



2017

ANNUAL  
REPORT



ROOTS FOR LIFE



"Ogobara Doumbo contributed to the emergence of excellence in scientific research in Africa. The outstanding quality of his work has led to major advances in the fight against malaria.

His meeting in 2003 with my son Christophe, whom he regarded as his brother, gave a new impetus to our work in Mali. Since then, throughout the years, Ogobara Doumbo brought his enlightening vision for medicine to our Foundation. I pay tribute to the strength of his humanism, to his great simplicity and to the incredible charisma of a man whose vision and action foreshadow the future of health on the African continent and in the world.

I salute a dear friend."

Alain Mérieux



Professors Ogobara Doumbo and François Gros at the first Christophe Mérieux Prize award ceremony in 2007

## **OGOBARA DOUMBO**

### **A PUBLIC HEALTH VISIONARY, MENTOR AND ROLE MODEL FOR GENERATIONS OF SCIENTISTS IN AFRICA AND WORLDWIDE**

As we finish this Annual Report, we are deeply saddened by the loss of Professor Ogobara Doumbo, who passed away June 9<sup>th</sup>.

Director of the Malaria Research and Training Center at the Faculty of Medicine of the University of Bamako in Mali, Professor Ogobara Doumbo led one of the biggest research and training teams in Africa.

A member of the Mérieux Foundation's Scientific Advisory Board and Chairman of the Board of the Charles Mérieux Center for Infectious Disease of Mali (CICM), Professor Doumbo was the first recipient of the Christophe Mérieux Prize, which he was awarded in 2007 for his malaria research. He was also the first to hold the Mérieux Doctors Chair, conducting research at the University Hospital Institute Méditerranée Infection (Timone Hospital) in Marseille.

The Mérieux Foundation has lost an exceptional advisor who played a pivotal role helping to shape its development.

The concepts promoted by Ogobara Doumbo became central to the Mérieux Foundation's model for action: the principle of not "doing for" but rather "working with" the local authorities and partners to leverage their strengths and catalyze the development of initiatives and capacities that are owned and managed locally.

Professor Doumbo's work goes far beyond his important contribution to global malaria research. His Malaria Research and Training Center is considered a model for research capacity building in low-income countries. By promoting access to quality care for all and developing local research in collaboration with the international scientific community, Ogobara Doumbo has advanced Africa on the path to self-reliance in health.

“Infectious diseases cause 17 million deaths each year around the world, predominantly in developing countries. For 50 years, the Mérieux Foundation, an independent family foundation, has been taking action to ensure that every man, woman and child has fairer access to essential healthcare.”



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**Alain Mérieux,**  
President

“Upholding the values of a Pasteurian tradition in medical biology, accessible to all, without geographical, ethnic or religious borders.”

**O**ur world is changing in a profound way. It is increasingly complex, discontinuous and brutal.

The extreme poverty of certain regions amplified by climate change, geopolitical instability and the proliferation of conflicts, push a growing number of people into exile, many with no hope of return. Beyond the precarious living conditions, these vulnerable women and men are faced with a heightened threat of infectious disease and epidemics, without access to the most basic healthcare.

These population movements are irreversible.

In this context of uncertainty and fear, it is tempting to turn inwards, look the other way and shut the door. We cannot accept this attitude and must, to the contrary, find the courage and strength to remain open to the world and work out, on site, appropriate solutions together. This is what we intend to do in our field, that of public health, in conjunction with actors on the ground and our partners.

We must confront these problems, upholding the values of a Pasteurian tradition in medical biology, accessible to all, without geographical, ethnic or religious borders.

Our Foundation is active in the field to increase access to diagnostics, which inform medical decisions, making it possible to fight infectious disease more effectively. During the celebration of our 50th anniversary in 2017, we reaffirmed our commitment to extend our action, taking a global health approach in the regions where we have set up laboratories. This reaches beyond

medical care to address all that provides a better quality of life for suffering populations: physical protection, housing, taking in street children, ensuring food, water and the surrounding environment are safe, education and training, socio-economic reintegration...

In this fight we have chosen to protect the most vulnerable: mothers and children.

We take action under the guidance of local health authorities, in Haiti since 2001, in Mali since 2005, in Madagascar since 2010, in Lebanon since 2011, in Iraq since 2014... Today, we are mobilizing in Bangladesh to come to the aid of the Rohingya refugees whose camp is just 50 kilometers from the Rodolphe Mérieux Laboratory in Chittagong. We work with major players in the health sphere, such as Institut Pasteur in Tunisia and the Chinese Academy of Medical Sciences in Mali. We are forging ahead with our partners, who contribute their complementary expertise in many fields: research, training, micro-credits... Our global network is solidly in place and continuing to expand each year.

We have a long road and many exciting challenges ahead. They make us humble but fiercely determined. In the troubled countries where we work, the women and men who fight at our sides, day after day, give us far more than what we give to them. They give a magnificent lesson in resilience and hope to a world that needs it so desperately.



**An independent family foundation with public interest status,** the Mériex Foundation is committed to fighting against infectious diseases affecting developing countries especially by reinforcing their clinical biology capabilities.

**W**ith its network of clinical biology laboratories, the Mériex Foundation focuses on diagnosis, an essential factor in patient care and a decisive tool in disease surveillance and control. With a global health approach that takes all a population's needs into account, the Foundation's teams also come to the assistance of the most vulnerable, particularly mothers and children.

The Mériex Foundation works closely with Fondation Christophe et Rodolphe Mériex, an independent family foundation under the aegis of the Institut de France, sharing the same public health goals.

**The Mériex Foundation's action focuses on four main objectives:**

**Increasing** vulnerable populations' access to diagnostics by strengthening clinical laboratories in national healthcare systems,

**Enhancing** local applied research capabilities by training researchers, developing collaborative programs and creating Rodolphe Mériex Laboratories, transferred to local partners,

**Encouraging** knowledge-sharing and public health initiatives working with Les Pensieres Center for Global Health,

**Improving** conditions for mothers and children taking a global health approach.

#### The Mériex Foundation's philosophy of action

**A collaborative dynamic** driven by partnerships with local healthcare stakeholders, international organizations, academic research, companies and NGOs,

**A long-term vision** with sustained support leading to autonomy and local ownership of infrastructures and programs,

**Building networks** for international cooperation to share experience and pool skills,

**A global health approach** from humans to animals, taking into account healthcare, but also nutrition, environmental safety, education and socio-economic support for patients.



**Benoit Miribel,**  
Director General

“It is indeed through a permanent exchange with our partners in the field that the Mérieux Foundation’s work is shaped”

**In 2017 the Mérieux Foundation celebrated 50 years of taking action for public health.**

To celebrate this important anniversary, we brought together our partners on September 14<sup>th</sup> at Les Pensières Center for Global Health in Veyrier-du-Lac. It is on this family property that the Mérieux Foundation’s work began with the first activities conducted in the field of scientific knowledge-sharing.

Today, this field remains central to the Mérieux Foundation’s work. Training, transmitting, bringing together, catalyzing: all of these activities involve the sharing of knowledge and are growing each year, at Les Pensières and through our international network. How could we effectively fight infectious diseases in developing countries without building local capacity? How can local capacities be strengthened without sharing knowledge, training and transferring the best available techniques?

Our initiatives to promote access to diagnosis for all and to develop applied research closely aligned with infectious disease priorities all have in common the challenge of transmitting and assimilating knowledge to truly strengthen local capacities.

The three round tables organized during the 50<sup>th</sup> anniversary celebration focused on the challenge of strengthening local capacities in the face of epidemic risks and the need for an integrated, global approach to health.

The late Professor Ogobara Doumbo chaired a round table on the new dynamics in local health capacity building. The discussion pointed to the need to decentralize scientific research and medicine to empower people on the front lines. Looking at his Malaria Research Training Center (MRTC) in Bamako as a successful model, Professor Doumbo explained how to reverse the “brain drain” by offering young scientists

interesting careers in developing countries. During the round table, the partnership developed over several years between Agence Française de Développement (AFD) and the Mérieux Foundation around the RESAOLAB network in West Africa was commended. Working with the ministries of health, the project successfully met its goal of bringing medical biology laboratories up to standard with more than a thousand laboratory technicians trained in seven countries and management by specialists in each country. The project’s regional approach contributes to surveillance for epidemic risks.

The rise of antimicrobial resistance is yet another factor contributing to emerging infectious disease threats in an ecosystem transformed by urbanization, population growth, deforestation and changing agricultural practices, conflict and natural disasters. In the face of these challenges, how can we not work to strengthen cooperation between local and international organizations, public and private sectors, to determine priorities and pool available resources? It is indeed through a permanent exchange with our partners in the field that the Mérieux Foundation’s work is shaped, taking a global health approach that takes into account the living conditions of vulnerable populations.

Building on this approach, 2017 marks a new year of growth for all Mérieux Foundation activities, both at Les Pensières and throughout the world. Working through partnerships, with private and public funding, all the actions undertaken by our teams aim to put women and men in a position to face the difficulties they must overcome with dignity. Through our work, everyone’s expertise is strengthened because our teams learn as much as they transmit. This is where we grasp the true significance of knowledge-sharing, a pillar of the Mérieux Foundation’s mission.

1967 - 2017

# 50 IN THE FIGHT AGAINST INFECTIOUS DISEASES YEARS

## OUR STORY: FROM PREVENTIVE MEDICINE TO GLOBAL HEALTH

**Founded in 1967 by Doctor Charles Mérieux in memory of his father, Marcel Mérieux,** the Mérieux Foundation has fought for half a century to help the most vulnerable populations. Initially focused on infectious disease prevention, particularly through vaccination, it has expanded its areas of focus over the years: access to diagnostics, applied research, knowledge-sharing. With a vision for the long-term, the Foundation works collaboratively, prioritizing partnerships with local stakeholders, particularly ministries and health authorities. Without these partners, the Foundation's work would not have been possible.

**Today, the Foundation is firmly committed to a global approach to health,** with a fourth area of focus: support for initiatives for mothers and children. On the occasion of its fiftieth anniversary, the Mérieux Foundation reiterates its dedication to helping the most vulnerable populations and confirms its commitment to operate in a spirit of sharing and cooperation to ensure the transfer and local ownership of the projects it launches and supports.

### 1967-1983

#### → Preventive medicine and vaccination in the field

Starting in 1967 and for over 15 years, the Foundation ran **vaccination campaigns** in Africa and organized the first international seminar on vaccination in Bamako (Mali) in 1974. In 1972, it created the **AMP** (Association for the Promotion of Preventive Medicine, now Preventive Medicine Agency) and, in 1975, it contributed to vaccinating 100 million Brazilians against meningitis. In 1983, **Bioforce Development** was created, the first training institute for humanitarian work.

### 1984-2000

#### → North-South scientific dialogue and global dissemination of innovation

In the 1980s, the Foundation strengthened its role as a catalyst with the dual objective of sharing scientific and medical information with as many people and institutions as possible and gaining better understanding of the reality of infectious diseases in the field. In 1986, this led to the organization of the first **Cent Gardes Conference**, one of the forerunning international scientific events on HIV/AIDS. In 1999, the **P4 Jean Mérieux Laboratory** was opened, a cutting-edge BSL4 research facility for the fight against dangerous emerging pathogens. The following year, the Foundation launched **ADVAC, the Advanced Course of Vaccinology**, which was followed by high-level international courses on diagnostics (2010) and, more recently, on epidemiology (2017).



## 2001-2010

### → Building local capacity for diagnosis and applied research

Under the impetus of Doctor Christophe Mérieux, with the support of Fondation Christophe et Rodolphe Mérieux, the Foundation redirected its focus to the field, creating the **network of Rodolphe Mérieux Laboratories**, laboratories of excellence around which clinical biology facilities are built or renovated. In 2008, the **Emerging Pathogens Laboratory** was inaugurated in Lyon and the first class of students started the **BAMS laboratory technician training course** in Mali. In the same year, the **GABRIEL network for applied research was launched**; it now has 20 members in 16 countries. The following year, the **RESAOLAB program for access to diagnosis** began in West Africa - a successful model for working as a network, it participated in the fight against Ebola during the 2014 outbreak.

## Since 2010

### → Towards a global approach to health for mothers and children

The Foundation has expanded its international footprint since 2010 and is working to respond to emergencies in the field that are faced by the most destitute people in the world, particularly mothers and children.

It has adopted a global approach to health, **which goes beyond medical care, to incorporate all the health and socio-economic issues that have an impact on a population's well-being**. The Mérieux Foundation and Fondation Christophe et Rodolphe Mérieux worked in Haiti after the earthquake and are currently working in the Middle East and in Bangladesh in response to the refugee crises. The Foundation is also closely involved with humanitarian organizations in Madagascar, Cambodia, Bangladesh and several African countries.

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### Les Pensières Center for Global Health, expanding horizons for half a century

In the 1970s, the Mérieux family property in Annecy became a meeting place for experts in all disciplines and from all countries to meet and discuss, playing a major role in spreading innovation and fostering North-South dialogue. Symposiums, training courses, conferences: more than 5,000 healthcare stakeholders gather every year at Les Pensières, which has become a leading center for global health.

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

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“Pasteur’s message is more relevant than ever before. We need to bring all areas of expertise together to build a shield against infectious diseases. To this end, we need biology combining diagnostics and vaccination, integrated into a more global approach to health, in which hygiene and many other factors are of crucial importance. Without borders between countries and religions and without borders between human and veterinary medicine.”

**Alain Mérieux,**

President of the Mérieux Foundation



## AN INTERNATIONAL MEETING ON NEW STRATEGIES FOR FIGHTING INFECTIOUS THREATS

**On September 14, 2017, to celebrate its 50<sup>th</sup> anniversary, the Mérieux Foundation organized a day of discussions on new epidemic risks in developing countries.**

More than 150 public figures and partners gathered at Les Pensières Center for Global Health: scientists, researchers, doctors, biologists, humanitarian actors and representatives from international organizations, from West Africa, Asia, Latin America, Madagascar, Haiti and the Middle East.

Population explosion, global warming, increasing conflicts and migratory flows, urbanization and accelerating world trade... These are all disruptive factors that have a direct impact on the threat of infectious diseases worldwide. One thing is clear: traditional models of action need to be redefined to focus on initiatives in the field, the involvement of local stakeholders and multidisciplinary approaches to improve the living conditions of vulnerable populations.





**Three round table discussions helped to highlight the work of our partners in the field and their visions for the future.**

**1** THE EPIDEMIC RISKS IN DEVELOPING COUNTRIES



**Chaired by  
Professor Christian Bréchet**  
President of Institut Pasteur

“At a time when human activity, with its impact on ecosystems, encourages the emergence or the re-emergence of pathogens and their spread throughout the world [...], when new agricultural practices, livestock intensification, lead to zoonoses which are now the cause of 70% of outbreaks among humans [...], we must define a global health governance agenda that is interdisciplinary.

**We must merge human and veterinary medicine, join forces with all those involved to translate today’s scientific, technological and digital progress into solutions to control the growing epidemic risk.”**

**2** NEW DYNAMICS IN HEALTH CAPACITY BUILDING



**Chaired by  
Professor Ogobara Doumbo,**  
Director of the Malaria Research and Training Centre at the Faculty of Medicine, University of Bamako in Mali

“The challenge is getting young Africans to stay in their countries so that they can contribute to the development of infrastructure, abilities and initiatives that contribute to the advancement of science and care, nationally and internationally. We must make use of local talent, choosing and training candidates so that we can diagnose diseases locally in laboratories, thereby preventing epidemics.

**With quality, long-term support, it is possible to attract and retain local talent because we all aspire to make a living as scientists and to have an impact on the health of our country.”**

**3** THE GLOBAL HEALTH APPROACH: BRINGING VULNERABLE POPULATIONS MORE THAN MEDICAL CARE



**Chaired by Dr. Jean-William Pape,**  
Founder and Director of the GHESKIO Centers in Haiti, Professor of Clinical Medicine at Weill Medical College of Cornell University in the United States

“The global health program at the GHESKIO Centers took shape as we were discovering the ravages of AIDS. When life-saving antiretroviral treatment (ART) became available we provided it to our patients. In a country where a large percentage of the population is malnourished (living on less than \$1/day), we could not give medications that our patients would have to take on an empty stomach. Nutritional support became necessary. As AIDS patients on ART lived a near normal life, they could work and provide support for their family. We thus developed micro-credits with the Mériex Foundation, especially for HIV-infected women. [...]

**Global health relies on 3 pillars: healthcare, education and economic opportunities.”**

# 01 ACCESS TO DIAGNOSIS



# INCREASE ACCESS TO DIAGNOSIS BY STRENGTHENING CLINICAL LABORATORIES

Because without diagnostics, medicine is blind, the Mérieux Foundation has made strengthening clinical biology laboratories the driving force behind its work in the field.

**D**iagnostics testing is an essential step in patient care because the prescription of suitable treatment depends on identifying the pathogen. Diagnostic testing is also essential for the surveillance and control of epidemics, a priority for the Global Health Security Agenda (GHSA) since the 2014 Ebola outbreak in West Africa. In addition, monitoring treatment efficacy is a crucial and decisive element in the fight against antimicrobial resistance. Laboratories are a key part of this process.

## SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Putting in place the infrastructure, equipment and IT systems that underpin quality medical biology
- Reinforcing the skills and processes needed to perform diagnostic testing
- Improving the management and efficiency of clinical biology laboratories (evaluation, mapping, supervision)
- Assisting health authorities in building a laboratory system that enables diseases to be prevented and monitored (sample management, epidemiological monitoring and creating networks)

**Since 2005, the Mérieux Foundation has built more than 20 laboratories and training centers for laboratory technicians and has renovated more than 50,** developing an expertise in strengthening diagnostic testing infrastructure in developing countries. Since 2011, the Foundation has led 25 consultancy projects on behalf of partners such as the WHO, the UNDP (United Nations Development Program) and the Global Fund to Fight Aids, Tuberculosis and Malaria.

**Wherever it works, the Foundation strives to offer structural support** in areas such as training, quality processes and IT systems, to ensure the sustainability of laboratories and their integration into national health systems.

The Mérieux Foundation also contributes to the creation of Laboratory Directorates, which coordinate the activity of the country's clinical biology laboratories. The Foundation believes in supporting its partners over the long term to foster local ownership of infrastructure and projects.



# RESAOLAB



## IMPROVING THE QUALITY OF DIAGNOSTIC SERVICES IN WEST AFRICA

**Launched in 2009, RESAOLAB brought to life the first West African Network of Biomedical Analysis Laboratories. Today it comprises over 1,000 laboratories in 7 countries: Benin, Burkina Faso, Guinea, Mali, Niger, Senegal, and Togo.**

The ability to provide quality diagnostic services is a prerequisite for improving a population's health. That's why the Mérieux Foundation created RESAOLAB with a regional and crosscutting approach that incorporates all factors impacting laboratory governance and performance. Launched in 2009 at the request of the ministries of health of Burkina Faso, Mali and Senegal, and later Benin, Guinea, Niger and Togo in 2013, RESAOLAB has laid the groundwork for improving public health in West Africa. Populations in these countries benefit from better access to quality diagnostics, for faster detection and effective care.

### TRAINING

- **Biomedical maintenance:** Nine members of RESAOLAB received scholarships to participate in the 2017 training session funded by the European Commission. The course was developed in partnership with the Polytechnic School of Abomey-Calavi in Benin;
- **Antibiologie:** Six candidates from the network were enrolled for the Inter-University Diploma of Antibiologie and Antibiotherapy in Sub-Saharan Africa, developed in collaboration with the University of Montpellier and awarded by the Higher Institute of Health Sciences of the Polytechnic University of Bobo-Dioulasso in Burkina Faso.

**In 2017, training, supervision activities and the roll-out of a laboratory information management system continued, along with the establishment of an external quality assessment program for all network members.**

The construction of governance infrastructures, transferred to the ministries of health of the network's member countries, is one of RESAOLAB's key activities: in Togo, the Directorate of Pharmacy, Drugs and Laboratories, the External Quality Assessment Center of the Laboratories Division and the Continuing Education Center were inaugurated in February 2017 in Lomé. Creating a Laboratory Directorate in charge of implementing the national policy on laboratory supervision is essential to improve the efficiency and long-term future of diagnostic services (defining budgets, training plans, maintenance programs, etc.). In Niger, Guinea and Benin, construction also continued in 2017.

2017 is the last year of the RESAOLAB project which will continue its activities in the form of a framework program for developing medical biology in West Africa. It will be organized by an international unit of the Mérieux Foundation and the appointment, in agreement with the respective Ministry of Health, of a focal point in each country.



## RESAOLAB ACHIEVEMENTS

**8 YEARS,  
7 COUNTRIES  
AND...**

- **Over 1,000 public and private laboratories** which are supervised and included in the network in the seven countries
- **Over 1,000 laboratory technicians** trained during 100 sessions
- **14 training modules** as part of a continuous professional development program
- **20 continuing training centers built**
- **Over 200 continuous professional development sessions** with an average of 20 participants
- **6 Laboratory Directorates** built and equipped
- **63 scholarships awarded** for the Bachelor of Science in Biological and Applied Medical Sciences (BAMS Mali)
- **36 scholarships awarded** to students studying for the Diploma of Specialist Studies (DES) in Medical Biology
- **16 external quality assessment sessions held**
- **More than 200 laboratories** benefit from an external quality control program

**RESAOLAB PARTNERS**

RESAOLAB, which is firmly aligned with the regional health policy established by the West African Health Organisation (WAHO), is led by the Mérieux Foundation, in collaboration with the ministries of health of the seven member countries. It operates with support from the Agence Française de Développement, the Islamic Development Bank, the Princely Government of Monaco, the Stavros Niarchos Foundation, and the Mérieux Foundation. WHO and the WAHO also participate in the initiative.





# RESAMAD

## BUILDING A LABORATORY NETWORK IN MADAGASCAR

**Launched in 2006, RESAMAD is a project to strengthen hospital laboratories in Madagascar** to address the lack of material and human resources necessary for medical biology activities to function properly. In total, 20 hospital laboratories have been renovated or re-fitted by the Mérieux Foundation, nine of which received funding from the Agence Française de Développement, via the Ministry of Public Health. The Foundation's support helps to improve the quality of diagnostic testing (and, as a result, the quality of treatment offered to the population) and to strengthen infectious disease surveillance.

**In 2017, the Mérieux Foundation worked to strengthen bacteriology in seven public hospital laboratories.** These laboratories have been equipped and provided with the reagents and consumables necessary to perform new tests. RESAMAD helps to harmonize data and ensure its reliability. External quality assessment activities and quality assurance training have continued within the network. This progress has already had a very tangible impact on the quality of treatment delivered to patients and on the control of nosocomial diseases in hospitals. Valuable data on antibiotic resistance have been generated.

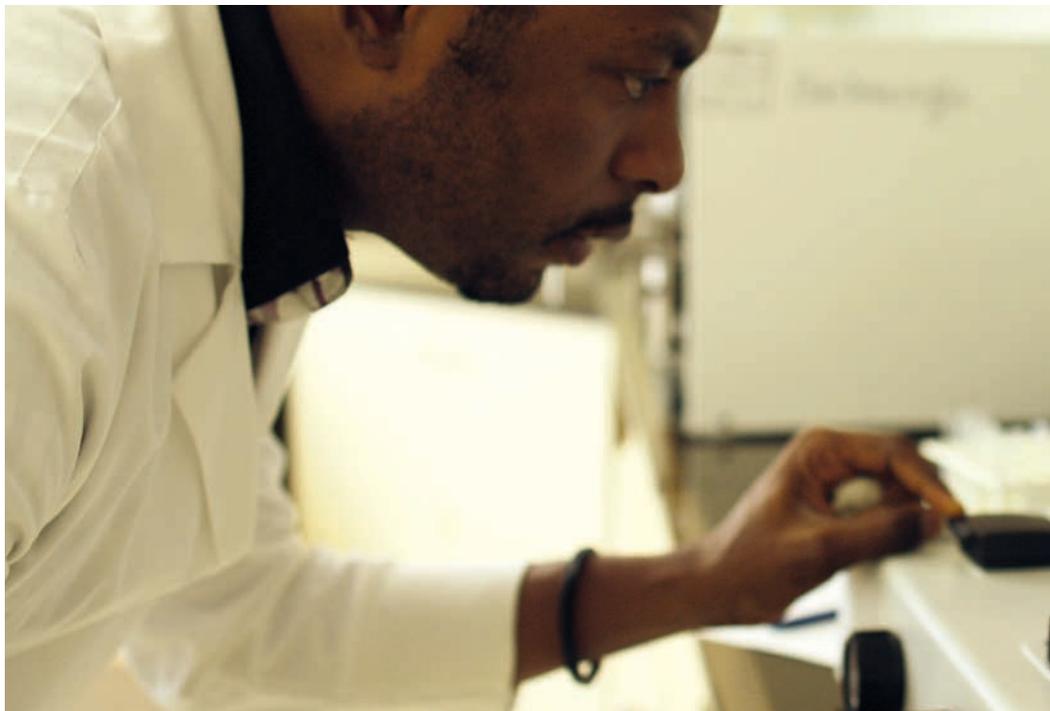
### A SELF-FINANCING MODEL

In addition to the technical aspects of rolling out key infrastructure, processes and skills, RESAMAD also aims to create the necessary conditions for the long-term operations of the laboratories through a cost recovery system.

This consists of using a portion of the revenue collected to finance the laboratory's activities and maintenance.

### EPIDEMIOLOGICAL SURVEILLANCE

The creation of a network of robust testing facilities such as RESAMAD is a powerful monitoring and surveillance tool, based on the rapid and coordinated upload of data generated by each laboratory.





# BAMS

## TRAINING LABORATORY TECHNICIANS IN WEST AFRICA AND HAITI

**The Bachelor of Science in Biological and Applied Medical Sciences (BAMS)**, an 8- or 9-month course leading to a diploma, was created in 2007 with the aim of developing the theoretical and practical skills of laboratory technicians, emphasizing best practice in terms of quality assurance, biosafety and waste management. Teaching covers scientific disciplines, as well as all the knowledge necessary for the optimal functioning of a laboratory: equipment maintenance, operating procedures, hygiene and safety, etc.

**BAMS is run in Mali and Haiti in partnership with the School of Biology, Biochemistry and Biotechnology (ESTBB) of the Catholic University of Lyon** and with support from Fondation Christophe et Rodolphe Mérieux. In Mali, the course was launched in 2007 for West African students and benefits from the support of the Charles Mérieux Center for Infectious Disease of Mali and RESAOLAB partners. In Haiti, the course has been delivered since 2011 in partnership with the Haitian Ministry of Public Health and the National Laboratory of Public Health.

### GRADUATING CLASSES

- 20 Haitian students completed the course in 2017 as part of the 6<sup>th</sup> graduating class of BAMS in Haiti, and 14 students are studying as part of the 7<sup>th</sup> edition of the course, with lessons beginning in September 2017
- 24 students from 8 West African countries were part of the 10<sup>th</sup> edition of the BAMS Mali program, which ended in 2017



### HANDOVER

In Mali, the 10<sup>th</sup> edition of BAMS also marks its transfer into the national education system: from the beginning of the 2018 school year, the course will be part of the program of the Ministry of Education and Scientific Research of Mali (as a Master I program at the University of Science, Techniques and Technologies in Bamako). In total, BAMS Mali trained more than 200 laboratory technicians in West Africa between 2007 and 2017.



# WEST AFRICA

## COMPLETION OF THE WARDS PROJECT

Launched in 2015 for a 3-year period, the **WARDS** (West Africa Regional Disease Surveillance) project came to an end in June 2017. Funded by the World Bank and coordinated by the West African Health Organisation (WAHO), WARDS has provided the Economic Community of West African States (ECOWAS) with an **effective epidemiological surveillance system by setting up 60 epidemiological surveillance centers at the district health level in 15 countries.**

As a partner of the project, **the Mériex Foundation was involved with improving the skills** of laboratory staff. The Foundation's team provided support for the 8 ECOWAS countries not belonging to RESAOLAB: Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea-Bissau, Liberia, Nigeria and Sierra Leone. The Foundation's work included: assessing needs, organizing training, translating training modules into English and Portuguese and holding joint workshops with members of the RESAOLAB network.

## REDISSE: STRENGTHENING DISEASE SURVEILLANCE SYSTEMS

As a continuation of WARDS, ECOWAS and WAHO countries decided to intensify their efforts in 47 district laboratories in five countries: Guinea, Guinea-Bissau, Liberia, Sierra Leone and Togo, as part of the REDISSE (Regional Disease Surveillance Systems Enhancement) project, funded by the World Bank. The Mériex Foundation is continuing for another year its **support for technical assessments, training, supervision and quality management**, alongside the ministries of health of the participating countries and the CCISD (Centre for International Cooperation in Health and Development).

## PARTNERSHIP FOR BIOSAFETY AND BIOSECURITY

After providing Mali with a mobile laboratory for the diagnosis of dangerous infectious agents in 2015, Germany supported the creation of a biosafety network covering the entire G5 Sahel region (Burkina Faso, Chad, Mali, Mauritania, and Niger) in 2016. Several awareness-raising and training workshops for member countries were held in 2017. Funded by the GIZ (German Federal Enterprise for International Cooperation), the project is run by the Mériex Foundation, the Charles Mériex Center for Infectious Disease of Mali in Bamako and the Bundeswehr Institute of Microbiology as part of the German Partnership Program for Excellence in Biological and Health Security. It is also supported by the ministries of health of the five countries and benefits from technical support from the Emergency Operations Center, WHO, WAHO and the G5 Sahel Permanent Secretariat.



# QUALITY INITIATIVE

## IMPLEMENTING A QUALITY MANAGEMENT SYSTEM

Convinced that the quality of test results contributes to decision-making for both the patient and the Ministry of Health, **in 2014 the Mériex Foundation launched a “Quality Initiative” to promote the establishment of quality management systems.** This mainly involves training and developing digital tools to raise awareness about the role of quality in the laboratory in limited resource countries. In 2017, the Quality Initiative supported five laboratories as they worked towards ISO 15189 certification. To achieve this, laboratories are trained to use the LQSI (Laboratory Quality Stepwise Implementation) tool developed by WHO. Achievements in 2017 including training (biosafety/biosecurity, sample transport following the International Air Transport Association (IATA) standard, internal audits, waste management), purchasing equipment and material, and developing a new version of the LabBook laboratory management software.

### IN 2017, THE QUALITY INITIATIVE INVOLVED 5 LABORATORIES IN 5 COUNTRIES

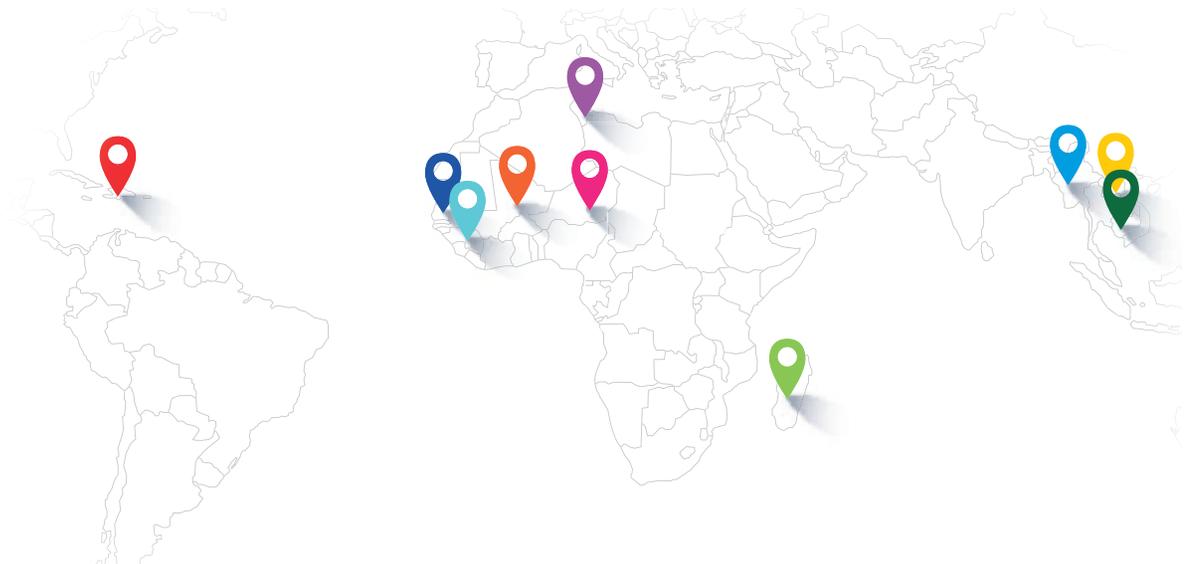
- Haiti: GHESKIO Centers (Haitian Group for the Study of Kaposi’s Sarcoma and other Opportunistic Infections)
- Laos: Center of Infectiology Lao Christophe Mériex in Vientiane
- Mali: Charles Mériex Center for Infectious Disease in Bamako
- Paraguay: Molecular Biology and Biotechnology Department, Institute of Research in Health Sciences of the National University of Asunción
- Bangladesh: Rodolphe Mériex Laboratory of Chittagong

In late 2017, an initial audit of the Rodolphe Mériex Laboratory of Beirut (Lebanon) was carried out to include this site in the initiative in 2018.



# COUNTRY INITIATIVES

Guinea | Madagascar | Mali | Niger | Senegal | Tunisia | Haiti | Cambodia | Laos | Myanmar



## GUINEA

### REINFORCING MEDICAL BIOLOGY INFRASTRUCTURE

After an initial phase, which consisted of an audit of the laboratories in Guinea after the Ebola virus epidemic, followed by a phase to define the strategy, **the LAB-NET project entered its operational phase with the roll-out of the action plan to strengthen medical biology capacities** in Guinea. In 2017, the Mérieux Foundation organized 20 training sessions for nearly 500 Guinean health professionals on biosafety, referencing samples, transporting infectious substances, external quality assessment and laboratory management. Funded by the Ministry of Europe and Foreign Affairs and coordinated by Expertise France, LAB-NET is run in partnership with the Pasteur Institute and the Ministry of Health of Guinea.

### ESTABLISHING A MEDICAL BIOLOGY POLICY

As part of the LABOGUI project, funded by the Agence Française de Développement, **the Mérieux Foundation is supporting the Guinean Ministry of Health in implementing a national medical biology policy**. The project is focused on strengthening the capacities of prefectural and regional laboratories and improving the way health professionals work. This is done through close monitoring by eight technical assistants based in each of the country's regions, under the supervision of a technical expert based in Conakry. This team was recruited and trained in 2017 and works within the Regional Health Directorates. Supervision of the relevant laboratories has begun; this will enable the development of improvement plans, in collaboration with the relevant stakeholders.

