

# "For clinical biology that is innovative and accessible worldwide"





Infectious diseases cause 17 million deaths each year around the world, predominantly in developing countries.

For 45 years, Fondation Mérieux, an independent family foundation, has been taking action to ensure that every man, woman and child has fairer access to essential healthcare.



# **MESSAGES**

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# **OBJECTIVES**

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Enhancing Research Capabilities P.10

# IN THE FIELD

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**Financial Partners** 

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ALAIN MÉRIEUX 
President

# For clinical biology that is innovative and accessible worldwide



Fondation Mérieux, working closely with Fondation Christophe et Rodolphe Mérieux, strives to reduce the threat of infectious disease in developing countries. Our two independent family foundations have built a unique model based on biological diagnostics, an essential gateway to patient treatment, which increases the effectiveness of healthcare. Our aim is to improve the quality and accessibility of diagnosis, to structure high-level applied research on diseases that are devastating these countries, and to help the most vulnerable.

Fondation Mérieux's greatest strength is its network, which fosters durable, crossborder scientific exchange. Alone, our impact is limited. When we bring together resources, expertise, and know-how from countries around the world, we can do so much more.

The first phase of RESAOLAB\* came to a close in 2013. We and our partners are particularly proud of its extremely positive results and, above all, of the second phase which will be rolled out in four new

African countries. RESAOLAB brings together financial and technical partners from different backgrounds, whose common goal is improving diagnostics in African countries. This all testifies to the power of our network-based approach.

In 2013, we were able to increase our budget to over 16 million euros. This was thanks to new financial partners and additional funding from Fondation Christophe et Rodolphe Mérieux, which is also a beneficiary of Institut Mérieux's dividends and support. Additionally, we strengthened our scientific potential by appointing Prof. Hubert Endtz as Scientific Director of Fondation Mérieux. A world-renowned microbiologist, Professor Endtz has extensive international experience in fighting infectious diseases and tropical microbiology in particular.

These new resources will allow us to expand the scope of our activities, such as opening a new Rodolphe Mérieux Laboratory every year; two new units will be inaugurated in Bangladesh in 2014 and in Brazil in 2015, along with new R&D programs focusing on the diseases present in those countries.

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Alongside our work in clinical diagnostics and applied research, we are also collaborating with Fondation Christophe et Rodolphe Mérieux to develop a specific program focused on improving medical, economic, and social services for mothers and children.

We are making progress step by step. There is still much work to be done, but we and our partners can be proud of our efforts to develop clinical biology that is innovative and accessible worldwide.

\* RESAOLAB: West African network of biomedical analysis laboratories, see pages 22 and 35.



BENOÎT MIRIBEL Director General

# Networking to take action

In 2013, Fondation Mérieux stepped up its capacity to take action in developing countries. Significant advances were made possible by our strong network of partners, which reaches beyond borders between countries and across public and private sectors. The inauguration of the National Public Health Laboratory of Dushanbe in Tajikistan, the launch of the LaoCol-VP project for cervical cancer screening of women living with HIV in Laos or the development of a molecular test for the diagnosis and surveillance of typhoid fever, are all initiatives that have been deployed thanks to our strategy of building networks and leveraging the expertise and resources of their members.

The expansion of the RESAOLAB program to include seven West African countries was one of the highlights of 2013, receiving renewed support from Agence Française de Développement as well as from new partners: the Department of International Cooperation of the Principality of Monaco, the Stavros Niarchos Foundation and the Islamic Development Bank. Building a laboratory network will increase the access of vulnerable populations to quality diagnostic services.



The Partnership for Dengue Control (PDC), created during a meeting of experts at Les Pensières in July 2013, brings together all of the key stakeholders in the fight against dengue. This network is being hosted by Fondation Mérieux with support, in particular, from our long-standing partner, Sanofi Pasteur. It is symbolic of

Selected to become a member of Aviesan, the National Alliance for Life Sciences, which brings together the leading French life science and healthcare stakeholders involved in developing countries, Fondation Mérieux will be able to strengthen the collaborative research programs carried out by the GABRIEL network.

the integrated, holistic approach crucial

to successfully addressing this disease.

The multi-center AFRICARAMI project, which just ended, is another illustration of the collaborations initiated by the Fondation to structure applied research in developing countries. With funding from the European Union, this African and Caribbean scientific and technical network to fight against infectious diseases made tangible improvements to the research capabilities in the four participating countries (Cameroon, Mali, Madagascar and Haiti).

Fondation Mérieux forges ties between public health professionals and decisionmakers during its courses and nurtures these ties through a variety of alumni networks and resources. This holds true for the 900 decision-makers in the field of vaccines from the ADVAC course, the alumni from ACDx dedicated to diagnostics, or graduates of the BAMS course for laboratory technicians. Our bi-lingual web portal, GLOBE (Global Link for Online Biomédical Expertise), facilitates these connections and has become a point of reference for strengthening the capacities of healthcare professionals via new information and communication technologies. (

Building on the success of its international initiatives, Fondation Mérieux is enhancing its network of partners. This is essential to our mission of overcoming the challenges infectious diseases present each day.

# Fighting infectious diseases

# A UNIQUE MODEL FOR ACTION

The Fondation Mérieux's model is a unique one: building on its holistic approach to public health issues and its long-standing expertise in clinical biology. Its mission is to enhance local capacities in developing

countries to reduce the impact of infectious diseases on vulnerable populations. **70% of medical decisions are based on diagnostics, making them critical to healthcare at both individual and collective levels.** By providing relevant and reliable results, biological diagnostics make it possible to identify pathogens, prescribe the right treatment for each patient, and monitor its effects.

On a wider scale, diagnostics are indispensable for epidemiological surveillance and establishing appropriate public health policies and prevention strategies. However, developing countries very often lack facilities for clinical testing, high-quality diagnostic tools, qualified personnel and effective research resources.

Access to improved diagnostic accuracy for better patient outcomes is one of Fondation Mérieux's top priorities. To achieve this, it works closely with Fondation Christophe et Rodolphe Mérieux, an independent family foundation under the auspices of the Institut de France, which supports Fondation Mérieux's operations in the field.

# NETWORKING TO TAKE ACTION

To fulfill its mission in public health, the Fondation builds international networks and actively develops partnerships spanning all relevant disciplines. It works closely with developing countries' health authorities, public and private academic research bodies, international organizations, governments, development banks, foundations, NGOs and the healthcare industry.

The GABRIEL applied research network and programs such as RESAOLAB and AFRICARAMI aim to strengthen diagnostic testing and research infrastructures in Africa. These are just some examples of this networking approach, which is the driving force behind the Fondation's actions in the fight against infectious diseases.

Thousands of healthcare professionals trained locally to provide better care for vulnerable populations

Integrated research teams bringing together some 15 researchers at the Emerging Pathogens Laboratory in Lyon and the Christophe Mérieux Laboratory in Beijing

RESOURCES

FOR ACTION

world

centers

programs

124 people working in more than ten countries around the

An international network of 13 training and research

Several hundred infectious disease experts involved in training and public health

Access to the P4 Jean Mérieux Laboratory's research platform in Lyon

■ The GABRIEL\* network federating 16 research units in different countries

An annual budget of over €16 million

A family foundation based in Lyon with a presence in the USA, China and close to a dozen developing countries

\* Global Approach to Biological Research, Infectious diseases and Epidemics in Low-income countries

# FOCUSED ON 3 OBJECTIVES

# **ENHANCING** LOCAL RESEARCH **CAPABILITIES**

through collaborative programs on the pathologies specific to underprivileged countries, providing training for researchers, and developing diagnostic tools for improved identification of infectious diseases.

# 2. INCREASING **VULNERABLE POPULATIONS' ACCESS TO DIAGNOSTICS**

by strengthening clinical biology capacities in local healthcare systems.

# ENCOURAGING **DIALOGUE AND KNOWLEDGE-SHARING**

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within the public health community to contribute to the dissemination and development of expertise and innovative projects.









# Enhancing research capabilities

Fondation Mérieux's research teams are a major asset, laying the groundwork for its expertise and helping it to fulfill its mission. Today, this applied research is structured around two units:

the Emerging Pathogens Laboratory, part of the International Center for Infectiology Research at Gerland in Lyon (France),

• the Christophe Mérieux Laboratory in Beijing (China), part of the Institute of Pathogen Biology at the Chinese Academy of Medical Sciences (CAMS).

Together, these two research laboratories work closely with researchers in the GABRIEL network to conduct multi-center studies and technological training.



# **TWO NEW PARTNERSHIPS**

**S**vieson

alliance nationale pour les sciences de la vie et de la santé

In 2013, Fondation Mérieux joined Aviesan (French National Alliance for Life Sciences and Health). This organization brings together leading French life science and healthcare stakeholders, including the CNRS (French National Center for Scientific Research), Inserm (French National Institute for Health and Medical Research) and Institut Pasteur. Its objective is to improve the performance of French research, by fostering its consistency, creativity and excellence. To that end, Aviesan coordinates research projects and implements action plans.



Alongside Institut Pasteur and Hospices Civils de Lyon, the Fondation is a partner of the CIRI (International Center for Infectiology Research), which was founded in January 2013 by Inserm, the CNRS, ENS of Lyon and the Claude Bernard University Lyon 1. CIRI brings together more than 20 research teams in pursuit of the same objective: fighting infectious diseases. Through a multidisciplinary approach that blends microbiology, immunology, cell biology, clinical research and epidemiology, plus a strong interface with industry, CIRI aspires to be a research center that fosters therapeutic innovation and a major player in preventive medicine and the treatment of infectious diseases.

# Fondation researchers enjoy access to the P4 Jean Mérieux Laboratory,

belonging to the Fondation and managed by Inserm. This BSL4 maximum-security unit is dedicated exclusively to research on biosafety level 4 pathogens, the biological agents that cause severe human disease and pose a serious threat to the people who handle them.

The Fondation's research teams benefit from an exceptional scientific environment which fosters direct contact with professors, clinicians and researchers at other institutions. The Emerging Pathogens Laboratory has ties to the doctoral school of Integrative, Molecular and Cellular Biology (ED BMIC) and is therefore able to host several doctoral candidates. Work began in 2013 on an expansion of this BSL4 laboratory, doubling its capacity. This new space is expected to be operational by the end of 2014 and will enable researchers to run programs not only on highly pathogenic viruses (such as the Ebola, Marburg and Lassa viruses), but also on mycobacterial strains that are particularly resistant to antibiotics.

Working with the French Armed Forces Health Services and the P4 Laboratory, the Emerging Pathogens Laboratory is developing a scientific program focused on hemorrhagic fevers, and more specifically on the Crimean-Congo virus. This research program, which targets the identification of biomarkers to predict the severity of infection, aims to improve patient diagnosis and care.

The Fondation's teams are working on the development and validation of molecular diagnostic tools for use in infectious disease surveillance

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in the GABRIEL network laboratories, in developing and emerging countries. Through multi-center studies and in collaboration with its partners, Fondation Mérieux contributes to building reliable epidemiological databases which can help to inform appropriate public health policies. It also runs research programs to identify and characterize emerging pathogens, biomarkers associated with certain diseases and resistance to antibiotics.

# In partnership with local healthcare authorities and stakeholders, the Fondation sets up laboratories of excellence, the Rodolphe Mérieux Laboratories,

which have two objectives: applied research in infectious diseases and training.

Since 2005, six Rodolphe Mérieux Laboratories have been created and contribute to building capacities in applied research, training and biological analysis in their surrounding regions. A new laboratory is nearing completion in Bangladesh and a project is underway in Brazil.





# **GABRIEL** Network

# A NETWORK-BASED RESEARCH APPROACH



The Fondation takes a collaborative and multi-partner approach to research, driven by the GABRIEL (Global Approach to Biological Research, Infectious diseases and Epidemics in Low-income countries) network. It works to foster the sharing of skills and knowledge, and thus facilitate the implementation of applied research programs and epidemiological studies with the goal of improving the diagnosis, prevention and treatment of infectious diseases.

This collaborative international scientific network was created by the Fondation in 2008 and is supported by the Lyon and Beijing research laboratories. It brings together a variety of members, including the Rodolphe Mérieux Laboratories, local laboratories of excellence, academic research centers, hospitals, private companies, etc. A Steering Committee, chaired by Professor Jean-William Pape, director of the GHESKIO Centers in Haiti, oversees implementation of the GABRIEL network's initiatives.

GABRIEL has expanded significantly and now connects members from 16 countries: Brazil, Cambodia, Cameroon, Canada, China,



France, Georgia, Haiti, Laos, Lebanon, Luxembourg, Madagascar, Mali, Mongolia, Paraguay and, more recently, Ukraine. In 2013, Zaporozhye State Medical University, one of Ukraine's oldest medical institutions, joined the GABRIEL network. This institution's involvement will strengthen the network's tuberculosis resistance research. New applications have been received in recent months and should help to further expand the network. Three new applicants, the National Laboratory for Scientific Computing (Brazil), the International Centre for Diarrhoeal Disease Research, Bangladesh and the Institute for Developing Science and Health Initiatives (Bangladesh). were approved by GABRIEL's Steering Committee at the network's sixth Annual Meeting in December 2013. The additional expertise these new members contribute will further enrich the network.

Partnerships were also formed with Institut Pasteur to hold a workshop on MERS-CoV (see page 27) and with the French Academy of Medicine to develop scientific writing workshops.

# A THREEFOLD OBJECTIVE

Enhancing research capabilities in developing countries

Running multi-center studies on infectious diseases which have a significant impact on public health

Standardizing applied research methodologies by transferring technology and implementing quality assurance procedures



# NUMEROUS SCIENTIFIC PUBLICATIONS

As a result of the technologies transferred since the launch of the GABRIEL network. several tuberculosis and pneumonia studies have been conducted in developing countries. They culminated in a number of scientific publications. In 2013, 40 papers were published by GABRIEL's teams in Brazil, Cambodia, China, France, Georgia, Haiti, Laos, Mongolia and Paraguay. In total, since 2008, GABRIEL researchers have produced more than 200 publications which can be accessed at www.gabriel-network.org.

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They also presented their research at a number of international scientific conferences.

