



# 2019 ANNUAL REPORT



PIONEERING DIAGNOSTICS





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## bioMérieux, a family commitment to combat infectious diseases

bioMérieux is first and foremost a human and scientific adventure that began more than 55 years ago.

Our expertise and our commitment to expand the frontiers of knowledge in biology are rooted in an entrepreneurial story that has been ongoing for more than a century.

In 1897, Marcel Mérieux, who had studied under Louis Pasteur, founded his laboratory in Lyon where he developed the first anti-tetanus sera. From the very beginning, the Institut Mérieux laid the groundwork for a bio-industrial organization that would make its mark on both vaccinology and later on the diagnosis of infectious diseases on a global scale.

bioMérieux, headquartered in Marcy l'Étoile, France, was created in 1963 by Alain Mérieux and today employs nearly 12,000 people.

The Company specializes in providing *in vitro* diagnostic solutions that determine the source of a disease or contamination to improve patient health and ensure consumer safety. Our products are mainly used in the clinical field for diagnosing infectious diseases, and in the industrial field for the detection of microorganisms in agri-food, pharmaceutical and cosmetic products.

bioMérieux is present in 44 countries and serves more than 160 countries with the support of a large network of distributors. Over 90% of sales are generated internationally.

Since 2014, Alexandre Mérieux, the great-grandson of Marcel, has been at the helm of this family-owned company as Chief Executive Officer. In December 2017, he was appointed Chairman and CEO by the Board of Directors.

bioMérieux is listed on the Euronext Paris stock market.  
(Symbol: BIM - ISIN: FR0010096479).  
Website: [www.biomerieux.com](http://www.biomerieux.com)



# PIONEERING DIAGNOSTICS

## TO ADDRESS PUBLIC HEALTH CHALLENGES

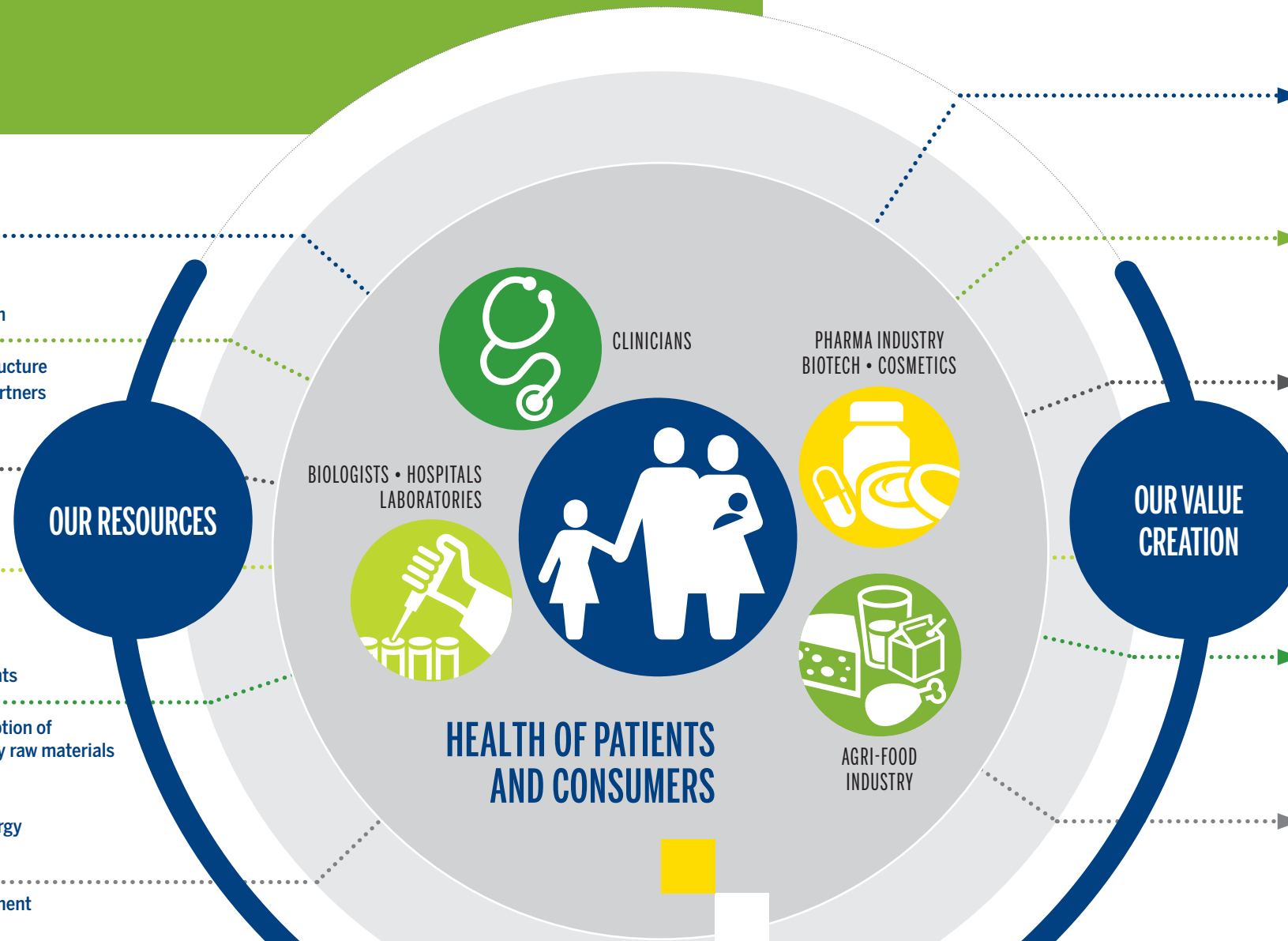
ANTIMICROBIAL RESISTANCE

SEPSIS

EMERGING PATHOGENS

PROTECTING CONSUMER HEALTH

- HUMAN**
  - 12,000 employees
  - 44 countries
  - Diversity and multiculturalism
- FINANCIAL**
  - Stable family shareholder structure
  - Mutual trust with financial partners (investors and banks)
  - Solid cash flow generation
- IN INNOVATION**
  - 14% of sales
  - 1,800 employees
  - 18 sites
- INDUSTRIAL**
  - 18 bio-industrial sites
  - < 4,000 employees
  - < 12,000 suppliers
  - Policy of sustained investments
- ENVIRONMENTAL**
  - Careful, responsible consumption of natural resources and primary raw materials
  - 658,000 m<sup>3</sup> water
  - 225 GWh energy, including 14% renewable energy
  - 68 kt CO<sub>2</sub>e
- CORPORATE CULTURE**
  - Humanist corporate commitment
  - Quality social dialogue
  - Global Code of Conduct
  - Ties to local stakeholders



- SUPPORT THE SUCCESS AND COMMITMENT OF OUR WORKFORCE**
  - 21 hours of training per employee
  - Access to training rate: 89%
  - 7.3% internal mobility
  - Employee share ownership plan
- ACHIEVE RESULTS THAT GUARANTEE OUR INDEPENDENCE**
  - Increase in sales: +8% CAGR 2016-2019
  - Net income: +15% CAGR 2016-2019
  - Free cash flow: €150 million in 2019
  - Dividends: +14% (2016-2019)
- STRENGTHEN THE MEDICAL AND ECONOMIC VALUE OF DIAGNOSTICS**
  - Open innovation (joint research laboratories, public/private partnerships)
  - Product quality and product safety
  - Medical-economic studies: the positive impact of diagnostics on health systems
- SUSTAIN AND DEVELOP OUR INDUSTRIAL ACTIVITY**
  - Local purchasing policies
  - 9 sites certified OHSAS 18001 / ISO 45001
  - Extensive industrial know-how
  - Responsible purchasing commitment to our suppliers
- REDUCE OUR ENVIRONMENTAL FOOTPRINT**
  - 9 sites certified ISO 14001
  - 2020 targets exceeded with 20% reduction in energy & water consumption and greenhouse gas emissions
  - Product eco-design approach
- COMMITTED TO PEOPLE AND LOCAL COMMUNITIES**
  - 70 agreements in 5 years with labour unions in France
  - Code of Conduct training for all employees
  - Responsible tax policy consistent with local business activity
  - bioMérieux employee involvement in local communities
  - 3.5% of sales allocated to philanthropy, including the Mérieux Foundation and Fondation Christophe et Rodolphe Mérieux



1894 - Marcel Mérieux studies with Louis Pasteur



1897 - Marcel Mérieux founds the Institut Mérieux



1937 - Dr Charles Mérieux take up the reins



1963 - Alain Mérieux founds bioMérieux



2015 - Alexandre Mérieux becomes CEO and then Chairman and CEO in 2017

**4 GENERATIONS DEDICATED TO PUBLIC HEALTH**  
**A FAMILY COMPANY WITH A LONG TERM VISION**

# EDITO

Alexandre Mérieux

Chairman and CEO



Our strategic choices for diagnostic solutions that address major healthcare challenges and our balanced international presence have a clear impact, reflected in the strong sales momentum that we have recorded for several years now. In 2019, bioMérieux generated sales of €2,675 million, representing growth of 7.2%, with contributive operating income before non-recurring items reaching €389 million in line with the targets set by the Company.

These results confirm our place among the major *in vitro* diagnostics players worldwide and strengthen our positioning in this market.

## Patient health and consumer safety are at the heart of our concerns.

By developing increasingly rapid and accurate diagnostic tests, we contribute to improving patient management while containing healthcare costs. We also apply our expertise at the service of the agri-food, pharmaceutical and cosmetics industries to control the microbiological quality of their products.

In 2019, we strengthened our leadership position in the field of microbiology with our complete VITEK® range for automated microbial identification and antibiotic susceptibility testing and our BACT/ALERT® blood culture systems. In the field of molecular biology, the innovative syndromic approach to diagnostics provided by our BIOFIRE® FILMARRAY® range continued its robust growth. It is being adopted by an increasing number of laboratories on

all continents, confirming the importance of this approach. In the field of immunoassays, we are a specialist player and invest in the development of high medical value tests that enrich our pipeline of innovations, in particular for the VIDAS® line and in the expansion of this activity with our increased shareholding in Hybiome. This Chinese company develops products that complement those of bioMérieux, thus consolidating our presence in China.

Finally, in the field of industrial microbiology, the growth of our business has been boosted by the acquisition of Invisible Sentinel in 2019, an American start-up specialized in tests for the quality control of beverages.

## Since its foundation more than 55 years ago, bioMérieux has developed extensive expertise in infectious disease diagnostics to address major health challenges such as antimicrobial resistance, sepsis and respiratory infections.

We are very proud that this expertise has been recognized. For example, in 2019, we were selected to be a key supplier in a tender process organized by the Fleming Fund, a UK aid investment program to tackle antimicrobial resistance in resource-limited countries.

At bioMérieux, we take a socially responsible approach to our business activities. In step with our company's development, we organize initiatives to promote awareness, education and prevention among healthcare professionals in order to support better patient care. We also uphold our commitments as a socially-responsible company by sponsoring initiatives in solidarity with communities in the countries where we operate, and by supporting the Mérieux Foundation and the Fondation Christophe et Rodolphe Mérieux, two independent family foundations that fight infectious diseases in developing countries.

These actions embody our humanist culture and the sense of commitment that drives all bioMérieux employees. This mindset is enriched by the importance we place on creating a working environment that fosters professional development. We weigh the impact of this approach on a daily basis, particularly in emergency situations such as the COVID-19 outbreak in late 2019.

bioMérieux was mobilized as early as January 2020 to develop a complementary diagnostic strategy to help healthcare professionals fight this epidemic. Thanks to the remarkable commitment of our teams, two molecular biology tests, in the ARGENE® and BIOFIRE® ranges, were made available to laboratories in March and SARS-CoV-2 was included in the BIOFIRE® syndromic Respiratory panel in May. We have validated the performance of 2 serology tests, VIDAS®anti-SARS-CoV-2, for the detection of antibodies in people who have been exposed to the virus.