## MADAGASCAR

### MONITORING PATIENTS LIVING WITH HIV

The Mérieux Foundation and the Charles Mérieux Center for Infectious Disease of Madagascar introduced **HIV viral load testing: a blood test that quantifies the amount of virus for the therapeutic monitoring of people living with HIV**. With a prevalence of between 0.5% and 1% of the population, an estimated 35,000 to 50,000 people are living with HIV in Madagascar and nearly 30,000 are in urgent need of antiretroviral treatment. Some 1,000 viral load tests were carried out in 2017 for the National Program. Prescription and interpretation training was organized in partnership with Hospices Civils de Lyon and the Joseph Raseta Befelata-nana University Hospital Center.



## MALI

### ▶ MONITORING TUBERCULOSIS RESISTANCE

Dedicated to **diagnostics and surveillance of tuberculosis resistance**, the BSL3 biosecurity level laboratory at the Charles Mérieux Center for Infectious Disease of Mali has been operational since 2017. It was built with support from Fondation Christophe et Rodolphe Mérieux and equipped with support from the Global Fund and the CDC-GHSA (US Centers for Disease Control and Prevention – Global Health Security Agenda) via Catholic Relief Services. In just a few months, over a hundred analyses were conducted by the staff of the Charles Mérieux Center for Infectious Disease, which is qualified to perform testing in a biocontainment laboratory. **Cases of multidrug-resistant tuberculosis have already been diagnosed** and the results reported to clinicians and to the National Program to help ensure appropriate patient care.

### HELPING TO PROVIDE MEDICAL CARE IN RURAL AREAS

The LABOMEDCAMP project, the first phase of which lasted from 2011 to 2014, saw the creation of 10 laboratories and aims to improve access to diagnosis by establishing front-line laboratories in community health centers. **The second phase of the project, launched in 2017, will help to consolidate these achievements and extend the initiative to 8 new rural health centers.** Funded by the Princely Government of Monaco and the Mérieux Foundation, the LABOMEDCAMP project is run in partnership with the Malian Ministry of Health and Public Hygiene, the NGO Santé Sud, the Charles Mérieux Center for Infectious Disease of Mali, the Association des Médecins de Campagne and the Mérieux Foundation.



## NIGER

### MAPPING LABORATORIES

As part of the collaboration with the Directorate of Health Laboratories of Niger and at the request of the African Society for Laboratory Medicine, the Mériex Foundation is mapping the laboratories of Niger. **This involves reviewing public and private biomedical laboratories at all levels of the health pyramid**, in terms of infrastructure, testing performed, staff qualifications, efficiency of practice and quality management. This report will be used by the Directorate of Health Laboratories to draw up a plan to strengthen the national laboratory network.

## SENEGAL

### AUTOMATED EPIDEMIOLOGICAL MONITORING

As the ability to respond to an epidemic also depends on fluid information flow, electronic data reporting systems are critical for strengthening epidemiological surveillance. In Senegal, as part of the I-Lab project, the Laboratories Directorate called on the Mériex Foundation in 2015 to **help set up a laboratory data reporting tool within the data management platform DHIS2 (District Health Information Software 2), recommended by the WHO**. In 2017, 118 national network laboratories were equipped and their personnel trained. 70% of the laboratories report their data automatically and weekly (compared to 5% before the project was set in motion). Some fifty computers were also provided to fill IT gaps. The project is funded by the Skoll Global Threats Fund and run with the NGO PATH.

## GLOBAL HEALTH SECURITY

In 2017 the Mériex Foundation **took part in the GHSA program (Global Health Security Agenda) in Senegal**, in collaboration with the NGO PATH and the Laboratories Directorate of Senegal. It contributed by helping to draft the laboratories' strategic plan, providing self-learning documents and tools in the areas of biosafety, biosecurity, quality management and antimicrobial resistance, and implementing training for biosecurity trainers.



## TUNISIA

### ▶ FOUNDATION STONE OF THE RODOLPHE MÉRIEUX LABORATORY

Construction of the 9<sup>th</sup> Rodolphe Mériex Laboratory began in Tunis in April 2017. The first BSL3 biosafety level laboratory in Tunisia will be managed by the Pasteur Institute in Tunis as part of a close partnership with the Mériex Foundation. Just like the eight other laboratories in the network, it will meet the highest international standards of safety and quality and will help improve the level of scientific research in the country.

## HAITI

### BUILDING THE LABORATORY SYSTEM



The SPHaïtiLAB project to support the development of Haitian laboratories, led by the Mériex Foundation, made significant progress in 2017. A “National Laboratory Policy”, which lays down the priorities of the Ministry of Public Health and Population to improve the country’s laboratory services, was drafted and submitted for validation to the high authorities of the Ministry of Public Health in October. To make this policy operational, a “National Strategic Plan for the Laboratory System 2018-2022” is being developed and was the subject of several meetings and workshops during the year. In addition, the study on the prevalence of multidrug-resistant tuberculosis has continued: nearly 1,000 samples have been sent to the GHESKIO Centers to be analyzed. In 2017, the project’s Haitian partners received training to bolster their skills in areas such as “Advocacy and Knowledge Translation” and “Project Management”. Jointly funded by the European Commission and the Mériex Foundation, the project benefits from the operational support of the National Public Health Laboratory (LNSP), the Epidemiology, Research and Laboratory Directorate, the GHESKIO Centers (Haitian Group for the Study of Kaposi’s Sarcoma and other Opportunistic Infections) and the African Institute of Public Health of Burkina Faso.

## CAMBODIA

### SUPPORTING THE LABORATORY NETWORK

The CamLab network of medical biology laboratories aims to **ensure the quality of diagnosis in laboratories to improve the health of the population**. One of this project’s major areas of focus is **to set up a national program for external quality assessment to evaluate the performance of test results**. In 2017, 44 laboratories took part in the program, with a satisfactory success rate (more than 80% compliance with the benchmark results). 2017 also saw the development of a national plan for continuing education for laboratory technicians, which will be submitted to the Ministry of Health for adoption. CamLab operates as part of a collaboration with the Bureau of Medical Laboratory Services of the Department of Hospital Services and the National Institute of Public Health of the Ministry of Health of Cambodia. WHO, NAMRU-2 (Naval Medical Research Unit Two) and the US CDC (Centers for Disease Control and Prevention) contribute to the initiative.

### ➔ INAUGURATION OF THE BATTAMBANG HOSPITAL MICROBIOLOGY LABORATORY

The microbiology laboratory of the public hospital in Battambang, 300km from Phnom Penh, has been revamped to meet growing demand and improve staff safety. The work was carried out as part of a collaboration with the Bureau of Medical Laboratory Services of the Ministry of Health, the Department of Hospital Services of the province of Battambang and the 3LAN Construction Engineering company. The laboratory was opened in February 2017 and aims to become a regional center for training and receiving samples, particularly for microbiology testing.



## ➡ RENOVATION OF THE RODOLPHE MÉRIEUX LABORATORY

The Rodolphe Mérieux Laboratory of Phnom Penh, which belongs to the Cambodian University of Health Sciences (USSC) and contributes to research and student training, was opened on April 27, 2017 after major renovation work. Its new facilities include a biobank for storing samples and microbiological strains used in USSC research projects and three units dedicated to molecular biology activities. The project was completed with funding from Fondation Christophe et Rodolphe Mérieux, in partnership with the Ministry of Health of Cambodia, USSC and the companies Climatic (France) and PIT (Cambodia).



## LAOS

### ➡ TWO CONFERENCES TO IMPROVE PATIENT CARE

In 2017, two conferences were organized by the Mérieux Foundation and the Center of Infectiology Lao Christophe Mérieux in Vientiane:

- **The regional symposium on viral hepatitis B and C** brought together some 100 health professionals from the Mekong region -in collaboration with the Ministry of Health of Laos and the IRD (French National Research Institute for Sustainable Development) and the University of Chiang Mai in Thailand and with the support of the French Ministry of Europe and Foreign Affairs and Gilead Sciences;

- **The 10<sup>th</sup> national seminar on HIV/AIDS** hosted 50 participants from all Laos antiretroviral treatment centers - in partnership with the Center for HIV/AIDS and Sexually Transmitted Infections.



### ➡ OFFICIAL OPENING OF THE FOOD SAFETY LABORATORY

The first Food Safety Laboratory in Laos was inaugurated on April 24, 2017 in Vientiane. It aims to protect the local population from foodborne diseases (responsible for 175,000 deaths each year in Southeast Asia, according to the WHO) through the testing and quality control of food products. Its construction was overseen by the Mérieux Foundation and was funded by Mérieux NutriSciences. The Food Safety Laboratory belongs to the Food and Drug Quality Control Center which is managed by the Ministry of Health of Laos.





## SUPPORTING KHAMMOUANE PROVINCE'S LABORATORIES

To expand access to quality diagnosis in the Khammouane Province, the **Lab Kham project focuses its work on 3 areas of improvement: continuing education, quality assurance and laboratory networking**. In total, 10 district laboratories are involved, overseen by the provincial hospital in Thakhek, in connection with the district hospitals and the Provincial Health Office. The project is funded jointly by the Mérieux Foundation and the Auvergne-Rhône-Alpes Region.

## PREVENTING HEPATITIS B IN NEWBORNS

The research project on the prevalence of hepatitis B in pregnant women is led by Dr. Vatthanaphone Latthaphasavang (as part of his scientific thesis at Claude Bernard Lyon 1 University), in collaboration with the Mahosot Hospital, the Mother-Child Hospital of Vientiane and the Center of Infectiology Lao Christophe Mérieux. This study aims to **identify pregnant women infected by the virus in order to offer them an assisted delivery and vaccination for newborns**. In 2017, 133 women likely to have transmitted the virus to their child at birth were monitored and 99% of children received the first dose of vaccine less than 24 hours after birth. This study, the results of which will be presented in 2018, will also help to inform a national prevention plan.

## MYANMAR

### ROLLING OUT AN HIV MONITORING TEST

In 2017, the Mérieux Foundation continued to support the National AIDS Program (NAP) to improve access to the test to quantify HIV viral load. The Foundation provided three laboratories with training, equipment and technical support. These laboratories have performed, for the benefit of some 25,000 people, more than 95% of viral load tests for cohorts of patients being treated by the NGOs MSF Holland, MSF Switzerland and The Union. This activity is part of the UNAIDS 2020 target of 90-90-90: 90% of people living with HIV know their HIV status, 90% of those diagnosed are receiving antiretroviral treatment and 90% of those treated have an undetectable viral load.

# 02 APPLIED RESEARCH



# REINFORCING APPLIED RESEARCH ON LOCAL PUBLIC HEALTH PRIORITIES

The Mériéux Foundation intends to make a lasting contribution to the development of research capacities in the field.

**Improving applied research capabilities in developing countries goes hand in hand with the roll-out of public health interventions to address local needs in the combat against infectious diseases.** The Mériéux Foundation is particularly committed to three scientific priorities: the launch of innovative and collaborative research projects, the development of training for young researchers and the organization of clinical and epidemiological studies to ensure the development of the GABRIEL research network and its long-term sustainability.

**The Mériéux Foundation works with the constant aim of developing autonomy and local initiative** to ensure that the organizations and projects it supports can continue to operate over the long term. The Foundation teams always act in collaboration with the relevant local stakeholders.

## **THE MÉRIEUX FOUNDATION: A MEMBER OF SEVERAL SCIENTIFIC NETWORKS AND PROGRAMS OF EXCELLENCE**

- International Center for Infectiology Research (CIRI, Inserm U1111)
- The French National Alliance for Life Sciences and Health (Aviesan) and the Francophone Network on Neglected Tropical Diseases
- ISARIC (International Severe Acute Respiratory and Emerging Infection Consortium)
- The European Union's Horizon 2020 consortia: COMPARE, GloPID-R and ZikaPLAN
- The European EVAg Consortium (European Virus Archive global), devoted to the collection, characterization, production and distribution of viruses

# THE EMERGING PATHOGENS LABORATORY IN LYON

## THE CORNERSTONE OF AN INTERNATIONAL RESEARCH SYSTEM

**The Mériex Foundation's research is backed by the expertise of the Emerging Pathogens Laboratory on the Charles Mériex campus in Lyon.** The laboratory's team is comprised of researchers, technicians and doctoral students who work in BSL2 and BSL3 biosecurity level zones. They have access to the BSL4 Jean Mériex-Inserm Laboratory and the technological platforms of SFR128 BioSciences Gerland-Lyon Sud.

The Emerging Pathogens Laboratory is **dedicated to applied research on infectious diseases** that affect vulnerable populations in developing countries. It focuses on three priority activities:

- Developing and transferring technologies for infectious disease diagnosis and surveillance,
- Supporting the careers of researchers in developing countries,
- Implementing multi-center research and surveillance activities, with emphasis on assessing the performance of new diagnostics (such as tuberculosis), monitoring morbidity trends (e.g. pneumonia) and the evolution of pathogens.

## QUALITY INITIATIVE

In 2014, the Mériex Foundation launched the Quality Initiative that aims to implement a quality management system that meets ISO 15189 certification criteria. Five members of the GABRIEL network participated in the Quality Initiative in 2017, receiving training, equipment and specially developed software (see p.19).

The Emerging Pathogens Laboratory also began a quality project to obtain ISO 17025 certification. After an audit performed in 2016, an action plan was developed for 2017 and 2018.





# GABRIEL NETWORK

## RESPONDING TO HEALTH ISSUES IN DEVELOPING COUNTRIES

In 2008, the Mérieux Foundation created the **GABRIEL network: a Global Approach to Biological Research, Infectious diseases and Epidemics in Low-income countries.**

Its members share their expertise and conduct research projects that target local infectious disease priorities: respiratory infections and fevers, enteric infections and emerging infections.

Coordinated by the Emerging Pathogens Laboratory, **the GABRIEL network has 20 members in 16 countries across 4 continents:** the Rodolphe Mérieux Laboratories and public and private university and hospital research laboratories. In 2017, two institutions joined the GABRIEL network: the Rodolphe Mérieux Laboratory at the Bangladesh Institute of Tropical and Infectious Diseases (BITID) of Chittagong and the Microbiology, Health and Environment Laboratory (LMSE) of Lebanese University in Tripoli (Lebanon).

In 2017, the GABRIEL network organized several training sessions for laboratory personnel, academics and health professionals. This included theoretical and practical training in molecular biology for 20 students in Cambodia, training on the detection of the Crimean-Congo hemorrhagic fever virus in Mali, a practical workshop using the Line Probe Assay kit to diagnose first-line tuberculosis drug resistance in the Ukraine and an infectious disease bioinformatics workshop for 12 participants, in partnership with the J. Craig Venter Institute (USA).

### GABRIEL NETWORK INTERNATIONAL VISIBILITY IN 2017

- 90 publications in international peer-reviewed scientific journals
- 3 conferences presented at the International Center for Infectology Research (CIRI)
- 8 oral presentations and 4 scientific posters at national and international conferences and symposia



### 9<sup>th</sup> international annual meeting of the GABRIEL network at Les Pensières Center for Global Health

► **Symposium** on the subject of flaviviruses (which include yellow fever, dengue fever, Zika, etc.) and the progress and challenges of their diagnosis;

► **Working groups** on tuberculosis (presentation of the multi-center research project in Bangladesh and Lebanon to validate biomarkers predicting the efficacy of tuberculosis treatment) and pneumonia (presentation of projects on the impact of vaccination and the surveillance of acute fevers);

► **2017 Young Researchers Award** given to Silaphet Somphavong (Laos) and Aline Da Rocha Matos (Brazil) for their respective work on tuberculosis and the influenza virus A (H1N1) pdm09.

# CHRISTOPHE MÉRIEUX PRIZE

The 2017 Christophe Mérieux Prize was awarded to Serge Eholié and Xavier Anglaret who jointly manage the Center for Research on Infectious Diseases and Associated Pathologies in Côte d'Ivoire.



The Center for Research on Infectious Diseases and Associated Pathologies was founded in 1994 in Abidjan, focusing on two areas: conducting research on infectious diseases to improve the health of the population, and training young scientists in medical research. With a multidisciplinary team including highly respected Ivorian and French researchers, today the center manages studies in 15 countries, including 11 African countries. In total, the team has carried out 83 studies, published 438 scientific articles and trained 80 Master's degree researchers and 30 PhD researchers. The center has also led to the opening of two large health centers in Abidjan where thousands of people receive care.

## ENCOURAGING FIELD RESEARCH

Every year since 2007, Fondation Christophe et Rodolphe Mérieux has awarded the Christophe Mérieux Prize to a researcher or a research team studying infectious diseases in developing countries. The winner is chosen by the Institut de France from a range of candidates working in the field, identified by the Mérieux Foundation.

The prize is worth €500,000.



# RESEARCH PROJECTS

## FOODBORNE DISEASES



### COMPARE PROJECT CONTINUES IN BANGLADESH

Funded by the Horizon 2020 program, COMPARE\* involves a consortium of 29 partners, coordinated by the Technical University of Denmark and Erasmus Medical Center (Rotterdam). **It aims to develop a global database for the rapid identification of pathogens using Next Generation Sequencing.** The Mériex Foundation supports two areas of the project in Bangladesh: the sequencing of samples in collaboration with the icddr,b (International Center for Diarrhoeal Disease Research, Bangladesh) and the analysis of resistant strains of *Salmonella* Typhi with the Child Health Research Foundation. The following are also partners: the Institute for developing Science and Health initiatives in Bangladesh (ideSHi), the National Laboratory of Scientific Computing in Brazil and the company Applied Maths.