International Influenza
 Networks Meeting, January
 14-16, 2013, Scottsdale, Arizona,
 USA

Biovision, March 24-26, 2013, Lyon, France

Global Influenza Surveillance Hospital Network Annual Meeting, June 17-18, 2013, Valencia, Spain

■ 5<sup>th</sup> European Congress of Virology, September 11-14, 2013, Lyon, France

7<sup>th</sup> edition of Lyonbiopole Partnering Days, Health Emergencies: Monitoring Emerging Infectious Diseases and Finding the Right Solutions, October 11, 2013, Lyon, France

Options for the Control of Influenza VIII Meeting – ISIRV, September 5-10, 2013, Cape Town, South Africa



# AFRICARAMI: A NETWORKING SUCCESS STORY

The multi-center AFRICARAMI project, launched in 2009 and completed in April 2013, is an example of the collaborative approach developed by Fondation Mérieux to structure applied research in developing countries.

The African and Caribbean network to support the fight against infectious diseases aimed to reinforce research capabilities in four countries: Cameroon (Biotechnology Center at the University of Yaoundé), Mali (Charles Mérieux Infectiology Center in Bamako), Madagascar (Charles Mérieux Infectiology Center in Antananarivo) and Haiti (GHESKIO Centers in Port-au-Prince). The project received €1 million in funding over three years from the ACP Science and Technology Programme of the European Union.

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The post-program assessment clearly showed that the goal of establishing research programs in these countries had been met.

Significant progress was made in fields as diverse as bibliographic research, information management, identification of new sources of funding, use of new bioinformatic technologies and knowledgesharing. The project also led to broader international scientific collaborations for project stakeholders and provided training to more than 500 researchers, giving the partners the opportunity to participate both as students and as teachers. The project brought together institutes and researchers working on common challenges in each country, and allowed a number of research laboratories to emerge from isolation and participate in national networks, such as the national tuberculosis programs.

# CONCRETE RESULTS

- 63 participating institutions
- 3 research protocols accepted by ethics committees
- 8 protocols on tuberculosis and pneumonia
- 500 scientists trained on 7 training modules
- 23 scientific presentations at international conferences

# FIGHTING RESPIRATORY INFECTIONS AND MULTIDRUG- RESISTANT TUBERCULOSIS

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With its teams in Lyon and Beijing, as well as its GABRIEL network partners, Fondation Mérieux coordinates collaborative applied research programs in two high priority areas: respiratory infections and multidrug-resistant tuberculosis.

It is also working on other particularly severe infectious diseases and implementing local initiatives on issues specific to certain areas: diarrheal diseases, typhoid fever, malaria, fevers of unknown origin, neglected tropical diseases, HIV and hepatitis.

# TUBERCULOSIS: A MAJOR PUBLIC HEALTH ISSUE

- 1.7 million deaths each year
- Only 60 % of cases identified
- Difficulties in diagnosis
- Development of multidrug-resistant strains



# IDENTIFYING THE CAUSES OF PNEUMONIA IN CHILDREN

Pneumonia is a major public health problem in developing countries. Its etiology is difficult to identify and little data is available on the role viral pathogens play in the disease. Identifying these pathogens is of the utmost importance in determining the most appropriate treatment and avoiding the systematic use of antibiotics, which is responsible for creating resistance.

A multi-center epidemiological trial involving 2,200 children was launched in 2010 to identify the viral or bacterial agents that cause severe pneumonia in children under five years of age.

The study is being conducted by members of the GABRIEL network in ten countries and the molecular tests being used were developed by the Emerging Pathogens Laboratory in Lyon, which is coordinating the entire trial. Thanks to the support of Sanofi Pasteur, this trial was extended to include two sites in India. The tools developed in the course of this study, currently underway in China, Cambodia, Madagascar, Mali, Brazil, Paraguay, Lebanon, Haiti and Mongolia, were the subject of an initial scientific publication in 2012. The data is being analyzed in collaboration with the Epidemiology and Public Health Group, UMR CNRS 5558, University Lyon I and Edouard Herriot Hospital. The findings on respiratory syncytial virus were presented to the Respiratory Syncytial Virus Global Estimates Network (RSV GEN), which is supported by the Bill & Melinda Gates Foundation.

In 2013, the enrollment of all of the cases was completed and the biological analysis of the samples collected is now being finalized. The end results of this largescale study are expected before the close of 2014.

# **PNEUMONIA**

- Number 1 cause of death in children under 5
- Every minute, 4 children are lost to this disease
- Pathogen identified in only 50% of cases

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# BETTER UNDERSTANDING DRUG-RESISTANT TUBERCULOSIS

For over two years, the Emerging Pathogens Laboratory has conducted a project to monitor and improve understanding of how drug resistance evolves in the bacteria responsible for tuberculosis. The monitoring process involves sequencing the bacterial genome during the treatment of patients who are suffering from the disease, and then studying changes in the sequences obtained. The results will make it possible to identify mutations that make *M. tuberculosis* resistant to antibiotics, determine the appropriate therapy, and study how the disease is transmitted between patients.

New tools need to be developed to store and present the vast amounts of data generated by the complete sequencing of the bacterial genomes. The aim of the project conducted by the Fondation, in close collaboration with Genostar, is to design and develop a database to collect and manage clinical and biological information from tuberculosis patients so it can be matched and compared with the complete genome sequences. The ultimate goal is for Rodolphe Mérieux Laboratories to be able to use the software suite with no support from bioinformatics personnel.



# DIAGNOSING STREPTOCOCCUS PNEUMONIAE

Fondation Mérieux's Emerging Pathogens Laboratory has developed a molecular tool for typing *Streptococcus pneumoniae* directly from clinical samples.

This is a multiplex real-time PCR test that amplifies specific genes of the 40 serotypes found to be the most frequent causes of pneumonia around the world.

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This quantitative, sensitive and specific tool is used to study the prevalence of the different serotypes of *S. pneumoniae* worldwide. Surveillance of the distribution of these serotypes is essential to determining the impact of new vaccines introduced in developing countries.

The test has been transferred to the different GABRIEL network laboratories as part of the multi-center pneumonia study.

# CHRISTOPHE MÉRIEUX PRIZE AWARDED TO DR. VALERIE MIZRAHI IN SOUTH AFRICA



This €00,000 prize is awarded each year by the Institut de France on behalf of Fondation Christophe et Rodolphe Mérieux to support infectious disease research in developing countries and to reward teams working in the field. Dr. Valerie Mizrahi was the recipient of the seventh Christophe Mérieux Prize. Director of the Institute of Infectious Disease and Molecular Medicine and professor at the University of Cape Town, Dr. Mizrahi received the prize in recognition of her research on tuberculosis, the leading cause of death from infectious disease worldwide.

Dr. Mizrahi focuses on aspects of the biology of the bacterium involved in resistance to tuberculosis drugs and is also working to develop new drugs to halt this resistance.

The Christophe Mérieux Prize also recognized Dr. Mizrahi's commitment to developing tuberculosis research in Africa. Her laboratory is the main training and research center in Africa and hosts hundreds of researchers and recent graduates from around the world.

> The greatest honor for me is that the award committee recognized my commitment to, and passion for, developing people. I think of all of the young scientists I have trained and dedicate this award to them.

DR. MIZRAHI



# DIAGNOSING TYPHOID FEVER

Typhoid fever is common in the least developed countries, mainly because of problems associated with unsafe drinking water, improper disposal of effluents, and flooding. The annual incidence of typhoid is estimated at approximately 17 million cases worldwide. However, the lack of a sensitive, reliable diagnostic test makes it impossible to confirm the diagnosis and measure the real incidence of this disease around the world.

Since 2011, the Emerging Pathogens Laboratory has been working to develop a molecular test to detect *Salmonella* Typhi, *Salmonella* Paratyphi A and *Salmonella* spp directly in blood samples from patients thought to have typhoid. A specific, sensitive molecular test is now available to monitor and diagnose typhoid fever in developing countries.

This project, funded by the Bill & Melinda Gates Foundation, is the perfect example of a collaborative approach, bringing together Fast-track Diagnostics (Luxembourg), Institut Pasteur (Enteric Bacterial Pathogens Unit, Paris) and the Department of Microbiology, Dhaka Shishu Hospital (Bangladesh).

The first phase of this important study is being finalized, with end results expected by the close of 2014. The study is likely to be expanded to several African and Asian countries in 2014-2015.

# RESPIRATORY AND ENTERIC INFECTIONS IN CHINA

Viral pathogens, and respiratory viruses in particular, are a significant public health threat. In recent decades, severe acute respiratory syndrome (SARS) and pandemic influenza caused by the A(H1N1) and A(H7N9) viruses have had a severe impact on public health in China, as well as on the global economy. The rapid identification of emerging pathogens using molecular techniques was crucial to controlling these infections. Respiratory virus surveillance is the primary research activity of the Christophe Mérieux Laboratory in Beijing. It uses a powerful metagenomic tool to characterize viral and bacterial agents and identify new pathogenic isolates directly from clinical samples. Against this backdrop, the Christophe Mérieux Laboratory is focused on the surveillance of emerging viruses, the characterization of their genome through sequencing, and the serological response of respiratory and enteric viruses, which are particularly prevalent in China. 17





# Increasing access to diagnostics

Fondation Mérieux's expertise is world-renowned for the creation and renovation of clinical laboratories focused on infectious disease diagnostics.



Around the Rodolphe Mérieux Laboratories, Fondation Mérieux creates and renovates clinical laboratories within regional hospitals and healthcare organizations to give local populations access to accurate diagnoses and thus improve patient care. The Fondation helps these laboratories to get off the ground by providing all the necessary equipment (laboratory benches, microscopes, diagnostic tools, etc.), in compliance with international quality and biosafety standards. At the same time, the Fondation offers training for laboratory staff in testing techniques for the diseases prevalent in developing countries. It fosters national and international laboratory networks to promote the sharing of experience and standardization of practices, thus strengthening the healthcare systems of these countries.

In the last ten years, the laboratories in 16 regional hospitals and 18 district hospitals have been renovated and their staff trained, bringing access to diagnostics to remote areas that are often poorly equipped in terms of healthcare facilities. The direct consequence is improved patient care since diagnostic testing is of higher quality, performed closer to the patient, in a timely manner. In addition, the Fondation has implemented training courses leading to a diploma: in Haiti and Mali, there is the BAMS\* course for senior laboratory technicians and, in Cambodia, the D.E.S. (Diploma of Specialist Studies) in Medical Biology for doctors and pharmacists (see page 49).

\*Bachelor of Science in Biological and Applied Medical Sciences

# An international network

# AMERICAS

# 1 HAITI

Rodolphe Mérieux Laboratory in Port-au-Prince Laboratory of the State University Hospital in Port-au-Prince

# 2

BRAZIL

Rodolphe Mérieux Laboratory in Rio Branco (ongoing)

# EUROPE

# 3 FRANCE

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Emerging Pathogens Laboratory in Lyon P4 Jean Mérieux Laboratory in Lyon

# AFRICA

4 SENEGAL RESAOLAB Program

# 5 GUINEA RESAOLAB Program



MALI Rodolphe Mérieux Laboratory in Bamako RESAOLAB Program

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BURKINA FASO RESAOLAB Program

8 TOGO RESAOLAB Program

9 BENIN RESAOLAB Program

# 10

**NIGER** RESAOLAB Program

# 11 CAMEROON

12

DEMOCRATIC REPUBLIC OF THE CONGO

13 ETHIOPIA

# 14 MADAGASCAR

Rodolphe Mérieux Laboratory in Antananarivo Fianarantsao Hospital's laboratory Fort-Dauphin Hospital's laboratory Antsirabe Hospital's laboratory

# MIDDLE EAST

15 LEBANON Rodolphe Mérieux Laboratory in Beirut

ASIA

# 16 TAJIKISTAN

National Public Health Reference Laboratory in Dushanbe

**BANGLADESH** Rodolphe Mérieux Laboratory in Chittagong

# 18

MYANMAR Public Health Laboratory of Mandalay

# 19 CHINA

Christophe Mérieux Laboratory in Beijing

# 20

LAOS Rodolphe Mérieux Laboratory in Vientiane Thakhek Hospital's laboratory Mahosot Hospital's laboratory

# 21 CAMBODIA

Rodolphe Mérieux Laboratory in Phnom Penh Battambang's laboratory Khmer-Soviet Friendship Hospital's laboratory Kossamack Hospital's laboratory Svay Rieng's laboratory Takeo Regional Hospital's laboratory



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Working as part of multidisciplinary networks is a common thread throughout all **Fondation Mérieux** activities and is a major factor in the long-term success and sustainability of its projects.

**RESAOLAB** exemplifies this approach.

# **RESAOLAB PROGRAM EXPANDED IN WEST AFRICA**

Launched in 2009 in Burkina Faso, Mali and Senegal, RESAOLAB aims to improve the health of populations by strengthening the clinical laboratory system and creating an inter-country network. It targets three priority areas: continuing training of laboratory staff, quality management for tests, and laboratory-based epidemiological surveillance. A multidisciplinary approach is employed to address these key areas; thus, the lessons learned from each county's initiatives are shared and a functional, collaborative, standardized network is created at subregional level.

The program is run in close collaboration with the countries' health ministries. Each ministry has an operating unit responsible for implementing the activities. The program is overseen by an international steering committee that meets once a year in one of the countries.

The first phase of RESAOLAB made it possible to run major continuing training programs, to equip training and quality assurance laboratories, to make tools available for epidemiological surveillance and to create a vibrant inter-country network (see page 35).

Today, more than 300 public and private laboratories in the first three countries have joined the network. RESAOLAB has, among others, promoted the creation of the National Laboratory Department in Senegal, facilitated the drafting of a national laboratories policy in Mali, and provided support to the Laboratory Department in Burkina Faso.

# **RESAOLAB'S PHASE 2**

Building on the success of the first phase, and at the request of the health ministries of Benin, Guinea, Niger and Togo, the project will be expanded through to 2017. 2014 will be dedicated to implementing RESAOLAB in these four new countries and to developing activities in the first three.

The project will therefore cover seven West African countries whose clinical facilities will be strengthened to improve the quality of care.

The second phase of RESAOLAB will focus on 6 key areas:

 improving laboratory services through implementation of a standardized quality system,

- strengthening both initial and continuing training of laboratory staff,
- establishing an information management system in the network's main laboratories,
- strengthening the national laboratory procurement, maintenance and management systems through a regional approach,
- obtaining additional funding for the laboratory systems,
- strengthening regional and national governance of the laboratory systems.