Building on our many strengths and despite the global uncertainty created by the COVID-19 pandemic, we intend to pursue bioMérieux's growth and, now more than ever, to serve our public health mission – both in the short term to meet the needs of healthcare professionals as they manage this pandemic, and in the long term by continuing to expand our diagnostic testing portfolio to better satisfy the needs of our customers worldwide.



## PRODUCT NEWS

### ETEST®

FDA clearance for 4 new tests to determine Minimum Inhibitory Concentration (MIC) for 4 new antibiotics: ETEST® Meropenem/Vaborbactam, ETEST® Imipenem/Relebactam, ETEST® Eravacycline and ETEST® Telavancin. These tests are critical to fighting antimicrobial resistance because they make it possible to choose the most effective antibiotic and the optimal dose to prescribe.

### BIOFIRE® BLOOD CULTURE IDENTIFICATION 2 (BCID2) PANEL

Submission for FDA clearance of the new generation of the Blood Culture Identification Panel, which includes several additional pathogens and an expanded list of antimicrobial resistance genes. In 2020, this panel received FDA clearance and was CE marked.

### NEPHROCHECK®

This test for the early risk assessment of acute kidney injury was included in medical society consensus guidelines: ERAS® Cardiac Surgery and the Acute Dialysis Quality Initiative (ADQI).

### BACT/ALERT® VIRTUO® AND FAN® PLUS

Clearance from the Chinese authorities (National Medical Products Administration, or NMPA) for resin-based FAN® Plus blood culture bottles and for the BACT/ALERT® VIRTUO® system.

### BIOMÉRIEUX EPISEQ® CS

Expansion of the BIOMÉRIEUX EPISEQ® Next Generation Sequencing (NGS) range with the launch of the online service. Its aim is to help laboratory hospitals in charge of infection control to identify infectious outbreaks and to monitor resistance genes in order to combat healthcare-associated infections (HAI).

### GAMME R-GENE®

Launch of HSV1&2 VZV R-GENE®, HSV1 HSV2 R-GENE® and VZV R-GENE® kits for the detection of certain herpes types and the Varicella Zoster Virus. The tests meet the needs of immunocompromised patients and transplant recipients, for whom these infections are particularly serious. They reinforce the ARGENE® molecular biology range.

## AT A GLANCE

# 2019

## SITE NEWS

### R&D AND PRODUCTION

#### → IN FRANCE

- Construction of a new facility for immunoassay R&D; increase in VIDAS® reagent production capacity at Marcy l'Étoile.
- Expansion of the Craponne site.
- Increase in GENE-UP® reagent capacity at Grenoble.

#### → IN CHINA

- Laying of the first stone for the new facility in Suzhou.

#### → IN THE UNITED STATES

- Increase in the production capacity of the BIOFIRE® range in Salt Lake City.
- New packaging line for BACT/ALERT® reagents in Durham.



## ACQUISITIONS AND INVESTMENTS

### IN THE FIELD OF IMMUNOASSAYS

#### HYBIOME (SUZHOU, CHINA)

bioMérieux increased its shareholding in this manufacturer of automated immunoassay tests for hospitals, from 54 to 67%.

### IN THE FIELD OF INDUSTRIAL MICROBIOLOGICAL CONTROL

#### INVISIBLE SENTINEL (PHILADELPHIA, PENNSYLVANIA, USA)

The VERIFLOW® platform, an innovative molecular biology solution for the detection of pathogens and spoilage organisms in food and beverages, in particular in wine and beer.

### IN THE FIELD OF MICROBIOLOGY

#### SPECIFIC DIAGNOSTICS (MOUNTAIN VIEW, CALIFORNIA, USA)

bioMérieux acquired a minority share in the capital of this company specialized in faster analysis of antibiotic susceptibility tests.

## PARTNERSHIPS

### BAXTER (UNITED STATES)

Collaboration agreement to improve the identification and treatment of acute kidney injury.

### VALUE-DX (EUROPE)

Coordination of a European public-private partnership, with the University of Antwerp and the Wellcome Trust, to fight antimicrobial resistance through diagnostic testing.

### CIDRAP (UNITED STATES)

Cooperation agreement with the Center for Infectious Disease Research and Policy (CIDRAP) at the University of Minnesota by which bioMérieux will provide support to initiatives that promote better management of prescribing antibiotics.

### CHILDREN'S MEDICAL CENTER IN SHANGHAI (CHINA)

Launch of a new joint research laboratory at the Children's Medical Center in Shanghai, with a study of the NEPHROCHECK® test in pediatric heart surgery.



# FOCUS ON LIFE AT OUR SITES IN 2019

bioMérieux is present in 44 countries through 18 bio-industrial sites, 18 R&D centers, subsidiaries and offices. Across all continents, our 12,000 employees contribute to fulfilling our public health mission while respecting the humanist values upheld by the Mérieux family. In 2019, our teams celebrated important inaugurations and anniversaries in the history of bioMérieux. Our commitment to our employees was also recognized by several Top Employer awards.



**EMEA\***  
**FRANCE**  
20 years of the International Distribution Center (IDC), bioMérieux's largest distribution platform, located in Saint Vulbas



**EMEA\***  
**FRANCE**  
Top Employer 2020 certification

**AMERICAS**  
Top Employer 2020 certification



**AMERICAS**  
**SAINT-LOUIS**  
30<sup>th</sup> anniversary of the acquisition of Vitek Systems, thanks to which bioMérieux developed the VITEK® range for automated bacterial identification and antibiotic susceptibility testing



**EMEA\***  
**IVORY COAST**  
Opening of a new training center in Abidjan for healthcare professionals to learn more about *in vitro* diagnostics and how to use bioMérieux systems and tests

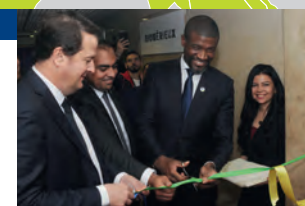


**EMEA\***  
**RUSSIA**  
Customer seminar



**EMEA\***  
**MIDDLE EAST**  
10<sup>th</sup> anniversary of the United Arab Emirates subsidiary

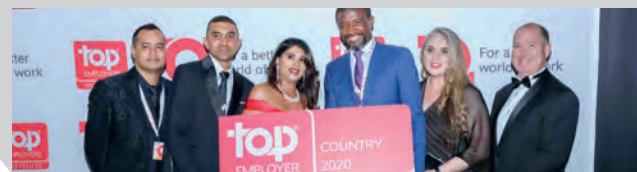
**ASIA PACIFIC**  
**CHINA**  
Top Employer certification renewed in 2020



**EMEA\***  
**EGYPT**  
Inauguration of the bioMérieux subsidiary in Cairo, Egypt



**EMEA\***  
**KENYA**  
Inauguration of the new bioMérieux office in Nairobi, Kenya



**EMEA\***  
**SOUTH AFRICA**  
Top Employer 2020 certification

\* Europe, Middle East, Africa.



# AN INTERNATIONAL SUCCESS

In guiding the Company's development, bioMérieux has always focused on meeting healthcare challenges related to infectious diseases all over the world. With over 90% of sales outside of France today, the scope of our activity is geographically balanced.

## AMERICAS REGION



SALES  
**€1,200  
MILLION**

GROWTH  
**+ 7.7%\***

SALES  
NORTH AMERICA: 39%

SALES  
LATIN AMERICA: 6%

## ASIA PACIFIC REGION



SALES  
**€514  
MILLION**

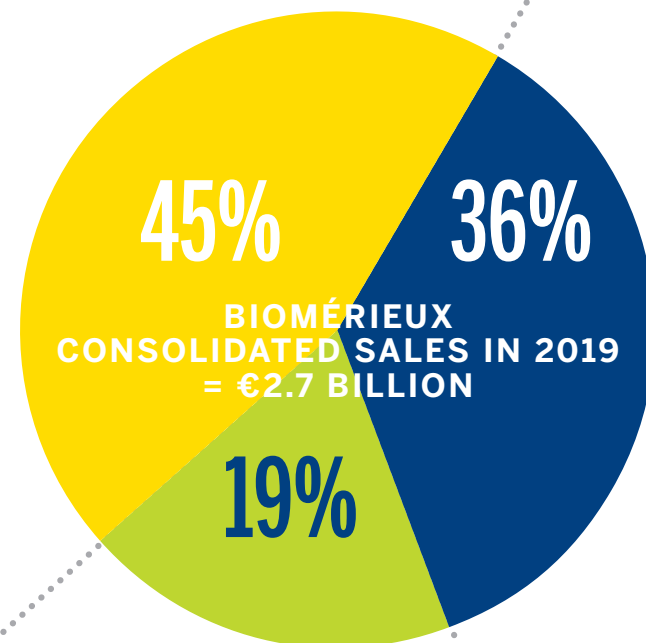
GROWTH  
**+ 12.1%\***

## EUROPE, MIDDLE EAST, AFRICA (EMEA) REGION



SALES  
**€961  
MILLION**

GROWTH  
**+ 4.4%\***



\* Year to year, at constant exchange rates and scope.



# CLINICAL APPLICATIONS

As a world leader of *in vitro* diagnostics, bioMérieux provides solutions that determine the source of disease. Our company is a global leader in the field of microbiology, a specialist in immunoassays, and a pioneer and leader in molecular syndromic diagnostics. We mobilize our expertise to address major public health challenges, and we place the fight against antimicrobial resistance at the heart of our public health mission.

“Our work directly supports patients. As the mother of a child who suffered from ear infections, I know the rational use of antibiotics is key.”

**Emily**  
Internal Communication  
Manager



**CLINICAL APPLICATIONS**

# DIAGNOSTIC TESTING: INSTRUMENTAL IN COMBATING ANTIMICROBIAL RESISTANCE

Antimicrobial resistance has been recognized as a major global public health threat by international organizations. As a world leader of *in vitro* diagnostics, we have been active in the field of infectious diseases for more than 55 years, and we have made the fight against antimicrobial resistance a priority. The Company offers a unique and comprehensive range of diagnostic solutions that support the responsible use of antibiotics.

## ANTIMICROBIAL RESISTANCE

### → A public health priority

**700,000 deaths annually** worldwide and an estimated **10 million deaths per year** by 2050 <sup>(1)</sup>

A potential **\$100 trillion cost** for the global economy <sup>(1)</sup>

An annual decrease in global GDP\* of between **1.1% and 3.8%** by 2050 <sup>(2)</sup>

### → A bioMérieux priority

**80% of sales** in clinical applications are from products that contribute, either directly or indirectly, to the fight against antimicrobial resistance

**75% of R&D investments** are dedicated to antimicrobial resistance

\* Gross Domestic Product.

**MARK MILLER**

EXECUTIVE VICE PRESIDENT  
Medical Affairs • bioMérieux

**“Diagnostic tests play a major role in the fight against antimicrobial resistance.”**

They make it possible to:

- Confirm that the infection is bacterial and identify the causative pathogen to ensure optimal patient outcomes and avoid unnecessary antibiotic use;
- Determine the pathogen’s resistance profile to select the most appropriate treatment, limit use of broad-spectrum antibiotics and avoid adverse side effects;
- Monitor the patient’s condition in order to adapt treatment duration to each individual and discontinue antibiotics as soon as possible;
- Screen for and prevent spread of MDRO (multi-drug resistance organisms).

Diagnostic tests are also valuable tools for the surveillance of resistance to antibiotics. They are used to monitor disease-causing agents and antimicrobial resistance at the local, regional and global levels, which is critical to understand the extent of resistance and to develop an adequate response. Awareness of the epidemiology of antimicrobial resistance determines the actions required to keep it under control. bioMérieux is the sole private sponsor of the Global Point Prevalence Survey (GLOBAL-PPS), the largest study of antibiotic use and antimicrobial resistance in hospitals conducted on a global scale. It aims to improve practices and slow the phenomenon of resistance (see page 43).