### TYPHOID SCREENING TEST VALIDATION IN AFRICA

Developed and validated by the Mériex Foundation's Emerging Pathogens Laboratory, based on research conducted in Bangladesh, the new typhoid test is currently undergoing validation in Africa (Burkina Faso, Ghana and Malawi). Benefiting from new funding from the Bill & Melinda Gates Foundation and scientific support from the International Vaccine Institute and the Malawi-Liverpool Wellcome Trust program, **the study delivered its first results in 2017, confirming the test's ability to identify the Salmonella pathogens responsible for typhoid fever.** The results were presented at the 10<sup>th</sup> International Conference on Typhoid & other Invasive Salmonellosis (Uganda, April 4-6, 2017).

## HEPATITIS

### EVALUATION OF HEPATITIS B SCREENING TESTS IN LAOS

In a country in which the prevalence of hepatitis B is estimated at 8 to 10% of the population, a study to evaluate screening was launched in 2015 in four hospitals in Laos. **The aim was to compare the results of rapid diagnostic tests used locally with those of the ELISA reference method (Enzyme**

Linked Immuno Sorbent Assay).

To do this, over 1,500 blood samples were collected and tested using both methods.

Statistical analysis will be carried out in 2018. Funded by the Mériex Foundation and the Fondation AnBer, the study is run in collaboration with the postgraduate section of the University of Health Sciences in Laos and the Center of Infectiology Lao Christophe Mériex.



### HEPATITIS C PREVALENCE IN CAMBODIA

The research project on **hepatitis C virus infections (HCV) in patients living with HIV and in pregnant women** was concluded in 2017. It showed that HCV infection is common in HIV-positive subjects and is mainly associated with intravenous medications.

The results were presented at the 9<sup>th</sup> Conference on HIV Science organized by the International AIDS Society (IAS) in Paris in July 2017. These studies were carried out with the support of the University of Health Sciences in Cambodia, the National Center for HIV/AIDS, Dermatology and STD, the Pasteur Institute of Cambodia, the NGO KHANA and New South Wales University in Australia.

### TUBERCULOSIS AND OTHER MYCOBACTERIAL DISEASES

## MOLECULAR EPIDEMIOLOGY OF TUBERCULOSIS IN LAOS

Carried out with the International Mixed Laboratory (an organization allowing several institutions to work together on antimicrobial resistance), **the project for genotyping tuberculosis strains aims to improve the effectiveness of disease control measures in Southeast Asia.** The network is comprised of the French National Research Institute for Sustainable Development of Montpellier, the National Institute of Hygiene and Epidemiology of Vietnam, the Pasteur Institute of Cambodia, the Center of Infectiology Lao Christophe Mérieux and the Mérieux Foundation's Emerging Pathogens Laboratory.

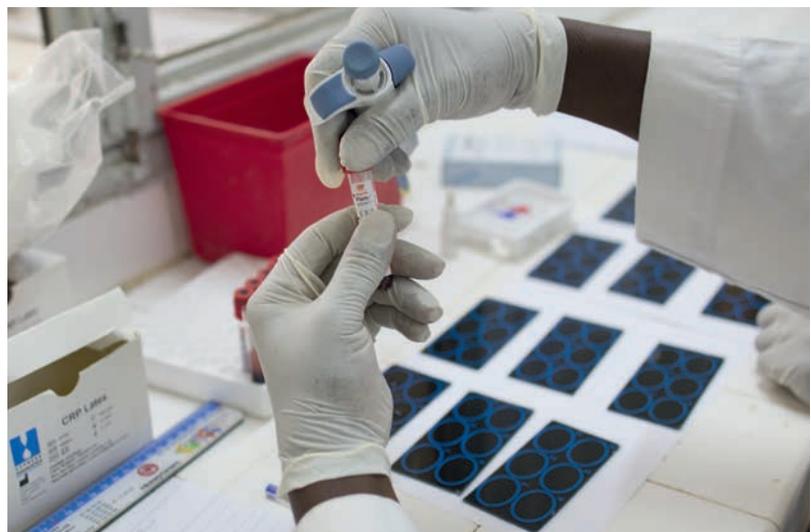
## MULTI-CENTER STUDY ON TUBERCULOSIS DRUG EFFICACY

The standard treatment for tuberculosis (recommended by WHO and based on four drugs) has significant side effects, especially for patients who contract a multidrug-resistant strain. These undesirable effects are the cause of an increasing number of patients stopping treatment. **The multi-center study launched in 2017 by the Mérieux Foundation aims to assess the efficacy of a new immunological test to monitor patients undergoing treatment for tuberculosis.**

The study is run in two countries, Lebanon and Bangladesh, and coordinated by the Emerging Pathogens Laboratory. Expansion to other members of the GABRIEL network is planned in 2018.

## LEPROSY DRUG RESISTANCE SURVEILLANCE IN MADAGASCAR

As the National Reference Laboratory for Leprosy since 2016, the Charles Mérieux Center for Infectious Disease of Madagascar is carrying out a study to **assess the genetic diversity of the strains of the leprosy bacterium and to monitor the emergence of resistance to antibiotic treatment.** This work is conducted in partnership with the dermatology department of the Joseph Raseta Befelatanana University Hospital Center, the École Polytechnique Fédérale of Lausanne, the Fondation AnBer, the Raoul Follereau Foundation, the National Leprosy Program, the French National Reference Center for Mycobacteria and Mycobacterial Resistance to Tuberculosis Drugs (CNR-MyRMA) and the WHO Country Office in Madagascar.



## INCIDENCE OF TROPICAL MYCOSES IN MADAGASCAR

The neglected tropical diseases chromomycosis and sporotrichosis are fungi which are endemic to Madagascar and develop in subcutaneous tissues after contact with a wound. This research project is being conducted as part of a thesis and seeks to **assess their impact and accurately identify sources of contamination with the aim of setting up a clinical biology network to identify and treat patients.** In 2017, an environmental surveillance project involving dermatologists, scientists and botanists was conducted. The analysis of cutaneous and environmental samples continues. The study is carried out in partnership with the dermatology department of the Befelatanana University Hospital Center with the support of Grenoble-Alpes University and Antananarivo University.

### RESPIRATORY DISEASES

## ETIOLOGY OF PNEUMONIA IN LEBANON

The PEARL study (Pneumonias' Etiology Among Refugees and Lebanese population) aims to **establish the prevalence of different pathogens which cause respiratory infections in the context of a humanitarian crisis.**

The results will enable recommendations to be made for prevention and treatment. In total, the study aims to include 1,500 patients. It brings together a consortium of partners from the worlds of

academia (Saint Joseph University in Beirut and Lebanese University in Tripoli), the humanitarian sector (NGOs Al-Bashaer and Amel), the private sector (Bioteck) and experts in biology (Chtoura Hospital in Lebanon, the University of Lyon and the Nationwide Children's Hospital of Ohio in the United States). The study is funded by the Mérieux Foundation and the Bill & Melinda Gates Foundation.



## SEROLOGICAL DISTRIBUTION OF PNEUMOCOCCUS IN CAMBODIA

With the aim of assessing the impact of the childhood vaccination program against pneumococcal infections launched in 2015, **the Mérieux Foundation and the Pasteur Institute of Cambodia are leading a research project to identify the strains which were in circulation before the introduction of the PCV13 vaccination.** A total of 250 strains isolated before January 2014 were analyzed by the Rodolphe Mérieux Laboratory of Phnom Penh with the help of the Sihanouk Hospital Center of HOPE and the support of NAMRU-2 (Naval Medical Research Unit Two) and the Emerging Pathogens Laboratory in

Lyon. The study was published in 2017 in the *American Journal of Tropical Medicine and Hygiene* and was presented to the WHO Cambodia Country Office and the Ministry of Health.

## PREVALENCE OF INFLUENZA AMONG SEVERE INFECTIONS IN CAMBODIA



Influenza viruses are frequently the cause of severe acute respiratory infections. **This study aims to identify the prevalence of influenza viruses among the causative agents of pneumonia in Cambodia.** In 2017, over 1,400 samples were analyzed, confirming the presence of influenza viruses in 4.2% of severe cases. This work is carried out as part of a collaboration with the Rodolphe Mérieux Laboratory of Phnom Penh, the Croix-Rousse Hospital in Lyon, the E2M2 doctoral school, the VirPath laboratory and Claude Bernard Lyon 1 University.



## PROSPECTIVE STUDY OF ACUTE RESPIRATORY INFECTIONS IN LAOS

The LaCoRIS project, launched in 2015, will continue until 2019. Based on a cohort of over 5,000 people in 25 villages in the Vientiane area, this project aims to measure the incidence of **acute respiratory diseases** and to identify pathogens responsible for acute respiratory diseases in urban and peri-urban areas of Laos. Funded by NAMRU-2 (Naval Medical Research Unit Two), the project is being carried out as part of a scientific collaboration between the Center of Infectiology Lao Christophe Mérieux, the LOMWRU of Vientiane (Lao-Oxford-Mahosot Hospital -Wellcome Trust Research Unit), the National Center for Laboratory and Epidemiology and the Emerging Pathogens Laboratory.

## FEVERS

### PEDIATRIC FEVER SURVEILLANCE IN MALI

Launched in 2016 in conjunction with the Charles Mérieux Center for Infectious Disease of Mali, the Bundeswehr Institute of Microbiology and the pediatric departments of the Gabriel Touré Hospital in Bamako and the Mali Hospital, **this study examines the origin of acute febrile syndromes to improve prevention and treatment.** More than 500 children have already been included in the study, which has highlighted the circulation of two remarkable viruses, the Lassa virus and the Crimean-Congo hemorrhagic fever virus, in addition to common pathogens. The study is supported by the German Partnership Program for Excellence in Biological and Health Security of the German Ministry of Foreign Affairs.

## MENINGITIS

### SURVEILLANCE OF BACTERIAL MENINGITIS IN MADAGASCAR

Launched in Africa in 2002, surveillance of the bacteria that cause meningitis was extended to Madagascar in 2011. **This entails monitoring the bacterial etiology of meningitis and carrying out microbiological monitoring of the emergence and reemergence of pathogenic strains.** The project is carried out in collaboration with the WHO Country Office in Madagascar, the infectious diseases department of the Befelatanana University Hospital Center, the Tsaralalana Mother-Child University Hospital and the Emerging Pathogens Laboratory of Lyon. The molecular diagnosis is carried out by the Charles Mérieux Center for Infectious Disease in Antananarivo and the sequencing is conducted by Meningococcal Reference Centers.

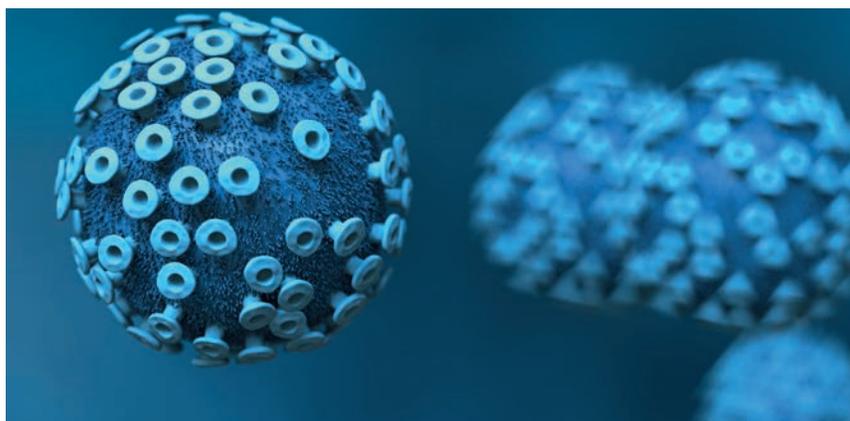
## ZIKA

## DEVELOPING DIAGNOSTIC TESTS

The Mérieux Foundation is one of 25 research and public health organizations that are members of the ZikaPLAN (Zika Preparedness Latin American Network) project. Funded by the European Commission as part of the Horizon 2020\* research and innovation program, the initiative brings together the different disciplines needed to take a comprehensive approach: epidemiological surveillance, clinical studies, screening and monitoring tools, training and knowledge-sharing activities. **The Mérieux Foundation is particularly involved in the development and transfer of rapid diagnostic tests.** In 2017, two prototype tests were submitted for assessment: one for the detection of the Zika virus and the other for the detection of immunoglobulin M (IgM) and immunoglobulin G (IgG), which are antibodies produced as part of the immune response.

**ACCESS TO TESTS FOR NEGLECTED DISEASES**

The Mérieux Foundation's strategy for giving access to diagnostic techniques is based on the training of local human resources to develop and produce reliable, affordable diagnostic tools. The Foundation works with several stakeholders who believe in this decentralized approach, including the Francophone Network on Neglected Tropical Diseases, Médecins Sans Frontières and the Pasteur Institutes.



# 03 KNOWLEDGE-SHARING



“Les Pensières Center for Global Health is much more than a place to work, it’s a place for dialogue and looking outwards so that new ideas can emerge and public health can advance worldwide. Such is the vocation of this unique and historic place.”

Alain Mérieux

## DEVELOPING KNOWLEDGE-SHARING

The Mérieux Foundation works around the world to spread and share knowledge so that scientific progress benefits as many people as possible.

**K**nowledge-sharing is the driving force behind all of the Mérieux Foundation’s work: increasing professional competence in clinical biology laboratories, creating spaces for dialogue on key scientific subjects and providing expertise to public health partnerships. Whatever the field, the Mérieux Foundation works relentlessly to enhance knowledge, promoting the circulation of ideas and the development of synergies to advance the fight against infectious diseases.

### LES PENSIÈRES CENTER FOR GLOBAL HEALTH

A property of the Mérieux Foundation, located on the shores of Lake Annecy, Les Pensières Center for Global Health was designed to encourage knowledge-sharing and to be a catalyst for discussions and a melting pot of ideas, all for public health. In an exceptional setting, looking out upon nature and the world, health professionals and stakeholders from the field, in all disciplines and from all countries meet together for high-level courses and conferences in an effort to advance healthcare around the world.

The Mérieux Foundation’s advanced courses and international conferences, including ADVAC, ACDx, the Global Task Force on Cholera Control, the Cent Gardes Conference and the GABRIEL network meeting, were held at Les Pensières in 2017. The center also welcomed international organizations including WHO, Unitaaid, the Bill & Melinda Gates Foundation, the Pasteur Institute, Inserm, Medicines for Malaria Venture, the Human Vaccines Project, the European Association for the Study of Obesity and Epiconcept.

Les Pensières has also welcomed organizations and non-profit associations, bringing together philanthropists and humanitarian stakeholders who are committed to the common good, including the Ahimsa Forum and the annual workshop of the French Foundation Centre.

Les Pensières welcomed more than 6,000 people during 150 events in 2017.



# TRAINING

## ADVAC PARTNERS

- Bill & Melinda Gates Foundation,
- European Centre for Disease Prevention and Control (ECDC)
- European Society for Paediatric Infectious Diseases (ESPID)
- European Commission
- Johns Hopkins Bloomberg School of Public Health
- Mériex Foundation
- National Foundation for Infectious Diseases (NFID)
- National Institute of Allergy and Infectious Diseases/National Institutes of Health and Fogarty International Center
- National Vaccine Program Office (NVPO)
- World Health Organization
- University of Geneva
- US Centers for Disease Control and Prevention (CDC)

Unrestricted education grants are provided by GlaxoSmithKline, Janssen, Merck, Novartis Vaccines, Pfizer, Sanofi Pasteur, Sanofi Pasteur MSD, Serum Institute of India and Takeda.

## DIFFERENT FORMATS ADAPTED TO LOCAL NEEDS

In collaboration with its partners, the Mériex Foundation provides tailored educational support and offers various teaching formats: intensive courses lasting one to two weeks, given by scientific experts from around the world (ADVAC, ACDx), degree training courses lasting several months (such as BAMS, see p.17) and short thematic modules, sometimes online, which support projects and networks in the field, including the GABRIEL network, the RESAOLAB project and the Quality Initiative.

## ADVANCED COURSE OF VACCINOLOGY

### – ADVAC (Advanced Course of Vaccinology)

**ADVAC covers all aspects of vaccination:** from immunology to vaccine delivery, political and economic issues and increased vaccine hesitancy. In 2017, ADVAC welcomed Prof. Rolf M. Zinkernagel, a professor at the University of Zurich and winner of the 1996 Nobel Prize in Physiology or Medicine (jointly with Peter Doherty). Rolf M. Zinkernagel taught a session on the theme “Immunology taught by viruses”.

The ADVAC alumni network (more than 1,100 people from 110 countries) regularly organizes meetings at major scientific conferences, as was the case in Geneva in 2017, following the SAGE conference (group of experts on vaccination) hosted by the WHO and in Madrid, during the conference of the European Society for Paediatric Infectious Diseases (ESPID).

## ADVANCED COURSE ON DIAGNOSTICS

### – ACDx (Advanced Course on Diagnostics)

**ACDx presents a comprehensive overview of challenges in diagnostics:** the latest advances, epidemic surveillance, access to quality testing, etc. In 2017, antimicrobial resistance was featured with the contribution of Dr. Marc Sprenger, director of the WHO's Antimicrobial Resistance Secretariat, who presented the Global Action Plan adopted in 2015. To make the course accessible to as many participants from developing countries as possible, grants were awarded in 2017 by BD, bioMériex, Bioneer, Cepheid, Roche and Africa CDC.