Officials from the health ministries of the seven countries gathered in Cotonou in October 2013 for the first international steering committee meeting dedicated to this second phase.



Prof. Dorothée A. KINDE-GAZARD Minister of Health of Benin - October 22, 2013

RESAOLAB's expansion is made possible by the continued support of the Agence Française de Développement (French Development Agency) and by additional backing from new partners: the Islamic Development Bank, the International Cooperation of the Principality of Monaco and the Stavros Niarchos Foundation. WHO/AFRO and the West African Health Organisation (WAHO) also support this initiative. A needs assessment was co-funded by the French Ministry of Foreign Affairs as part of the Global Fund 5% Initiative.

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# DECENTRALIZING TUBERCULOSIS DIAGNOSIS IN CHINA

Since November 2008, Fondation Mérieux, in partnership with the Chinese Ministry of Health, has run a program to decentralize the region's diagnostic facilities and treatment of tuberculosis and its drug-resistant forms.

After a successful first phase in the Zhejiang and Heilongjiang provinces between 2008 and 2012, the program was expanded to two new sites selected by the Chinese authorities: the Xinjiang Uyghur Autonomous Region and the Guangxi Zhuang Autonomous Region.

Through its bureau in China, Fondation Mérieux helps the Ministry of Health and the Chinese CDC implement new, more effective tools for diagnosing tuberculosis and detecting its resistance to antimicrobials: LED microscopy, liquid culture, the LPA from Hain, and GeneXpert® MTB/RIF. The project consists mainly in equipping laboratories and training staff at the tuberculosis patient treatment sites.

# CARE : "CHINA AGAINST RESISTANCE"

Launched at the end of 2013, the CARE "China Against Resistance" project, run by Fondation Mérieux in partnership with the Chinese Medical Association (CMA), aims to promote and support the prudent use of antibiotics:

by facilitating the rapid and reliable identification of bacteria and providing a protocol – designed specifically to meet China's clinical needs – to test their sensitivity to antibiotics; by establishing systems to manage and monitor the use of antibiotics and encouraging networking among microbiology laboratories.

As part of the CARE project, Fondation Mérieux provides state-of-the-art equipment to identify bacteria and to test their susceptibility; it also offers the necessary training for these diagnostic tools. The Fondation also lends its expertise to establishing and monitoring best practices in hospitals.



# Encouraging knowledge-sharing and training



Spreading scientific innovation worldwide: Les Pensières Les Pensières Conference Center is a venue for meetings and North-South and South-South dialogue, dedicated to scientific discussion and disseminating innovation. For over 40 years, it has welcomed healthcare professionals (researchers, clinicians, biologists, pharmacists, veterinarians, representatives of healthcare and regulatory authorities, etc.) across all disciplines and countries, for high-level conferences and institutional training courses.



Les Pensières was created with an initial focus on vaccinology, but now extends its activities to diagnostics and other issues which concern public health, such as nutrition, food safety and access to safe water.

Through Les Pensières, the Fondation is able to share scientific expertise internationally and enhance knowledge in the fight against infectious diseases. It is the starting point for an outstanding multi-disciplinary network of specialists that is set to advance public health on a global scale.

# NEW INFORMATION TECHNOLOGIES AT LES PENSIÈRES

2013 heralded the start of a new era at Les Pensières with significant investment in technology. In particular, funds were allocated to give attendees access to 90 iPads and to create a cloud computing network.

These tools make it possible to replace printed course materials (meaning, for example, that 80,000 pages no longer need to be printed for the ADVAC course every year) and enable attendees to take personalized notes. The use of these tools also encourages online course evaluation which provides instant feedback on the quality of the speakers and whether course objectives have been met. 25



# In 2013, 90 conferences and training courses were held at **Les Pensières**, with internationally renowned speakers and some 3,600 participants from around the world.

# THE CONFERENCE PROGRAM INCLUDED:

THERAPEUTIC VACCINES: REPROGRAMMING IMMUNITY IN INFECTIOUS DISEASES, ALLERGY AND CANCER March 2013 - Conference organized in partnership with Sanofi Pasteur.

# GLOBAL LABORATORY INITIATIVE MEETING

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April 2013 - Conference organized in partnership with the World Health Organization and Stop TB Partnership.

### TARGETING COMMENSAL FLORA TO BETTER SHAPE PROTECTIVE IMMUNE RESPONSES FOR BETTER DISEASE PREVENTION AND THERAPY

June 2013 - Conference jointly organized in partnership with Sanofi Pasteur.

### BETTER FOOD FOR BETTER HEALTH

September 2013 - Conference organized in partnership with Mérieux NutriSciences.

WORLD RABIES DAY September 2013 - Forum organized in partnership with Institut Pasteur.

# FORUM ESPACE HUMANITAIRE

September 2013 - Conference organized in partnership with the French Red Cross and Fondation de France.

### VACCINATION: AN EVOLUTIONARY ENGINE FOR SPECIES? November 2013 - Conference

November 2013 - Conference organized in partnership with Sanofi Pasteur.



# MERS-COV: A TOPICAL WORKSHOP AT LES PENSIÈRES

Through Les Pensières, the Fondation strives to be at the forefront of the fight against infectious diseases. It therefore worked with Institut Pasteur to bring leading European experts together in Annecy last October for a workshop on the threat posed by MERS-CoV, a highly topical issue.

A better understanding of the origin of this coronavirus and its epidemiology is crucial to developing prevention strategies. Many aspects of this emerging pathogen responsible for Middle East respiratory syndrome (MERS-CoV), first identified in Saudi Arabia in 2012, remain unknown.

This workshop was held alongside the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) meeting organized at Les Pensières by the European Commission, Inserm and Fondation Mérieux. The meeting was dedicated to the risk of epidemics caused by emerging infectious diseases.

For 17 years, Fondation Mérieux has organized annual vaccinology

courses in partnership with Sanofi Pasteur. Vaccine experts, physicians and members of the public health community present their work and share their experiences at these courses, held alternately in Asia and South America. Fondation Mérieux also organizes and supports scientific conferences **in different countries around the world**.

# INTERNATIONAL CONFERENCES INCLUDED:

### NATIONAL TUBERCULOSIS DAY - IN MALI

April 2013 - Conference organized by the Charles Mérieux Infectiology Center in Bamako, in partnership with the National Tuberculosis Program.

### 4<sup>th</sup> CHARLES MÉRIEUX CONFERENCE: "CANCER AND INFECTIOUS DISEASE PATHOGENS IN THE MEKONG BASIN: WHAT ARE THE BEST STRATEGIES FOR INTERVENTION AND TRAINING?" – IN LAOS

March 2013 - Organized as part of the Jacques Cartier meetings in partnership with the Francophone Institute of Tropical Medicine (IFMT), the Francophone University Agency (AUF) and Fondation Mérieux.

### TOWARD A LABORATORY NETWORK FOR IMPROVED DIAGNOSIS – IN LAOS

November 2013 - Conference organized in partnership with WHO Laos and Cambodia, the Lao Oxford Mahosot Wellcome Trust Research Unit, CHU Liège, Institut Pasteur of Laos, the Diagnostic Microbiology Development Program (DMDP) and the Defense Threat Reduction Agency (DTRA).

### KHAMMOUANE DENGUE FEVER MEETING: A REVIEW OF THE 2013 DENGUE OUTBREAK – IN LAOS

October 2013 - Conference organized with the support of the Rhône-Alpes Regional Council.

### VACCINOLOGY APAC (ASIA PACIFIC), BANGKOK – IN THAILAND

November 2013 - Conference organized with the support of Sanofi Pasteur.

# THE SECRETS OF THE BRAIN – IN FRANCE

October 2013 - Symposium held in Paris in collaboration with the Fondation Léa et Napoléon Bullukian.

# Training healthcare professionals

There is little benefit in strengthening clinical testing structures in developing countries without training local healthcare professionals: laboratory technicians and the leading doctors and scientists of tomorrow. The Fondation has honed its expertise in this area, establishing links with universities and training organizations such as the ESTBB\*, the University of Geneva and the London School of Hygiene and Tropical Medicine.

As a result, it has implemented a number of training and knowledge-sharing programs intended to reinforce biological expertise in the field and to raise awareness among opinion leaders about public health's major challenges (including vaccinology, diagnostics, emerging pathogens and neglected diseases).

It also contributes to building teaching curriculums in pharmacy and biology at the university level. The Universities of Health Sciences in Phnom Penh and Antananarivo are examples of this commitment.

The Fondation places emphasis on training in the field so that students are working in their own countries and are encouraged to remain there, thus molding them into the healthcare professionals of tomorrow. These local training courses are delivered in Charles and Christophe Mérieux Infectiology Centers, such as those in Bamako and Vientiane.

A Bachelor of Science in Biological and Applied Medical Sciences (BAMS) has been established in Haiti, with the support of the French AnBer Foundation, and in Mali, thanks to funding from the Islamic Development Bank.

Since its launch in 2007, about one hundred laboratory technicians have completed the program, delivered in partnership with the ESTBB.

Other training courses leading to qualifications have also been set up, including a diploma of specialist studies in medical biology at the University of Health Sciences in Cambodia.

\* School of Biology, Biochemistry and Biotechnology at the Catholic University of Lyon



# Raising awareness among the public health community

At Les Pensières conference center, training courses for members of the public health community are co-organized with academic institutions. The aim is that doctors, biologists and representatives of regulatory bodies and health authorities share what they have learned and improve practices in their country.

# IN 2013, THESE TRAINING COURSES INCLUDED:

### ADVANCED VACCINOLOGY COURSE

(ADVAC):  $14^{\rm th}$  edition of this vaccinology training course, organized with the University of Geneva.

Its objective is to facilitate decisionmaking in vaccinology by providing participants with a comprehensive overview of the field, from immunology to vaccine development, including clinical trials and the social, economic, political and ethical issues of vaccination.

ADVAC is supported by the Bill & Melinda Gates Foundation, European Commission (ADITEC project), World Health Organization, U.S. Centers for Disease Control and Prevention, European Society for Paediatric Infectious Diseases, European Centre for Disease Prevention and Control, Johns Hopkins Bloomberg School of Public Health, National Institutes of Health and Fogarty International Center, and the National Vaccine Programme Office.

### ADVANCED COURSE ON DIAGNOSTICS (ACDx):

4<sup>th</sup> edition of this training course organized in partnership with the London School of Hygiene and Tropical Medicine, dedicated to the diagnosis of infectious disease.

This course aims to raise awareness of the role of diagnostics in global public health, covering research and development in diagnostic testing, quality issues, and human resources in the laboratory setting.

ACDx is supported by the Bill & Melinda Gates Foundation and the Global Emerging Infection Surveillance and Response System (GEIS).

# MORE THAN 1,000 GLOBE MEMBERS



The GLOBE portal (Global Link for Online Biomedical Expertise) is an online network for healthcare professionals and scientists in developing countries. Launched in 2009, this electronic portal is intended to strengthen expertise and knowledge-sharing about infectious diseases, by making a range of tools, information. conferences and distance-learning modules available to members. It offers 14 self-training modules, multiple worksheets, and hosts nine networks, including GABRIEL, RESAOLAB and ADVAC. Four years after its launch, GLOBE had more than 20,000 visits in 2013 originating from 173 countries.

www.globe-network.org





# THE AMERICAS

# 1 HAITI

Rodolphe Mérieux Laboratory in Port-au-Prince Haiti's State University Hospital Laboratory in Port-au-Prince

# 2 BRAZIL

Rodolphe Mérieux Laboratory in Rio Branco (ongoing) Charles Mérieux Training Center in Salvador (ongoing)

# BRAZIL

The framework for establishing the future Rodolphe Mérieux Laboratory in Brazil was finalized and the laboratory's layout has been approved. Construction will begin in 2014 at the University Hospital site in Rio Branco.

A Charles Mérieux Training Center is also being established in Salvador de Bahia, as part of the University Hospital.

The Rio Branco laboratory will provide reference tools for diagnosis and treatment of hospital patients, while the Salvador Center will offer targeted training workshops, bringing together clinicians working in different Amazonian states. Hepatitis, particularly B, C, and delta, will be a key focus, as it is particularly prevalent in this part of the world.

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# PARTNERSHIP WITH GHESKIO

HAIT

Since 2002, Fondation Mérieux has worked alongside its long-standing partner, GHESKIO (Haitian Group for the Study of Kaposi's Sarcoma and Opportunistic Infections), particularly providing technical support to the microbiology laboratory. 70 people currently work at the Rodolphe Mérieux Laboratory, created by the Fondation as part of GHESKIO's Institute of Infectious Diseases and Reproductive Health (IMIS). These teams work to diagnose multi-resistant tuberculosis, cholera, and HIV, playing a key role in the fight against infectious diseases and the prevention of epidemics.

Following Haiti's 2010 earthquake, which damaged GHESKIO's Centers, the most recent renovation work in 2013 has put one of the training rooms back in service, thanks to the support of the AFRICARAMI project (African and Caribbean network to support the fight against infectious disease). This second round of renovations comes after initial work to repair the laboratory immediately after the earthquake.

BRAZIL

HAIT

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# TECHNICAL SUPPORT TO THE IMIS LABORATORY

In 2013, the Fondation provided a technical assistant in medical biology to the Institute of Infectious Diseases and Reproductive Health laboratory. This support helped the laboratory improve its bacteriology expertise and develop a program to monitor germ sensitivity to antibiotics.

# BAMS: 18 NEW LABORATORY TECHNICIANS IN TRAINING

Given the success of the training program that was created and developed in Mali in 2007, Fondation Mérieux decided to set up a Bachelor of Science in Biological and Applied Medical Sciences (BAMS) in Haiti. This course, which leads to a qualification, is organized in collaboration with the ESTBB (School of Biology, Biochemistry, and Biotechnology) at the Catholic University of Lyon, the National Public Health Laboratory in Port-au-Prince, and Haiti's Ministry of Public Health and Population. BAMS aims to improve the biomedical analysis skills of senior laboratory technicians, as well as their knowledge of quality assurance regulations.

The third BAMS class in Haiti had 18 new trainees in September 2013.