### 4 NEW ETEST® TO IMPROVE THE APPROPRIATE USE OF ANTIBIOTICS

In 2019, bioMérieux launched four new ETEST® products in the United States with 510(k) clearance from the US Food and Drug Administration (FDA). These tests determine an antibiotic's Minimum Inhibitory Concentration (MIC); ETEST® Meropenem/Vaborbactam, ETEST® Imipenem/Relebactam, ETEST® Eravacycline and ETEST® Telavancin. Launched on the market at the same time as these new antibiotics, the tests are an effective guide for clinicians in their choice of an appropriate, personalized treatment for patients whose condition is of concern and for whom the arrival on the market of a new compound could be a novel therapeutic option.

Also in 2019, bioMérieux made its new ETEST® Piperacillin/Tazobactam available in all its markets.

The ETEST® range plays a critical role in the fight against antimicrobial resistance because it contributes to preserving the efficacy of antibiotics and to preventing antimicrobial resistance. These tests are particularly well-adapted to determining the necessary Minimum Inhibitory Concentration of an antibiotic to achieve effective treatment outcomes in the most challenging cases.

The manual MIC gradient strip ETEST® provides reliable and accurate large-scale MIC determination for many new and existing antibiotics and is used in complement to VITEK® 2 in challenging situations. VITEK® 2 is an automated antibiotic susceptibility testing system enabling both identification and susceptibility testing for the vast majority of microorganisms (more than 400). Results are delivered within hours. The combination of manual and automated methods meets the needs of microbiologists, which may vary due to geographical and epidemiological factors.



### BIOMÉRIEUX EPISEQ® CS, A NEW SOLUTION TO HELP FIGHT HEALTHCARE-ASSOCIATED INFECTIONS (HAI)

Healthcare-associated infections (HAI) affect many hospital wards and are increasingly difficult to target due to the emergence of multi-drug resistant bacteria. Efforts to fight these infections represent a significant cost for hospitals. With the innovative BIOMÉRIEUX EPISEQ® CS Next Generation Sequencing (NGS) online solution launched in 2019, hospital laboratories in charge of infection control are able to identify infectious outbreaks and monitor resistance genes. It covers a broad spectrum of the 13 bacterial species most commonly responsible for healthcare-associated infections worldwide.

### BIOFIRE® FILMARRAY® BLOOD CULTURE IDENTIFICATION 2 PANEL SUBMITTED FOR FDA CLEARANCE

The BIOFIRE® FILMARRAY® BCID2 Panel includes several additional pathogens and an expanded list of antimicrobial resistance genes compared to the initial panel, which has been available since 2013.

It identifies 26 bacteria, 7 yeasts, and 10 antimicrobial resistance genes, including 4 classes of carbapenemases, an MCR-1 gene, extended-spectrum beta-lactamases, emerging pathogens such as *Candida auris*, and new targets to more accurately identify methicillin-resistant *Staphylococcus aureus* (MRSA).

This new panel is compatible with the FILMARRAY® 2.0 and FILMARRAY® TORCH systems. In 2020 this panel received FDA clearance and was CE marked.



#### CHRISTINE GINOCCHIO

PhD MT (ASCP)  
Medical Affairs • bioMérieux

**“Rapid identification of bloodstream infections and detection of antimicrobial resistance genes are more important than ever for hospitals and their patients. Thanks to the expanded BIOFIRE® FILMARRAY® BCID2 Panel and the syndromic approach, a single, comprehensive test will detect the pathogens and key associated antibiotic resistance markers most frequently responsible for these infections, enabling prescription of more targeted, effective treatment.”**



### BIOMÉRIEUX TEAMS UP WITH THE FLEMING FUND TO TACKLE ANTIMICROBIAL RESISTANCE IN RESOURCE-LIMITED COUNTRIES

bioMérieux was selected to be the principal partner in the tender process by the Fleming Fund, a £265 million UK aid investment to help resource-limited countries tackle antimicrobial resistance. The Company was chosen by the Fleming Fund based on the outstanding performance of its diagnostic solutions, its organizational capacity in the targeted countries and its extensive expertise in training of health professionals, in the fields of microbiology and AMR.

bioMérieux will be locally active in 18 out of the 24 countries taking part in the program in Africa and Asia Pacific. In each country, over the next three years, the Company will equip one clinical reference laboratory and one veterinary reference laboratory with the VITEK® MS and VITEK® 2 systems for

pathogen identification and susceptibility testing, and with MYLA® software for data processing. The laboratory analyses will contribute to establishing robust AMR surveillance systems, providing pathogen resistance trends, as well as critical individual patient results. This information should improve treatment for patients and contribute to development of effective national AMR policies. Moreover, the data collected by national laboratories will improve the understanding of the extent of the phenomenon of resistance and how it spreads, as well as the geographic areas where antimicrobial resistance poses the greatest risk.

"I optimize our customers' knowledge of our solutions, which empowers them to combat complex challenges such as sepsis and antibiotic resistance."

Eric

Customer Education



CLINICAL APPLICATIONS

# AN EXTENSIVE RANGE OF SOLUTIONS TO FIGHT SEPSIS

Sepsis is a serious infection associated with organ failure, caused when the body's immune system mounts an acute response to the infection, and in many cases, it may rapidly lead to death.

It is a life-threatening condition following a common infection, such as respiratory, gastrointestinal and urinary infections as well as skin and wound infections.

Sepsis may begin with the appearance of non-specific signs that are cause for alarm, such as:

- 1 confusion
- 2 shortness of breath
- 3 rapid heart rate
- 4 fever and shivering
- 5 extreme fatigue
- 6 clammy skin.

Rapidly recognizing the symptoms and having a diagnostic test can save lives!

While sepsis may affect people of all ages, the risk is higher for some patient groups: immunocompromized patients, children under one year old, adults over the age of 60, and patients compromised by chronic illness.

→ Even though it is often under-recognized, sepsis is one of the leading causes of death worldwide and the main cause of death from infection.

Since 2017, it has been recognized by the World Health Organization (WHO) as a Global Health Priority.

A study published recently in *The Lancet*<sup>(3)</sup> demonstrated that sepsis remains a major concern despite a decrease in its incidence and mortality between 1990 and 2017:

## Nearly 49 million

cases of sepsis were recorded worldwide in 2017

Sepsis caused

## 11 million deaths,

or nearly 20% of deaths worldwide in 2017

Sepsis incidence and mortality vary considerably from one region to another, with resource-limited countries being particularly impacted.

→ Early recognition of the signs of sepsis and rapid diagnosis are essential to begin effective antibiotic treatment as quickly as possible. Any delay in starting appropriate treatment is associated with increased mortality

JULIEN TEXTORIS

MD, PhD

Consultant in anesthesiology & intensive care at Edouard-Herriot Hospital, Lyon, France  
Medical Affairs • bioMérieux

**"Sepsis is a medical emergency, when every minute counts. However, because the clinical signs and symptoms are not specific, it is often diagnosed too late.**

**Recognizing sepsis at an early stage is essential, before it gets worse, especially because there is no specific treatment that is effective against sepsis. If it is not recognized early enough and treated rapidly, sepsis can cause septic shock with multiple organ failure, that too often leads to the patient's death.**

**In this context, diagnostics plays a critical role: the sooner sepsis is diagnosed, the greater the likelihood of giving the patient the right therapy to treat the infection, avoiding organ failure and increasing the patient's chances of survival."**










bioMérieux offers the most extensive range of solutions on the market for sepsis diagnostics and management, combining immunoassay, microbiology and molecular biology tests.

## What the Sepsis Solution does



1

### IDENTIFY THE INFECTIOUS AGENT AND DETERMINE THE APPROPRIATE ANTIBIOTIC TREATMENT WITH:

-  BIOFIRE® FILMARRAY® panels for the rapid identification of a viral or bacterial infection before it becomes generalized in critically ill patients.
-  BIOFIRE® FILMARRAY® Blood Culture Identification Panel to identify 27 targets and antibiotic resistance markers in samples, in 1 hour.
-  Innovative BACT/ALERT® VIRTUO® system, the first fully-automated, scalable blood culture instrument, reducing by 30% the time required for the detection of microorganisms in patient blood samples.
-  Conventional and chromogenic culture media in the CHROMID® line to detect and identify a wide variety of bacteria that may cause sepsis.
-  VITEK® MS mass spectrometry system to rapidly identify the responsible pathogen based on a positive blood culture reported by BACT/ALERT® VIRTUO®.
-  VITEK® 2 automated identification and susceptibility testing system.
-  ETEST® manual antibiotic susceptibility testing range.



2

### TEST, ANALYZE AND MONITOR THE BODY'S RESPONSE WITH:

-  VIDAS® B.R.A.H.M.S PCT™ test to identify patients presenting a severe infection to ensure the efficacy of antibiotic treatment (and to stop antibiotics as soon as possible).
-  NEPHROCHECK® test to identify patients at risk for kidney injury, so that preventive measures may be taken.

3

### OPTIMIZE LABORATORY WORKFLOWS WITH:

-  Lab Consulting solutions, which are designed to reduce the time required for blood culture bottles to arrive at the laboratory. Solutions are based on the analysis of sample flows in the laboratory to suggest organizational adjustments that improve operational efficiency and time-to-results.
-  MYLA® software to process microbiology data and ensure connectivity to several analysis instruments.

### BIOMÉRIEUX SUPPORTS THE WORK OF THE GLOBAL SEPSIS ALLIANCE

bioMérieux is a member of the Global Sepsis Alliance (GSA), a not-for-profit organization dedicated to building sepsis awareness, which has clearly identified diagnosis as “one of the most effective weapons” to combat sepsis. The GSA supports healthcare professionals across the globe to improve care for patients with sepsis, aiming for a 20% reduction in the incidence of sepsis by 2020. bioMérieux takes part in World Sepsis Day, organized by the GSA on September 13 each year to help raise public awareness.

*“I support right-first-time initiatives to ensure that our manufacturing systems are consistent for the production of life-saving solutions.”*

**John**  
Manufacturing Compliance

### CLINICAL APPLICATIONS

# A GAME CHANGER: DIAGNOSTIC TESTS FOR EARLY RISK ASSESSMENT OF ACUTE KIDNEY INJURY (AKI)

AKI is a decrease in kidney function occurring over a period of hours or days<sup>(4)</sup>. It may be caused by direct injury to the kidney, by nephrotoxic drugs, as a complication of a concomitant disease, or as a result of an infection, such as sepsis. This loss of renal function leads to a decrease in blood filtering, that, if left untreated, may cause severe complications or even death.

Sepsis is an immune-reaction to infection that can result in the rapid deterioration of the patient's general condition leading to possible organ failure. When sepsis is associated with AKI, the risk of mortality for the patient doubles<sup>(5)</sup>. Patients with early stages of AKI may be managed by their physician to help them preserve as much renal function as possible. This stage may be reversible. In patients with severe stages of AKI, their capacity to filtrate or purify blood is damaged, as a result they may require more invasive treatment, such as dialysis<sup>(6)</sup>. Therefore, early risk assessment of AKI is critical to establish optimized management for patients<sup>(7,8)</sup>.





### NEPHROCHECK®, A HIGH MEDICAL VALUE PREDICTIVE TEST

In April 2018, bioMérieux acquired Astute Medical, a California-based company that developed and produced the Nephrocheck® test for the early risk assessment of acute kidney injury (AKI). This high medical value predictive test, which is FDA-cleared and CE-marked, uses urinary biomarkers to indicate kidney stress in advance of AKI. The acquisition is a continuation of the partnership formed between Astute Medical and bioMérieux in 2015, under which Astute Medical granted bioMérieux a license to develop and market the Nephrocheck® test on the VIDAS® automated immunoassay system.

In 2019, the test was featured in presentations at several conferences internationally and in key publications:

- An article co-authored by several experts was published in *Critical Care*, demonstrating the value of Nephrocheck® for use in intensive care<sup>(9)</sup>.

- The *Journal of Medical Economics* published the first budget impact model of AKI using the Nephrocheck® biomarker<sup>(10)</sup>.

- Scientific posters about an ongoing study of AKI and sepsis were presented during the International Vicenza Course on Acute Kidney Injury and Continuous Renal Replacement Therapies (Italy) and Kidney Week (United States).



