.S. Surgeon General.

**Paul Anantharajah Tambyah** is Professor of Medicine and Senior Consultant Infectious Diseases Physician in Singapore. After completing medical school in Singapore and military service in the Singapore Armed Forces, he trained in Infectious Diseases at the University of Wisconsin with Dr Dennis Maki. Since returning to Singapore nearly two decades ago, he has served on a number of national and international committees including the board of the Society of Healthcare Epidemiology in America and as President of the Society of Infectious Diseases (Singapore). He is currently Secretary-General of the Asia Pacific Society of Clinical Microbiology and Infection and also an EXCO member of the International Society of Infectious Diseases. He has been a member

of the joint WHO-KSA mission on MERS and has published extensively on device associated infections and emerging infectious diseases including SARS, Nipah and pandemic influenza.



**Dr. Ursula Theuretzbacher, Ph.D.**, is founder and principal of the Center for Anti-Infective Agents in Vienna, Austria, since 1988. A microbiologist by training, she dedicated her professional life to antibacterial and antifungal drug R&D as well as appropriate and optimized usage of these drugs. She focuses on resistance and dosing issues from the early development phase to the use of old and new drugs in clinical practice. She currently focuses on R&D strategies and policies.

Ursula Theuretzbacher is currently work package leader in the multinational collaborative EU funded project AIDA (Re-developing old antibiotics) and in the multinational public-private partnership project DRIVE-AB (Incentivizing antibacterial drug R&D, funded by the EU Innovative Medicines Initiative=IMI) and partner in the IMI project COMBACTE-MAGNET (Developing new molecules against Gram-Negative Infections). Ursula Theuretzbacher is currently President of the Society of Anti-Infective Pharmacology (ISAP) and Founding President of the ESCMID (European Society of Clinical Microbiology and Infectious Diseases) PK/PD of Anti-Infectives Study Group (EPASG). She is chair of a policy and scientific study group of the International Society of Chemotherapy (ISC), Member of the Executive Committee of the International Society of Infectious Diseases (ISID) and member of the ECCMID Programme Committee. She has published widely read text books on clinical microbiology and authored and/or co-authored reviews, book chapters, research papers on resistance, PK/PD, and antibacterial and antifungal agents



**Oyewale Tomori** is the President of the Nigerian Academy of Science with experience in the area of virology, disease prevention and control. Dr. Tomori has served on numerous WHO advisory committees, among them WHO Africa Regional Polio Certification Committee, WHO Group of Experts on Yellow Fever Disease, Chairman WHO Yellow Fever Emergency Committee on International Health Regulations (IHR) and the Steering Committee of the International Consortium on Anti-Virals, ICAV, Canada. In 1994, he was appointed as the Regional Virologist for the WHO Africa Region where he served for ten years, establishing the African Regional Polio Laboratory Network. In 2002 he received the Nigerian National Order of Merit, (NNOM), the country's highest award for academic and intellectual attainment and national development, and in 1981 was recognized by the Center for Disease Control and Prevention for his contribution to Lassa Fever research. Dr. Tomori has extensive knowledge on viral infections, among them Lassa Fever, Yellow Fever, and Ebola Hemorrhagic Fever. He was recently in October 2016, elected an international member of the US National Academy of Medicine

**Effy Vayena, Ph.D.**, is the division head of the Health Ethics and Policy Lab in the Department of Public Health at the University of Zurich. From 2000-2007 she worked at the World Health Organization, focusing on ethical and policy issues relating to reproductive health, and assisted reproduction as well as on health research ethics. She remains a consultant to the World Health Organization and is a visiting faculty member at the Harvard Center for Bioethics, Harvard Medical School and faculty associate at the Berkman Klein Center for Internet and Society at Harvard Law School. In 2015 she was named a Swiss National Science Foundation professor of health policy. Vayena's current research focus is on ethical and policy questions in personalized medicine and digital health. At the intersection of multiple fields, she relies on normative analyses and empirical methods to explore how values such as freedom of choice, participation and privacy are affected by recent developments in personalized medicine and in digital health. She is particularly interested in the issues of ethical oversight of research uses of big data, ethical uses of big data for global health, as well as the ethics of citizen science. Using the ethics lens in innovative ways, her work aims to provide concrete policy recommendations and frameworks that facilitate the use of new technologies for a better and more just health system. Vayena studied medical history and bioethics at the University of Minnesota and completed her habilitation in bioethics and health policy at the University of Zurich.