# SUPPORTING HAITIAN WOMEN LIVING WITH HIV

Haiti is the poorest country in the Caribbean and also has the highest rate of HIV infection. In 2005, a micro-credit loan program for HIV-positive women was created in partnership with ACME (Haitian cooperative association for micro-enterprises) and the GHESKIO Centers, and continues to this day.

The women participating in this project are all HIV-positive or at risk of HIV infection, residents of Port-au-Prince, and are facing economic difficulties. GHESKIO recruits the women, and ACME provides training on managing an income-generating activity and the responsibilities tied to their loan and small business ownership. In 2013, more than 750 women participated in training on micro-credit loans, and 350 women received a loan.

Despite Haiti's dire economic situation, this program is an ongoing success, with a high reimbursement rate and effective economic reintegration of many women. In October 2013, there were more than 883 loans in place for a total of 6,851,238 Haitian gourdes (around €278,000).

Fondation Mérieux, with funding from Fondation Christophe et Rodolphe Mérieux, covers the risk of non-payment through a Guarantee Fund managed by ACME. It also covers the cost of training programs and GHESKIO social workers supporting women in the program.

In 8 years, more than 6,700 loans have been granted to more than 3,000 women.

# WORKING FOR HAITIAN CHILDREN

Thanks to the support of Fondation Christophe et Rodolphe Mérieux, Fondation Mérieux was able to start three new building projects to house Haitian children.

• Support from the French AAIP association (firefighters' international aid actions) for the construction of three "Kayïti" houses with a dispensary in Jacmel.

Extensions to the Our Lady of the Miraculous Medal children's home in Cap-Haitian and vehicle purchases. Fondation Mérieux completed work to expand and improve this institution managed by Sister Godelive. 500 children attend the school and close to 100 are residents in the orphanage. Five new "Kayïti" houses were built to accommodate the members of the religious community, in addition to a laundry room and a playground for children.

■ In Leogane, 15 "Kayïti" houses were built along with two multipurpose halls for the Communautés de l'Incarnation -Brother Franklin Armand religious community. These new premises will accommodate around 60 children and 10 supervisors.

Fondation Mérieux has also continued to support organizations working with children:

aid for street children through a health solidarity fund for the Communautés de l'Incarnation - Brother Franklin Armand, which covers healthcare costs,

since 2010, financial support to the Association Klib Timoun Kè Kontan (AKTKK).

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# **AFRICA**



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**RESAOLAB** Program

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**3** MALI Rodolphe Mérieux Laboratory in Bamako RESAOLAB Program

**4** BURKINA FASO RESAOLAB Program

5 TOGO Programme RESAOLAB

6 BENIN

**7** NIGER RESAOLAB Program

8 CAMEROON

9 DEMOCRATIC REPUBLIC OF THE CONGO

10 ETHIOPIA

11) MADAGASCAR

# Rodolphe Mérieux Laboratory in Antananarivo

Fianarantsoa Hospital Laboratory Fort-Dauphin Hospital Laboratory Antsirabe Hospital Laboratory

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# THE WEST AFRICAN LABORATORY NETWORK

# **RESAOLAB** : STRENGTHENING CLINICAL LABORATORY STRUCTURES

The RESAOLAB project began in 2009 in close collaboration with the ministries of health in Burkina Faso, Mali, and Senegal to improve access to high-quality diagnostics. The first phase of the project was completed in 2013, with excellent results.

A flagship program initiated by Fondation Mérieux, RESAOLAB was co-financed by the Agence Française de Développement (AFD). The WHO/AFRO and the West African Health Organisation (WAHO) also collaborated in the program. (More information on pages 22 + 23).

# **RESULTS OF RESAOLAB'S PHASE 1**

Establishment of a continuing training plan for laboratory staff in Burkina Faso, Mali and Senegal

- 8 continuing training modules available online
- Regional standardization of the official disclosure form for notifiable diseases
- 7 training sessions for 53 instructors from all three countries
- 111 training sessions
- 24 participants per session
- Development

of a distance-learning platform (http://www.globe-network.org/)

Renovation and equipment of 12 decentralized centers for training and quality control

Development of a quality assurance plan in each country

Implementation of quality control and supervision in 182 laboratories

Development of a Laboratory Information Management System with an open source software program (called LAB-BOOK) installed in 45 laboratories

■ 15 laboratories in each country set up with IT equipment to facilitate electronic data transmission for communicable disease surveillance Since the establishment of RESAOLAB in 2009, we have seen a major change (...) and this has made a really important contribution to the laboratories and healthcare pyramid in Burkina Faso.

### DR. RASMATA OUEDRAOGO-TRAORÉ

Professor, Bacteriology – Virology Laboratory Director, CHUP-CDG Ouagadougou - Burkina Faso

Many laboratory activities are currently done manually, with all the associated risks that follow. In my opinion, it's critical that we start digitalizing files: this will allow us to reduce the margin of error, and also keep track of our patients and their clinical history.

And in a laboratory like this, where systems and material play an important role, (...) personnel must be trained to maintain the equipment.

PROF. IDRISSOU ABDOULAYE

Director General, CNHU - HKM Cotonou - Benin

# EXTENDING THE RESAOLAB PROGRAM

At the end of 2013, a new phase was introduced to improve the quality of medical biology services in four new West African countries. (More information on page 23).

In 2014, the RESAOLAB program will be launched in Benin, Guinea, Niger, and in Togo, while continuing in Burkina Faso, Mali, and Senegal.

# BURKINA FASO

# A NEW CENTER AS PART OF RESAOLAB

of Pharmacy, Drugs and of medical analyses. Laboratories.

As part of the RESAOLAB Unit will monitor and oversee program, a new Continuing quality control of all the labora-Training Center and External tories' activities. This will Quality Control Unit was built ensure that continuing training in the Burkina Faso Ministry of of laboratory personnel is Health facility in Ouagadougou, adapted to actual needs,

Inaugurated in March, this new Continuing Training Center will make it possible to train laboratory technicians from all over the country. It boasts a training center which can accommodate up to 30 people, a microscopy room with around 20 microscopes, and a computer lab for distance learning sessions. The External Quality Control

next to the General Directorate thereby improving the quality

# DEMOCRATIC **REPUBLIC OF THE** CONGO

# CHOI FRA PREVENTION

In 2013, Fondation Mérieux Studying the significance of supported a research project on the etiology of cholera-related diarrhea in endemic cholera zones in the Eastern part of the Democratic Republic of the Congo.

A Congolese researcher working with the University of Besançon (Laboratoire Chrono Environnement) evaluated the possibility of installing a new laboratory at the University of Kinshasa that would focus on studying the epidemiology of the disease in order to better understand and prevent epidemics.

cholera in these endemic zones would allow researchers to better estimate the impact of this pathology in the sub-region.

In addition, a working group comprising the Fondation Veolia, the NGOs Pharmacie Aide Humanitaire, Action Against Hunger, and Fondation Mérieux is acting to develop a rapid test to detect cholera in different water sources.

# CAMEROON

# THE FIGHT AGAINST TUBERCULOSIS

On April 13, 2013 in Yaoundé, Just like in Mali (see page 39), the Fondation held a tuberculosis this Health / Tuberculosis symposium in collaboration symposium brought together with the National Tuberculosis decision-makers, researchers, Program. This event was and clinicians to define the organized as part of the challenges and future directions AFRICARAMI project in order of research on tuberculosis, and to take stock of all the existing bibliographic data on tuberculosis in Cameroon and progress being made in detecting the disease.

efforts to eliminate the desease.

# PARTNERSHIP WITH INSTITUT PASTEUR

In May 2013, a meeting took place with Cameroon's Minister of Health to establish a partnership between Fondation Mérieux and Institut Pasteur to renovate the Garoua Hospital laboratory in Northern Cameroon. This laboratory is set to reopen in 2014.







# IMPROVING TUBERCULOSIS DIAGNOSIS

The humanitarian organization Inter Aide, with the support of Fondation Mérieux and the European Union, implemented a program to fight tuberculosis with three main objectives: raising awareness of infection in Ethiopia, facilitating access to high-quality diagnostics, and mobilizing healthcare professionals in the fight against this disease.

In 2013, the support of Fondation Christophe et Rodolphe Mérieux made it possible to extend Inter Aide's activities financed through the Stop TB Partnership's TB Reach project.

Between 2012 and 2013, Inter Aide trained 244 community health workers, 50 supervisors, and 1,100 volunteers in the fight against tuberculosis in the Dawro region in Southern Ethiopia. The Tocha reference laboratory and two laboratories in Soddo were equipped with a fluorescence microscope.

This aid program made it possible to increase tuberculosis detection by 85% (661 new cases as compared to 358 before the program), and will continue in 2014.

# GUINEA

In 2013, a new laboratory in the Coronthie Women and Children's Health Center in Conakry was fully equipped. It was officially opened on March 8<sup>th</sup> in the presence of Bernard Kouchner and Alpha Condé, President of the Republic of Guinea.

The laboratory director was trained at the Charles Mérieux Infectiology Center in Mali at the end of the year.



# MALI

# PUBLIC HEALTH ACTIVITIES CONTINUED AT THE CHARLES MÉRIEUX CENTER

Despite a difficult political context in Mali and the SERVAL military operation that affected some international partnerships, the Charles Mérieux Infectiology Center was able to continue its activities in 2013. The center's first Scientific Council was held in November 2013.

The center focused its activities throughout the year on research and bringing in young Malian researchers to improve local expertise, particularly in the fields of tuberculosis and pneumonia. As part of these efforts, an in-depth technical training was conducted in the Emerging Pathogens Laboratory. The creation of a biosafety level 3 laboratory (P3) will ensure that Mali now has the appropriate tools to diagnose mycobacteria resistance.

The center will be integrated into the national public health system thanks to strong links with the university and the Ministry of Health. Accordingly, a scientific director on secondment from the civil service has recently been assigned to the Charles Mérieux Infectiology Center.

In 2013, the center renovated certain buildings and updated some of its equipment. Given the success of RESAOLAB, the training facility's capacity was increased (classrooms and media library).





# SCIENTIFIC CONFERENCE ON THE FIGHT AGAINST TUBERCULOSIS

On April 11, 2013, the Charles Mérieux Infectiology Center, in partnership with the National Program for Tuberculosis Eradication, organized a conference in Bamako with close to 50 participants, including researchers from the Faculty of Medicine and Pharmacy and the National Research Institute on Public Health.

This event was organized as part of the AFRICARAMI project to present advances in tuberculosis research in Mali and promote exchanges between national researchers on needs and studies to be initiated.

# THE SEVENTH BAMS CLASS

The Bachelor of Science in Biological and Applied Medical Sciences (BAMS) has been organized since 2007 by the Charles Mérieux Infectiology Center in Bamako, in partnership with the Faculty of Medicine and Pharmacy of Bamako and ESTBB (School of Biology, Biochemistry and Biotechnology at the Catholic University of Lyon).

This 9-month course (October 2013-June 2014) provides a formal qualification and is intended to reinforce senior laboratory technicians' biomedical analysis skills and knowledge of laboratory quality assurance regulations.

During this 7<sup>th</sup> session in Mali, 28 new participants are being trained by 26 teachers.

# LABOMEDCAMP: SUPPORT FOR COMMUNITY HEALTH CENTER LABORATORIES

This cross-sectoral project brings together the NGO Santé Sud, for their experience setting up field laboratories; the Charles Mérieux Infectiology Center, to train laboratory staff and supervise the project; and the RESAOLAB Mali unit to integrate the laboratories into the community health centers in the national network. The initiative also benefited from the support of the International Cooperation of the Principality of Monaco.

Launched in February 2011, LABOMED-CAMP seeks to provide better diagnosis of infectious diseases in primary healthcare centers in Mali.

As such, ten new front-line laboratories were established and are now operational in community health centers in three regions: Ségou, Koulikoro, and Kayes. Ten doctors and fourteen laboratory technicians working in these health centers were trained in quality assurance at the Charles Mérieux Infectiology Center in Bamako, which also supervised the installation and startup of these laboratories. The premises were set up with IT equipment to collect and transmit epidemiological data to reference health centers, as well as an integrated, networked quality management system. The Kayes Regional Training Institute was also renovated and its installations were upgraded.

These laboratories will continue to be monitored and assisted through the RESAOLAB network's existing activities and systems.





# FIGHTING AGAINST INFANT-CHILD MORTALITY WITH PESINET

This project has been in operation since 2010 to give people in Bamako access to healthcare facilities. Its objective is to permanently reduce infant-child mortality in Sub-Saharan Africa.

In partnership with the Pesinet association, Fondation Mérieux trains and supervises laboratory and community health center staff in Bamako on how to improve disease detection and treat young children more quickly.

The Pesinet program includes regular house visits, health education measures, and a reasonably-priced micro-health insurance plan. By using cell phones to monitor newborns' vital signs, this program helps identify children's health problems much sooner and enables them to be sent to a local doctor as quickly as possible.

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More than 700 mothers were informed of preventive practices and 50 health center professionals were trained on Essential Family Practices and techniques for patient intake and education. The Charles Mérieux Infectiology Center conducted an evaluation of needs in order to establish a plan to improve infrastructure. It also offered a program to train laboratory technicians (on the quality of their analyses) and prescribers (on the importance of biomedical analysis to diagnose infectious disease in young children).

The system for early detection and treatment of childhood health problems proved highly successful: in 97% of cases that raised red flags, an illness was detected and treated.

Since the Pesinet program was launched, 1,600 children have benefited from this measure, which could ultimately be extended to other regions.

# FIGHTING AGAINST EXCLUSION WITH SAMUSOCIAL IN MALI

Since 2005, Fondation Mérieux has been supporting Samusocial in Mali to provide funding for, and access to, healthcare for street children in Bamako.

The Samusocial program was developed to address the suffering and social exclusion of children under the age of 18 living and sleeping on the streets of Bamako. In addition to creating and maintaining social ties, Samusocial also provides psychosocial, medical, nutritional, and educational assistance to these children wherever they are living, through both nighttime visits and daytime healthcare services.





Fondation Mérieux provides financial and logistic support for Samusocial's various activities:

• outpatient treatment through nighttime patrols in the streets of Dakar,

medical monitoring of children with health problems throughout the day in order to provide appropriate treatment and refer them to specialized facilities when required,

health education initiatives: raising awareness of issues such as daily hygiene, disease prevention, and vaccination, in collaboration with Ministry of Health campaigns.

