



# OPEN MEDICAL INSTITUTE

## SEMINAR REPORT

GLOBAL HEALTH:  
VECTORE-BORNE  
DISEASES  
OMI MEX INSTITUT  
PASTEUR SEMINAR

June 13-15, 2022

Medical Education Beyond Borders



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# OMI MEX INSTITUT PASTEUR SEMINAR IN GLOBAL HEALTH: VECTOR-BORNE DISEASES

June 13-15, 2022

21 fellows from Mexico, France, Brazil, Cuba
4 faculty members from France and Brazil
11 lectures given by faculty
3 interesting round table sessions

## Group Photo of Faculty and Fellows



## SCHEDULE

**OMI MEX Institut Pasteur Seminar**  
**Global Health: Vector-Borne Diseases**  
**Monday, June 13 – Wednesday June 15, 2022**

### Monday, June 13, 2022

08:00 - 09:00	Registration and Breakfast	
09:00 - 09:45	Opening Ceremony	
09:15 - 09:45	Pre-Seminar Test	
09:45 - 10:30	Vector-Borne Diseases	Anna-Bella Failloux, PhD
10:30 - 11:15	Dengue Remains a Threat	Anna-Bella Failloux, PhD
11:15 - 11:35	<b>COFFEE BREAK</b>	
11:35 - 12:20	Chikungunya and Zika Conquered America	Anna-Bella Failloux, PhD
12:20 - 13:05	Yellow, An Old Disease in Re-Emergence	Anna-Bella Failloux, PhD
13:05 - 14:05	<b>LUNCH</b>	
14:05 - 15:05	Round Table: Globalization, Climate Change and Vector-Borne Diseases	Faculty

### Tuesday, June 14, 2022

08:00 - 09:00	Registration and Breakfast	
09:00 - 09:45	History of Malaria	Stephanie Blandin, PhD
09:45 - 10:30	Malaria Transmission	Stephanie Blandin, PhD
10:30 - 10:50	<b>COFFEE BREAK</b>	
10:50 - 11:35	Genetically Modified Mosquitoes	Stephanie Blandin, PhD
11:35 - 12:20	A Re-Emerging Parasite, Chagas Disease	Claudio R. Lazzari, ScD, FRES
12:20 - 13:05	Treatments of Chagas Disease	Claudio R. Lazzari, ScD, FRES
13:05 - 14:05	<b>LUNCH</b>	
14:05 - 15:05	Round Table: Protecting Biodiversity to Prevent New Emerging Infectious Diseases	Faculty

**Wednesday, June 15, 2022**

08:00 - 09:00	Registration & Breakfast	
09:00 - 09:45	History of Vector Control in America	Luciano A. Moreira, PhD
09:45 - 10:30	Innovative Tools to Control Vector-Borne Diseases	Luciano A. Moreira, PhD
10:30 - 10:50	<b>COFFEE BREAK</b>	
10:50 - 11:35	Round Table: Vaccination and/or Vector Control?	Faculty
11:35 - 12:05	Post-Seminar Test	
12:05 - 13:05	<b>Lunch</b> Closing Ceremony and Awards	



# OPEN MEDICAL INSTITUTE

## FACULTY BOOKLET

GLOBAL HEALTH:  
VECTOR-BORNE  
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PASTEUR SEMINAR

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## **Wolfgang Aulitzky, MD**

Director, Open Medical Institute  
**American Austrian Foundation**

Associate Dean and Gerhard Andlinger Professor  
for International Medicine & Distance Learning  
Adjunct Professor of Clinical Urology  
Adjunct Professor of Clinical Reproductive Medicine  
**Weill Medical College of Cornell University**

Adjunct Professor of Pediatrics  
**Perelman School of Medicine at the Children's Hospital  
of Philadelphia**