### NEPHROCHECK® TEST INCLUDED IN GUIDELINES FROM LEADING MEDICAL ORGANIZATIONS

In the second quarter of 2018, the Nephrocheck® biomarkers were included in guidelines issued by the Society for Enhanced Recovery After Surgery (ERAS® Cardiac) and by the international organization Acute Dialysis Quality Initiative (ADQI), which includes over 150 specialists of diagnostics and care for patients with AKI and associated diseases requiring dialysis.

In 2019, the Nephrocheck® test (TIMP-2 and IGFBP-7) was included in the "Guidelines for Perioperative Care in Cardiac Surgery" published by the ERAS® Cardiac Society. These guidelines make recommendations for the use of biomarkers, such as the Nephrocheck® test, after cardiac surgery for early detection of kidney stress, followed by appropriately targeted interventions to avoid AKI<sup>(11)</sup>.

The Nephrocheck® test has been used in intensive care units in the United States and in 2019, was introduced in several countries in Europe and Latin America and in India.

### PARTNERSHIP WITH BAXTER

In March 2019, bioMérieux and Baxter International Inc., a global leader in acute care, announced a collaboration agreement to develop future biomarkers to rapidly identify and inform treatment of acute kidney injury.

**MARK MILLER**  
EXECUTIVE VICE PRESIDENT  
Medical Affairs • bioMérieux

**"As a pioneer in diagnostics, we are looking forward to collaborating with Baxter to address the important challenges in critical care medicine such as AKI. In order to accomplish this, the team at recently-acquired Astute Medical is committed to the development of additional high medical value biomarkers for improved patient care."**

*"Every day I work with scientists to ensure our antimicrobial tests are developed to provide fast, accurate diagnostic results to patients."*

**Kelsey**

Technology Transfer Lead,  
Industrialization



### CLINICAL APPLICATIONS

# EXPANDING OUR PORTFOLIO FOR THE DIAGNOSIS OF RESPIRATORY INFECTIONS

Respiratory infections are both extremely common and potentially serious. They are a major public health concern worldwide. One of the priority challenges for these infections is reducing the inappropriate use of antibiotics, which are ineffective against viruses. Diagnostic tests play therefore a critical role in ensuring that these infections are treated effectively with the appropriate molecule.

- Upper respiratory tract infections are the leading cause of all disease worldwide, including all pathologies, infectious and non-infectious combined<sup>(12)</sup>.
- Lower respiratory tract infections (including pneumonia) are responsible for nearly 3 million deaths per year. They are the leading cause of death from infectious diseases worldwide<sup>(13)</sup> and one of the primary reasons for hospitalization in Europe and the United States<sup>(14)</sup>. Pneumonia is the leading infectious cause of death in children<sup>(15)</sup>.
- Diagnostic tests are essential to combat these serious infections and limit the unnecessary and inappropriate use of antibiotics in order to avoid the side effects associated with their use and to slow and even prevent the emergence of drug-resistant bacteria.



## To fight against these respiratory infections, bioMérieux provides a comprehensive product offering with:

### **BIOFIRE® FILMARRAY® molecular biology solutions**

The Respiratory Panel simultaneously tests for 17 viruses and 3 bacteria that cause respiratory infections. It was expanded with the Respiratory 2 (RP2) and Respiratory 2 *plus* (RP2*plus*) Panels, which simultaneously test for 21 and 22 pathogens respectively, in just 45 minutes. The Respiratory EZ (RP EZ) Panel detects 11 viruses and 3 bacteria. It is CLIA-waived (for use outside of clinical laboratories) and is available only in the United States. Regarding the Pneumonia and Pneumonia *plus* Panels: the first identifies 33 targets (18 bacteria, 8 viruses and 7 antimicrobial resistance genes), while the second includes the same targets, as well as the MERS-CoV\* emergent virus.

### **The VIDAS® B-R-A-H-M-S PCT™ test**

measures procalcitonin (PCT) levels to optimize the use of antibiotics for the treatment of lower tract respiratory infections, in order to better differentiate between viral and bacterial infections. It thus avoids the inappropriate and unnecessary use of antibiotics and helps monitor the patient's response to therapy in order to personalize treatment duration and stop antibiotic treatment without risk, as soon as possible. PCT is also a prognostic marker for sepsis, supporting the rapid management of appropriate patient care in the event of this serious illness<sup>(16)</sup>.

### **CHROMID® chromogenic culture media**

for the detection of *Pseudomonas aeruginosa*, *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* (MRSA).

### **The VITEK® range**

for the identification and automated antimicrobial susceptibility testing of bacteria and yeast, able to identify the vast majority of microorganisms and to deliver sensitivity/resistance results in a few hours.

### **The ARGENE® range**

in molecular biology, composed of ready-to-use, real-time PCR kits for the detection of pathogens involved in respiratory tract infections.

## BIOMÉRIEUX MOBILIZED TO RESPOND TO THE COVID-19 EMERGENCY

As soon as the new coronavirus appeared in late 2019 in China, bioMérieux's research teams immediately started to develop complementary diagnostic tests for the detection of the SARS-CoV-2 virus responsible for COVID-19. Given the rapid, global spread of the epidemic, diagnostic tests are essential to prevent and limit the number of infections. In the face of this emergency, bioMérieux chose to develop complementary approaches for the specific diagnosis of the SARS-CoV-2 virus, based on its manual and automated molecular biology PCR solutions:

- a real-time PCR test, part of the ARGENE® range, that can be used to test a large number of patient samples simultaneously;
- an automated real-time PCR test based on the BIOFIRE® FILMARRAY® 2.0 and TORCH technology, which can be used for the individual diagnosis of a patient in an emergency setting. This test was developed in partnership with the US Department of Defense within the scope of the Next Generation Diagnostic System program, and will also be available in other countries that need it, subject to obtaining marketing authorization from the relevant regulatory authorities;
- the expanded BIOFIRE® FILMARRAY® Respiratory Panel, updated to include the detection of SARS-CoV-2, in addition to the 21 pathogens that most frequently cause respiratory infections, with detection in approximately 45 minutes.

For patients showing signs of a respiratory infection, the existing BIOFIRE® Pneumonia and Respiratory Panels can be used to test for the 20 other pathogens that cause this type of infection. They are useful to rule out common causes of respiratory infection other than Covid-19, in order to optimize the diagnostic strategy for this new coronavirus.

- In addition, bioMérieux has launched a development project of VIDAS® serological tests to detect the immune response to SARS-CoV-2 infection.

We have set up an accelerated development process for these tests so they can be launched as quickly as possible.

### DR HENRIQUETA PEREIRA

DIRECTOR OF THE GENERAL AND PEDIATRIC CLUSTER  
AT THE COIMBRA HOSPITAL AND UNIVERSITY CENTER, PORTUGAL  
*Talking about the BIOFIRE® FILMARRAY® Respiratory Panel*

**“We quickly realized that it is more economical to perform the PCR multiplex test, at every level. In addition to providing more information from a smaller sample, it does not require extra work. Pediatricians have started using this test overwhelmingly and, since January 2017, we have been using it 24/7.”**



# INDUSTRIAL APPLICATIONS

bioMérieux strengthened its leadership position in industrial microbiology in 2019. The Company offers the most extensive range of solutions in this field, with both manual and automated solutions, providing rapid and reliable results for companies in the food, biopharmaceutical and cosmetic industries. Our solutions cover all stages of analysis, from sample preparation to the final step of microorganism identification.

### NEW WEBSITE

Our new bioMérieux Industry website, [www.biomerieux-industry.com](http://www.biomerieux-industry.com) has been online since July 2019.

The site presents the production value chains and the solutions from bioMérieux corresponding to each step for different market segments in the pharmaceutical and agri-food industries. The new platform, which replaces existing websites in 32 countries, was launched in English and will soon be available in 8 languages. It will be enhanced with new features such as customer testimonials, expert interviews on the latest market trends, and scientific and regulatory resources, making it a valuable educational tool.

\* Middle East syndrome coronavirus.



*"I find solutions for our production teams so that laboratories can always count on our products to address healthcare needs."*

**Delphine**

Industrialization manager



INDUSTRIAL APPLICATIONS

# DIAGNOSTIC TESTS, ESSENTIAL FOR PHARMACEUTICAL PRODUCT QUALITY

bioMérieux is a world leader in the field of industrial microbiological control, a vital activity to ensure the microbiological quality of medicines during production. The Company offers the most comprehensive range of solutions to meet the needs of companies in the pharmaceutical sector.



Microbiological control for companies in the pharmaceutical industry prevent bacterial contamination of medicines by monitoring the quality of the environment and of all products used along the manufacturing chain, as well as finished products. Such controls are subject to increasingly stringent requirements imposed by regulatory agencies, and to growing technological challenges in connection with the development of bioproduction and cellular and gene therapies.

In the context of stricter regulatory requirements coupled to the therapeutic revolution, bioMérieux is constantly enriching its product offering. For several years, the Company has been investing in solutions that are proving to be key approaches for the bio-pharmaceutical industry, the automation and digitization.

## ENDONEXT™

### A FULL RANGE OF ENDOTOXIN DETECTION ASSAYS

Following the acquisition of Hyglos in 2016, bioMérieux expanded the ENDONEXT™ range and today offers a complete endotoxin detection solution. With the launch of the BioTek™ Synergy™ HTX reader and the innovative ENDOZYME® II GO test in 2018, our solution was further enriched in 2019 with:

- ENDONEXT™ software v1.0, dedicated specifically to the analysis of bacterial endotoxin testing results;
- a semi-automated solution to further streamline workflows, limit handling time and reduce the risk of errors.

## ENDOZYME® II GO

### RECOGNIZED AS A REFERENCE TEST

ENDOZYME® II GO is the latest addition to the bioMérieux ENDONEXT™ range. Launched in 2018, it is based on Recombinant Horseshoe Crab Factor C (rFC). This technology eliminates the need to harvest the blood of horseshoe crabs, a species that is endangered in Asia and protected in the United States. Most currently-marketed endotoxin detection tests continue to use animal-derived raw materials.

ENDOZYME® II GO enables endotoxin testing in pharmaceutical grade water, injectable drugs and other pharmaceutical products. With enhanced reliability, it allows an easy and rapid workflow, and is particularly adapted to raw material and finished product testing.

This innovative technology received a favorable reception from the Europe Union (Directive 2010/62/EU) and will be included in the publication of a new chapter in the European Pharmacopoeia (2.6.32) in mid-2020. At the same time, the United States Pharmacopoeia (USP) Chapter <85> on bacterial endotoxin tests is also being revised so that rFC will be validated as an official method.

These decisions represent a key step in the market's adoption of these new tests, which avoid the need to use raw materials derived from animal sources. They mark significant progress since the tests were launched for use by major pharmaceutical companies that implement this technology at their production sites for ethical, environmental and technical reasons.





### SAFETY OF PLATELETS WITH BACT/ALERT®

Each year, globally around 10 million platelet transfusions are administered to patients.

Platelets play an important role in blood coagulation. A transfusion may become necessary for some patients with a low platelet count due to illnesses such as cancer or leukemia, after major surgery, or following a significant loss of blood.

Platelets for transfusion come from carefully selected donors. Even so, routine testing of platelets is essential to monitor the risk of bacterial contamination of platelets, since such contamination is one of the primary causes of transfusion-related morbidity and mortality.

bioMérieux works in close collaboration with blood banks and blood transfusion services to guarantee the availability of these vital resources. Our BACT/ALERT® system provides automated blood culture solutions as well as internationally-recognized test protocols to monitor the risk of bacterial contamination. In 2019, the US Food and Drug Administration (FDA) published a new directive, which recommends strategies recognizing the utilization of bacterial screening as an effective solution to extend platelet shelf life, reduce waste, and improve operational efficiency and patient safety.

Today, BACT/ALERT® is the principal automated blood culture system used worldwide for platelet screening. With the new and innovative BACT/ALERT® VIRTUO® system, used by several blood transfusion centers all over the globe, bioMérieux confirms its position as leader in quality control of platelet concentrates.

In late 2018, the innovative culture bottles BPA and BPN used for quality control testing of platelets with the fully automated BACT/ALERT® VIRTUO® blood culture system received 510(k) clearance from the FDA.