Support for Samusocial in Mali was renewed in 2014, as it was in Senegal and Burkina Faso.

# SENEGAL

# **RESAOLAB IN SENEGAL**

In 2013, Fondation Mérieux opened an office in Dakar to support and guide the development of RESAOLAB in Senegal.

A National Training Center and an External Quality Control Laboratory were created in Thiès thanks to RESAOLAB funding. The program also helped to establish Senegal's National Laboratories Directorate.

# THE VOICES PROJECT: USING MOBILE PHONES TO IMPROVE EPIDEMIOLOGICAL SURVEILLANCE

The VOICES (VOIce-based CommunitycEntric mobile Services for social development) pilot project came to an end in 2013 in Dakar. The experiment tested the use of mobile phones for conducting epidemiological surveillance in regional laboratories and training laboratory staff.

VOICES was financed by the European Commission from its beginnings in 2011, and brought together Senegal's National Network of Laboratories, the Multinational Higher School of Telecommunications in Dakar, the telecommunications group Orange, the Dutch Organization for Applied Scientific Research (TNO), the South African Council for Scientific and Industrial Research, the Worldwide Web Foundation, and Fondation Mérieux.

This "mobile health" pilot project led to improvements in the transmission of priority disease notifications from regional laboratories to national bodies, as well as increased dissemination of training and information about epidemics.

# SOCIALAB: IMPROVING PRENATAL CARE

SOCIALAB is an academic research project launched in November 2012 by AIGHD (Amsterdam Institute for Global Health and Development) and financed by WOTRO (Netherlands Foundation for the Advancement of Tropical Research). As a partner for this study through RESAOLAB, Fondation Mérieux coordinates local project management through its teams based in West Africa.

SOCIALAB's objective is to identify barriers (social, cultural, historic, or political) that affect medical biology services, and measure their impact on the quality of prenatal care in Senegal and Sub-Saharan Africa in general.

The results of this three-year project should help to increase the capacity of biomedical laboratory services and improve the use of diagnostics for prenatal healthcare.

In 2013, efforts were focused on selecting and training the Senegalese research team, launching studies at 15 sites, and conducting initial ethnographic research in healthcare facilities.





# A NEW HOSPITAL PHARMACY PROGRAM

Since 2007, Fondation Mérieux has been helping to establish a Pharmacy Department in the Antananarivo Faculty of Medicine, in partnership with the University of Antananarivo, Joseph Fourier University in Grenoble, the Pierre Fabre Foundation, and the French International Cooperation ministry. The creation of this "pharmacy" program started with renovations to the premises, installation of classroom equipment, and teacher training. Among the project's objectives was the transfer of responsibility for pharmacy education to Madagascan teachers.

As a result, in 2013, ten pharmacists received their diplomas in Madagascar and started working for the Ministry of Public Health as hospital pharmacists.

In 2014, the program will start using the three-cycle system (Bachelor/Master/ Doctorate) and will become part of the Common First Year in Health Studies (PACES).



# TRAINING BIOLOGISTS

Thanks to the support of Fondation Mérieux, several training modules were held in 2013 as part of the AFRICARAMI project (see page 14), including a molecular biology training module at the Charles Mérieux Infectiology Center (for biologists and biology interns), and a quality assurance training module for biologists and laboratory technicians.



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# ROTAVIRUS STUDY AT THE WOMEN AND CHILDREN'S UNIVERSITY HOSPITAL IN TSARALALANA

Acute diarrhea caused by rotavirus infection is one of the world's leading causes of death in children under the age of five. This virus is responsible for 125 million cases each year and kills 500,000 children, 85% of whom are in Africa and Asia.

Epidemics of rotavirus diarrhea generally occur alongside respiratory disease outbreaks, which put a great strain on pediatric services. At the request of the WHO, monitoring of these diarrheas in Madagascar was begun to determine to what extent the rotavirus affects children under the age of five who are hospitalized in the Women and Children's University Hospital in Tsaralalana.

This new study seeks to determine the prevalence and role of the rotavirus in causing diarrhea. The results will help improve treatment of severe acute rotavirus diarrhea in young children and will help guide local decision-makers in introducing a vaccine.

# ENHANCING REGIONAL LABORATORIES

In 2013, new technical support training programs were conducted at the Antsirabe and Fianarantsoa University Hospitals as well as the Women and Children's University Hospital in Tsaralalana (HUMET).

Furthermore, the Madagascan Ministry of Health called upon Fondation Mérieux for logistic assistance to its laboratories. With funding from the Agence Française de Développement, the Fondation provided reagents and consumables, and helped to launch microbiology and immunoassay testing activities at seven laboratories. The establishment of bacteriology services continued in conjunction with the surveillance of diseases with epidemic potential.

# RENOVATING CLINICAL TESTING FACILITIES

The Fondation continued to invest and update equipment in the Charles Mérieux Infectiology Center in Madagascar.

In November 2013, Fondation Mérieux and the Ministry of Health signed an agreement to rehabilitate and equip a new regional laboratory in Tsiroanomandidy.

The Women and Children's University Hospital in Tsaralalana was renovated and received technical support from a French intern in medical biology.



# DIARRHEAS: PREVENTING CONTAMINATION BETWEEN HUMANS AND ANIMALS

Salmonella and Campylobacter are the bacteria most often involved in foodborne diseases, and are particularly dangerous for vulnerable individuals. With the rapid development of poultry and pig farming in countries like Madagascar, more reliable information is necessary to allow public authorities to control contamination risks.

At the end of 2013, a year-long study was initiated to: measure the prevalence of bacterial pathogens in diarrhea (particularly in children), evaluate contamination in poultry and pig farms, identify the species and serotypes involved and, finally, analyze the antibiotic resistance of these bacteria common to humans and animals.

The main objective of this research is to evaluate the risk to the Madagascan population of consuming products from the poultry and pig farming industries.

# DIFFERENTIATING BETWEEN PNEUMONIA AND MALARIA IN CHILDREN

A study was begun in May 2011 on Madagascar's Eastern Coast, near Manakara, to identify biomarkers associated with fevers in children under the age of five living in a malaria-endemic region.

The objective of this research is to identify host markers of diagnostic significance that could be used to differentiate malaria and pneumonia. These potential markers were identified by the Canadian biotechnology company Caprion, based on samples taken from Madagascan patients that had previously been diagnosed using techniques from the Emerging Pathogens Laboratory (Lyon).

The NIH (National Institutes of Health) and Institut Mérieux are financing this three-year project, which is conducted in partnership with the Ampasimanjeva Medical Foundation and the Charles Mérieux Infectiology Center of Madagascar in Antananarivo.

These differentiation biomarkers should soon be confirmed in cohorts from other malaria-endemic countries, within the GABRIEL network. Two scientific publications are currently being written on the subject.



# HEALTH EDUCATION

Fondation Mérieux has provided support to several organizations (ENDA, Graines de Bitumes, Mivarotra, Grandir Dignement, Akamasoa) for their health education programs (covering hygiene and prevention) for poor children and their families.

- First-aid training for educators
- Efforts to eradicate parasites affecting children
- Establishment of pharmacies
- Tuberculosis training sessions for educators and parents, awareness-raising among children, and support for screening
- Hygiene education and provision of soap



# CHILDREN'S HEALTH SOLIDARITY FUNDS

In collaboration with the Antsirabe hospitals and in coordination with several organizations, Fondation Mérieux helps cover hospitalization costs for poor women and children in the Antsirabe region who are suffering from infectious diseases.

The Fondation also trains hospital physicians on treating children (in partnership with the La Réunion University Hospital's pediatric service) and provides bacteriology training for laboratory technicians.

# HUMANITARIAN AND NON-PROFIT PROJECTS

### AKAMASOA ASSOCIATION: helping the underprivileged access essential medicines

In 2013, Fondation Mérieux provided support to the Akamasoa association, founded in Antananarivo by Brother Pédro to facilitate the social and economic reintegration of poor families. Akamasoa now helps 20,000 people, half of whom are children, in ten towns in several regions in Madagascar. One of the association's objectives is to help these families access health services: doctor's visits, hospitalization, biological testing, x-rays, CT-scans, medicine, etc. Fondation Mérieux supports the association by helping provide essential medicines purchased through a public central procurement center and distributed through health dispensaries.

### VAHATRA ASSOCIATION: development of health insurance plans

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The objective of the Vahatra association is to improve living conditions for poor families living in Antsirabe by helping them become more independent particularly with regard to finances, healthcare, and social issues. Since 2012, Fondation Mérieux has been helping cover the cost of hospitalization, as part of a health insurance plan which now has over 2,200 subscribers. The Fondation also helps train the association's trainers and provides expertise on healthcare services and access to healthcare facilities for the insurance plan's subscribers.

# MIDDLE EAST



# ASIA



National Public Health Reference Laboratory in Dushanbe

# **3** BANGLADESH

Rodolphe Mérieux Laboratory in Chittagong



Christophe Mérieux Laboratory in Beijing

# **5**) MYANMAR

Public Health Laboratory of Mandalay



# Rodolphe Mérieux Laboratory in Vientiane Thakhek Hospital's laboratory Mahosot Hospital's laboratory



# Rodolphe Mérieux Laboratory in Phnom Penh

Battambang Laboratory Khmer-Soviet Friendship Hospital Laboratory Kossamack Hospital Laboratory Svay Rieng Laboratory Takeo Regional Hospital Laboratory



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# BANGLADESH

# CONSTRUCTION OF A RODOLPHE MÉRIEUX LABORATORY IN CHITTAGONG

Following the agreement reached in the spring of 2012, construction of a new Rodolphe Mérieux Laboratory in the BITID (Bangladesh Institute of Tropical and Infectious Diseases) in Chittagong is now 90% complete.

Fondation Mérieux is in charge of the construction, installation of equipment, and training of personnel for this future laboratory, which will be inaugurated in November 2014.

This high-quality laboratory focuses on training biologists as well as on applied infectious disease research.

In preparation for the laboratory's opening, a meeting was held in late 2013 to define the laboratory's priorities and the terms of collaboration with its partners: the BITID, the ICDDR, B, ideSHi (International Centre for Diarrhoeal Disease Research, Bangladesh, Institute for

Developing Science and Health Initiative, founded by Dr. Firdausi Qadri, winner of the 2012 Christophe Mérieux Prize), Fondation Mérieux, and the Mahidol Oxford Research Unit (MORU).

The laboratory will start by focusing on tuberculosis and enteric infections; diagnostic testing will be established to identify pathogens and evaluate how sensitive strains are to antibiotics.

# REDUCING TUBERCULOSIS TRANSMISSION IN PRISONS

Bangladesh is one of the 22 countries hardest hit by tuberculosis, with an infection rate of 434/100,000 inhabitants in 2012 (according to the WHO). Meanwhile, prisons all over the world are an aggravating factor in the spread of this disease; they promote the emergence of antibioticresistant strains as a result of overcrowding, lack of medical facilities, and the general poor health of the prison population.

A one-year study is currently being conducted in the largest prison in Dhaka, to determine how the disease is transmitted between inmates, understand why prisons have a much higher contamination rate than the national average, and describe the factors which determine tuberculosis strains' capacity for transmission in a prison environment.

The ultimate objective of this study is to draft recommendations for prison and health authorities. This will improve early detection of the disease and the management of the epidemic in prisons.

# CAMBODIA

# TRAINING AND RESEARCH AT THE RODOLPHE MÉRIEUX LABORATORY

In 2013, the Rodolphe Mérieux Laboratory at Cambodia's University of Health Sciences continued its training and research efforts in three main fields: clinical pharmacology, descriptive epidemiology, and the relationship between pathogens and the environment. These different projects are jointly carried out with international partners to allow expertise to be shared

The Rodolphe Mérieux Laboratory of Cambodia's fourth Strategic Orientation Board meeting was held in July 2013, in the presence of representatives from the University of Health Sciences, Fondation Mérieux, and WHO. During this meeting, the university was able to present its new research coordination department, which will help with project development. Efforts to increase the autonomy of the Rodolphe Mérieux Laboratory continued at the behest of the university's new president.

# BETTER MALARIA TREATMENTS

The Rodolphe Mérieux Laboratory in Phnom Penh has a dHPLC\* analytic platform that measures plasmatic drug concentrations of antiretroviral and antituberculosis drugs. This platform, the only one of its kind in Cambodia, has made Cambodia more self-sufficient in its fight against malaria, HIV, and tuberculosis.

Since 2008, the laboratory's objective has been to improve understanding of how these drugs are metabolized by the body, to avoid treatment failures.

In keeping with work conducted in previous years (measuring concentrations of efavirenz and nevirapine, and then mefloquine), in 2013 the project focused on perfecting a technique to measure the concentration of piperaquine. This antimalarial drug is used in Cambodia in conjunction with dihydroartemisinin to treat *Plasmodium falciparum* malaria which is resistant to first-line treatments.

\* Denaturating High Performance Liquid Chromatography

# RESEARCH ON ENTERIC PATHOGENS AT TAKEO HOSPITAL

In developing countries, diarrhea-related diseases remain the second leading cause of death in children under five. These diseases are caused by various enteric pathogens which can be parasites, bacteria or viruses. In order to treat young patients effectively, diagnostic tools must be developed to determine the etiologies that correspond to the different clinical symptoms of these diarrhea related diseases.

The project began in 2010 in Cambodia and seeks to identify the pathogens that cause diarrhea in children under five, as well as encourage the transfer of identification technologies and creation of partnerships with the Rodolphe Mérieux Laboratory.

630 samples were taken from children under five who were undergoing treatment in public hospitals, and the Rodolphe Mérieux Laboratory then identified the pathogens. Analysis techniques were based on the multiplex PCR using kits developed by Fast-track Diagnostics to identify bacteria and viruses. A PCR test developed by DSO-NUS was also used to identify *Vibrio cholera*. Parasites were identified by microscopy.

Initial results showed a prevalence of 41.8% of enteroviruses, 41.1% of adenoviruses, and 22.8% of *Shigella* spp. Analyses of all the samples are being completed and should be the subject of a scientific publication in 2014.

Thanks to this research project, new partnerships were established in 2013, in particular with the Angkor Hospital for Children, a research group working with the Cambodia-Oxford Medical Research Unit (COMRU).