Associate Professor of Urology  
**Medical University of Innsbruck, Austria**

**Wolfgang Aulitzky, MD** is the Medical Director of the American Austrian Foundation. He is Associate Dean for International Medicine and Distance Learning, Adjunct Prof. of Clinical Urology and Adjunct Prof. of Clinical Reproductive Medicine at the Weill Medical College of Cornell University/New York Presbyterian Hospital. In 2016, he was appointed Adjunct Professor of Pediatrics in the Associated Faculty of the Perelman School of Medicine at the Children's Hospital of Philadelphia. He is also Associate Prof. of Urology at the Medical University of Innsbruck and Visiting Professor at the Medical University of Vienna. Amongst others he is a member of the American, German and Austrian Societies of Urology and was awarded the Zuckermandlpreis of the Austrian Society of Urology in 1989. In 1995 he received the Silver Medal, in 2007 the Golden Medal for Merits to the Republic of Austria and in 2014 the cross of honor of the Land Salzburg. As Director of the Medical Program of the American Austrian Foundation he has initiated the Open Medical Institute, a scientific and educational collaboration of Weill Cornell and the NewYork Presbyterian Hospital, the Children Hospital of Philadelphia, Duke University, Columbia University, the Cleveland Clinic and leading hospitals in Austria. Dr. Aulitzky earned his medical degree at the University of Innsbruck in 1977, was a research associate at the University of Uppsala, Sweden and the Rockefeller University, New York. He received his training as an urologist at the University of Innsbruck and the General Hospital of Salzburg. He is the author of more than 140 publications on Urology, Andrology and Health Care issues and is co-author of books on basic and clinical urology/andrology.



**Anna-Bella Failloux, PhD  
(Course Director)**

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**Anna-Bella Failloux, PhD** is a medical entomologist and chief of the unit “Arboviruses and Insect Vectors” in the department of Virology at the Institut Pasteur in Paris. Her work mainly focuses on arbovirus–mosquito interactions in order to decipher the factors leading to the viral emergence. She did her first move in medical entomology at the Institut Louis Malardé in French Polynesia with a PhD on the adaptation of the vector *Aedes polynesiensis* to local parasite populations of the filaria *Wuchereria bancrofti*. Then she moved to the Institut Pasteur in Paris, where as a post-doc, she developed genetic markers to uncover the complex genetic structure of the widespread mosquito *Aedes aegypti*, the primary dengue vector worldwide, dengue being the most important arboviral disease affecting humans. In 2011, she became the head of an independent group (tenured in 2014) which has been actively involved in defining finely the role of mosquito vectors in the last emergences of chikungunya and Zika. Her team has an international renown in transmission of human arboviruses and for its unique expertise in experimental infections of mosquitoes with class 3 arboviruses. She collaborates tightly with the Pasteur network (33 institutes covering five continents) to anchor her projects on arboviral emergences. She has authored over 200 scientific publications on vectors of alphaviruses, flaviviruses, and phleboviruses. She participates actively in teaching medical entomology as co-director of the course “Insect Vectors and Pathogens Transmission”, the course “Medical Entomology” of the Pasteur Network and the MOOC “Medical Entomology” of the Institut Pasteur.





## Stephanie Blandin, PhD

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**Stephanie Blandin, PhD** is a French immunologist who specialized in mosquito/parasite interactions. She grew up on a farm in Burgundy where she had inspiring teachers who nurtured her love for science. She prepared highly competitive exams for two years and joined the “Ecole Normale Supérieure” in Paris where she studied chemistry and biology. After being awarded a bachelor’s degree, she did a six-month internship in the laboratory of Prof. Max Cooper in Birmingham, Alabama, USA. She then obtained a master’s degree in Immunology from the Institut Pasteur in Paris and moved to the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, for her PhD under the supervision of Prof. Kafatos, who was then the head of EMBL, and Prof. Hoffmann, who was later awarded the Nobel prize in Medicine in 2011. It is at that time that she started to work on the major malaria vector, the mosquito *Anopheles gambiae*. During her PhD, the field underwent major advances, with the sequencing and the first transformation of the mosquito genome, and the development of functional genetic approaches. She contributed to some of these developments, provided the first proof that mosquitoes mount a potent antiparasitic response and identified a key mosquito antiparasitic gene. With exciting novel opportunities opened up by this series of developments, she decided to stay in the field and moved to the laboratory of Dr. Levashina in Strasbourg, France. She identified the first mosquito gene whose polymorphism determines mosquito resistance to malaria parasites. She is now leading her own lab at the IBMC in Strasbourg, where she continues her work on the dissection of the genetic basis of resistance, but also on the maintenance of redox homeostasis in mosquitoes and parasites, and on means to manipulate redox homeostasis to reduce malaria transmission. She was awarded the Young Biomedical Researcher prize from Sanofi & Institut Pasteur in 2012. Her lab is part of the Laboratory of Excellence ParaFrap and the international consortium Zikalliance. She has obtained additional financial support, notably from the European Research Council (ERC), the French National Research Agency (ANR) and the Region Grand Est. She is also involved in promoting a responsible and ethical research and in science outreach programs. She lives in Strasbourg with her two children. Her husband is a group leader in Cambridge, UK.