## AMRSNET NETWORK

At the 2017 edition of ACDx, the Africa CDC (Centers for Disease Control) launched its “Antimicrobial Resistance Surveillance Network” (AMRSNET) to fight against antibiotic-resistant infections, a framework aligned with WHO's Global Action Plan. This network brings together leaders in public health, epidemiologists, experts in laboratory policy and stakeholders in human, animal and environmental health.



## ADVAC

(Advanced Course of Vaccinology)

- 18<sup>th</sup> course
- 72 students from 38 countries
- May 8-19, 2017 at Les Pensières Center for Global Health

In partnership with the University of Geneva

## ACDx

(Advanced Course on Diagnostics)

- 8<sup>th</sup> edition
- 38 students from 20 countries
- October 29 - November 3, 2017 at Les Pensières Center for Global Health

In partnership with the London School of Hygiene & Tropical Medicine

LAUNCHED IN 2017

## Epidemiology in Complex Emergencies Course

- 1<sup>th</sup> edition
- 23 students from 16 countries
- June 19-23, 2017 at Les Pensières Center for Global Health

In partnership with Epiconcept and CORDS (Connecting Organizations for Regional Disease Surveillance)

## EPIDEMIOLOGY TRAINING

The Mériex Foundation launched the Epidemiology in Complex Emergencies Course in 2017 to strengthen epidemiologists' skills so they are able to contribute effectively to **a multidisciplinary response to outbreaks**. Teaching was provided by contributors from the US CDC (Centers for Disease Control and Prevention), WHO, Médecins Sans Frontières, GOARN (Global Outbreak Alert and Response Network) and Epicentre, with funding from the Skoll Global Threats Fund.



## DISTANCE LEARNING

### GLOBE: Global link for online biomedical expertise

**Distance learning is an important, complementary tool for knowledge-sharing.** The Mériex Foundation offers health professionals around the world independent access to training, networks of expertise and collaborative spaces. In French and English, the bilingual GLOBE portal offers interactive training courses on subjects linked to biology, epidemics and laboratory management. Content is regularly enhanced and, in 2017, 6 new modules were added, including e-learning on best practices in laboratories, biosafety and rabies.

# SCIENTIFIC CONFERENCES

Every year, the Mérieux Foundation contributes to the sharing of knowledge by organizing high-profile scientific conferences. In 2017, a special event was held at Les Pensières for the Foundation's 50<sup>th</sup> anniversary. More than 150 people attended this day of discussions on the new epidemic risks in developing countries (see special report p.8).

In addition to this anniversary event, the Mérieux Foundation also organized twelve conferences in 2017, half of which were held outside of France.

## CONFERENCES HELD AT LES PENSIÈRES IN 2017

### Conference on Enteric Fever Diagnostics

→ February 2017 / 44 participants

In partnership with the Bill & Melinda Gates Foundation

Given the lack of specificity and/or sensitivity of the tests currently used to screen for typhoid, this event aimed to determine the Target Product Profile (TPP) for the diagnosis of typhoid fever. A TPP describes the manner in which a diagnostic tool will be used, along with its necessary characteristics.

### Humanized Models to Study Immunity and to Accelerate the Development of New Solutions for Human Health

→ April 2017 / 50 participants

In partnership with Sanofi Pasteur

This conference focused on humanized research models (after the transplantation of a human immune system into an animal model) and their impact on the study of infectious diseases and cancers and on the testing of new drugs.



## ENDING CHOLERA

**Global Roadmap to 2030  
October 2017**

→ In partnership with the Global Task Force on Cholera Control (GTFCC)

110 participants

### Human Vaccines Project meeting

→ April 2017 / 31 participants

In partnership with the Human Vaccines Project an international NGO representing academia, associations, industry and the public sector

### Vaccine Acceptance: Science, Policy and Practice in a “Post-Fact” World

→ September 2017 / 56 participants

In partnership with Sanofi Pasteur

This seminar focused on identifying policies and practices that build and maintain confidence in vaccines, particularly the role of social and ethical marketing.

### Cent Gardes: HIV vaccine meeting

→ October 2017 / 105 participants

In partnership with ANRS (French Agency for Research on AIDS and Viral Hepatitis) and Inserm

This biennial symposium, which focuses on the HIV vaccine, brings together experts from public and private research, hospitals and universities and health authorities. Participants presented their work on the mechanisms of HIV transmission and the role of the mucosal immune system.

### Communication of Vaccine Benefits beyond the Infection Prevented

→ December 2017 / 50 participants

In partnership with Sanofi Pasteur

Beyond the direct benefits of vaccines in terms of infection prevention, participants in this conference made recommendations to better promote related benefits, such as reducing antimicrobial resistance and healthy aging.

## INTERNATIONAL CONFERENCES

### 2<sup>nd</sup> Asian Dengue Summit

→ Philippines, March 2017 / 110 participants

In partnership with the working group ADVA (Asian Dengue Vaccine Advocacy), the DVI (Dengue Vaccine Initiative) and the NGO SEAMEO.

### 6<sup>th</sup> and 7<sup>th</sup> “MENA Influenza Stakeholders Meetings”

→ Czech Republic and Latvia,

April and September 2017 / 35 and 25 participants

In partnership with Sanofi Pasteur

These conferences brought together 60 representatives from countries in the Middle East and North Africa, working to reduce the burden of influenza, in accordance with the WHO’s Global Action Plan for Influenza Vaccines.

### Partners for Rabies’ Prevention

→ Switzerland, September 2017 / 45 participants

In partnership with the GARC (Global Coalition for Rabies Control)

This conference aimed to improve the management and prevention of rabies in affected countries by sharing experiences, advocacy and the practical implementation of the latest discoveries.

### Vaccinology 2017 Conference: 3<sup>rd</sup> international symposium for Asia-Pacific experts

→ Vietnam, October 2017 / 87 participants

In partnership with Sanofi Pasteur

Held alternately in Latin America and Asia-Pacific, these events aim to encourage the sharing of experience to establish new vaccination strategies.

## ► OBJECTIVE: REDUCE DEATHS FROM CHOLERA BY 90% BY 2030.

The **Global Task Force on Cholera Control (GTFCC)** is a network of more than 50 UN and international agencies, academic institutions, and NGOs that help countries affected by cholera to intensify their efforts. The initiative includes WHO, GAVI, MSF, and US CDC.

During this high-level conference, the GTFCC presented its Global Roadmap which aims to align resources, share best practice and strengthen partnerships among affected countries, donors and international agencies.

It calls for a concerted approach to fight cholera, with country-level planning for early detection and a rapid response to outbreaks. The Launch of the GTFCC’s Global Roadmap was supported by the Bill & Melinda Gates Foundation, the Mériex Foundation and WaterAid.

# PUBLIC HEALTH PARTNERSHIPS

The Mérieux Foundation also contributes to several international, interdisciplinary initiatives that take a synergistic approach to effectively fight against infectious diseases, pooling expertise on priority issues and enabling stakeholders to learn from each other's experience.

## ACCELERATING THE RESPONSE TO PANDEMIC RISKS

### GloPID-R: Global Research Collaboration for Infectious Disease Preparedness



GloPID-R is a global network of research funding bodies and infectious disease experts.

**Objective:** to prepare and activate a rapid, coordinated and effective research response during major outbreaks of new or re-emerging infectious diseases with pandemic potential.

The Mérieux Foundation is responsible for managing the GloPID-R Secretariat, in partnership with the University of Oxford. The Secretariat is funded by the European Union's Horizon 2020 research and innovation program under grant agreement No 643434.

#### — 2017 progress

- Integration of new members in the network and a strategy to increase coordination with other global preparedness initiatives as well as in antimicrobial resistance,
- Organization of the General Assembly, with the first participation of industry representatives,
- Groundwork for a new working group on rapid funding mechanisms for research during infectious disease crises,
- Publication of scientific recommendations on long-term research priorities to improve risk assessment and prediction of pandemic threats.

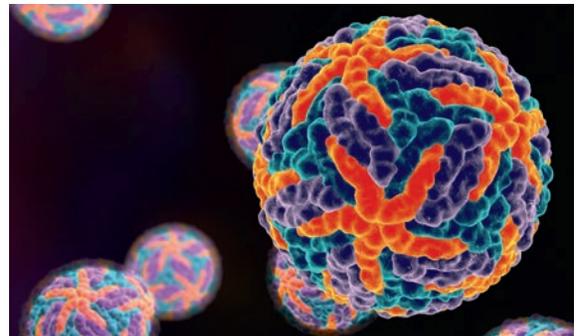
## GAINING GROUND IN THE FIGHT AGAINST DENGUE AND OTHER ARBOVIRAL DISEASES

### PDC: Partnership for Dengue Control

PDC is an alliance of international organizations and scientific experts, created with support from the Bill & Melinda Gates Foundation, Sanofi Pasteur, Takeda, bioMérieux and Bayer.

**Objective:** to contribute to the elimination of dengue and other arboviral diseases in emerging and developing countries.

A comprehensive approach integrating different prevention tools: vaccines, antiviral treatments, insecticides, mosquito control, new diagnostic methods, etc.



#### — 2017 progress

- Organization of a workshop on New and Innovative Approaches to Laboratory Diagnosis of Zika, Dengue and other Arboviruses at Les Pensières Center for Global Health in May 2017, and of a side meeting during the American Society of Tropical Medicine and Hygiene (ASTMH) annual meeting in November, 2017,
- Publication of two scientific articles in *Vaccine* and *The Journal of Infectious Diseases*,
- Participation in the Dengue Prevention Board meetings as a member of the GDAC consortium (Global Dengue and *Aedes*-transmitted Diseases Consortium), founded in 2016 by PDC and the Dengue Vaccine Initiative (DVI).

## CONTROLLING CHOLERA AND ENTERIC DISEASES

### IDEA-Cholera / GTFCC



IDEA-Cholera is based on the field expertise of health professionals, grouped together in interdisciplinary working groups at the regional level.

**Objective:** contributing to the control, prevention and elimination of cholera and other enteric diseases through the development of regional and national actions.

Hosted by the Mérieux Foundation, IDEA received support from Sanofi Pasteur, bioMérieux and Valneva. As of May 2017, the Mérieux Foundation's efforts in the fight against cholera are conducted through the Global Task Force on Cholera Control, led by WHO (see p.40).

**The 5<sup>th</sup> IDEA Asia conference** was held in March 2017 in Vietnam, organized by the Mérieux Foundation with the support of the National Institute of Hygiene and Epidemiology of the Vietnamese Ministry of Health, attended by 50 participants from 10 Asian countries.

## IMPROVING GLOBAL EPIDEMIOLOGICAL SURVEILLANCE

### CORDS: Connecting Organizations for Regional Disease Surveillance

## CORDS

Connecting Organizations for  
Regional Disease Surveillance

CORDS brings together six regional epidemiological surveillance networks in Africa, Asia, the Middle East and Europe.

Funded by the Rockefeller Foundation and the Skoll Global Threats Fund, the CORDS office is located on the Mérieux Foundation's premises.

CORDS and the Mérieux Foundation co-organized the first Epidemiology in Complex Emergencies Course in 2017 (see p.39).



# 04 PROJECTS FOR MOTHERS AND CHILDREN



## TAKING ACTION FOR VULNERABLE POPULATIONS

As part of its global health approach, the Mérieux Foundation works to improve the quality of life of vulnerable populations, particularly mothers and children.

**T**oday, factoring in all of a population's needs as part of a global health approach seems to be the only way to reduce the impact of infectious diseases and their increasingly rapid spread. This issue was at the heart of the anniversary conference organized by the Mérieux Foundation on September 14, 2017 (see report p.8). Alongside local NGOs, the Mérieux Foundation works to improve the living conditions of displaced and refugee populations: access to hygiene, medical care and education and socio-economic support.

**These activities are funded by Fondation Christophe et Rodolphe Mérieux as part of the close partnership between the two family foundations.**

### FONDATION CHRISTOPHE ET RODOLPHE MÉRIEUX

An independent family foundation under the aegis of the Institut de France, founded in 2001, Fondation Christophe et Rodolphe Mérieux devotes most of its resources to funding projects in the field. It relies on the expertise and human resources of the Mérieux Foundation to implement its projects in the field.

# IMPROVING HEALTH CONDITIONS IN HUMANITARIAN CRISES

## HELPING ORPHANS IN HAITI

The Mérieux Foundation works in Haiti, in a particularly difficult context, with a population living in extremely precarious conditions. Since 2011, the Mérieux Foundation has supported the extension of the children's homes in Cap Haitien and Léogâne, covering the construction costs. In Léogâne, the children's home run by Brother Armand and Sister Armelle is home to 68 girls aged 5 to 12 and 12 members of staff. It includes six homes for children, a multi-activity room, four classrooms, a library, a playground and a communal kitchen. Several income-generating activities have been established, including two hen houses, a goat farm, a pig farm, a duck farm and a large fruit and vegetable garden.

The Mérieux Foundation also provides support for operating costs, the purchase of medicines, food aid, improving the living conditions of children and their schooling.

### INAUGURATION OF THE "MAISON BÉNÉDICTE"

On January 4, 2017, Alain Mérieux inaugurated the "Maison Bénédicte" in Antananarivo, a building that was renovated in memory of Doctor Bénédicte Contamin, the former head of the Mérieux Foundation in Madagascar. The center provides student accommodation, training and a retreat, as well as acting as the mission house for the Communauté du Chemin Neuf, an ecumenical Catholic community.





## RENOVATING ACCOMMODATION AND BOOSTING ACCESS TO MEDICAL CARE IN MADAGASCAR

The Mérieux Foundation supports Akamasoa, an association which fights poverty, founded nearly 30 years ago by Father Pédro.



In 2017, renovation work was carried out to create a home for young students, a nursery and a homeless shelter. The Foundation has covered the hospitalization costs of more than 800 people, mostly women and children.

**The Fonds de Solidarité Santé Enfants et Femmes Démunis (Charitable Fund for the Health of Vulnerable Mothers and Children), supported by the Mérieux Foundation, provides medical monitoring for more than 1,300 vulnerable children.**

Around the world

# 800 MILLION PEOPLE

## STILL HAVE NO ACCESS TO DRINKING WATER

80% of them live in rural areas and suffer major health and economic consequences.



## ACCESS TO DRINKING WATER IN CAMBODIA

The Mérieux Foundation is a partner of the NGO 1001 Fontaines. It **builds small rural water purification plants, based on an economic model which enables communities to produce drinking water independently.** The Mérieux Foundation contributes to water purification projects led by 1001 Fontaines which assess drinking water treatment and monitoring methods. In 2016, the "Water Treatment" project to install a Labtech laboratory in the Battambang province was initiated. It continued in 2017, with the motorization of the pre-treatment of water, the installation of machines on the pilot sites and the monitoring of water quality during the pilot phase.

# BUILDING HEALTH INFRASTRUCTURES FOR ISOLATED, DISPLACED AND REFUGEE POPULATIONS



## EMERGENCY AID FOR THE ROHINGYA

In 2017, as part of its partnership with Friendship, the Mérieux Foundation began working in the Ukiha camp with Rohingya refugees. Its support made it possible for Friendship to provide emergency medical care and improve water, sanitation and hygiene (WASH) in the camp to prevent epidemics.

## SUPPORTING HEALTH STRUCTURES IN BANGLADESH

In Bangladesh, the Mérieux Foundation has worked alongside several associations which are committed to helping people in isolated areas without quality healthcare infrastructure. On the island of Maeshkali, home to more than 250,000 people, **the Mérieux Foundation contributed to the construction of a health center in partnership with the NGO AMD (Medical Aid for Development) and SARPV (Social Assistance and Rehabilitation for the Physically Vulnerable):** construction work began in 2017.

The Mérieux Foundation also supports the **Bangladeshi NGO Friendship** and is **currently contributing to equipping the laboratory of its first land hospital in Shyamnagar** in the south of the country. This hospital, which completes the medical system designed by Friendship (three hospital ships and several mobile clinics, which are already operational), should be operational in 2018.



## EQUIPPING A LABORATORY AND A DISPENSARY IN EGYPT

With the support of the Auvergne-Rhône-Alpes region, **the Mérieux Foundation and its Egyptian partners, the NGOs Mahaba and Anaphora, offer access to medical care** to the most vulnerable populations. In 2017, a medical dispensary in Upper Egypt and a clinical diagnostics laboratory in Asyut were built to make up for a lack of accessible healthcare.

## HELPING REFUGEE CAMPS IN IRAQ

Since the outbreak of the crisis in Iraq and Syria in 2014, the Mérieux Foundation has been involved in assisting displaced populations in Iraq: delivering medicine and emergency food relief and building housing, a school and a health center. In 2017, in response to a request from the Yazidi High Council, **the Mérieux Foundation supervised the construction of a community medical center for Yazidi women and children who have been persecuted in the war.** Under the supervision of the Mérieux Foundation, displaced local entrepreneurs also expanded the Pauline-Marie Jaricot Mother and Child Center in Erbil, with the addition of a floor dedicated to pre- and post-natal care.



The Foundation also equipped the laboratory of the clinic set up by the NGO EliseCare in the Yazidi refugee camp in Darkar, close to the Turkish border, which has been home to close to 4,000 people since May 2016. The Foundation also equipped the clinical diagnostics laboratory managed by the NGO Première Urgence International, in the Bardarash refugee camp, which is home to more than 10,000 Shabak, a Shiite minority living in northern Iraq.

The Mérieux Foundation has provided assistance on several occasions in the Dibaga camps, which are home to more than 41,500 Sunnites, primarily mothers and children who have fled Mosul. The Foundation has distributed several tons of fortified nutritional milk and protein biscuits as well as cradles, bottles and nipples.