# UNDERSTANDING THE INTERACTIONS BETWEEN PATHOGENS AND THE ENVIRONMENT

The BiodivHealthSEA project in Cambodia studies interactions between the environment and infectious diseases, in collaboration with partners from Asia (National University of Singapore) and Europe (CNRS/IRD, University of Montpellier 2). The project, which was launched in 2009 with the Rodolphe Mérieux Laboratory, seeks to evaluate levels of biological and chemical pollutants in Cambodia, particularly pesticides and pathogens that are present in the environment (water, soil, air, flora, and fauna).

The objective is to analyze the local impact of global changes on zoonotic diseases (which represent 60% of emerging diseases) by focusing on those transmitted by rodents. In 2013, BiodivHealthSEA focused on evaluating the *Leptospira* species among rodents captured in the Pursat province.

# A PARTNERSHIP WITH INSTITUT PASTEUR IN AVIESAN

Fondation Mérieux participated in the creation of the new Regional Research Platform - ASIA (PRR-ASIE) in association with several French research institutes and agencies (Institut Pasteur, Inserm (IMMI), IRD/AIRD, CIRAD, ANRS) that are members of Aviesan South. Founded under the authority of the Kingdom of Cambodia's Ministry of Health, this platform is dedicated to the study and surveillance of infectious diseases and will bring together research teams from the North and the South.

Fondation Christophe et Rodolphe Mérieux helped fund the construction of this platform, which boasts more than 180 m<sup>2</sup> of laboratories, including biosafety level 2 laboratories and 110 m<sup>2</sup> of office space. Construction is now complete and the center was officially inaugurated on March 11, 2014 at the *Institut Pasteur*'s Phnom Penh campus.



Since 2003, the Fondation has been helping the university establish this doctorate-level post-graduate degree in Cambodia's Faculty of Pharmacy, which is open to doctors, biologists, and pharmacists.

This three-year D.E.S. (Diploma of Specialist Studies) combines theoretical classes, practical work, and mandatory internships (hospital placements and research at the Rodolphe Mérieux Laboratory). The curriculum covers a wide range of subjects relating to biological diagnosis of human diseases, as well as the basics of physiopathology, clinical practices, therapeutics, epidemiology, and disease prevention.

Its objective is to provide future medical biologists with a comprehensive training on the quality of diagnostic testing, supervision of laboratory activities, and relations with clinical departments.

In 2013, a new class of 8 students enrolled in the D.E.S.  $\,$ 

To further improve the D.E.S. in Medical Biology, bacteriology, hematology, biochemistry, parasitology, and mycology modules were offered in 2013.

In December, the 2<sup>nd</sup> D.E.S. partners' day served to define the strategy for training the program's teachers. Since one of Fondation Mérieux's main priorities is to ensure that this program becomes autonomous, teaching responsibilities will gradually be handed over to Cambodian professors.

# "BLOOD CULTURE" WORKSHOPS IN CAMBODIA

February 21-22, 2013, sixty-five people participated in the 1<sup>st</sup> Blood Culture Workshop held in Cambodia. Seven laboratories were represented, along with eight partners: the Cambodian Ministry of Health, University of Health Sciences (UHS), Sihanouk Hospital Center of Hope (SHCH), Institute of Tropical Medicine of Antwerp (ITM), World Health Organization (WHO), Diagnostic Microbiology Development Program (DMDP), Naval Medical Research Program 2 (NAMRU2) and Fondation Mérieux. During this workshop, good blood culture practices were presented by experts from six hospitals in Cambodia (Battambang, Takéo, Svay Rieng, Kampong Cham, Kossamak and the National Pediatrics Hospital) that are part of the national microbiology network.

October 10-11, 2013, the second workshop session was held with the same experts. The participants presented the results of implementing blood culture in their hospitals after the first workshop. The ultimate goal of these workshops was to improve patient care in Cambodia and share information about pathogens.



# KAMPOT HOSPITAL LABORATORY RENOVATIONS

In 2013, the clinical laboratory in Kampot Hospital was expanded to make room for a new microbiology unit. This project was a collaboration between the Ministry of Health's Laboratories office, WHO, and DMDP.

# SUPPORT FOR TREATMENT OF HIV-POSITIVE CHILDREN



In 2013, the Fondation supported MAGNA Children at Risk, an organization which works with the pediatric and gynecology departments at Takhmao Chea Chumneas Hospital, in partnership with Cambodia's national HIV/AIDS program. As a result, 350 children received support in 2013, and their parents were able to participate in counseling sessions.

The organization coordinated more than 450 house visits to ensure children adhered to their antiretroviral treatment, and to limit the onset of opportunistic infections.

# LAOS

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# STRENGTHENING THE KHAMMOUANE PROVINCE LABORATORY NETWORK

Since 2007, Fondation Mérieux has been working in the Khammouane province, particularly in Thakhek Provincial Hospital, to strengthen and improve the diagnostic capabilities and skills of laboratory professionals. To do so, Fondation Mérieux is working in partnership with the Hospices Civils de Lyon and has received funding from the Rhône-Alpes Region and Fondation AnBer. In 2013, eight district hospital laboratories in the province renovated their electrical connections, water points, and laboratory benches. In addition, the laboratories were equipped with refrigerators and laboratory equipment for diagnostic testing.

In November 2013, thirty-five laboratory technicians were trained to use the new diagnostic tools and conduct the most common analyses.

A Fondation Mérieux expert trained participants on how to conduct certain types of analyses (stool parasitology, basic hematology, biochemistry, urine analyses, rapid tests, etc.) as well as on biosafety and laboratory waste management.



# THE CHRISTOPHE MÉRIEUX INFECTIOLOGY CENTER OF LAOS: Fighting against HIV, hepatitis infections, and tuberculosis

One of the Infectiology Center in Vientiane's main priorities is monitoring patients living with HIV using the principal diagnostic tests (HIV viral load, early diagnosis in children through proviral DNA detection on blotting paper and genotyping of resistant strains). In addition to the introduction of these techniques, an interdisciplinary work group holds annual meetings to bring together all those involved in the treatment of HIV-positive patients. In 2013, the 6th national workshop on HIV was held to evaluate HIV-positive patient care (see page 52). Lastly, research is being conducted to monitor sensitivity to antiviral drugs used in Laos.

The same approach is being used with **hepatitis:** In 2013, the Christophe Mérieux Infectiology Center organized the 2<sup>nd</sup> national workshop to improve treatment and monitoring of hepatitis B and C.

Support for the national **tuberculosis** program continues, particularly through a national prevalence study financed by the Global Fund, in which molecular diagnostic tools are used to identify resistance. A partnership with the Institut de Recherche pour le Développement (IRD) was finalized, leading to a collaboration between Cambodia, Vietnam, and Laos.



Organized in collaboration with Institut Pasteur of Paris and Fondation Mérieux, this course took place on March 18-29, 2013 at Institut Pasteur of Laos (IPL), the Christophe Mérieux Infectiology Center of Laos (CICML), and the Institut de la Francophonie pour la Médecine Tropicale (IFMT). It is part of the Agence Universitaire de la Francophonie's major regional project.

This course on "Infectious agents and tumors" was designed for doctors, pharmacists, scientists, and recent graduates from health sciences universities in Southeast Asia. It went over the clinical and epidemiological relationship between infections and cancer, the role of infectious bacterial, viral, and parasitic agents involved in oncogenesis, and diagnostic techniques for these infectious agents. The 15 participants discussed how to develop strategies and increase capacities for screening, as well as how to prevent the onset of infectious cancers in the region.



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# THE 4<sup>th</sup> CHARLES MÉRIEUX CONFERENCE

The fourth annual conference was held March 14-15, 2013 at the Christophe Mérieux Infectiology Center. The event was organized as part of the Entretiens Jacques Cartier, in partnership with the Institut de la Francophonie pour la Médecine Tropicale (IFMT), the Agence Universitaire de la Francophonie (AUF), and Fondation Mérieux. It brought together 80 participants on the topic "Cancer and Infectious Agents in the Greater Mekong Subregion: Strategies for Intervention and Training".

This conference gave participants the opportunity to address strategies for training personnel as well as allowing them to discuss regional cancer prevention, treatment and patient care.

# 2<sup>nd</sup> NATIONAL WORKSHOP ON HEPATITIS INFECTIONS

The Christophe Mérieux Infectiology Center of Laos organized a workshop September 4-6 2013 on hepatitis infections, prevention of transmission, and therapeutic monitoring.

This event, which convened 70 participants, was organized in partnership with the Agence Universitaire de la Francophonie (AUF), University Paris 13, the Cancer Research Center in Lyon, and Fondation Mérieux.

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# THE 6<sup>th</sup> NATIONAL HIV WORKSHOP

This conference was organized by the Christophe Mérieux Infectiology Center of Laos in partnership with the National HIV Program (CHAS) ESTHER, Institut Pasteur of Paris, and Fondation Mérieux. It was held June 11-13, 2013 on the topic of "Virological Monitoring of HIV-positive Children and Adults in Laos". The 50 participants raised questions regarding monitoring of ARV treatment in HIV-positive adults and children: How should prevention of mother-to-child HIV transmission be monitored? How to detect HIV early in children born to HIV-positive mothers? And how should ARV treatment be provided? This workshop also gave participants the opportunity to present clinical cases and share experiences with two neighboring countries, Thailand and Cambodia.

# CERVICAL CANCER SCREENINGS

In 2013, the LaoCol-VP project was launched to screen Laotian women living with HIV for cervical cancer caused by the papillomavirus. The goal of the project is to compare the cost and effectiveness of a simple test, *care*HPV<sup>™</sup>, versus pap smears in detecting pre-cancerous or cancerous lesions in HIV-positive women. A joint project between the National HIV Program in Laos and the National Cancer Institute, the objective of LaoCol-VP is to reduce the mortality rate for this type of cancer.

# MYANMAR

# FONDATION MÉRIEUX, A PHL PARTNER

The PHL (Public Health Laboratory) in Mandalay has four platforms: Molecular Biology, Microbiology, Virology, and Hematology-Serology. Fondation Mérieux financed laboratory renovations and the establishment of two of the units, which are now quite active.

# Towards Better Viral Load Monitoring of HIV-Positive Patients

Since 2012, the molecular biology platform has made it possible to monitor people living with HIV by testing their HIV viral load, in collaboration with the NGO The Union (International Union Against Tuberculosis and Lung Disease). In 2013, early HIV testing through proviral DNA detection on blotting paper began in the Mandalay laboratory. No less than 15,000 people living with HIV now have access to viral load monitoring.







Given the success of viral load monitoring in Mandalay, the same service will be launched in the National Public Health Laboratory (NHL) in Yangon. Fondation Mérieux and the NHL will soon sign a technical cooperation agreement for viral load monitoring as part of a national program whose objective is to increase the number of patients treated from 60,000 to 105,000 by 2015.

### **Development of Microbiology**

In 2013, the Microbiology unit was renovated and refitted. Fondation Mérieux supported the creation of this unit by organizing training sessions for medical technicians and doctors from the Public Health Laboratory. The first training session within the PHL was organized to improve surveillance and investigation of epidemics in Northern Myanmar.



TAJIKISTAN



The NPHRL (National Public Health Reference Laboratory) in Tajikistan was inaugurated in Dushanbe on September 4, 2013, by Emomalii Rahmon, President of the Republic.

The Tajik Ministry of Health and the United Nations Development Program called upon Fondation Mérieux to design and equip this center, which was financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria.

With a focus on diagnosing multi-resistant tuberculosis, this new, close to 500 m<sup>2</sup> laboratory has two BSL2 and BSL3 units for handling pathogens which require a high biosafety level. It can now be considered as the best such facility in Tajikistan.

Initially, this new National Public Health Reference Laboratory will perform routine biological testing for tuberculosis in the Dushanbe region, as part of the national tuberculosis control program. The national HIV laboratory is currently in the process of transferring its activities to the NPHRL. A third stage will establish a microbiology reference laboratory particularly focused on bacteriology.

# LEBANON

The Rodolphe Mérieux Laboratory in Beirut was inaugurated in 2011 at the Health Technology Center at Saint-Joseph University.

The Rodolphe Mérieux Laboratory's 3<sup>rd</sup> Strategic Orientation Board meeting was held on October 23, 2013.

The 400m<sup>2</sup> premises were equipped in 2012 and have biosafety zones (level 1, 2, and 3) as well as a microbiology unit, a molecular biology unit (for nucleic acid extraction, amplification, post-amplification analysis, and storage of biological samples) and a mycobacteria analysis unit.

In 2013, the Rodolphe Mérieux Laboratory began its specialized testing activities: HIV, HBV, and HCV viral loads, HCV genotyping, tuberculosis typing, etc. The laboratory is specifically focused on bacterial resistance.

A partnership between Hôtel-Dieu de France Hospital, the Hospices Civils de Lyon, and the Rodolphe Mérieux Laboratory of Lebanon should lead to knowledge sharing and exchanges of hospital personnel.



# GOVERNANCE

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\* Since April 2014, replacing Philippe LACOSTE \*\* Since October 2013, replacing Prof. Christian TREPO

# MAIN FINANCIAL PARTNERS

Fondation Mérieux would like to thank its partners for their continued trust and commitment. In 2013, their support made it possible to initiate and reinforce numerous capacity-building and research projects which help local stakeholders in their fight against infectious diseases.