*“I work with leading food and pharmaceutical industrial manufacturers to help ensure that what you consume is safe and fit for use.”*

**Johnny**

Industrial Microbiology Director



### INDUSTRIAL APPLICATIONS

# DIAGNOSTICS FOR FOOD SAFETY



For more than 25 years, bioMérieux has applied its experience acquired in clinical applications to the field of industrial microbiological control, where the Company is a world leader today.

Testing the microbiological quality of foods constitutes the historical basis of the industrial applications developed by bioMérieux and based on a host of solutions.

The manufacture of food products is subject to very strict controls to guarantee their microbiological quality. Microbiological testing is carried out during the entire production process, from raw materials to finished products, as well as in the production environment to ensure safe food for the consumer.





### OFFICIAL RECOGNITION FOR BIOMÉRIEUX'S ANALYTICAL METHODS

In the demanding and highly regulated segment of microbiological analysis of agri-food products, bioMérieux has the most extensive portfolio of certified and officially recognized methods.

**+ 80 methods certified**  
by official North American and European bodies\*

In 2019, bioMérieux obtained new official recognition for the highly innovative methods that support its new molecular biology platform GENE-UP®: AOAC-OMA (Official Method of Analysis) certifications for the primary food pathogens in the North American market and AFNOR certifications for European markets.

The GENE-UP® system considerably simplifies laboratory workflow by improving productivity and limiting the risk of inter-sample contamination. Its menu enables the detection of the disease-causing organisms most commonly tested for in the food chain, such as *Salmonella*, *Norovirus*, *Escherichia coli* O157:H7, *Listeria*, enterohemorrhagic *Escherichia coli* and *Cronobacter*.

In early 2019, bioMérieux introduced a new unit-dose format for its reagents that can be used with the entire GENE-UP® range. It further streamlines workflows for our customers, providing rapid and extremely precise results.

\* AOAC certification in the United States, Santé Canada in Canada, AFNOR Certification and MicroVal in Europe.

### INVISIBLE SENTINEL

#### ACQUISITION OF THE US-BASED SPECIALIST IN BEVERAGE QUALITY CONTROL

Invisible Sentinel, which was acquired by bioMérieux in early 2019, is based in Philadelphia (PA) where it develops, manufactures and markets innovative and user-friendly molecular diagnostic solutions for the rapid, accurate and reliable detection of pathogens and spoilage organisms in food and beverages.

Its innovative molecular biology testing platform, VERIFLOW®, is user-friendly and does not require sophisticated lab infrastructure. It targets diversified customers in the food industry, in particular manufacturers of beverages (beer, wine, fruit juice) and nutraceuticals.

This acquisition strengthens bioMérieux's position in food pathogen testing and spoilage organism detection by expanding it to new customer segments such as breweries and wine producers. The product line provides the perfect complement to bioMérieux's molecular diagnostic food testing solution, GENE-UP®. It is commercially available in a number of countries: France, Germany, Italy, Spain, China, Japan, Mexico, Chile, etc.

#### TOD MOSTERO

WINEMAKER  
Dominus Estates, California, USA

**“Early in-house *Brettanomyces* monitoring in wines during and just after fermentations, which was impossible to do before, allows us to effectively mitigate issues and avoid potential problems later in the process.”**

### INDIA: IMPROVING FOOD SAFETY AND ADOPTING RAPID METHODS

In countries where bioMérieux operates, we work with local health authorities and microbiologists to contribute to improving the health of consumers by increasing their awareness of the value of diagnostic testing.

This is the case in India, for example, where the Company has organized several initiatives in recent years to:

- raise awareness about the importance of food safety for public health with the Food Safety and Standards Authority of India (FSSAI), which is in charge of scientific and regulatory issues;
- conduct training in advanced microbiological techniques for food safety and method validation systems.

Two experts appointed by the French government, representatives of the ISO (International Standardization Organization), one of them an expert from ANSES (French Agency for Food, Environmental and Occupational Health & Safety) and one bioMérieux expert, taught two five-day training sessions (late 2018 and late 2019), within the scope of the FSSAI/ANSES partnership, under the aegis of the French Embassy in Delhi.

A total of 30 FSSAI laboratories, or ones recognized by this authority, and 46 microbiologists received training about ISO methods and a number of scientific and standards-related topics. The training was made possible thanks to the contribution of the bioMérieux team in India and the local partnership established with the FSSAI and its laboratories.

All of these efforts led to the introduction of a new regulation in India at the end of 2019, authorizing the use of alternative methods including several bioMérieux methods, and specifying their conditions of use.

Adopting these alternative methods contributes to the improvement of food safety in India.

### INTERNATIONAL SURVEY ON FOOD SAFETY

For the inaugural **World Food Safety Day** on June 7, 2019, bioMérieux and Mérieux NutriSciences published the results of an international survey about consumers' perceptions and behaviors on food safety. The survey, covering China, France, India and the United States, revealed that this topic is a widely-shared concern and highlighted the differences from one country to another in consumers' perceptions and expectations when it comes to food safety.





# CLOSE TO OUR CUSTOMERS WITH A RANGE OF SERVICES

As part of our approach to contribute to improving patient care and protecting consumer health, bioMérieux offers customers a specific and evolving portfolio of services.

These services help ensure the optimal integration of instruments into laboratory workflows while maintaining the conditions of use over the long term, respecting quality regulations and supporting skills development through training and medical education initiatives.

Thanks to our international footprint and close proximity to our customers, bioMérieux provides a range of systems to optimize their operational performance – for example, to improve the management of their reagent inventory.

**CUSTOMER SERVICE ACTIVITY IN 2019:**  
**6% growth**  
including maintenance, service contracts and workflow audits.

**94,5%**  
**of customers satisfied\***

\* Based on the results of a customer satisfaction survey conducted in 38 countries among 6,000 customers.

## A GLOBAL, SCALABLE SERVICE OFFERING

Everyday 1,500 employees are on the ground, working closely with customers and providing tailor-made services to ensure continuous improvement of the customer experience. Our extensive service offering starts with pre-sales technical discussions and continues through each step of instrument installation, training sessions, qualification processes and long-term follow-up to answer technical questions.

In the field of industrial applications, for example, bioMérieux develops partnerships with strategic and global customers, major players in the agri-food and pharmaceutical industries worldwide. This results in co-design activities for the development of new solutions, personalized worldwide technical support for these customers, and a service offering adapted to their specific needs and environment (regulatory, productivity, etc.).

In 2018, bioMérieux strengthened customer relations locally and globally with the creation of teams of experts in charge of training and coaching for employees in different countries. They take part in project management with the aim of ensuring the same quality of service worldwide, starting with the design phase of our solutions.

In 2019, we went one step further with the roll-out of an offering adapted to all markets thanks to a scalable offer designed to address different types of customer needs.

## REMOTE SYSTEMS MANAGEMENT

We continue to deploy our program to ensure the connectivity of bioMérieux remote systems using the VILINK® solution. Our aim is to improve the ability to interact remotely and thereby reduce intervention times, in particular for software updates, system calibration and preventive maintenance.

## → bioMérieux wins 5 AACC awards

In August 2019, bioMérieux received 5 IMV Clinical ServiceTrak™ awards at the annual meeting of the American Association for Clinical Chemistry (AACC) held in Anaheim, California (USA). The Company was recognized in the fields of identification & antibiotic susceptibility testing (best customer service and customer satisfaction) and blood culture (best service, customer satisfaction and system performance).

## DELIVERY SERVICE RATE REACHES RECORD HIGH IN 2019

At the interface between production and our customers, the bioMérieux Supply Chain is responsible for making sure that products are available and orders are delivered on time worldwide. It relies on a team of more than 400 people and on network made up of international logistics platforms and 25 warehouses in several countries. The main objective of Supply Chain teams is to ensure the availability, quality and on-time delivery of reagents, instruments and spare parts to our customers.

**96,7% of orders fulfilled**  
shipped and delivered on time.

•

This performance, up by 2 points from the previous year, is the fruit of the combined efforts of all bioMérieux departments that contribute daily to improving management of inventories and deliveries

In 2018, a system to track orders in real time was rolled out for our customers worldwide. In 2019, our close collaboration with some customers expanded to include sharing supply management tasks. In this case, the bioMérieux Supply Chain teams are responsible for monitoring and managing customer inventories, making suggestions about products and quantities to order to avoid any risk of rupture.



## LAUNCH OF THE CUSTOMER PORTAL

A personalized customer portal was introduced in the fourth quarter of 2019 in India and Singapore. The pilot portal, in English, is being tested by 150 customers. It provides a number of services – for example, reporting and managing incidents with technical support teams; requesting a call-back; keeping records of appointments; creating and tracking orders; archiving invoices and even accessing bioMérieux product technical documents. The roll-out of this portal will continue in 2020 with the addition of new functionalities that further improve our service offering and value for customers.



# A TRADITION OF OPEN INNOVATION

Innovation is one of the pillars of bioMérieux's strategy, rooted in our entrepreneurial tradition.

For over 55 years, we have innovated to drive progress in pathogen detection and identification for the health of patients and consumers. Our approach to innovation is based on combining internal innovation programs and multidisciplinary, international, public and private collaborations with academic research institutions, the medical and scientific community, and cutting-edge biotech companies. Lastly, it includes strategic, pivotal acquisitions that harness new technologies to enhance our portfolio.

**FRANÇOIS LACOSTE**

EXECUTIVE VICE PRESIDENT  
R&D • bioMérieux

**“Innovation for bioMérieux is to provide laboratories with precise and rapid results, wherever in the world, to improve the health of patients and ensure the safety of consumers.”**

## TRUE TO OUR PIONEERING SPIRIT, BIOMÉRIEUX STRIVES TO FULFILL TWO OBJECTIVES:

- increase the medical value of clinical diagnostic tests and develop microbiological control solutions to address the needs of industry in an increasingly regulated sector. Our R&D efforts aim to deliver results even faster, to develop tools for detecting new pathogens, tests to provide information with a high clinical value, and biomarkers for increasingly personalized treatments;
- improve laboratory workflows and optimize their overall operational performance.

### → Innovation Award

In October 2019, bioMérieux was awarded the French-American Chamber of Commerce Innovation Prize. This prize recognizes the efforts undertaken by the Company in the fight against antimicrobial resistance and the positive impact for the economy and the lives of patients. It also rewards our commitment to detect microorganisms in agri-food, pharmaceutical and cosmetic products.

1,800 employees working at 18 R&D centers worldwide

Numerous collaborative agreements in countries focused on worldwide scientific and medical innovation

3 joint research laboratories

Around 30 patent applications filed each year

554 patent families in the portfolio

82 scientific publications in 2019

## CLINICAL INNOVATION

### JOINT RESEARCH LABORATORIES

#### IN FRANCE



Since 2002, bioMérieux and the **Lyon Civil Hospitals (HCL)** have joined forces in two joint research laboratories within the Lyon-Sud and Edouard Herriot Hospitals. These two laboratories will be housed in a single

location in the coming years. In 2019, a joint roadmap for both laboratories was established, with a focus on three fields of research:

- the diagnosis of severe bacterial infections among young children admitted to the Emergency Room or hospitalized in the neonatal ward within the scope of the **ANTOINE** (biomarkers to differentiate bacterial from viral infections) research program. In late 2019, the inclusion of a cohort of nearly 1,000 children under the age of three hospitalized at the HCL and other hospitals in France was finalized;
- the study of organ failure and kidney failure in particular, with a study of the **NEPHROCHECK®** test for the early risk assessment of acute kidney injuries among patients with multiple injuries, presenting a profile similar to that of patients with sepsis;
- the validation of innovative tests for the characterization of the immune status of patients in intensive care. As part of the **REALISM** (REAnimation Low Immune Status Markers) program, conducted jointly with **BIOASTER** and partners in the pharmaceutical industry between 2016 and 2019, promising biomarkers to improve the care of patients with a high risk of sepsis were identified. The markers will be validated through a large multicentric prospective European study known as **IMPACCT** (IMmune Profiling of ICU PATients to address Chronic Critical illness and ensure healThy ageing), with the support of the EIT Health\* network.