**Lawrence (Larry) Madoff, MD**, is an academic infectious disease physician specializing in the epidemiology of emerging pathogens, bacterial pathogenesis, and international health. He is a Professor of Medicine at the University of Massachusetts Medical School and Lecturer on Medicine at Harvard Medical School. Dr. Madoff serves as Director of Epidemiology and Immunization and Deputy State Epidemiologist for the Massachusetts Department of Public Health. Dr. Madoff has directed ProMED, the Program for Monitoring Emerging Diseases, since 2002. He is a member of the American Society for Microbiology, the International Society for Infectious Diseases, past President of the U.S. Lancefield Streptococcal Research Society, a Fellow of the Infectious Diseases Society of America and a Fellow of the American College of Physicians. A graduate of Yale College and Tufts Medical School, he performed his Internal Medicine Residency at New York Hospital-Cornell Medical Center and his Infectious Disease Fellowship at the Harvard Medical School-Longwood program. He is the author of over 100 scientific and medical publications on topics involving infectious diseases and microbiology. <http://www.promedmail.org>



**Prof. Norbert NOWOTNY, PhD**, is Associate Professor of Virology at the Institute of Virology, University of Veterinary Medicine, in Vienna, Austria since 1997, (Full) Professor of Virology at the Department of Microbiology and Immunology, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman since 2012 and Head of the Department of Microbiology and Immunology at the College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman since 2013. 2001-2006 he was (Full) Professor of Virology at the Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, United Arab Emirates, University, Al Ain, United Arab Emirates.

Education: Study of Biology, University of Vienna, Vienna, Austria; PhD thesis at the Virology Laboratory of the Institute for Cancer Research, University of Vienna Medical School; 1982: Graduation to PhD; 1997 Habilitation for *Virology* at the University of Veterinary Medicine, Vienna, Austria

Research Interests: All aspects of infectious diseases, especially viral diseases, of humans, farm, pet and zoo animals as well as wildlife; Medical and veterinary entomology; mosquito- and tick-borne viruses; Infectious diseases at the environment / animal / human interface; Emerging infections; Zoonoses



**Dr. Britta Lassmann, MD**, is a clinician scientist with a longstanding interest in Infectious Diseases and Global Health. She is a graduate of the University of Vienna Medical School, Austria and completed her Internal Medicine residency at the Mayo Clinic, Rochester, MN and her Infectious Diseases fellowship at Yale University, New Haven, CT. Her international work brought her to the Albert Schweitzer Hospital in Gabon, to Thailand and to Costa Rica. Prior to moving to Boston, she was a faculty member of the Division of Infectious Diseases at the University of California, Los Angeles. Her research expertise is in the area of chronic viral infections and advanced molecular diagnostics. Dr. Lassmann became ISID's new Program Director in January 2014. She is responsible for overseeing the scientific, training, educational, and professional development programs for this non-profit professional organization with more than 70 000 members in over 100 countries. Dr. Lassmann is board certified in Internal Medicine and Infectious Diseases.

Residency = Facharzt Ausbildung

Fellowship = Additivfach

## 7. Press Pictures

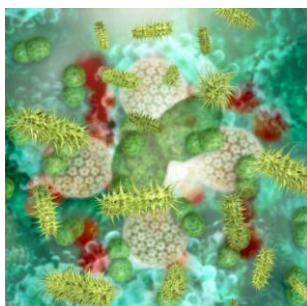
Please find the high resolution pictures on the CD enclosed.



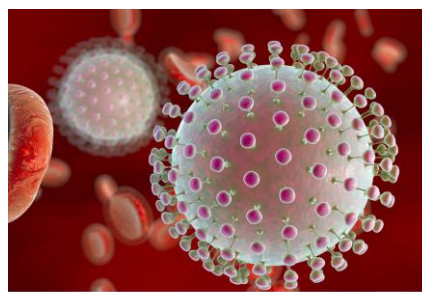
**Aedes aegypti mosquito**

© CDC/ Prof. Frank Hadley Collins, Dir., Cntr. for Global Health and Infectious Diseases, Univ. of Notre Dame

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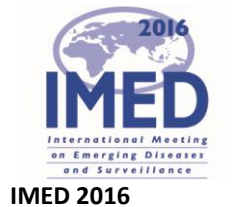
**Bacteria** © fotolixrender-Fotolia.com



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### LOGOS:



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