# FOUNDATIONS

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Bill & Melinda Gates Foundation Calouste Gulbenkian Foundation

**Cariplo Foundation** 

CDC Foundation

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Fondation Bullukian

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Agence Française de Développement (AFD)

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Centers for Disease Control and Prevention (CDC)

Defense Threat Reduction Agency (DTRA)

Direction de la Coopération Internationale (DCI) de la Principauté de Monaco

European Centre for Disease Prevention and <u>Control (ECDC)</u>

European Union (7th Framework Programme, ACP Science and Technology Programme)

Fogarty International Center

Ministère des Affaires étrangères (through France Expertise Internationale, Global Fund 5% Initiative)

National Institute of Allergy and Infectious Diseases (NIAID) / National Institutes of Health (NIH)

**Rhône-Alpes Region** 

# INTERNATIONAL Organizations & NGOs

Agence de Médecine Préventive (AMP)

Global Fund to Fight AIDS, Tuberculosis and Malaria

Islamic Development Bank (IDB)

Pharmacie aide humanitaire (PAH)

**Red Cross** 

United Nations Development Programme (UNDP)

West African Health Organisation (WAHO) \*

World Bank \*

World Health Organization (WHO)

# UNIVERSITIES & RESEARCH INSTITUTES

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American Society for Microbiology (ASM)

Centre national de recherche scientifique (CNRS)

Ensemble pour une Solidarité Thérapeutique en Réseau (ESTHER)

European Society for Paediatric Infectious Diseases (ESPID)

Institut national de la santé et de la recherche médicale (Inserm)

Institut National du Cancer (INCa)

Institut Pasteur

Institut de recherche biomédicale des armées (IRBA)

Institut de Recherche pour le Développement (IRD)

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Genostar

GlaxoSmithKline Biologicals

IDT Biologika

IMACCESS

Institut Mérieux

Luminex

Merck

Mérieux Nutrisciences

Novartis Vaccines

Pfizer

Qiagen

Sanofi Pasteur

Sanofi Pasteur MSD

\* Since 2014

# 2013 ACCOUNTS & KEY FIGURES

# BALANCE SHEET

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ASSETS (K€)	NET DEC. 31, 2013	NET DEC. 31, 2012
FIXED ASSETS		
Intangible fixed assets	12	20
Property, plant and equipment	2,518	3,182
Investments and other financial assets	22,639	17,521
Total	25,169	20,723
CURRENT ASSETS		
Inventories	5	6
Payments on account	3	103
Accounts receivable	1,092	1,117
Other receivables	8,492	3,000
Marketable securities	56,273	61,838
Cash and cash equivalents	1,398	7,656
Prepaid expenses	630	658
Unrealized exchange losses	0	0
Total	67,893	74,378
TOTAL ASSETS	93,062	95,100
LIABILITIES AND FUND BALANCE (K€)	DEC. 31. 2013	DEC. 31. 2012
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE	DEC. 31, 2013	DEC. 31, 2012
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation	<b>DEC. 31, 2013</b> 64.916	DEC. 31, 2012 64.916
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LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings	DEC. 31, 2013 64,916 884 23,610	DEC. 31, 2012 64,916 884 24,433
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period	DEC. 31, 2013 64,916 884 23,610 (5,860)	DEC. 31, 2012 64,916 884 24,433 (824)
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550	DEC. 31, 2012 64,916 884 24,433 (824) 89,410
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LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1 396
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 0 415 80	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396 84
LIABILITIES AND FUND BALANCE (K€)  FUND BALANCE  Dotation  Reserves  Retained earnings  Net income / loss for the period  Total  Allowances for contingencies  Funds reserved for future engagements  LIABILITIES Loans  Accounts payable	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 0 415 80 80 1,039	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396 84 84
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans Accounts payable Investment payable	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396 84 1,284 0
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans Accounts payable Investment payable Other payable	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0 1,645	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396 84 1,284 0 1,479
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans Accounts payable Investment payable Other payable Deferred income	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0 1,645 6,333	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 241 1396 84 1,284 0 1,479 1,204
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans Accounts payable Investment payable Other payable Deferred income Unrealized exchange gains	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0 1,645 6,333 0	DEC. 31, 2012 64,916 884 24,433 (824) (824) 89,410 241 1396 84 1,284 0 1,284 0 1,479 1,204 2
LIABILITIES AND FUND BALANCE (K $\in$ )FUND BALANCEDotationReservesRetained earningsNet income / loss for the periodTotalAllowances for contingenciesFunds reserved for future engagementsLIABILITIESLoansAccounts payableInvestment payableOther payableDeferred incomeUnrealized exchange gainsTotal	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0 1,645 6,333 0 9,097	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 1396 241 1396 84 1,284 0 1,284 0 1,479 1,204 2 4,053
LIABILITIES AND FUND BALANCE (K€) FUND BALANCE Dotation Reserves Retained earnings Net income / loss for the period Total Allowances for contingencies Funds reserved for future engagements LIABILITIES Loans Accounts payable Investment payable Other payable Deferred income Unrealized exchange gains Total TOTAL LIABILITIES AND FUND BALANCE	DEC. 31, 2013 64,916 884 23,610 (5,860) 83,550 0 415 80 1,039 0 1,645 6,333 0 0 9,097 93,062	DEC. 31, 2012 64,916 884 24,433 (824) 89,410 241 241 1396 84 1,284 0 1,284 0 1,479 1,204 2 2 4,053 95,100

INCOME         226         280           Grants         41         118           Reverse on operating allowances         6.391         7.522           Expenses refund         395         436           Other operating income         22         27           Total income         7.075         8.383           EXPENSES         7.075         8.383           External purchases and expenses         4.727         5.680           Taxes and duties         7.28         874           Salaries         2.073         2.112           Social contributions         999         982           Depreciations         737         634           Donations and subsidies received         5.709         4.666           Grants awarded         4         19           Not book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14.961         14.973           Other financial income         881         1.097           Other financial income         1.872         1.342           Reverse on financial allowances         154         399           Other financial income         3.7	(	(K€)	ACTUAL 2013	ACTUAL 2012
Services revenue         226         280           Grants         41         118           Reverse on operating allowances         6.301         7.522           Expenses refund         385         436           Other operating income         22         27           Total income         7075         8.383           EXPENSES         7075         8.383           External purchases and expenses         4,727         5.680           Taxes and duties         728         874           Salaries         2.073         2.112           Social contributions         959         952           Depreciations         737         634           Donations and subsidies received         5.709         4.666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         2.3         7           Total expenses         14.961         14.973           CuRRNT INCOME         1097         0ther financial income         1.972           Dividends         081         1.097         0ther financial income         1.972           FINANCIAL INCOME         19         1.973	11	NCOME		
Grants         41         118           Reverse on operating allowances         6,391         7,522           Expenses refund         395         436           Other operating income         22         27           Total income         2073         5,680           External purchases and expenses         4,727         5,680           Salaries         2,073         2,112         50cial contributions         959         982           Depreciations         737         634         10         141         4.919           Net book value of sold assets         -         -         -         -         Other operating expenses         23         7           Total expenses         14,951         144,951         14,973         Ourent financial income         1,872         1,342           Privelenses         144,951         144,951         144,973         1,971           Other operating expenses         1,4493         1,443<	S	ervices revenue	226	280
Reverse on operating allowances         6,391         7,522           Expenses refund         396         436           Other operating income         22         27           Total income         7,075         8,383           EXPENSES         """"""""""""""""""""""""""""""""""""	C	Grants	41	118
Expenses refund         395         436           Other operating income         22         27           Total income         7,075         8,383           EXPENSES         728         874           External purchases and expenses         4,727         5,680           Taxes and duties         20,073         2,112           Social contributions         909         982           Depreciations         737         634           Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14,961         14,973           CURENT INCOME         -         -           Dividends         881         1.097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial expenses         2,733         1,071           FINANCIAL EXPENSES         -         -           Financial allowances <td>F</td> <td>Reverse on operating allowances</td> <td>6,391</td> <td>7,522</td>	F	Reverse on operating allowances	6,391	7,522
Other operating income         22         27           Total income         7075         8.383           EXPENSES             External purchases and expenses         4.727         5.680           Taxes and duties         728         874           Salaries         2.073         2.112           Social contributions         959         982           Depreciations         737         634           Donations and subsidies received         5,709         4.866           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14.961         14.973           CURRENT INCOME         -         -           Dividends         881         1.097           Other financial income         1.872         1.342           Reverse on financial allowances         154         399           Prinancial allowances         154         355           Total financial expenses         2.373         1.071           Total financial expenses         2.373         1.071           Total sceptional income         -	E	Expenses refund	395	436
Total income         7.075         8,383           EXPENSES	C	Other operating income	22	27
EXPENSES         4.727         5.680           Taxes and duties         728         874           Salaries         2.073         2,112           Social contributions         969         982           Depreciations         737         634           Donations and subsidies received         5.709         4.666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14.961         14.973           CURRENT INCOME         7.886         6.539           Pividends         881         1.097           Other financial income         1.872         1.342           Reverse on financial allowances         154         399           Net income from marketable securities         673         4.281           Total financial allowances         3.585         7.119           Financial allowances         2.373         1.071           Total expenses         2.751         1.370           Financial allowances         2.373         1.071           Total expenses         2.751         1.370           FINANCIAL RESULT </td <td>Т</td> <td>otal income</td> <td>7,075</td> <td>8,383</td>	Т	otal income	7,075	8,383
External purchases and expenses         4,727         5,680           Taxes and duties         728         874           Salaries         2,073         2,112           Social contributions         959         982           Depreciations         737         634           Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         23         7           Total expenses         14,961         14,973           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,221           Total financial allowances         378         299           Other financial expenses         2,373         1,071           Total of financial expenses         2,373	E	XPENSES		
Taxes and duties         728         874           Salaries         2,073         2,112           Social contributions         939         982           Depreciations         737         634           Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         23         7           Total expenses         14.961         14.973           CURRENT INCOME         -         -           Dividends         881         1.097           Dividends         881         1.097           Dividends         881         1.97           Reverse on financial income         1.872         1.342           Reverse on financial allowances         678         4.281           Total financial expenses         2.373         1.071           Total of financial expenses <td>E</td> <td>External purchases and expenses</td> <td>4,727</td> <td>5,680</td>	E	External purchases and expenses	4,727	5,680
Salaries         2,073         2,112           Social contributions         959         982           Depreciations         737         634           Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14,961         14,973           CURRENT INCOME         -7,886         -6,589           FINANCIAL INCOME         -7,886         -6,589           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial allowances         378         299           Other financial expenses         2,373         1,071           Total experises         2,373         1,071           Total of financial expenses         2,731         1,370           FINANCIAL EXPENSES         Exceptional income         -           Exceptional income         -         9	Т	axes and duties	728	874
Social contributions         959         982           Depreciations         737         634           Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14,961         14,973           CURRENT INCOME         -         -           Dividends         881         1.007           Dividends         881         1.027           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7.119           FINANCIAL EXPENSES         -         -           Financial allowances         2,373         1.071           Total of financial expenses         2,373         1.071           Total of financial expenses         2,373         1.071           Total of primarcial expenses         2,373         1.071           Total exceptional income         -         9	S	alaries	2,073	2,112
Depreciations737634Donations and subsidies received5,7094,666Grants awarded419Net book value of sold assetsOther operating expenses237Total expenses237Total expenses14,96114,973CURRENT INCOME-,7,886-6,589FINANCIAL INCOME-Dividends8811,097Other financial income1,8721,342Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119Financial allowances378299Other financial expenses2,3731,071Total financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,47511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOME-9Exceptional income-9Exceptional income-9Exceptional acyenses300-Total exceptional acyenses <td>S</td> <td>ocial contributions</td> <td>959</td> <td>982</td>	S	ocial contributions	959	982
Donations and subsidies received         5,709         4,666           Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14,961         14,973           CURRENT INCOME         -7,886         -6,589           FINANCIAL INCOME         -7,886         -6,589           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         6678         4,281           Total financial allowances         3,585         7,119           FINANCIAL EXPENSES	Γ	Depreciations	737	634
Grants awarded         4         19           Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         23         7           Total expenses         23         6           EVERNT INCOME         -         -           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7,119           FINANCIAL EXPENSES         -         -           Financial allowances         2,373         1,071           Total of financial expenses         2,373         1,071           Total of financial expenses         2,751         1,370           FINANCIAL EXPENSES         -         -           Exceptional income         -         9           Exceptional income         -         9           Exceptional reverse on allowances         241         9           Exceptional expenses         30         -           Exceptional alowances for contin	Γ	Donations and subsidies received	5,709	4,666
Net book value of sold assets         -         -           Other operating expenses         23         7           Total expenses         14,961         14,973           CURRENT INCOME         -         -           Dividends         6,589         -           FINANCIAL INCOME         -         -           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7,119           FINANCIAL EXPENSES         -         -           Pinancial allowances         2,373         1,071           Total financial expenses         2,751         1,370           FINANCIAL RESULT         835         5,749           EXCEPTIONAL INCOME         -         9           Exceptional income         -         9           Exceptional income         -         9           Exceptional expenses         30         -           Exceptional expenses         30         -           Exceptional expenses         30	C	Grants awarded	4	19
Other operating expenses         23         7           Total expenses         14,961         14,973           CURRENT INCOME         -7,886         -6,589           FINANCIAL INCOME         -7,886         -6,589           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7,119           FINANCIAL EXPENSES         -         -           Pinancial allowances         2,373         1,071           Total of financial expenses         2,373         1,071           Total oxceptional income         -         9           Exceptional allowances for contingencies         -         -           Total exceptional allowanc	Ν	Vet book value of sold assets	-	-
Total expenses         14,961         14,973           CURRENT INCOME         -7,886         -6,589           FINANCIAL INCOME         -         -           Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7,119           FINANCIAL EXPENSES         -         -           Financial allowances         2,373         1,071           Total of financial expenses         2,373         1,071           Exceptional income         -         9           Exceptional income         -         9           Exceptional expenses         30         -           Exceptional allowances for contingencies         -         -           Total exceptional allowances for contingencies <th< td=""><td>C</td><td>Other operating expenses</td><td>23</td><td>7</td></th<>	C	Other operating expenses	23	7
CURRENT INCOME-7,886-6,589FINANCIAL INCOMEDividends8811,097Dividends1,8721,342Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSES8812,373Pinancial allowances378299Other financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTS2419Exceptional allowances for contingenciesTotal exceptional allowances30-Exceptional allowances30-Income taxTotal exceptional income10,901EXCEPTIONAL RESULT2119Income taxTotal exceptional allowances for contingencies-Total exceptional expenses30-EXCEPTIONAL RESULT2119Income taxTotal EXPENSES17,741IO300115,512Total EXPENSES17,741Intermediate BALANCE-Financial allowance-Financial allowance-Financial allowance-Financial allowance-<	Т	otal expenses	14,961	14,973
FINANCIAL INCOMEDividends8811,097Other financial income1,8721,342Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSES7Financial allowances378299Other financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional income241-Total expenses30-Exceptional allowances for contingenciesTotal exceptional allowances for contingenciesTotal exceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-Exceptional expenses30-EXCEPTIONAL RESULT2119Income taxTOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	С	URRENT INCOME	-7,886	-6,589
FINANCIAL INCOMEDividends8811,097Other financial income1,8721,342Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSES78299Other financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOME2419Exceptional income-9Exceptional income2419Exceptional income300-Exceptional expenses300-Total exceptional allowances for contingenciesTotal exceptional allowances300-Exceptional allowancesTotal exceptional expenses300-Exceptional expenses300-Income taxTOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403				
Dividends         881         1,097           Other financial income         1,872         1,342           Reverse on financial allowances         154         399           Net income from marketable securities         678         4,281           Total financial income         3,585         7,119           FINANCIAL EXPENSES         7         7           Financial allowances         378         299           Other financial expenses         2,373         1,071           Total of financial expenses         2,373         1,071           Total expenses         2,373         1,071           Exceptional income         2,373         1,370           Exceptional income         241         -           Exceptional income         241         9           Exceptional allowances for contingencies         -         -           Total exceptional allowances for contingencies         -         -           Total exceptional expenses         300         -           Exceptional allowances for co	F	INANCIAL INCOME		
Other financial income1,8721,342Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSES78299Other financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOME2419Exceptional income-9Exceptional income2419EXCEPTIONAL COSTS30-Exceptional allowances for contingenciesTotal expenses30-Exceptional expenses30-Exceptional expenses30-Income taxTOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	Γ	Dividends	881	1,097
Reverse on financial allowances154399Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSESFinancial allowances378299Other financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional income241-Total exceptional income2419EXCEPTIONAL COSTSExceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE-6,841-831Prior funds carried forward1,3961,403		Other financial income	1,872	1,342
Net income from marketable securities6784,281Total financial income3,5857,119FINANCIAL EXPENSESFinancial allowances378299Other financial expenses2,3731,071Total of financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional expenses30-Total exceptional expenses30-Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342Income tax1TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	F	Reverse on financial allowances	154	399
Total financial income3,5857,119FINANCIAL EXPENSESFinancial allowances378299Other financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional allowances for contingenciesTotal exceptional allowances for contingenciesTotal exceptional allowances300-Exceptional allowances300-Exceptional allowances for contingenciesTotal exceptional allowances300-Exceptional allowances for contingenciesTotal exceptional expenses300-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE-6,841-831Prior funds carried forward1,3961,403	N	let income from marketable securities	678	4,281
FINANCIAL EXPENSESFinancial allowances378299Other financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional allowances for contingenciesTotal exceptional allowances for contingenciesTotal exceptional allowances300-EXCEPTIONAL RESULT2119Income taxTOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	T	otal financial income	3,585	7,119
Financial allowances378299Other financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOME8355,749Exceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTS2419Exceptional allowances for contingenciesTotal exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE-6,841-831Prior funds carried forward1,3961,403	F	INANCIAL EXPENSES		
Other financial expenses2,3731,071Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOME-9Exceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTS-Exceptional allowances for contingencies-Total exceptional allowances for contingencies-Total exceptional expenses30Exceptional expenses30Income tax-TOTAL EXPENSES17,741Income tax-TotAL EXPENSES17,741Intermediate Balance-Firefunds carried forward1,396Intermediate Balance-Intermediate Balance-Inte	F	inancial allowances	378	299
Total of financial expenses2,7511,370FINANCIAL RESULT8355,749EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional expenses30-Exceptional expenses30-Exceptional expenses30-Income taxTOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	<u> </u>	Other financial expenses	2,373	1,071
FINANCIAL RESULT8355,749EXCEPTIONAL INCOME-9Exceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE-6,841-831Prior funds carried forward1,3961,403	Т	otal of financial expenses	2,751	1,370
EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-Exceptional expenses30-Exceptional expenses30-Total exceptional expenses30-Total exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841- 831Prior funds carried forward1,3961,403	F	INANCIAL RESULT	835	5,749
EXCEPTIONAL INCOMEExceptional income-9Exceptional reverse on allowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841-831Prior funds carried forward1,3961,403				
Exceptional income9Exceptional reverse on allowances241Total exceptional income241P241Exceptional expenses30Exceptional allowances for contingencies-Total exceptional expenses30Exceptional expenses30Income tax-TOTAL INCOME10,901Income tax-TOTAL EXPENSES17,741Intermediate BALANCE-Prior funds carried forward1,3961,403				0
Exceptional reverse on anowances241-Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841-831Prior funds carried forward1,3961,403	거문		-	9
Total exceptional income2419EXCEPTIONAL COSTSExceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403			241	-
EXCEPTIONAL COSTSExceptional expenses30Exceptional allowances for contingencies-Total exceptional expenses30EXCEPTIONAL RESULT211Income tax-TOTAL INCOME10,901INTERMEDIATE BALANCE-Prior funds carried forward1,3961,403			241	9
Exceptional expenses30-Exceptional allowances for contingenciesTotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCEPrior funds carried forward1,3961,403	2 <u>-</u>	XCEPTIONAL COSTS		
Exceptional allowances for contingencies-Total exceptional expenses30EXCEPTIONAL RESULT211Income tax-TOTAL INCOME10,901TOTAL EXPENSES17,741INTERMEDIATE BALANCE-Prior funds carried forward1,3961,403	ŀ	Exceptional expenses	30	-
Iotal exceptional expenses30-EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841-831Prior funds carried forward1,3961,403		Exceptional allowances for contingencies	-	-
EXCEPTIONAL RESULT2119Income tax1TOTAL INCOME10,90115,512TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841- 831Prior funds carried forward1,3961,403	Т	otal exceptional expenses	30	-
Income tax         -         -1           TOTAL INCOME         10,901         15,512           TOTAL EXPENSES         17,741         16,342           INTERMEDIATE BALANCE         - 6,841         - 831           Prior funds carried forward         1,396         1,403		XCEPTIONAL RESULT	211	9
TOTAL INCOME         10,901         15,512           TOTAL EXPENSES         17,741         16,342           INTERMEDIATE BALANCE         - 6,841         - 831           Prior funds carried forward         1,396         1,403	h	ncome tax	-	-1
TOTAL EXPENSES17,74116,342INTERMEDIATE BALANCE- 6,841- 831Prior funds carried forward1,3961,403		OTAL INCOME	10,901	15,512
INTERMEDIATE BALANCE- 6,841-831Prior funds carried forward1,3961,403	/ T	OTAL EXPENSES	17,741	16,342
INTERMEDIATE BALANCE- 6,841- 831Prior funds carried forward1,3961,403			C 0.41	0.21
Prior lunus carried forward 1,396 1,403		NTERMEDIATE BALANCE	- 6,841	-831
Even do no comissió for futuro en region entre		THOF TURIOS CALTER TOFWARD	1,396	1,403
Funds reserved for future engagements     415     1,396       NET INCOME (1.055 FOR THE DEDIOD     5.000     924			415	1,390