\* An independent body of the European Union that acts as an innovation catalyst in the health field.



## IN CHINA

In early 2019, a new joint research laboratory was created with the **Shanghai Children's Medical Center (SCMC)** as part of a three-year collaboration agreement. Our alliance with one of the most innovative pediatric hospitals in the world opens up prospects for collaboration in many different areas. Our work together began with a clinical study of the **NEPHROCHECK®** test for the early risk assessment of acute kidney injuries in young children following cardiac surgery. In the future, the joint laboratory will expand its activities to focus on the same fields as the Lyon-based laboratories in France.

Given the success of this type of collaboration, bioMérieux's ambition is to strengthen the links among our different joint research laboratories to create a network spanning several continents.

## RESEARCH PROJECTS AND PARTNERSHIPS

### IN BRAZIL

Based on the ANTOINE research program model in partnership with the HCL, the **ANTONIO** program with the **Infants Institute** of São Paulo focuses on the validation of biomarkers among immunocompromized and immunosuppressed children with febrile illness for the diagnosis of severe bacterial infections. More than 200 patients were enrolled in 2019. The aim of this project is to validate biomarkers that will guide the prescription of antibiotics.



### WITH BIOASTER, THE FRENCH TECHNOLOGY INNOVATION INSTITUTE IN MICROBIOLOGY



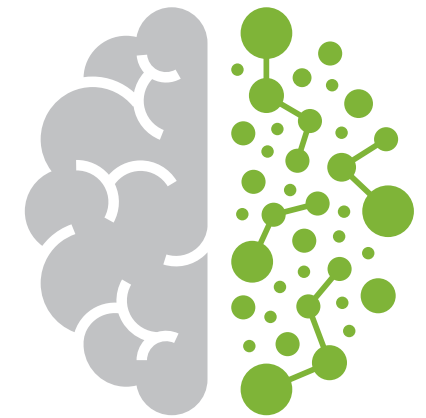
- In late 2018, the **DIREX** research project on rapid microbiology was launched to categorize bacteria using automated readers, an important step for the identification of pathogens.
- The **ISIT-TB** project, conducted with BIOASTER since 2015, reached completion in 2019. It identified biomarkers for the diagnosis of tuberculosis and the prognosis of patients who are likely to develop active TB. Building on these results, bioMérieux will carry out a field validation study in 2020.
- The **baCTseq** project was launched in late 2019 for 3 years. It aims to develop a solution to identify and determine the resistance profile of bacteria in the context of sepsis, directly from blood samples. The project is based on using genome sequencing to diagnose sepsis, from the sample through to results interpretation.
- The metagenomics project **IROISE** targeting hematology-oncology patients ended in 2019. Based on the genome sequencing of blood-borne viruses, this project led to the development of highly innovative know-how between BIOASTER and bioMérieux, which is amongst the world's best teams for virome\* analysis.

\* The collection of all the genomes of a virus population, found in the same body or the same environment.

## PUBLIC/PRIVATE COLLABORATIONS WITHIN THE SCOPE OF CALLS FOR TENDER IN THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAM

bioMérieux is the only partner from industry in the following consortia, designed to accelerate the clinical validation of new biomarkers and enlarge the scope of studies to develop prototypes for use on the **BIOFIRE®** **FILMARRAY®** and **VIDAS®** platforms.

- The **IMPACCT** project involves several partners. Coordinated by bioMérieux in close collaboration with Imperial College London and the Lyon Civil Hospitals for a period of 3 years, it has received €2.8 million in funding from the European Union out of a total budget of €3.9 million. IMPACCT's main objective is to validate the clinical performance of a panel of immune biomarkers in a study involving 800 patients with sepsis.
- The **DIAMONDS** (Diagnosis and Management of Febrile Illness using RNA Personalised Molecular Signature Diagnosis) project began on January 1, 2020. It will be fully funded by the European Union for up to €22.5 million over a period of 5 years. The primary aim of this project is to develop a rapid test to distinguish viral from bacterial infections using a personalized genomic signature in cases of severe infection, especially in pediatric patients. The project, which is being coordinated by the Imperial College London, brings together 28 partners and 13 countries. DIAMONDS is the continuation of **PERFORM**, an ongoing European project, also funded through the Horizon 2020 program, in which bioMérieux is the only partner from industry (see page 44).
- **ImmunoSep**, launched on January 1, 2020, will be fully financed by the European Union for around €10 million in funding over the next four years. Coordinated by Radboud University Nijmegen Medical Center (the Netherlands), it will be the first large clinical study to demonstrate the efficacy of immunotherapy for the management of sepsis. Within the scope of this project, a European clinical network will be set up to allow the validation of future treatments and diagnostic tools. ImmunoSep will provide the first opportunity for bioMérieux to validate the biomarkers and tools developed through the **REALISM** project.



### BRAINI



bioMérieux is the industry partner in the **BRAINI** (Blood biomarkers to improve management of mild traumatic brain injury) project, which was launched in 2019 with the support of EIT Health. This project assesses the performance of an automated blood test on the **VIDAS®** platform that measures two brain-specific proteins known to be elevated in patients who have intracranial lesions. It also evaluates the prognostic value of the two brain biomarkers to detect patients at risk for deterioration of their neurological condition.

This clinical study aims to register the diagnostic test in Europe and to produce data to prepare for its inclusion in future guidelines issued by professional societies.

Mild traumatic brain injuries, a common cause of admission to hospital emergency departments, are difficult to diagnose. Physicians need objective tools to determine whether patients require a CT brain scan. By reducing the number of unnecessary CT scans, this test will limit exposure to ionizing radiation for patients with mild brain injuries and will reduce the costs associated with managing such injuries for health systems.



## COOPERATION AGREEMENTS

### WITH ENTASIS THERAPEUTICS

According to the terms of an agreement between bioMérieux and Entasis Therapeutics, this American biopharmaceutical company will make use of the BIOFIRE® FILMARRAY® systems and the Pneumonia and Pneumonia plus BIOFIRE® FILMARRAY® Panels for a phase 3 global clinical trial. The trial aims to identify patients with pneumonia and septicemia caused by carbapenem-resistant *Acinetobacter baumannii* who are able to be treated by the antibiotic ETX2514SUL. *Acinetobacter baumannii* is a Gram-negative bacterium that causes serious infections. It is included in the WHO global list of antibiotic-resistant bacteria because of its multi-drug resistance, which represents a major threat in hospitals, nursing homes and among patients whose care involves the use of devices such as respirators and blood catheters.

### WITH THE JACKSON LABORATORY

The collaborative project between bioMérieux and the Jackson Laboratory, a microbiology group directed by George Weinstock, Ph.D. (Hartford, CT, United States), was completed in late 2019. It focused on the value of genome sequencing for research into the mechanisms of antimicrobial resistance. This work led to the discovery and publication<sup>17</sup> of a new mechanism of resistance to beta-lactamases. The research focused on modifications in gastro-intestinal bacterial flora before, during and after treatment with antibiotics. Several scientific publications are in preparation based on the project findings.

## EXPANDING OUR PORTFOLIO OF IMMUNOASSAY SOLUTIONS

bioMérieux increased its shareholding in Hybiome (China) to 67%. This company which specializes in automated immunoassay tests, is developing two automated, mid-throughput immunoassay systems, complementary to the VIDAS® product range.

### DEVELOPMENT OF 3 TESTS ON THE VIDAS® PLATFORM:

- VIDAS® NEPHROCHECK® for the diagnosis of acute kidney injury;
- VIDAS® TB-IGRA for the diagnosis of latent tuberculosis;
- VIDAS® DENGUE for the diagnosis of this arboviral disease transmitted by mosquito bites.



## INNOVATION AND ACQUISITION IN INDUSTRIAL MICROBIOLOGICAL CONTROL

### IN THE PHARMA SECTOR

bioMérieux is in the final phase of development of the very first all-in-one molecular test for mycoplasma detection, BIOFIRE® MYCOPLASMA, whose performances were already presented in 2019 in the United States and Europe. Mycoplasma are one of the most formidable microbial contaminants in the manufacture of biopharmaceutical products.

Thanks to rapid, simple detection, BIOFIRE® MYCOPLASMA improves the safety and productivity of manufacturing processes for biotherapeutics and new cellular and gene therapies, which are currently among the most vibrant sectors in the pharmaceutical industry. With just 2 minutes of hands-on time for results in less than 1 hour, this test requires no special expertise or specialized laboratory. It allows controls to be performed at any stage in the process, and facilitates the rapid, reliable availability of pharmaceutical products. Such a development is particularly useful for patients requiring cellular therapy.

### IN THE AGRI-FOOD SECTOR

In 2019, bioMérieux acquired Invisible Sentinel (United States), a company specialized in the development and production of innovative molecular diagnostic solutions for the quality control of beverages.







**#WeArebioMérieux**

# CORPORATE RESPONSIBILITY

True to our public health mission and driven by the power of diagnostics, bioMérieux is committed to protecting life. We are focused on improving the quality of life of the many communities we interact with, furthering the development of our employees, providing access to care for the most vulnerable people, countering new infectious threats worldwide, and sustaining the efficacy of healthcare systems for future generations.





# COMMITTED TO BEING A SOCIALLY RESPONSIBLE COMPANY, WITH A HUMANISTIC VISION

As a pioneer in the field of *in vitro* diagnostics, bioMérieux has been committed to fighting infectious diseases worldwide for more than 55 years. Our company has always adopted a socially responsible, humanist approach to business development in line with the values upheld by the Mérieux family. We take a long-term view when it comes to our employees as well as to outside stakeholders and the community in general. Our public health mission means we have a particular responsibility to today's society and future generations.

Through its activities, bioMérieux supports the advancement of the United Nations Sustainable Development Goals (SDG), which aim to provide a blueprint to build a better and more sustainable future for all.

Each year since 2003, we have renewed our support for the United Nations Global Compact. bioMérieux has committed to respecting the 10 principles set out in the Global Compact, based on four pillars: respect for human rights, labor conditions, the environment and the fight against corruption.

## A PRINCIPLED GOVERNANCE MODEL

bioMérieux is a family company, founded in 1963 by Alain Mérieux, and directed today by Alexandre Mérieux, CEO. The Company is 59% owned by Institut Mérieux. Since 2005, Fondation Christophe et Rodolphe Mérieux, under the aegis of Institut de France, has been a one-third shareholder in Institut Mérieux. The Foundation indirectly collects the only dividends that Institut Mérieux distributes in order to finance its activities in the field. Fondation Christophe et Rodolphe Mérieux works in the field to fight against infectious diseases in disadvantaged countries.

## A STRONG ORGANIZATION TO LEAD OUR CORPORATE SOCIAL RESPONSIBILITY (CSR) APPROACH

In 2018, bioMérieux created a quarterly CSR Committee composed of several members of the Executive Committee. Its role is to oversee all CSR-related issues and to anticipate corresponding opportunities, challenges and risks. This committee works with the Executive Committee to issue recommendations on our CSR achievements and to assess the Company's progress.

In 2019, to bolster our initiatives and the transparency of our commitment, bioMérieux appointed a CSR Director in charge of providing leadership and focus for our CSR performance.

A materiality analysis is underway to determine CSR priorities and will provide the foundations to draw up a new roadmap in 2020.

## RATING AGENCIES RECOGNIZE OUR CSR POLICY

bioMérieux's commitment to Corporate Social Responsibility has been recognized by extra-financial rating agencies that evaluate the Company's social, societal and environmental performance and have included bioMérieux in their Socially Responsible Investment (SRI) indices.