## **Claudio R. Lazzari, ScD, FRES**

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**Claudio R. Lazzari, ScD FRES** is a medical entomologist who specializes in Chagas disease vectors. Dr. Lazzari grew up in Buenos Aires, Argentina. He graduated from the University of Buenos Aires and specialised in insect physiology and behavior at the University of Tübingen, Germany. Dr. Lazzari's research interests are focussed on the adaptations of disease vectors to the hematophagous way of life. His research characterises by an integrative approach, which includes methods and concepts of functional morphology, physiology, and the quantitative analysis of behaviour. Recent publications include the discovery of the ability of blood-sucking organisms to thermoregulate in order to avoid the thermal stress associated to the ingestion of the blood of a warm-blooded host. He is a peer reviewer, academic editor, or member of the editorial board for multiple major journals. Dr. Lazzari's research efforts have earned him different national and international grants and awards. Dr. Lazzari is currently Professor of the University of Tours, Honorary Professor of the University of Buenos Aires, Corresponding Scientist of the National Research Council of Argentina, and Fellow of the Royal Entomological Society. He lives in Tours with his wife Teresita and his three cats.



## **Luciano A. Moreira, PhD**

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**Luciano A. Moreira, PhD** received a BSc in Agriculture Engineering at the Federal University of Viçosa (UFV), Brazil, a MSc in Plant Science with emphasis in Biological Control of Insects, UFV, and his PhD in Genetics and Plant Breeding (1998) – UFV and Centre of Plant Breeding and Reproduction Research (CPRO-DLO), The Netherlands. He completed his first post-doctorate at Case Western Reserve University (Cleveland, OH, USA) from 1998 to 2002. He is a Public Health Scientist of Instituto de Pesquisas René Rachou –FIOCRUZ since 2002. He completed a sabbatical at the University of Queensland (Australia) in 2010 on the interaction between *Aedes aegypti*, *Wolbachia*, and dengue virus. He is interested in various aspects of vector biology, with an emphasis on molecular biology of mosquitoes that transmit pathogens, studying the interactions between pathogen/host invertebrates/symbionts. Luciano Moreira is a lead investigator of a multi-disciplinary project in Brazil, called World Mosquito Program Brasil, involving the release of *Wolbachia* mosquitoes to control arboviruses such as dengue, chikungunya, and Zika.



## **Becky Aguilar-Álvarez de Sáenz**

**Executive Director | AMSA**

- Bachelors degree in economics, Instituto Tecnológico Autónomo de México (ITAM)
- Banking and financial career for 15 years
- Member of the Board Civic Committee, Ford Motor Company Mexico
- Treasurer of the Board of Trustees UNETE (Unión de Empresarios por la Tecnología en la Educación)
- Member of the International Women's Forum
- Member of the Mexican Council for International Affairs
- AMSA's Executive Director since 2010



## **Gerardo Legorreta Creel**

**President of the Board | AMSA**

- Chairman of the Board of Trustees, Alianza Médica para la Salud, A. C. (AMSA)
- Studied at the London Business School and Instituto Tecnológico Autónomo de México (ITAM)
- CEO of UBS (Union Bank of Switzerland)
- Member of the Board of Directors of Bepensa, SA de CV
- Founder and Managing Director of LG & A

Fellow Booklet

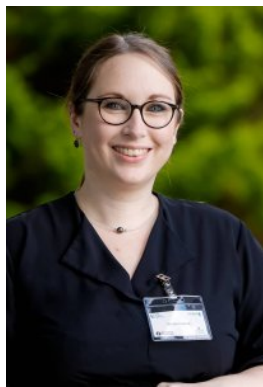
Global Health: Vector-Borne Diseases



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Alvaro Ferreira, MD  
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**Monday, June 13, 2022**

We started our day with a fantastic breakfast in the seminar room. Then, Dr. Anna-Bella Failloux kicked off our first day of the seminar with an interesting overview on Vector-Borne Diseases, such as Dengue and Zika. After, we had a coffee break, where we were able to interact with the faculty members. Then, Dr. Anna-Bella Failloux gave a very informative lecture on Chikungunya and Yellow fever arboviruses. Then, we had lunch in the conference room, what I really found to be a very good idea because it allowed us to further interact with all participants. After our lunch break, we spent the rest of the afternoon in a very important and interactive round table in which we discussed climate change and vector-borne diseases.

**Tuesday, June 14, 2022**

The second day started with a lecture from Dr. Stephanie Blandin on the history of malaria, followed by another lecture in malaria transmission. After a short coffee break, we had a talk where Dr. Stephanie Blandin explored the tolls to genetically modify mosquitoes. Then, we moved to another vector-borne disease - Chagas Disease - where Dr. Lazzari described the vectors, the transmission cycles, and the treatments. After lunch, we participated in a round table where we discussed the importance in protecting biodiversity to prevent the emergence of new infectious diseases. Next, Stephanie Faschang had the great idea to promote a small event on the patio of the Haytt House Hotel. This was a great opportunity for a more relaxed way of networking.