### THE ORDEAL OF YAZIDI WOMEN

The Yazidi minority living in Iraq has been the victim of persecutions described by the UN as a crime against humanity, a war crime and genocide. The physical and mental health of the 7,000 Yazidi women freed from the Islamic State's control requires medico-psychological care and social support.

# PROMOTING **ACCESS** TO **EDUCATION** AND DEVELOPING PREVENTION

## TRAINING AND MICRO-CREDITS IN HAITI

Since 2010, the Mérieux Foundation has worked with the association AKTKK, which hosts the “Centre de l’Espoir” (Center of Hope), a multidisciplinary vocational training center. Created in 2001, the center welcomes each year approximately 65 students in economic difficulty from isolated villages. AKTKK offers several kinds of training courses: cabinetmaking, embroidery, floristry and handicraft. Two income-generating activities (a hen house and a chicken farm) have been operational since 2016.

The Mérieux Foundation is also a partner of the Association for the Cooperation with Micro Companies (ACME), a non-profit organization. Created in 1997, ACME aims to help micro-entrepreneurs who don’t have access to bank loans to develop their business by providing unsecured loans. This institution offers seven types of loans, one of which is specifically for people living with HIV or the hepatitis C virus. The Mérieux Foundation provides ACME with funding as part of its micro-credit training and covers the operating costs of the support centers that monitor the program’s beneficiaries. Loans are used to develop projects in services, trade and agricultural production. Nearly 90% of borrowers are illiterate, but all receive oral training.

## FUNDING HIGHER EDUCATION IN CAMBODIA

In partnership with the NGO Enfants du Mékong, the Mérieux Foundation has supported the Doctor Christophe Mérieux Center of Phnom Penh for several years. This training center offers students from disadvantaged backgrounds the opportunity to pursue higher education. The center hosts nearly 300 students as well as twenty kindergarten children from the slums of Phnom Penh.



## PARTNERSHIP WITH SAMUSOCIAL IN CONGO, MALI AND SENEGAL

Since 2009, the Mérieux Foundation has supported **Samusocial International**, an organization that works in the field to help street children in capital cities in developing countries. **In 2017, the Foundation launched a survey on the knowledge, attitudes and practices (KAP) of these young people with regard to three diseases: HIV/AIDS, tuberculosis and malaria.** This KAP survey was carried out in Dakar (Senegal), Bamako (Mali) and Pointe-Noire (Democratic Republic of Congo) as part of a project funded by Expertise France via the 5% Initiative.



## REBUILDING THE QARAQOSH SCHOOL IN IRAQ

**The Mérieux Foundation was asked by the regional authorities to rebuild the school in Qaraqosh**, a predominantly Christian city in northern Iraq, partly destroyed and occupied by the Islamic State. In partnership with the Île-de-France Region, the Raoul Follereau Foundation and Fondation Saint-Irénée, this school will be rebuilt by local construction companies. Work is to begin in 2018. The primary school is part of the national school system.

## HEALTH EDUCATION IN MADAGASCAR

**The Mérieux Foundation works alongside Malagasy NGOs to educate children and their families about the prevention of infectious diseases.** Work in 2017 included continued training of social workers and paramedical staff and the distribution of WASH teaching kits (water, sanitation and hygiene). These kits consist of an educational game, a trainer's guide, a quiz to boost the trainer's knowledge, a coloring book for children, a badge and a poster for families. This educational method aims to raise awareness through the game, which is immersive (realistic situations), fun (motivational) and innovative (digital).

## SUPPORTING PRIMARY SCHOOLS IN MALI

The Mérieux Foundation strongly believes in the significant role schools play when it comes to raising awareness about the importance of good hygiene habits and health. It **works with the La Main à la Pâte Foundation**, created by the Academy of Sciences and the Ecole Normale Supérieure in Paris and Lyon with the aim of improving the quality of science teaching in primary and secondary schools. This project aims to help teachers use teaching methods which stimulate students' scientific reflection, understanding of the world and ability to express themselves. **The pilot project is focused on the issues of water and air in seven schools in the city of Bamako in Mali.** In 2017, the first phase of the project ended with new teacher training sessions and a school visit by a scientist from the Charles Mérieux Center for Infectious Disease.

# 05 THE MÉRIEUX FOUNDATION WORLDWIDE



BENIN

BURKINA FASO

GUINEA

MADAGASCAR

MALI

NIGER

SENEGAL

TOGO

BRAZIL

HAITI

BANGLADESH

CAMBODIA

CHINA

LAOS

MYANMAR

EGYPT

IRAQ

LEBANON

TAJIKISTAN

# AFRICA

## BENIN

- 1 Beninese employee<sup>1</sup>
- RESAOLAB network member since 2013

### IN 2017

#### RESAOLAB PROJECT ACTIONS

- **Construction** of the National Laboratories Directorate and the Continuing Training Center
- RESAOLAB **technical workshops** organized in June to bring together all the network members and representatives of the 15 ECOWAS countries
- Second **training session** in biomedical maintenance organized in September, in partnership with the Ecole Polytechnique d'Abomey-Calavi (EPAC), funded by the European Union
- Continuation of the **external quality assessment program** with Oneworld Accuracy
- Drafting of the **National Laboratory Policy and Strategy**
- **Mapping** of laboratories
- Review of the **National Laboratory Quality Plan**
- 3 technicians for the Bachelor of Science in Biological and Applied Medical Sciences (**BAMS**), organized in partnership with the School of Biology, Biochemistry and Biotechnology (ESTBB) and the Charles Mérieux Center for Infectious Disease of Mali
- 2 scholarships for the **DES in Medical Biology** at the University of Ouagadougou (Burkina Faso)

## BURKINA FASO

- **Mérieux Foundation office:** 1 Burkinabe employee
- RESAOLAB network member since 2009:
  - Construction of the Continuing Training Center and External Quality Control Unit in Ouagadougou, within the General Directorate of Pharmacy, Drugs and Laboratories, inaugurated in 2013
  - Renovation and equipping of 3 other continuing training centers: Bobo-Dioulasso (DRS), Ouahigouya (Lazaret Medical Center) and Fada N'Gourma (Regional Hospital)
  - Renovation of the laboratory and practical workrooms of the Faculty of Pharmacy of Ouagadougou in 2014

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Reception of a **mobile laboratory** in Mali for the G5 Sahel countries (Burkina Faso, Chad, Mali, Mauritania and Niger) to better respond to biological threats, in partnership with the German Program «Enable and Enhance Initiative» (E2I), funded by the Federal Ministry of Foreign Affairs and the Federal Ministry of Defence

#### RESAOLAB PROJECT ACTIONS

- Support for the **Interuniversity Diploma in Antibiology**
- **Supervision** of laboratories to review the level of equipment and training of laboratory personnel, and to support laboratories in the quality process
- Organization of **continuing training** sessions for laboratory staff

- Participation in Oneworld Accuracy's **external quality assessment** program
- 2 scholarships for the **DES in Medical Biology** at the University of Ouagadougou (Burkina Faso)

#### ENHANCING RESEARCH CAPABILITIES

- Extension of the **evaluation** of the method for detecting pathogens responsible for enteric fever in Burkina Faso, Ghana and Malawi, after an initial phase approved in Bangladesh. Project funded by the Bill & Melinda Gates Foundation

<sup>1</sup>until August 2017

# AFRICA

## GUINEA

- **First Mériex Foundation mission in 2010**
- **Mériex Foundation office:**  
-1 expatriate  
-15 Guinean employees
- **RESAOLAB network member since 2013**

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Start of the **REDISSE project** funded by the World Bank via the West African Health Organisation: technical evaluation of 10 laboratories in selected districts in Guinea (out of a total of 47 laboratories in Guinea, Guinea-Bissau, Liberia, Sierra Leone and Togo)
- Continuation of the **LAB-NET project**: analysis of data from 105 laboratories, recommendations for actions and a training plan; training of more than 500 people in biosafety and sample referencing; organization of 3 IATA certification training courses, training in external quality assessment and joint training with the Pasteur Institute of Guinea in laboratory management; acquisition of personal protective equipment and sample transport boxes
- Continuation of the **LABOGUI project** aimed at supporting the implementation of the national medical biology policy through the strengthening of prefectural and regional laboratories and the improvement of laboratory professionals' practices. Recruitment and setting up of teams: technical assistants are trained and based at the regional health directorates, and acquisition of transportation vehicles

- Construction of the extension and **equipment** of the practical work rooms at the National Health School in Kindia (initial training)

#### RESAOLAB PROJECT ACTIONS

- **Construction** of the National Laboratories Directorate and the Continuing Training Center for Laboratory Technicians in the Institute for the Professional Development of Healthcare Providers in Conakry

#### PROJECTS FOR MOTHERS AND CHILDREN

- Financial support to the **Bernard Kouchner Women and Children's Health Center** in Coronthie, inaugurated in 2014, for the purchase of laboratory reagents and the management of medicine stocks\*
- Support to the NGO Entrepreneurs du Monde for the Wakili social **microfinance** project\*

## MADAGASCAR

- **First Mériex Foundation mission in 2006**
- **Mériex Foundation office:**  
6 Malagasy employees
- **Charles Mériex Center for Infectious Disease with a Rodolphe Mériex Laboratory\* within the University of Antananarivo (2010)**
- **One GABRIEL network member: University of Antananarivo**
- **Renovation of 9 clinical biology laboratories since 2007**

#### Rodolphe Mériex Laboratory Research Focus:

- Leprosy
- Chromomycosis and sporotrichosis
- Multidrug-resistant bacteria
- Bacterial meningitis
- Human papillomavirus (HPV)
- Schistosomiasis

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- 2017 **RESAMAD project achievements\***:  
- Bacteriology strengthening: workshop on antimicrobial resistance and official presentation workshop of RESAMAD



\* With support from Fondation Christophe et Rodolphe Mériex

- Equipment and supply of reagents and consumables needed to start up new bacteriology testing for 7 laboratories
- Implementation of the 80/20 and 60/40 cost recovery management system in 5 hospitals
- Continuation and monitoring of external quality control within laboratories by integrating new laboratories
- Launch of the DHIS2 tool, recommended by WHO
- Contribution to the epidemiological surveillance of diseases in Madagascar due to the quality of the testing performed
- Quality assurance training for technicians and biologists
- Charles Mérieux Center for Infectious Disease's activities focused on **neglected tropical diseases**: shistosomiasis, chromoblastomycosis and leprosy
- Response to the **plague epidemic** by providing personal protective equipment
- **HIV-1 viral load measurement**: more than 800 viral load tests performed

- Support for **pharmacy studies**: raising awareness among high school students in the eastern region of Madagascar to encourage pharmacy studies after graduation

## ENHANCING RESEARCH CAPABILITIES

- **Molecular surveillance of resistance** of *Mycobacterium leprae* to leprosy drugs: the Charles Mérieux Center for Infectious Disease becomes the National Reference Laboratory for Leprosy
- **Chromomycosis and sporotrichosis** in Madagascar: epidemiology, mycological and molecular diagnosis and characterization of environmental factors
- Monitoring of pediatric and adult **bacterial meningitis** in Antananarivo
- Strengthening of the cooperation with BioFire, with the pursuit of **platform donations** for GABRIEL laboratories, in particular for the Charles Mérieux Center for Infectious Disease of Madagascar

## PROJECTS FOR MOTHERS AND CHILDREN

- **Inauguration** of the "Maison Bénédicte" in Madagascar, in the memory of Dr. Bénédicte Contamin, the former head of the Mérieux Foundation in Madagascar\*
- **Access to hygiene** for vulnerable populations in Madagascar with the Akamasoa association: renovation of a nursery in the village of Mahatazana with capacity for 150 children, rehabilitation of housing for young students and expansion of the homeless shelter\*
- Implementation of **educational kits** on water, hygiene and sanitation,

which include 2,000 coloring books, 1,000 diplomas for families, an interactive game and an illustrated WASH quiz for teachers\*

- **Raising awareness** of hygiene and other issues related to infectious diseases among children and young people in local associations\*



# AFRICA

## MALI

- **First Mérieux Foundation mission in 2003**
- **Mérieux Foundation office:**  
-1 expatriate  
-5 Malian employees
- **Charles Mérieux Center for Infectious Disease with a Rodolphe Mérieux Laboratory\* in Bamako (2005)**
- **One GABRIEL network member: Charles Mérieux Center for Infectious Disease**
- **RESAOLAB network member since 2009; renovation and equipping of training sites (in 2010)**



### Rodolphe Mérieux Laboratory Research Focus:

- Tuberculosis
- Hepatitis B
- Respiratory infections
- Fevers of unknown origin

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Continuation of **technical capacity** building at the Charles Mérieux Center for Infectious Disease: training, equipment and start-up of activities in the BSL3 level laboratory dedicated to tuberculosis diagnosis and research, with funding from the Global Fund and US CDC-GHSA via Catholic Relief Services

- Continuation of the **ISO 15189\*** standard certification process of the clinical biology laboratory
- Reception of a **mobile laboratory** at the Charles Mérieux Center for Infectious Disease in Bamako for the G5 Sahel countries (Burkina Faso, Chad, Mali, Mauritania and Niger), to better respond to biological threats, in partnership with the German Enable and Enhance Initiative (E2I), funded by the Federal Foreign Office and the Federal Ministry of Defence
- **LABOMEDCAMP:** organization of meetings of the coordination unit (Mérieux Foundation, Santé Sud and Charles Mérieux Center for Infectious Disease of Mali) to implement the second phase of the project (install 8 additional laboratories in community health centers in the regions of Kayes, Koulikoro, Ségou, Sikasso)

#### RESAOLAB PROJECT ACTIONS

- **BAMS\* Mali:** graduation of the 10<sup>th</sup> and final class of the Bachelor of Science in Biological and Applied Medical Sciences (BAMS) created in 2007 in collaboration with the Charles Mérieux Center for Infectious Disease, the Mérieux Foundation and the School of Biology, Biochemistry and Biotechnology (ESTBB) of the Catholic University of Lyon. In 2018, BAMS becomes a Master's in Medical Biology, the result of a partnership between the Faculty of Pharmacy of the USTBB (University of Technical Sciences and Technologies of Bamako), the Charles Mérieux Center for Infectious Disease, the Mérieux Foundation and ESTBB

#### ENHANCING RESEARCH CAPABILITIES

- Surveillance of **etiologies of fevers** in Mali: study of infectious etiologies of acute or prolonged febrile syndromes to improve their diagnosis, treatment, prevention and control
- Seroprevalence of **chronic hepatitis B** virus carry in Timbuktu
- Study of the spectrum of respiratory tract viruses in Mali: evaluation of the spectrum of **respiratory tract virus** infections, their epidemiological characteristics and immune responses in children, adults and pregnant women
- Training for the detection of the **Crimean-Congo hemorrhagic fever** virus with a molecular biology method at the Charles Mérieux Center for Infectious Disease in June 2017

- DREPATEST study: diagnostic performance and feasibility of the **Rapid Diagnostic Test (RDT)** of sickle cell disease Sickle SCAN™ from Biomedomics, in infants under 6 months in Bamako (Mali), Lomé (Togo) and Kinshasa (Democratic Republic of Congo)

#### TRAINING AND KNOWLEDGE-SHARING

- Workshop at the Christophe Mérieux Laboratory in Beijing through two collaborative projects designed to build research capacity on **emerging infectious diseases** in Africa: "Identification of respiratory viruses in Mali" and "Characterization of the fauna virome" (bats and rodents) in Mali; 4 scientists from the Charles Mérieux Center for Infectious Disease of Mali took the intensive

\*With support from Fondation Christophe et Rodolphe Mérieux

training course January 9-19, 2017

- Training on **biological safety** and health security in Germany for 4 scientists from the Charles Mérieux Center for Infectious Disease July 9-15, 2017

## PROJECTS FOR MOTHERS AND CHILDREN

- Partnership with the **Samusocial International\*** which provides assistance to children living in the streets of Bamako: launch of a KAP survey to collect data on knowledge, attitudes and practices of street children and young people on HIV/AIDS, tuberculosis and malaria
- Pilot program for **science and health education** at primary schools in Mali in collaboration with the Fondation la Main à la Pâte\*: 2 teacher training sessions, school visits, meeting with pedagogical and operational coordinators to establish scientific support for teachers
- Partnership with the SMARA\* association: **pediatric training** missions for general practitioners and healthcare in 3 districts in the north of Mali
- Support to the NGO Djantoli for the **monitoring and care of mother and child health\***: helping mothers to better care for their children's health by developing sustainable solutions to facilitate rapid access to care.