### SCORES AND LABELS EARNED

Label	Date	bioMérieux's performance
 Global Challenges Index	February 2020	Inclusion in the Global Challenges Index, which selects pioneering companies that actively assume their responsibility and make a substantial contribution to meeting key global challenges. This index comprises 50 companies fulfilling these criteria, chosen from among 4,200 firms.
 CDP	January 2020	Score D
 FTSE4Good	January 2020	Inclusion in the FTSE4Good Index, reserved for companies demonstrating strong management of environmental, social and governance risks.
 Gala	January 2020	Score 72 (health sector average: 46)
 ecovadis	November 2019	Score 72/100 (up from previous year). Ranked in the top 1% of companies with the best performance.
 GLOBAL100	November 2019	Listed 26 <sup>th</sup> on the Corporate Knights Global 100 Index (companies earning more than US\$1 billion in revenues).
 ISS ESG	October 2019	Score C+ Ranked in the top decile of the Health Care Equipment & Supplies sector.
 Euronext Vigeoiris	September 2019	1 <sup>st</sup> place in the Health Care Equipment & Services sector. Inclusion in the Ethibel Index for the European companies with the best CSR performance.





## COMMITTED TO PEOPLE

As a public health stakeholder, bioMérieux places the patient and, more broadly, public health at the heart of its business activity. As a Company, we are aware of our social responsibility and, in accordance with Article 25 of the Universal Declaration of Human Rights and Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), we are committed to providing global health solutions that improve the management of infectious diseases. Our commitments are focused on the fight against antimicrobial resistance, which represents a serious threat to public health globally, and on antibiotic stewardship because the overuse

and misuse of these treatments has severe consequences for health and the environment. bioMérieux also supports the action of Mérieux Foundation and Fondation Christophe et Rodolphe Mérieux in the fight against infectious diseases. The Company and the workforce maintain strong ties with local stakeholders and communities wherever they are present.

Our commitment to people is upheld first and foremost by bioMérieux employees. Through their daily work, they contribute to improving health worldwide.



## PRESERVING THE EFFICACY OF ANTIBIOTICS, A MAJOR PUBLIC HEALTH CHALLENGE

To combat bacterial resistance to antibiotics, there are several areas for action: improving hygiene and infection control, developing new antibiotics, and bolstering vaccination, without forgetting the vital role of educating healthcare professionals, patients and the public about the importance of the appropriate use of antibiotics. In this fight, diagnostic tests play an essential part, contributing to improved patient care.

As a global leader in infectious disease diagnostics, bioMérieux is a fervent defender of antibiotic stewardship. True to our public health mission, we place the development of diagnostic tests and education at the heart of our priorities, in order to preserve the efficacy of antibiotic treatments for the health of patients and future generations.

### CONTRIBUTING TO INTERNATIONAL STUDIES TO DEMONSTRATE THE IMPACT OF DIAGNOSTIC TESTS IN THE FIGHT AGAINST ANTIMICROBIAL RESISTANCE (AMR)

#### GLOBAL-PPS

In 2019, bioMérieux renewed its support for the coordinating team of the Global Point Prevalence Survey (GLOBAL-PPS)\* Professor Herman Goossens and Dr. Ann Versporten of the University of Antwerp (Belgium). This study of unprecedented international scope, which began in 2015, provides key information about the use of antibiotics and antimicrobial resistance in hospitals worldwide. The GLOBAL-PPS makes it possible to measure the impact of the implementation of antimicrobial stewardship programs designed to reinforce appropriate antibiotic use in hospitals.

As the sole private sponsor of the GLOBAL-PPS since it was launched, bioMérieux provides financial support and contributes to promoting and developing the study on the ground locally. In 2019 once again, our teams in Africa, Asia, Canada and Mexico helped to significantly improve medical communications with hospitals, encouraging many of them to take part in this survey. A supplementary module on healthcare-associated infections (HAIs) was added in September 2019. It has been used by around 100 hospitals in Belgium, India and the Philippines to implement action plans in order to reduce HAIs and support the appropriate use of antibiotics.

Ten scientific articles about the GLOBAL-PPS have been published since it was launched. The most recent one demonstrates the value of the GLOBAL-PPS to support the ECDC-PPS (European Centre for Disease Prevention and Control Point Prevalence Survey), a similar survey conducted every four years at the European level<sup>(18)</sup>.

In 2019, since the launch of the GLOBAL-PPS:

Over 80 participating countries;

More than 800 participating hospitals on all continents;

Data collected from over 300,000 hospitalized patients

\* bioMérieux is the exclusive private sponsor of the Global Point Prevalence Survey. The Company funds the survey but plays no role in the study design, selection, analysis and interpretation of data nor in drafting the report. The data, which are strictly confidential, are stored anonymously at the Coordination Center of the University of Antwerp.



## CARE, A MULTI-SPONSOR PROGRAM IN CHINA

The China Against drug REsistance program, initiated in 2013 by the Mérieux Foundation, receives support from bioMérieux, which oversees its implementation. This program, which is based in particular on the GLOBAL-PPS, provides a standardized tool (quality indicators) to help hospitals improve their antimicrobial stewardship programs and control healthcare-associated infections in order to limit the spread of antimicrobial resistance in China. In addition to hygiene measures, the CARE program will also develop collaborative projects based on interventions such as surgical prophylaxis, the systematic review of antibiotic prescriptions after 48 hours based on the patient's condition and the results of microbiology tests, and the use of hydroalcoholic solutions. In 2016, the first point prevalence survey was conducted in four clinical departments of the First Affiliated Hospital of Zhejiang University in Zhejiang Province. In 2019, the CARE program was expanded to 9 hospitals in 8 Chinese provinces.

## COMBACTE, A EUROPEAN NETWORK TO FIGHT ANTIBIOTIC RESISTANCE

Within the framework of projects financed by the European Commission and led by IMI (Innovative Medicines Initiative), bioMérieux is a partner of the COMBACTE-CDI (COMbatting BACTERial resistance in Europe) project, dedicated to combatting *Clostridioides difficile* infections (CDI), which are among the most prevalent healthcare-associated infections. Launched in November 2017 for a period of 3 years, the project aims to better understand the epidemiology and the clinical impact of CDI in order to improve patient outcomes.

## PERFORM, A EUROPEAN PROJECT FOR THE RAPID IDENTIFICATION OF BACTERIAL INFECTIONS IN CHILDREN

The European project PERFORM\* (Personalised Risk assessment in febrile illness to Optimise Real-life Management across the European Union) aims to improve the identification of bacterial infections and to reduce inappropriate use of antibiotics, which impacts antibiotic resistance, by developing new tests to differentiate between viral and bacterial infections. The PERFORM consortium brings together 18 international organizations from 10 countries. Of the 10, bioMérieux is the only partner from industry.

In 2020, the initiative will continue through the DIAMONDS (Diagnosis and Management of Febrile Illness using RNA Personalised Molecular Signature Diagnosis) project (see page 35).

\* The PERFORM grant is one of the largest awarded by the European Commission's Horizon 2020 health program (€18 million). Over a five-year period (2016-2021), it provides funding for the development of novel diagnostic tests to improve care for children presenting with high fever on arrival at a hospital or a health clinic.

## VALUE-DX, A EUROPEAN CONSORTIUM TO DEMONSTRATE THE VALUE OF DIAGNOSTIC TESTS

Launched in April 2019, with a budget of €14 million over four years, the VALUE-Dx project\*\* is coordinated by the University of Antwerp, bioMérieux and the Wellcome Trust. Through its co-leadership of this innovative project, bioMérieux is accelerating pan-European efforts to assess and quantify the medical, economic and public health value of diagnostics for optimizing the use of antibiotics and combatting AMR. Antibiotics are often over-used and unnecessarily prescribed in community care settings. The goal is to demonstrate, in the specific case of community-acquired acute respiratory tract infections (CA-ARTI), the value of diagnostics as a fundamental tool to better target antibiotic prescribing. The project's approach is to facilitate and accelerate the rigorous assessment and implementation of innovative diagnostic technologies in healthcare settings by establishing the necessary infrastructure, methods, processes, and approaches. The VALUE-Dx project also aims to evaluate and overcome major hurdles to adopting diagnostic tests for acute respiratory tract infections, in particular training in the clinical field, psycho-social barriers, organizational challenges, as well as regulatory and reimbursement issues.

\*\* This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking under grant agreement No 820755. IMI 2 receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA and bioMérieux SA, Janssen Pharmaceutica NV, Accelerate Diagnostics S.L., Abbott Laboratories, Bio-Rad Laboratories, BD Switzerland Sarl, and The Wellcome Trust Limited.

## → Progress on the CDC's AMR Challenge

In September 2018, bioMérieux joined the AMR (Antimicrobial Resistance) Challenge, an initiative organized by the US Centers for Disease Control and Prevention (CDC) to step up the fight against antimicrobial resistance through three commitments. The Company made significant progress on all three in 2019:

- Innovative diagnostics: around 75% of our R&D budget is dedicated to antibiotic resistance;
- International studies (such as GLOBAL-PPS);
- Public-private partnerships (such as VALUE-Dx).

## TOOLS FOR TRAINING AND EDUCATION



### www.amr.biomerieux.com

In 2019, bioMérieux's educational website on antimicrobial resistance was revamped with new content.

This site, accessible to healthcare professionals and the public, is designed to increase awareness of the major health challenges created by antimicrobial resistance, to educate on the appropriate use of antibiotics, and to demonstrate the essential role of diagnostic testing to curtail this public health threat worldwide.

bioMérieux is actively involved in programs to raise awareness among healthcare professionals and the public on the importance of antibiotic stewardship, with several initiatives:

- Organizing top-level scientific encounters all over the world;
- Publishing a series of education booklets for laboratories and clinicians, accessible in the Education section on: [www.biomerieux.com](http://www.biomerieux.com)
- Training on the role of diagnostic testing in antimicrobial stewardship policies in hospitals;
- Providing support for the World Antibiotic Awareness Week, <https://waaw2019.biomerieux.com/fr> ;
- Building employee awareness through an annual in-house communication campaign.

## → Inter-university degree in sub-Saharan Africa

bioMérieux supported the 3<sup>rd</sup> edition of the inter-university degree in "Antibiologie & Antibiothérapie" in sub-Saharan Africa organized at the University of Nazi Boni in Burkina Faso. This degree, developed by the Higher Institute of Health Sciences (ISSS) in Burkina Faso, aims to promote the development of scientific capacity in the antimicrobial resistance field in Africa by training healthcare professionals about the appropriate use of antibiotics. With each new group of graduates, the training program helps create a network of AMR specialists in French-speaking Africa.

\* Antibiotics and Antibiotic Therapy.

## BIOMÉRIEUX ALONGSIDE INTERNATIONAL ORGANIZATIONS

bioMérieux is recognized for its expertise in the field of diagnostic testing for infectious diseases, and the Company is actively involved with the following international bodies that are working to combat antimicrobial resistance:

- Signatory to the 2017 Declaration on Antimicrobial Resistance at the World Economic Forum in Davos (Switzerland);
- Participant in the 2017 AMR Industry Alliance and representative of the diagnostics industry on its Board of Directors. As an active member, bioMérieux took part in 2019 in the survey on which the Alliance based its 2020 Report;
- Voting member of the American Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB);
- Member of the working groups of AdvaMed (Advanced Medical Technology Association) and MedTechEurope (European trade association for the medical technology industry);
- Leader of the French "Antibiorésistance" project of the Industrial and Governmental Health Strategy Committee.

## → Cooperation agreement with CIDRAP

In January 2019, bioMérieux signed a cooperation agreement with CIDRAP (Center for Infectious Disease Research and Policy at the University of Minnesota – United States), undertaking to support CIDRAP's actions in favor of the responsible use of antibiotics. This agreement resulted in the sponsorship of two CIDRAP webinars about the value of diagnostics in antimicrobial stewardship, the first in Europe and the United States and the second for the Asia-Pacific region. bioMérieux also participated in the redesign of the CIDRAP website to promote content related to antimicrobial resistance.





## ACTING TO PREVENT EPIDEMICS IN LOW- AND MIDDLE-INCOME COUNTRIES



### JOINING FORCES TO COMBAT PLAGUE OUTBREAKS IN MADAGASCAR

We are continuing our collaboration with the Institut Pasteur of Madagascar to combat the plague through a study launched in 2018 to improve the diagnosis of this endemic disease. The clinical study, which is funded by bioMérieux in collaboration with the Institut Mérieux, focuses on diagnosing the plague using the BIOFIRE® FILMARRAY® Global Fever Panel RUO (Research Use Only) developed by BioFire Defense. Outbreaks of the plague occur annually in Madagascar, which is the country most affected by this infectious disease, according to the WHO.

