

Contents

An historical perspective on environmental change and vector-borne disease.....	1
James L.A. Webb, Jr.	
Modelling emergence of vector-borne diseases in Europe.....	7
David J. Rogers	
Climate-driven infectious diseases in a changing human landscape: two case studies on cholera and malaria.....	15
Mercedes Pascual	
Environmental changes and the emergence of zoonotic infections in humans.....	21
Anthony J. McMichael	
Human migrations and adaptation to the environment: a genetic view.....	33
Lluís Quintana-Murci	
Vector-borne diseases and international transport	39
Pascal Delaunay, Grégory L'Ambert, Pierre Marty	
Enhanced chikungunya and dengue fever surveillance in french mainland districts where <i>Aedes albopictus</i> is established/Emergence of autochthonous clusters of dengue cases in Nice and chikungunya cases in Fréjus, September 2010.....	49
Alexis Armengaud	
What do we need to do to protect health from climate change?.....	57
Diarmid Campbell-Lendrum	



HSH PRINCE ALBERT II OF MONACO

The name Pasteur, famous all over the world, is synonymous with science and progress. But it embodies a great deal more: above all, it stands for science at the service of people and their health – science devoted to helping people thrive every day. Louis Pasteur’s outstanding work, which has been kept alive for over a century through the Institut Pasteur, represents the hope of a better world, one in which men and women can free themselves from the vagaries of nature and the suffering decreed by fate.

At the core of this very living legacy is the conviction that science has a duty to be helpful and that its ultimate objective must always be to assist men, women and children, especially the most vulnerable.

This very strong conviction is also at the heart of my commitment. It determines the missions I have assigned, since 2006, to my Foundation, which was established to take action in the fight against climate change and to protect the planet’s water resources and biodiversity.

This conviction is also behind the Principality of Monaco’s firmly-established decision to implement a responsible international cooperation policy founded on health, education, microeconomic support and environmental protection objectives.

Because all these actions are interrelated when it comes to helping those on the receiving end: the populations hit time and time again by the same scourges. Environmental upheavals and infectious diseases affect people in the same way: their first victims are always the most destitute, and their development represents a threat to all. Pollution – like viruses – knows no frontiers.

Nowadays we are aware just how determining a role the environment plays in human health. Although the environment was for a long time a neglected concern, today we are witnessing a spirit of long-term responsibility with regards to both.

Whether the focus is access to drinking water, of course, but also to healthy food, protecting the planet’s ecosystems or combating pollution, the fight for health and the fight for the environment are now unavoidably linked.

Driven by these shared convictions and objectives, the Institut Pasteur, my Government and my Fondation signed a promising partnership in 2010 to enable us to run joint projects. One of our key objectives is organising scientific meetings focused on topics we have in common, and this first symposium provides a concrete example of that.

This is why I am delighted that so many eminent figures have agreed to participate in the event. And very pleased to be able to carry out with them some extremely timely reflections on environmental changes and their impacts on human health.

A handwritten signature in black ink, appearing to read "Albert de Lumina". The signature is written in a cursive style with a long, sweeping tail on the final letter.



PROF. ALICE DAUTRY

Since 1888, the Institut Pasteur has remained true to its missions and priorities set out for it by the founder himself. Louis Pasteur recognised the importance of furthering scientific knowledge as a means of overcoming disease and of translating scientific discoveries into immediate practical applications to help people in need, wherever they might be in the world.

The Institut Pasteur leads a relentless fight against infectious diseases and against all the microorganisms that cause them, whether viruses, bacteria, parasites or fungi. They also conduct research on genetic diseases, cancer or neurodegenerative diseases.

Many health challenges remain to be tackled and new ones are emerging regularly. Environmental changes, as urbanization, modern means of communication for goods and people or climate changes facilitate the spread of diseases and the appearance of new ones.

The Principality of Monaco, and His Serene Highness Prince Albert II, are deeply committed to issues concerning climate changes, their impact on human health and are concerned about helping those who are in need.

This is why, sharing the same values – progress benefiting to all – the Institut Pasteur, the Monaco Scientific Center and the Prince Albert II of Monaco Foundation have decided to join their strengths.

We, at Institut Pasteur, are proud to organize this first symposium about climate changes and their impacts on human health with the Principality of Monaco and do hope these talks will help all of us to obtain new victories in the fight against diseases.

A handwritten signature in black ink that reads "A. Dautry". The signature is written in a cursive, flowing style.



PROF. PATRICK RAMPAL

The consequences of environmental changes on human health have become a major public health challenge of this century.

As people interact with their environment, changes occur creating new opportunities and new threats to human societies and health. In particular, urbanisation, regional and global circulation of resources, human migrations and climatic variability can facilitate the proliferation of known or emerging diseases, which have the potential to become a worldwide epidemic. To recognise these interactions between human activity, environmental changes, and health drove to new research fields and opened innovative, multidisciplinary scientific approaches to try to resolve these new health challenges.

The aim of this conference, co-organized by the Pasteur Institute, the Prince Albert II Foundation and the Monaco Scientific Center, is to bring together world known experts in each of these disciplines so as to provide a global vision and consider efficient strategies of adaptation and prevention.

A handwritten signature in black ink that reads "P. Rampal". The signature is written in a cursive style with a horizontal line under the first letter "P".

Acknowledgments

This book contains the manuscripts of the oral presentations given during the first symposium “Environmental Changes & Human Health”, organized by the Institut Pasteur, the Prince Albert II of Monaco Foundation and the Scientific Center of Monaco.

I would like to thank the authors for allowing us to print their work, Doctor Hervé Raps for the reviewing the book and Mrs Valerie Von Bredow for editing the discussions.

Patrick Rampal