**Wednesday, June 15, 2022**

On the third, and last, day of the seminar, we had two talks on vector control, both presented by Dr. Luciano Moreira. First, he gave us a historical perspective of vector control in the Americas, and then a detailed description of the innovative tools to control vector-borne diseases, especially the use of Wolbachia in *Aedes aegypti* mosquitoes to block Dengue, Zika, and Chikungunya virus transmission. After that, we had a great discussion in a round table where we debated the importance of vaccine development and the importance of developing new strategies to control the vectors. Then, we had lunch followed by the post-seminar test. We ended with an emotional closing ceremony, complete with the fellows receiving awards. Last but not least, I would like to express my gratitude to the OMI for granting me the opportunity to be a part of an incredible event.



Marcela Yanes, MD  
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**Monday, June 13, 2022**

This is the first time that an OMI Mex seminar about Global Health and Vector Borne Diseases has taken place in Mexico. It was only possible due to the cooperation between AMSA, the Open Medical Institute, and Institut Pasteur. I have a background in family medicine and education, and I'm very interested in learning about climate change. This was a unique opportunity to learn about this with a "pandemic" perspective. Our cohort was extremely rich in a variety of backgrounds; we had infectious disease doctors, pediatricians, epidemiologists, and PhD candidates that were in Mexico for the very first time! People came from all over the world, from Cuba, Brazil, Colombia, France, and Mexico. We had people from Mexico City, Chiapas, Jalisco, and Nuevo Leon. The PhD candidates are settled in different parts of Latin America, such as Guadalupe, Guyana, but they also work in Brazil, in collaboration with the Institut Pasteur. These days that we're living in are a turning point in public health, it's becoming more important to learn from our experiences and to know the threats that we are facing, one of those threats being vector-borne diseases. In association to the threat of vector-borne diseases, there's also another huge crisis that's among us, which is the climate change crisis. That is one of the factors that will be key to the change of transmission patterns of vector-borne diseases. During the first day, Dr. Anna-Bella Failloux talked specifically about mosquitoes, and we learned that there are several species that are vectors of diseases, such as viruses like Dengue, Zika, Chikungunya, Yellow Fever, or parasites such as Malaria. We learned about the global significance of those vector-borne diseases. One of the highlights of the day was to learn about those disease patterns, how critical is to make a correct diagnosis about them and to do intentional research on the diseases in endemic places.

**Tuesday, June 14, 2022**

It was a super technical day, with the expertise of Dr. Blandin from the University of Strasbourg. We learned about genetically modified mosquitoes that are made to fight against Malaria. With the help of those genetically modified mosquitoes, we are expecting to decrease their vector competence, meaning that we're eventually expecting to diminish propagation of VBD. We also had Dr. Lazzari lecture remotely from Buenos Aires about Chagas disease, neglected diseases, and the impact of those diseases in the health of so many people. We had a round table, where we had the opportunity to ask the faculty about their perspective towards ethical implications towards genetically modified species, but also talked about the value of the preservation of biodiversity to avoid the change of transmission patterns in vector borne diseases. At the end of the day, we had a little get together on a terrace, where we had the chance to meet the faculty in an informal way where they talked about their own experiences. We also had the chance to learn about our fellows and to give advice or suggestions to get to know the city.

**Wednesday, June 15, 2022**

The final day of the seminar was here, and we learned very valuable information that Dr. Luciano Moreira gave during his lecture. He is the project leader of the World Mosquito Program, which is a specialized program in the use of Wolbachia as a method to help the communities around the world to prevent the spread of mosquito borne diseases such as Dengue, Zika, and Chikungunya. This method in combination with general measures seems hopeful in the control and prevention of those diseases. During the round table, we talked about vaccines and their value in the control of VBD. We concluded that education is one of the keys in the prevention and control of vector borne diseases. At the very end, some fellows reflected about their experience and how it will impact our daily practices. We thanked the organizers and the faculty for their valuable time and enthusiasm towards education. We had our post-seminar test, the closing ceremony, and awards. These kinds of events help the spread of knowledge, but also give the chance to increase our own network of fellows. In the real world, education is an eye-opening experience; it changes the way we perceive the world. Getting the chance to meet people from all over the world is one of the best ways to gain perspective, that's why networking and education are the weapons that make the world go around.