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# INCOME STATEMENT

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# 2013 ACCOUNTS & KEY FIGURES

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# USE OF FUNDS STATEMENT

EXPENSES (USES) (€)	ACTUAL 2013
MISSIONS	10,796,117
Clinical biology laboratories	1,067,135
Collaborative research programmes	2,919,228
Training and knowledge sharing	4,383,038
Support for local initiatives	1,396,195
Support for Laboratories and Mérieux's Centers	215,146
International offices	815,376
FUND-RAISING EXPENSES	1,291,913
OPERATING EXPENSES	2,784,416

INCOME (FUNDS) (€)	ACTUAL 2013
DONATIONS AND LEGACIES	40,748
Donations	40,748
Legacies	-
OTHER PRIVATE FUNDS	6,248,538
Sponsorship/ Patronage	2,486,800
Grants from Fondation Christophe et Rodolphe Mérieux	2,408,973
Other grants	1,352,765
GRANTS AND OTHER PUBLIC FUNDING	142,739
OTHER INCOME	2,307,744
Services revenues	225,682
Refund of expenses	384,608
Other financial income	805,247
Dividends	892,208

TOTAL EXPENSES FOR THE PERIOD	14,872,445
ALLOWANCES	377,054
DEPRECIATION	736,616
FUNDS RESERVED FOR FUTURE ENGAGEMENTS	415,115
ACCOUNTING RESULTS (PROFIT)	-
GRAND TOTAL	16 401 230
	10,401,230
Evaluation of in-kind patronage	45,916

TOTAL INCOME FOR THE PERIOD	8,739,769
REVERSE ON ALLOWANCES	405,306
PRIOR FUNDS CARRIED FORWARD	1,395,984
ACCOUNTING RESULTS (DEFICIT)	5,860,172
GRAND TOTAL	16,401,230
Evaluation of in-kind patronage	45,916

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# Deloitte.

### FONDATION MERIEUX

Foundation recognized as being of public utility 17 roe Bourgela 69002 LYON

Statutory auditors' report on the financial statements Year ended December 31, 2013

The form

To the Directors,

In accordance with our appointment as statutory aufitor by your Committee, we hereby report to you for the year ended December 31, 2013 on:

- the sudii of the accompanying financial statements of FONDATION MERIEUX;
   the justification of our assessments;
   the specific verifications and disclosures required by law.

These financial statements have been approved by the Committee. Our role is to express an opinion on these financial statements, based on our audit.

### L OPINION ON THE FINANCIAL STATEMENTS

We conducted our audit in accordance with professional practice standards applicable in France. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit assumance about whether the financeal statements are free of material misistatement. An audit includes examining, using sample testing techniques or other selection methods, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made, as well as evaluating the overall financial statement presentation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

Salah darama ke sanat ke 112 bit 4 Januar (Januar V), na paté anata ka Januar ta Sana da Tanad Napaté di Maraman Mala (Januar Ka Januar), panta di Kajang Pangara ngana jar Salah Mala (Januar), panta ka Januar in . Danity Institu Televano Limited

### Deloitte

FORDATION MERICUS

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As statutory auditors of FONDATION MERIEUX, we hereby confirm that the above translation of our auditors' report on the financial atalaments of FONDATION MERIEUX for the year ended December 31, 2013 appropriately reflects the context and opinion of our original report issued in French language. For identification purpose, we also confirm that the financial statements of FONDATION MERIEUX far the part miled Documber 31, 2013 show:

- nevenues of 7,033,776 euros.
   operating iscome of -7,922,705 euros;
   ant iscome of -5,860,172 eoros;
   sharsholdens' equity of 83,548,866 euros;
   total assess and liabilities of 93,062,207 euros.
- This is a five translation into English of the statutory auditors' report on the fluencial statements inseed in the Forach language and is provided solely for the convenience of English speaking users.

Protect suggauge and is previously solvely for the convensions of tagginh speaking users. The strategy solved by the set of tagginh speaking users. This is such reports, whether qualified or not. This information is presented advect the opticity on the financial attenues and isolotion any any strategy deficiently file another's assessments of optical speaking and solving matters. These measurements were considered for the parpose of issuing an andit opticion on the financial interments taken as a whole and not to provide septents summaries on individual scenario capitologic or on information taken outside of the financial instances.

This report should be read in conjunction with, and is construed to accordance with, Presch law and profes auditing standards applicable in Prace.

Villeuthanne, Jone 10, 2014 The Statutory' Auditor

DELOTTE & Associts

HAS-Nathalie LORENZO CASQUET

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FONDATION MERIEUX

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In our opinion, the financial statements give a true and fair view of the financial position and the assets and liabilities of the Foundation as of December 31, 2013 and the results of its operations for the year then ended in accordance with accounting principles generally ocepted in France

### II. JUSTIFICATION OF OUR ASSESSMENTS

In accordance with the requirements of article L823-9 of the French Commercial Code (code de commerce) relating to the justification of our assessments, we hereby inform you that our assessments covered the appropriateness of the accounting policies adopted.

These assessments were performed as part of our audit approach for the financial statements taken as a whole and contributed to the expression of our opinion in the first part of this report.

### III. SPECIFIC VERIFICATIONS AND DISCLOSURES

We have also performed the specific verifications provided for by law, in accordance with the professional practice standards applicable in France.

We have no comment to make as to the fair presentation and consistency with the financial statements of the information given in the financial report and in the documents addressed to the Directors with respect to the financial position and the financial statements.

Villeurbaune, June 10, 2014 The Statutory Auditor

DELOTTE & Associts

French original signed by Nathalie LORENZO CASQUET

# 2013 ACCOUNTS & KEY FIGURES

# BREAKDOWN OF 2013 EXPENSES

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(Excluding provisions and exceptional expenses)

Missions	<b>78%</b>	
Administration	13%	
Fundraising expenses	9%	



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# BREAKDOWN OF EXPENSES BY ACTIVITY

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(Excluding provisions and exceptional expenses)

Training	41%
and knowledge-sharing	
Collaborative research programs	27%
Support for local initiatives	13%
Clinical biology laboratories	10%
International experts	7%
Support for local structures	2%



# GEOGRAPHICAL SEGMENTATION OF ACTIVITIES

(Excluding funds carried forward to 2013)

Europe <sup>(1)</sup>	43%
Asia	22%
Africa	20%
The Caribbean	9%
Indian Ocean	5%
South America	1%

(1) Missions (including coordination) based out of Europe to benefit developing countries

.

# GEOGRAPHICAL SEGMENTATION OF EMPLOYEES\*

124 employees worldwide

Europe <sup>(1)</sup>	43%
Africa	28%
Asia	18%
Indian Ocean	7%
The Caribbean	2%
South America	2%

\* Employees of Fondation Mérieux and its local research and training centers



# BREAKDOWN OF 2013 INCOME

(Excluding provisions and non-recurring items)

Endowment income	38%
& investment	
Fondation Christophe et Rodolphe Mérieux	18%
Sanofi Pasteur sponsorship and partnership	17%
Private partnerships	10%
Public partnerships	7%
Real estate income	6%
Other income	2%
Other sponsorships	1.5%
Donations and legacies	0.5%



### **EVOLUTIONS IN EXPENSES BY FIELD OF ACTIVITY** 6,246 (in K€) 4,301 4,334 3,703 3,448 2,908 2,748 1,689 1,395 1,043 1,064 CLINICAL BIOLOGY COLLABORATIVE TRAINING AND SUPPORT FOR LOCAL

KNOWLEDGE-SHARING

INITIATIVES

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LABORATORIES RESEARCH PROGRAMS

2012 2013 2014 Estimate





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