## NIGER

- **First Mérieux Foundation mission in 2012**
- **Mérieux Foundation office: 1 Nigerian employee<sup>2</sup>**
- **RESAOLAB network member since 2013**

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Reception of a **mobile laboratory** in Mali for the G5 Sahel countries (Burkina Faso, Chad, Mali, Mauritania, Niger), to better respond to biological threats, in partnership with the German "Enable and Enhance Initiative" program, financed by the Federal Ministry of Foreign Affairs and the Federal Ministry of Defence
- **Data collection** on the capacity of health laboratories in Niger and development of a map through funding from the Bill & Melinda Gates Foundation via the African Society for Laboratory Medicine

#### RESAOLAB PROJECT ACTIONS

- Confirmation of funding from the Princely Government of Monaco for the **continuation of RESAOLAB** activities in Niger 2018-2020
- **Construction and equipment** of the Laboratories Directorate in Niamey, which houses the External Quality Assessment Laboratory, and the Continuing Training Center in Zinder
- Laboratories **supervision**, organization of external quality assessment sessions in partnership with Oneworld Accuracy and 9 training sessions for laboratory technicians on the module "Epidemic Potential Disease", "Microscopy" and "Chronic Diseases", financing

of scholarships for the training of 2 medical executives for the DES in Medical Biology in Ouagadougou and scholarships for 2 technicians in intensive training in biomedical equipment maintenance

- **Scholarships:** 6 laboratory technicians for the Bachelor of Science in Biological and Applied Medical Sciences (BAMS), organized in partnership with the School of Biology, Biochemistry and Biotechnology (ESTBB) and the Charles Mérieux Center for Infectious Disease of Mali

<sup>2</sup>On a consultancy contract

# AFRICA

## SENEGAL

- **First Mériex Foundation mission in 2009**
- **Mériex Foundation office:**
  - 1 expatriate
  - 2 Senegalese employees
- **RESAOLAB network member since 2009:**
  - Support for the creation of a National Laboratories Directorate (2012)
  - Renovation of continuing training center in Kaolack (2012)
  - Support to the National Public Health Laboratory of Thiès (2009)
- **I-Lab project development (2015)**

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Finalization of the I-Lab project to develop a tool dedicated to **automating the collection of epidemiological data** from laboratories, developed in partnership with the NGO PATH and the Skoll Global Threats Fund
- Participation in the activities of Senegal's **Global Health Security Agenda** in consortium with the NGO PATH: contribution to the drafting of the laboratories' strategic plan, provision of documents and self-training tools in the fields of biosafety, biosecurity, quality management and antimicrobial resistance, and implementation of a training of trainers in biosafety

#### RESAOLAB PROJECT ACTIONS

- Organization of the **International Steering Committee** in Dakar in January 2017
- Development of a **laboratory mapping tool** in collaboration with PATH
- Participation of a laboratory technician for the Bachelor of Science in Biological and Applied Medical Sciences (**BAMS**), organized in partnership with the School of Biology, Biochemistry and Biotechnology (ESTBB) and The Charles Mériex Center for Infectious Disease of Mali
- Implementation of the **external quality assessment** program (biochemistry and bacteriology) in partnership with Oneworld Accuracy

#### PROJECTS FOR MOTHERS AND CHILDREN

- Partnership with **Samusocial International\*** of Senegal, which provides assistance to the children living in the streets of Dakar: launch of a KAP survey to collect data on the knowledge, attitudes and practices of street children and young people on HIV/AIDS, tuberculosis and malaria

## TOGO

- **First Mériex Foundation mission in 2012**
- **Mériex Foundation office:**
  - 2 Togolese employees
- **RESAOLAB network member since 2013**

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Launch of the **REDISSE project**, funded by the World Bank via the West African Health Organisation: technical evaluation of 7 laboratories in selected districts in Togo (out of a total of 47 laboratories in Guinea, Guinea-Bissau, Liberia, Sierra Leone and Togo)

#### RESAOLAB PROJECT ACTIONS

- **Inauguration** in Togo of the Directorate of Pharmacy, Medicine and Laboratories, of the Center of External Quality Assessment and of the Center for Continuous Training
- **Inauguration** of the renovated practical work rooms within the Faculty of Health Sciences and the Higher School of Biological and Food Techniques
- Support for the establishment of a national **external quality assessment** system and participation in the Oneworld Accuracy program
- Support for the implementation of a supervision program using the **SLIPTA checklist**, biosecurity tools and the LQSI tool (15 laboratories)
- Pursuit of a doctor's training in the **DES in Clinical Biology** at the Cheikh-Anta-Diop University in Dakar (Senegal) and a biologist in the Master's in Quality at the Institute of Risk and Quality Management



\* With support from Fondation Christophe et Rodolphe Mériex

- 325 laboratory staff trained in RESAOLAB continuing **education modules**
- Support for the development of **framework documents** for improving the governance of the medical biology sector in Togo:
  - National Medical Biology Policy in Togo 2018-2022
  - Strategic Plan for the Development of the National Medical Biology Policy in Togo 2018-2027
  - National maintenance plan for medical biology equipment in public laboratories in Togo
  - National Implementation Plan of the Quality Approach in medical biology laboratories in Togo
  - Standard blueprints and cost estimates for medical biology laboratories by level of care (peripheral care levels I and II, district hospitals and hospital and regional care centers)



## ENHANCING RESEARCH CAPABILITIES

- PneumoTone (study on etiologic agents responsible for **pneumonia** in a cohort of patients): authorization to import biological samples obtained from the Ministry in charge of Research
- DREPATEST study: Diagnostic performance and feasibility of the **Rapid Diagnostic Test** (RDT) of sickle cell disease SCAN™ from Biomedomics, in infants under 6 months in Bamako (Mali), Lomé (Togo) and Kinshasa (DRC)

# AMERICAS

## BRAZIL

- **First Mérieux Foundation mission 2011**
- **Charles Mérieux Center for Infectious Disease with a Rodolphe Mérieux Laboratory in the Fundhacre Hospital in Rio Branco (2016)**
- **2 GABRIEL network members: the Oswaldo Cruz Foundation and the Laboratório Nacional de Computação Científica (National Laboratory for Scientific Computing)**

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- **Nomination** of the Director of the Rodolphe Mérieux Laboratory of Rio Branco
- Rodolphe Mérieux Laboratory's first **strategic advisory committee** held in November: activities will begin with biological monitoring of patients infected by viral hepatitis
- **Construction** of the Charles Mérieux Training Center in Salvador

#### ENHANCING RESEARCH CAPABILITIES

- **Collaboration** avec le Laboratório Nacional de Computação Científica dans le cadre du projet COMPARE (COllaborative Management Platform for detection and Analyses of (Re)emerging and foodborne outbreaks)

#### PROJECTS FOR MOTHERS AND CHILDREN

- Continuation of the partnership with Chief Almir to support the preservation and promotion of the Surui tribe's heritage and knowledge in **medical botany\***

## HAITI

- **First Mérieux Foundation mission in 2002**
- **Mérieux Foundation office: 2 Haitian employees**
- **Rodolphe Mérieux Laboratory\*: BSL3 level lab within the Institute of Infectious Diseases and Reproductive Health (IMIS) part of the GHESKIO Centers (Haitian Group for the Study of Kaposi's Sarcoma and Opportunistic Infections) in Port-au-Prince (2009)**
- **A member of the GABRIEL network: the GHESKIO Centers**
- **Bachelor of Science in Biological and Applied Medical Sciences - BAMS (2011)**
- **Public health project for the development of laboratories - SPHaitiLAB (2015-2019)**

#### Rodolphe Mérieux Laboratory Research Focus:

- Tuberculosis
- HV/AIDS
- Microbiology and bacterial resistance

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Continuation of the **SPHaitiLAB** project for strengthening the laboratory network:
  - Sample collection for the pilot study on the prevalence of multidrug-resistant tuberculosis at the GHESKIO Centers
  - Drafting of the National Laboratory Policy, submitted to the Ministry of Public Health and Population for validation
  - Development of the National Laboratory Network's Five-Year Strategic Plan 2018-2022
- Organization of **training** in "Advocacy and Knowledge Application" and in "Project Management"

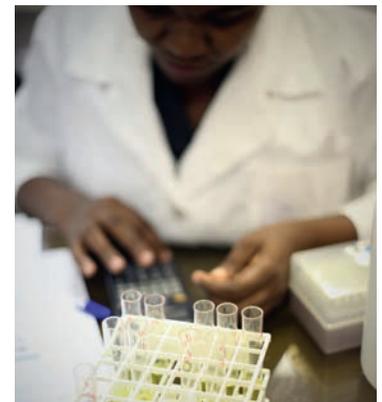
- Work at the IMIS laboratory (GHESKIO Centers) to **reduce energy consumption**
- Beginning of the **7<sup>th</sup> BAMS** Haiti class in September (14 participants)\*

#### ENHANCING RESEARCH CAPABILITIES

- Continuation of the **Quality Initiative** aimed to promote the implementation of a quality management system at the GHESKIO Centers to obtain ISO 15189 certification of laboratories\*

#### PROJECTS FOR MOTHERS AND CHILDREN

- Support to the Cap Haïtien **children's home**
- Support to the Village of Nazareth **orphanage** of Léogâne\*
- Support to the **association** Klib Timoun Kè Kontan
- 12th year of the **micro-credit program** (set up in collaboration with the Association pour la coopération avec la micro-entreprise) for Haitian women living with or vulnerable to HIV: since 2005, more than 4,500 women have benefited from 9,000 loans, and the repayment rate is over 90%



\*With support from Fondation Christophe et Rodolphe Mérieux

# ASIA

## BANGLADESH

- **First Mérieux Foundation mission in 2009**
- **Rodolphe Mérieux Laboratory\* in Chittagong, within the Bangladesh Institute of Tropical and Infectious Diseases - BITID (2015)**
- **3 GABRIEL network members: the BITID, the icddr,b (International Centre for Diarrhoeal Disease Research), the ideSHi (Institute for developing Science and Health initiatives)**

### Rodolphe Mérieux Laboratory Research Focus:

- Tuberculosis
- Typhoid

## IN 2017

### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Continuation of the **Quality Initiative** to implement a quality management system in laboratories in developing countries\*
- Equipment of the **medical laboratory** of the land-based Shyamnagar Friendship Hospital, in partnership with the NGO Friendship\*

### ENHANCING RESEARCH CAPABILITIES

- Collaboration with the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) in the **COMPARE project**

### PROJECTS FOR MOTHERS AND CHILDREN

- Construction of a **health center** on Maeshkali island to address the island's limited access to healthcare\*
- Support to Friendship to strengthen its emergency actions in the **Rohingya refugee camp** near Cox's Bazar in the Ukhia region\*

## CAMBODIA

- **First Mérieux Foundation mission in 2001**
- **Mérieux Foundation office: 2 Cambodian employees**
- **Reconstruction of the Faculty of Pharmacy in Phnom Penh in partnership with the Pierre Fabre Foundation in 2003**
- **Rodolphe Mérieux Laboratory\* within the Faculty of Pharmacy of Phnom Penh (opened in 2005 and renovated in 2016)**
- **New regional platform for research on infectious diseases on the Institut Pasteur campus in Phnom Penh in 2014 (part of the Mérieux Foundation's membership in the Aviesan Sud scientific network)**
- **9 clinical biology laboratories renovated since 2007**
- **One GABRIEL network member: the University of Health Sciences (UHS) in Phnom Penh**

### Rodolphe Mérieux Laboratory Research Focus:

- Respiratory infections
- Hepatitis
- Environmental pathogens

## IN 2017

### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Inauguration of the Rodolphe Mérieux Laboratory of the University of Health Sciences, after a **complete renovation**: construction of a biobank and three units dedicated to molecular biology
- Inauguration of the microbiology laboratory of Battambang Hospital, after **renovation and extension** of the laboratory surface area
- Support for CamLab, the national network of Cambodia's clinical biology laboratories: development of a **continuous training plan** for laboratory technicians and

continuation of the national external quality assessment program for 44 laboratories

- Training of managers in **biosafety and biohazard management** in the laboratory according to the national biosafety curriculum
- **Theoretical and practical training** in molecular biology in collaboration with UHS: participation of 20 students and two Cambodian trainers

### ENHANCING RESEARCH CAPABILITIES

- Prevalence study of **hepatitis C infections** among people living with HIV and pregnant women in 4 Cambodian provinces
- Finalization of the study on the **distribution of *Streptococcus pneumoniae*** serotypes circulating in Cambodia before the introduction of the PCV13 vaccine
- Characterization of influenza viruses responsible for **severe pneumonia**

### PROJECTS FOR MOTHERS AND CHILDREN

- Support for the NGO 1001 Fontaines for its research project on **pesticides in drinking water** in Cambodia\*
- Support for the Dr. Christophe Mérieux Center for **student training** in partnership with Enfants du Mékong\*

# ASIA

## CHINA

- **First Mériex Foundation mission in 2006**
- **Mériex Foundation office: 3 Chinese employees**
- **Christophe Mériex Laboratory\* within the Institute of Pathogen Biology at the Chinese Academy of Medical Sciences (CAMS) in Beijing (2008)**
- **One GABRIEL network member: the Institute of Biology at the Chinese Academy of Medical Sciences (CAMS)**
- **3<sup>rd</sup> international foundation to be officially recognized by the Chinese Ministry of Health in 2014**

### Christophe Mériex Laboratory Research Focus

- Pneumonia
- Tuberculosis

## IN 2017

### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Continuation of the program to decentralize tuberculosis diagnosis\* and screen for **drug-resistant TB** through a partnership between the Mériex Foundation and the Chinese Ministry of Health
- CARE project (China Against Drug REsistance) which strengthens the rational use of antibiotics and the **control of nosocomial infections**



### ENHANCING RESEARCH CAPABILITIES

- Continuation of **bioinformatics development** within the Christophe Mériex Laboratory\*
- **Scientific collaboration and training** within the GABRIEL network by the Christophe Mériex Laboratory\*:
  - Training of 4 scientists from the Charles Mériex Center for Infectious Disease of Mali at the Christophe Mériex Laboratory
  - Protocols developed for 2 research projects in collaboration with the Charles Mériex Center for Infectious Disease of Mali

## LAOS

- **First Mériex Foundation mission in 2005**
- **Mériex Foundation office: -2 expatriates -3 Laotian employees (of which 2 are consultants)**
- **Center of Infectiology Lao Christophe Mériex and Rodolphe Mériex Laboratory\* on the Ministry of Health's scientific campus, with the Pasteur Institute of Laos, the Institut de la Francophonie pour la Médecine Tropicale and the University of Health Sciences (2009)**
- **9 clinical biology laboratories renovated, including 8 in the Khammouane province in 2013**
- **Food Safety Laboratory\* (2017)**
- **One GABRIEL network member: the Ministry of Health**

### Rodolphe Mériex Laboratory Research Focus:

- HIV/AIDS
- Chronic viral hepatitis
- Viral respiratory infections and tuberculosis
- Human papillomavirus (HPV)

## IN 2017

### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Inauguration of the **Food Safety Laboratory**, the reference laboratory for food quality control in the country
- Continuation of the **Lab Kham project**: training provided to all laboratory technicians and prescribing physicians in Khammouane province hospitals
- Launch of the **Preparedness & Response** project for the creation and hosting of a "One Health" platform bringing together actors in human, animal and environmental health in Laos

\*With support from Fondation Christophe et Rodolphe Mériex



- **Extension** of the Center of Infectiology Lao Christophe Mérieux\*

## ENHANCING RESEARCH CAPABILITIES

- Continuation of the **Quality Initiative** to implement a quality management system in laboratories in developing countries\*
- International ID-Bio/International Joint Laboratory Research Group: **molecular epidemiology of tuberculosis** in Southeast Asia
- Continuation of the LaCoRIS project for monitoring symptoms of **acute respiratory infections** in Vientiane
- Continuation of the TDR vs ELISA project: evaluating the effectiveness of rapid tests for the **diagnosis of hepatitis B**
- Continuation of the study on the **prevalence of hepatitis B** among pregnant women in Vientiane
- Surveillance of **resistance to anti-retroviral drugs** in people living with HIV in Laos\*

## TRAINING AND KNOWLEDGE-SHARING

- Organization of a **regional symposium** on viral hepatitis B and C
- Organization of the 10<sup>th</sup> **National HIV/AIDS Seminar**

## MYANMAR

- **First Mérieux Foundation mission in 2010**
- **1 Burmese employee**
- **Renovation of 3 units at the Public Health Laboratory (PHL) in Mandalay and the Yangon National Health Laboratory (NHL), between 2011 and 2014 (the molecular biology, bacteriology and virology laboratories)\***

## IN 2017

## SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- **Training of laboratory staff** in the microbiology department of the Public Health Laboratory (PHL) by a microbiologist expert, in partnership with the NGO Diagnostic Microbiology Development Program (DMDP)
- Support for **HIV viral load testing** at the National Health Laboratory (NHL) in Yangon, the PHL in Mandalay and Dawey\*: 42,200 HIV viral load tests conducted since 2012; these three platforms perform over 95% of all viral load testing in the country
- Design of the **LabMyNet project** to significantly increase the capacity of Myanmar laboratories to perform HIV viral load testing, funded by the 5% Initiative and implemented by the Mérieux Foundation in partnership with the Ministry of Health
- **Training of laboratory technicians** to perform HIV viral load testing

# MIDDLE EAST

## EGYPT

- **First Mériex Foundation mission in 2017**

### IN 2017

#### PROJECTS FOR MOTHERS AND CHILDREN

- Evaluation missions with local partners for the equipment of a **medical dispensary** at the Anaphora association in Upper Egypt and the equipment of a clinical diagnostics laboratory at the Mahaba association in Ballout in the governorate of Assiout, funded by the Auvergne-Rhône-Alpes Region



## IRAQ

- **First Mériex Foundation mission in 2014**
- **Saint-Irénée school in the Erbil refugee camp (2015)\***
- **Pauline-Marie Jaricot Mother and Child Medical Center (2016)\***
- **Medical laboratory in the Bardarash camp (2016)\***

### IN 2017

#### PROJECTS FOR MOTHERS AND CHILDREN

- Extension of the Pauline-Marie Jaricot Mother and Child Medical Center in Erbil with a level dedicated to the **gynecological unit\***
- **Equipment of the laboratory** of the EliseCare NGO clinic in the Darkar camp\*
- Construction of a **medical and social center** for Yazidi women and children who are victims of war\*
- Evaluation missions for the Qaraqosh **school reconstruction** project\*



## LEBANON

- **First Mériex Foundation mission in 2008**
- **Mériex Foundation office:**  
-2 expatriates  
-2 Lebanese employees
- **Rodolphe Mériex Laboratory\* within the Technology Center of the Saint Joseph University in Beirut (2011)**
- **Two GABRIEL network members: Saint Joseph University and Lebanese University**

#### Rodolphe Mériex Laboratory Research Focus:

- Pneumonia

### IN 2017

#### SUPPORT FOR CLINICAL BIOLOGY LABORATORIES

- Organization of a **quality audit** at the Rodolphe Mériex Laboratory in November\*
- Bringing the Rodolphe Mériex Laboratory up to standard to perform **tuberculosis testing**
- **Technical support** for the refurbishment of the clinical biology laboratory at the Lebanese University

#### ENHANCING RESEARCH CAPABILITIES

- GABRIEL network multi-center studies:
  - Extension of the PEARL study (Pneumonias' Etiology Among Refugees and Lebanese population): study on the **etiology of respiratory infections** among vulnerable populations (local and refugees) to improve patient care, co-funded by the Bill & Melinda Gates Foundation
  - HINTT project (HBHA-IGRA New Test for Tuberculosis): **evaluation of biomarkers** for monitoring the effectiveness of anti-tuberculosis

treatment: drafting of the study protocol and discussion of the partnership with the Ministry of Health - National Tuberculosis Program

## TRAINING AND KNOWLEDGE-SHARING

▪ **First conference** on infectious diseases and public health in the Middle East and North Africa region (MENA IDPH Infectious Diseases and Public Health) in Beirut, co-organized by the Mériex Foundation, ESCMID, The Lancet Infectious Diseases and ESA, in partnership with the Lebanese Society of Infectious Diseases (LSID) and the Agence Universitaire de la Francophonie: training and networking of a consortium of international partners; interventions by recognized experts from the region

## PROJECTS FOR MOTHERS AND CHILDREN

▪ **MELIBAN**: location scouting and developing blueprints for the construction of a socio-medical center\* in Baalbek in the Bekaa plain, in partnership with the Lebanese NGO, Amel Association

## The Mériex Foundation pays tribute to Régis Sodoyer

A volunteer since 2014,  
he passed away on September 6, 2017

Régis was passionate about teaching biological techniques to teams in Asia and Africa and we are very grateful for his contribution.



He took his camera on all of his missions and leaves us with many beautiful photos that remind us of his work in the field.



# GOVERNANCE

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- **Dr. Guy VERNET\***  
CEO
- **Emily PENROSE**  
Program and Operations Director

\*Since March 2018





“Building on our expertise in biology, we are working closely with international and local partners as part of multidisciplinary, complementary and, above all, concerted approaches with a long-term perspective.”

Alain Mérieux

# FINANCIAL PARTNERS

To successfully carry out its development and research projects in emerging countries and ensure they produce sustainable results, the Mérieux Foundation brings together national and international public and private partners with local organizations.

The trust and commitment of nearly 60 partners have made it possible for the Foundation to help local stakeholders in their fight against infectious diseases. The Mérieux Foundation thanks them warmly for their support.

## REGIONAL, NATIONAL & INTERNATIONAL INSTITUTIONS

- African Society for Laboratory Medicine (ASLM)
- Agence Française de Développement (AFD)
- Auvergne-Rhône-Alpes Region
- Centers for Disease Control and Prevention (CDC)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- European Commission
- European and Developing Countries Clinical Trials Partnership (EDTCP)
- Expertise France
- Initiative 5% / Expertise France
- Ministère de l'Europe et des Affaires étrangères - via Expertise France
- Princely Government of Monaco
- U.S. Agency for International Development (USAID)
- World Bank – via the West African Health Organisation (WAHO)

## FOUNDATIONS & NGOS

- Agence de Médecine Préventive (AMP)
- Bill & Melinda Gates Foundation
- CDC Foundation – via Catholic Relief Services
- Fondation AnBer
- Fondation APAC
- Fondation Christophe et Rodolphe Mérieux
- Fondation Pierre Fabre
- Fondation Raoul Follereau
- Fondation Saint-Irénée
- Fonds Decitre
- Fonds Pour Eux
- Gilead Foundation
- Œuvres Pontificales Missionnaires
- PATH
- Skoll Global Threats Fund
- Tulipe

## UNIVERSITIES & RESEARCH INSTITUTES

- Agence France Recherche Nord & Sud Sida-HIV Hépatites (ANRS)
- The African Field Epidemiology Network (AFENET)
- Bioaster
- Centre International de Recherche en Infectiologie (CIRI)
- Institut de recherche biomédicale des armées (IRBA)
- LabEx ECOFECT (Dynamiques éco-évolutives des maladies infectieuses)
- Lyonbiopôle
- Naval Health Research Center (NAMRU-2)
- Penn State University (PSU)
- University of Geneva

## INDUSTRY

- BD
- Biocentric
- Bioneer
- bioMérieux
- Cepheid
- GlaxoSmithKline Biologicals (GSK)
- Gilead
- Institut Mérieux
- Janssen Research & Development
- Merck
- Mérieux NutriSciences
- Pfizer
- Qiagen
- Roche
- Sanofi Pasteur
- Takeda
- Valneva

# 2017

## ACCOUNTS & KEY FIGURES

### BALANCE SHEET

ACTIF (K€)	NET DEC. 31. 2017	NET DEC. 31. 2016
<b>FIXED ASSETS</b>		
Intangible fixed assets	7	24
Property, plant and equipment	1,572	1,705
Investments and other financial assets	28,056	28,003
<b>TOTAL</b>	<b>29,635</b>	<b>29,732</b>
<b>CURRENT ASSETS</b>		
Inventories	0	0
Payments on account	0	37
Accounts receivable	949	2,971
Other receivables	11,256	11,480
Marketable securities	51,208	54,140
Cash and cash equivalents	7,684	5,017
Prepaid expenses	1,804	1,854
Unrealized exchange losses	56	12
<b>TOTAL</b>	<b>72,958</b>	<b>75,509</b>
<b>TOTAL ASSETS</b>	<b>102,593</b>	<b>105,241</b>
<b>LIABILITIES AND FUND BALANCE</b> (K€)	<b>31 DEC. 2017</b>	<b>31 DEC. 2016</b>
<b>FUND BALANCE</b>		
True endowment	64,916	64,916
Reserves	884	884
Retained earnings	17,810	18,463
Net income / loss for the period	(1,395)	(653)
<b>TOTAL</b>	<b>82,215</b>	<b>83,611</b>
<b>QUASI ENDOWMENT</b>		
Allowances for contingencies	153	109
Funds reserved for future engagements	2,545	2,666
<b>TOTAL</b>	<b>2,698</b>	<b>2,774</b>
<b>LIABILITIES</b>		
Loans	0	68
Accounts payable	2,017	1,956
Investment payable	250	360
Other payable	3,123	3,155
Deferred income	12,277	13,037
Unrealized exchange gains	12	279
<b>TOTAL</b>	<b>17,679</b>	<b>18,856</b>
<b>TOTAL LIABILITIES AND FUND BALANCE</b>	<b>102,593</b>	<b>105,241</b>

## INCOME STATEMENT

(K€)	ACTUAL 2017	ACTUAL 2016
<b>INCOME</b>		
Services revenue	337	372
Grants	70	315
Reverse on operating allowances	14,258	13,994
Expenses refund	1,342	713
Other operating income	12	17
<b>TOTAL INCOME</b>	<b>16,020</b>	<b>15,411</b>
<b>EXPENSES</b>		
External purchases and expenses	9,626	9,490
Taxes and duties	905	872
Salaries and social contributions	4,607	4,025
Depreciations	471	311
Donations and subsidies received	8,043	7,724
Grants awarded	-	-
Net book value of sold assets	-	-
Other operating income	37	5
<b>TOTAL EXPENSES</b>	<b>23,689</b>	<b>22,426</b>
<b>CURRENT INCOME</b>	<b>-7,669</b>	<b>-7,016</b>
<b>FINANCIAL INCOME</b>		
Dividends	1,004	1,208
Other financial income	1,334	794
Reverse on financial allowances	385	627
Net income from marketable securities	4,042	4,213
<b>TOTAL FINANCIAL INCOME</b>	<b>6,766</b>	<b>6,842</b>
<b>FINANCIAL EXPENSES</b>		
Financial allowances	160	64
Other financial expenses	437	550
<b>TOTAL FINANCIAL EXPENSES</b>	<b>598</b>	<b>615</b>
<b>FINANCIAL RESULT</b>	<b>6,168</b>	<b>6,227</b>
<b>EXCEPTIONAL INCOME</b>		
Exceptional income	30	117
Exceptional reverse on allowances	-	-
<b>TOTAL EXCEPTIONAL INCOME</b>	<b>30</b>	<b>117</b>
<b>EXCEPTIONAL COSTS</b>		
Exceptional expenses	-	-
Exceptional allowances for contingencies	46	98
<b>TOTAL EXCEPTIONAL COSTS</b>	<b>46</b>	<b>98</b>
<b>EXCEPTIONAL RESULT</b>	<b>-16</b>	<b>19</b>
Income tax	-	-
<b>TOTAL INCOME</b>	<b>22,816</b>	<b>22,369</b>
<b>TOTAL EXPENSES</b>	<b>24,332</b>	<b>23,139</b>
<b>INTERMEDIATE BALANCE</b>	<b>-1,516</b>	<b>-770</b>
Prior funds carried forward	2,666	2,894
Funds reserved for future engagements	2,545	2,777
<b>NET INCOME / LOSS FOR THE PERIOD</b>	<b>-1,395</b>	<b>-653</b>



**BREAKDOWN OF EXPENSES**

- Excluding provisions and exceptional expenses
- Change in the scope of consolidation in 2017: international office expenses included in administration expenses

Missions	74%
Administration	19%
Fundraising	7%



**BREAKDOWN OF EXPENSES BY ACTIVITY**

- Excluding provisions and exceptional expenses
- Change in the scope of consolidation in 2017: international office expenses included in administration expenses

Increasing access to diagnosis for vulnerable populations	45%
Reinforcing local applied research capacities	30%
Taking action for mothers and children	13%
Developing knowledge-sharing	12%

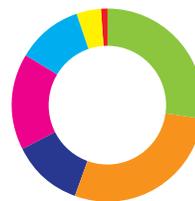


**GEOGRAPHICAL SEGMENTATION OF ACTIVITIES**

- Excluding funds carried forward to 2018

Europe <sup>(1)</sup>	35%
Africa	30%
Asia	17%
Caribbean	6%
Middle East	5%
Indian Ocean	4%
South America	3%

<sup>(1)</sup> Mostly activities in developing countries managed from France



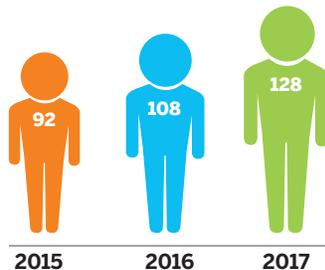
**BREAKDOWN OF INCOME**

- Excluding dedicated funds, provisions and non-recurring items

Endowment income & investment	28%
Fondation Christophe et Rodolphe Mérieux	27%
Public partnerships	16%
Sanofi Pasteur sponsorship and partnership	12%
Other private partnerships	11%
Real estate income	4%
Other income	1%

**CHANGES IN HEADCOUNT\* AS AT DECEMBER 31<sup>ST</sup>**

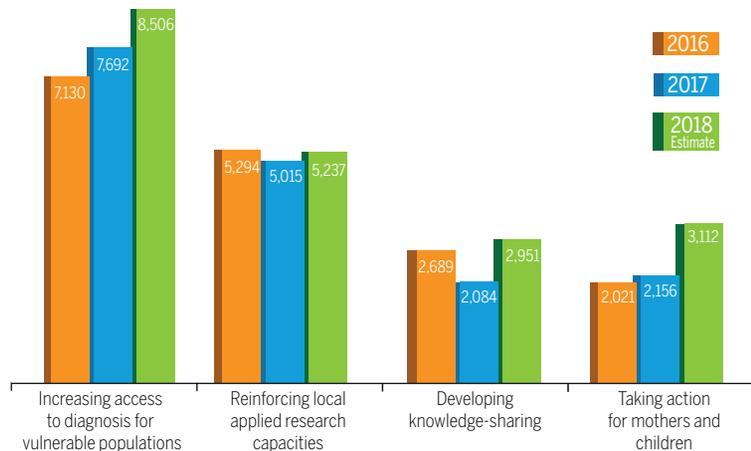
128 employees worldwide \*\*



\* Full-time equivalents  
\*\* Excluding interns, temporary employees and local research and training center staff

**EVOLUTION OF EXPENSES BY FIELD OF ACTIVITY**

- In K€, excluding depreciation, provisions, financial expenses and future engagements
- Change in the scope of consolidation in 2017: international office expenses included in administration expenses



**FONDATION MÉRIEUX**

Fondation reconnue d'utilité publique  
17 rue Bourgelat  
69002 LYON

**Statutory auditor' report  
on the financial statements**  
For the year ended 31 December 2017

To the Board of FONDATION MÉRIEUX,

**Opinion**

In compliance with the engagement entrusted to us by your Board of Directors, we have audited the accompanying financial statements of FONDATION MÉRIEUX for the year ended 31 December 2017.

In our opinion, the financial statements give a true and fair view of the assets and liabilities and of the financial position of the Foundation as at 31 December 2017 and of the results of its operations for the year then ended in accordance with French accounting principles.

**Basis for Opinion****Audit Framework**

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under those standards are further described in the "Statutory Auditor' Responsibilities for the Audit of the Financial Statements" section of our report.

FONDATION MÉRIEUX

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**Independence**

We conducted our audit engagement in compliance with independence rules applicable to us, for the period from 1 January 2017 to the date of our report and specifically we did not provide any prohibited non-audit services referred to in the French Code of ethics (code de déontologie) for statutory auditors.

**Justification of Assessments**

In accordance with the requirements of Articles L.823-9 and R.823-7 of the French Commercial Code (code de commerce) relating to the justification of our assessments, we inform you of the key audit matters relating to risks of material misstatement that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period, as well as how we addressed those risks.

These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on specific items of the financial statements.

The net amount in the balance sheet on 31 December 2017 of equity securities amounted to 15 138 659 euros. Those are valued at acquisition price and depreciated on the basis of their fair value as described in the note "Investments" of the notes to the financial statements. Based on the information made available to us, our work has consisted in assessing the data underlying these values in use and checking the consistency of assumptions.

**Verification of the Management Report and of the Other Documents Provided to Board members**

We have also performed, in accordance with professional standards applicable in France, the specific verifications required by French law.

We have no matters to report as to the fair presentation and the consistency with the financial statements of the information given in the management report and in the other documents provided to the Board members in respect to the financial position and the financial statements.

**Responsibilities of Management and Those Charged with Governance for the Financial Statements**

Management is responsible for the preparation and fair presentation of the financial statements in accordance with French accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

FONDATION MÉRIEUX

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In preparing the financial statements, management is responsible for assessing the Foundation's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless it is expected to liquidate the Foundation or to cease operations.

The financial statements were approved by the committee (bureau).

**Statutory Auditor' Responsibilities for the Audit of the Financial Statements**

Our role is to issue a report on the financial statements. Our objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As specified in Article L. 823-10-1 of the French Commercial Code (code de commerce), our statutory audit does not include assurance on the viability of the Foundation or the quality of management of the affairs of the Foundation.

As part of an audit conducted in accordance with professional standards applicable in France, the statutory auditor exercises professional judgment throughout the audit and furthermore:

- Identifies and assesses the risks of material misstatement of the financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence considered to be sufficient and appropriate to provide a basis for his opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control.
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management in the financial statements.

FONDATION MÉRIEUX

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- Assesses the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Foundation's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of his audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the statutory auditor concludes that a material uncertainty exists, there is a requirement to draw attention in the audit report to the related disclosures in the financial statements or, if such disclosures are not provided or inadequate, to modify the opinion expressed therein.
- Evaluates the overall presentation of the financial statements and assesses whether these statements represent the underlying transactions and events in a manner that achieves fair presentation.

Lyon, 6 June 2018

The Statutory Auditor

**French original signed by****DELOITTE & ASSOCIÉS**

Nathalie LORENZO CASQUET

# KEY FIGURES

- **18 countries** where we work
- **28 biology training centers** built or renovated
- **A network of 20 applied research units**
- **Over 25 collaborative research programs**
- **13 laboratories built** including 1 in 2017
- **42 laboratories renovated** including 2 in 2017
- **12 conferences**
- **13 training courses and programs**
- **128 employees** in 13 countries
- **An annual budget** of close to **23 million euros**



## PHOTOS

- AntasH
- Eric Bergoend
- Christopher Black
- Antonin Bouvier
- Alexis Chezière
- Enfants du Mékong
- Fondation Mérieux
- Friendship
- GettyImages
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- Martin Grosjean
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- Olivia Mérieux
- Melon Rouge
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- Didier Plowy-  
Institut de France
- Bernard Seytre
- Régis Sodoyer

## ILLUSTRATION

Delphine Chauvin  
for the Mérieux Foundation's  
50<sup>th</sup> anniversary

Sickle SCAN is the  
property of  
Biomedomics

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