The Company also supported the 13<sup>th</sup> International *Yersinia* Symposium from September 16 to 19 in Madagascar, the first event organized in Africa on the *Yersinia* genus. The *Yersinia pestis* bacterium causes the plague, a zoonotic disease transmitted by fleas. The plague, which remains endemic in Asia, America and Africa, has caused three pandemics and millions of deaths.

### CONTRIBUTING TO BETTER INFECTIOUS DISEASE DIAGNOSTICS IN HAITI AND CAMBODIA

bioMérieux continues to support infectious disease diagnostics in resource-limited countries by making donations of reagents.

In Haiti, the Company donated BIOFIRE® FILMARRAY® Gastro-Intestinal Panels to the Gheskio Centers to improve the diagnosis of gastro-intestinal infections.

In Cambodia, BIOFIRE® FILMARRAY® Meningitis-Encephalitis and Respiratory Panels were donated to the Angkor Hospital for Children to improve diagnoses among children admitted to the Emergency Room with suspected neuro-meningitis or respiratory infections.

### DOING OUR PART TO IMPROVE DIAGNOSTIC TESTING OF PEDIATRIC FEVERS

bioMérieux provides support for a research program on pediatric fevers in rural areas of six countries in Southeast Asia by donating BIOFIRE® FILMARRAY® systems and Respiratory Panels. This research program is being developed by the Mahidol Oxford Tropical Medicine Research Unit (MORU, Faculty of Tropical Medicine, Bangkok, Thailand). The contract was signed in December 2019 and patient enrollment is scheduled for 2020.

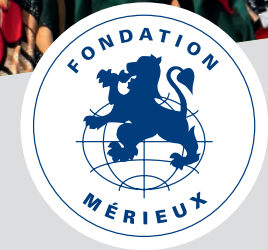


## IMPROVING ACCESS TO DIAGNOSTICS ALONGSIDE THE FOUNDATIONS



As part of its sponsorship activities, bioMérieux supports initiatives by the Mérieux Foundation, which has public interest status, and the Fondation Christophe et Rodolphe Mérieux, under the aegis of the Institut de France. These two independent family foundations work together closely to combat infectious diseases and to sustainably improve the quality of life and health of vulnerable populations, in particular mothers and children.

In 2019, bioMérieux allocated €2.409 million to these family foundations to support a number of projects.



FONDATION CHRISTOPHE & RODOLPHE MÉRIEUX  
UNDER AEGIS OF THE INSTITUT DE FRANCE



## STRENGTHENING RESEARCH

Improving applied research capacity in developing countries is one of the strategic priorities of the Mérieux Foundation. This commitment takes many forms: training local research teams, setting up collaborative research programs, and creating cutting-edge laboratories, the Rodolphe Mérieux Laboratories. These centers of excellence are transferred to local partners to ensure they address local needs on a long-term basis. They contribute to strengthening local research and training capacities while ensuring clinical and biological analyses in the regions where they are located.

- ➔ In 2019, the Rodolphe Mérieux Laboratory of Beirut, a national observatory for pathogenic agents and infectious diseases in Lebanon, was named a national tuberculosis reference laboratory.
- ➔ In Laos, a mobile biosafety (BSL-3) laboratory was installed in 2019 at the Lao Christophe Mérieux Center of Infectiology for diagnostic testing and tuberculosis monitoring. The Lao Christophe Mérieux Center of Infectiology has received ISO 15189 and ISO 15190 accreditation.

## ➔ Actively combatting the Ebola virus in the Democratic Republic of the Congo

bioMérieux supported the actions of the Mérieux Foundation as part of efforts to combat the Ebola virus disease epidemic in the Democratic Republic of the Congo. For this purpose, bioMérieux donated BIOFIRE® FILMARRAY® systems and Global Fever Panel-RUO (Research Use Only) and BioThreat-E (Ebola test). These solutions are used to equip the mobile biosafety laboratories (BSL-2 and BSL-3) shipped to Goma by the Mérieux Foundation. The laboratories were donated to the National Institute for Biomedical Research as part of a partnership with USAID (United States Agency for International Development) to bolster diagnostic capacities in Goma, the country's third largest city. In addition, bioMérieux donated a BIOFIRE® FILMARRAY® system for a mobile laboratory developed by the Praesens Foundation (Belgium) to bring Ebola screening to remote areas.

## ENHANCING ACCESS TO DIAGNOSTICS

bioMérieux donates BIOFIRE® FILMARRAY® systems to the Rodolphe Mérieux Laboratories to improve pathogen surveillance. bioMérieux has already installed two platforms in Lebanon (in Tripoli and Beirut), one in Haiti and one in Madagascar.

In 2018, two BIOFIRE® FILMARRAY® systems were installed in Bangladesh near Rohingya refugee camps to be used during a study conducted by the Mérieux Foundation. The aim of this study is to identify the disease agents responsible for acute respiratory infections during humanitarian crises, and to determine the types of health interventions that are necessary to improve patient care in such settings. These systems will then be dedicated to the Rodolphe Mérieux Laboratory at the Bangladesh Institute of Tropical and Infectious Diseases (BITID) in Chittagong. For this study, bioMérieux also donated a mini VIDAS® system and VIDAS® B.R.A.H.M.S PCT™ tests to measure procalcitonin.



## HELPING MOTHERS AND CHILDREN

The Foundations work alongside local partners in countries where laboratories have been set up, as well as countries affected by humanitarian crises. Health, hygiene, education and the development of socio-economic activities are the fields in which initiatives are organized to improve living conditions and access to care for the most vulnerable populations, in particular mothers and their children.

### IN IRAQ

In 2019, the community medical center for Yazidi women and children was inaugurated in Shekan. The Yazidi minority has been the victim of persecutions, exile and abuse at the hands of the Islamic State. In response to a request from the Yazidi High Council, the construction of this center was initiated by the Mérieux Foundation and its partners, in particular the Auvergne-Rhône-Alpes Region. Due to political and military instability in the region, displaced Yazidi women and children cannot currently return to their homes. Their physical and mental health has been deeply affected, and they cannot imagine the prospect of rebuilding a future. The center is equipped to provide psychological care (individually and with support groups). It has workshops where sesame paste and sesame oil are made, a hair salon, and a children's game and sports area.

### IN LEBANON

A socio-medical center to serve refugee communities was inaugurated in 2019 in the Bekaa Plain. It was built by the Mérieux Foundation alongside its partners: the Fondation Christophe et Rodolphe Mérieux, the Principality of Monaco's Department of International Cooperation, and the NGO Amel Association International. Lebanon is one of the countries with the most Syrian refugees in proportion to its population, especially in the Bekaa plain near the Syrian border, one of the regions of the country with the poorest infrastructure. The refugees, primarily women and children, live here under crisis conditions. This center provides medical care, gynecological, obstetric and pediatric consultations, and information about good hygiene practices and social support.

## bioMérieux supports the Betania Center in Madagascar

In 2019, bioMérieux provided financial support to the Betania Center in Ankasina, a poor neighborhood of Antananarivo, the capital of Madagascar. The Mérieux Foundation is one of the partners of this center, which houses a medical dispensary for pregnant women and young mothers, a school, a cafeteria for children and a vegetable garden. The funds provided by bioMérieux were used to renovate the medical building and to build a sanitary block to help prevent the spread of infectious diseases.

## TRAINING HEALTHCARE PROFESSIONALS

The Mérieux Foundation contributes to implementing training programs designed to meet international, regional and local public health needs and priorities in many different places. In 2019, it organized two training courses at Les Pensières Center for Global Health (Annecy – France), which focused on topics related to the strategic activities of bioMérieux. The Company lent its support, and employees took part in these two courses:

### ➔ 1<sup>st</sup> Antimicrobial Resistance (AMR) Course: A One Health Challenge

This five-day course on AMR, developed in partnership with the University Paris-Diderot, was designed to support the objectives of the WHO's AMR Global Action Plan to combat antimicrobial resistance and strengthen strategic decision-making capacity, especially in low- and middle-income countries.

### ➔ 10<sup>th</sup> anniversary of ACDx

The Advanced Course on Diagnostics is a one-week intensive course developed in partnership with the London School of Hygiene & Tropical Medicine (LSHTM). ACDx advocates for the role and value of diagnostics in global health. It focuses on access to quality diagnostics, in particular with respect to antimicrobial resistance and epidemic preparedness, while highlighting social and technical innovation. Attendees include scientists and decision makers who implement strategies on the use of diagnostics for infectious disease control. Among the outstanding features of this course are its interdisciplinary approach and international outreach, which facilitate exchange and collaboration to allow access to diagnostics for all.

## 2019 CHRISTOPHE MÉRIEUX PRIZE AWARDED TO DR. MARYLINE BONNET



Dr. Maryline Bonnet received the Christophe Mérieux Prize for her research on tuberculosis in developing countries. Dr. Bonnet, an epidemiologist and pulmonologist, is research director at the TransVIHMI Unit of IRD, the French National Research Institute for Sustainable Development. Since 2014 she has been working in Mbarara, Uganda, where she conducts several research projects on tuberculosis and HIV.





## TIES WITH LOCAL STAKEHOLDERS



### WITH ASSOCIATIONS



As a loyal supporter since 2007 of **Sport dans la Ville**, which uses sport to help young people from disadvantaged neighborhoods find their place in society and the professional world, bioMérieux sponsors and hosts young people to allow them to gain work experience. In 2019, the association inaugurated a digital space – to which bioMérieux contributed – on the association's Lyon campus, with the aim of improving digital know-how among young people. The Company also renewed its support for the Apprenti'Bus program, which was thus able to acquire a third retrofitted school bus for traveling education initiatives that help youngsters learn written and oral communication skills.



Since 2014, bioMérieux has been a partner of the **Institut Télémaque**, which provides schooling and homework support for youngsters from modest backgrounds, from 7<sup>th</sup> grade through high school graduation. For the 2018-2019 school year, the Company funded in-house tutors who accompanied 20 young people selected by the Institut Télémaque.

### WITH SCHOOLS AND ACADEMIC INSTITUTIONS



In 2015, bioMérieux established a partnership with **EMLYON Business School** in France. Thanks to this alliance, it was one of the first companies to join the Global Business Network, which brings together major international businesses that are partners to the school. We have become the partner with expertise in the life sciences within the I.D.E.A. program (Innovation, Design, Entrepreneurship & Arts), a novel learning approach adopted by EMLYON to train future innovative entrepreneurs. bioMérieux also supports the development of research projects conducted by the French Corporate Governance Institute (IFGE). Furthermore, the partnership includes training to help Group employees develop their skills, particularly in connection with the digital transformation in business.



bioMérieux is also a founding member of the **Fondation Université Grenoble Alpes** created in 2014. The aim of this foundation is to support top-notch research projects and promote equal opportunity to accompany the transitions of the 21<sup>st</sup> century. In 2019, the Company renewed its term with the **Fondation Université Grenoble Alpes** for five more years.

Since 2015, bioMérieux has also participated in the "Health 4 Life" Master's Excellence program at the **Université Grenoble Alpes (UGA)** by funding 31 scholarships in five years, providing top students in this specialization the opportunity to continue their studies in an international setting. This Master's degree at the Faculty of Pharmacy of UGA combines multidisciplinary approaches, and is original in that it develops interfaces between the healthcare, computer engineering and mathematics fields. This partnership allows bioMérieux to hire recent graduates of the program.



A partner of the **INSA (National Institute of Applied Sciences) Lyon** Foundation since 2010, bioMérieux renewed its commitment to the foundation from 2020 to 2024. It also strengthened ties with the school by sponsoring the Biosciences Department class of 2022. bioMérieux sits on the Board of Directors of the Foundation and is a member of its Bureau and the Advisory Board of the Department of Biosciences. Each year, the Company hosts interns from the school and hires young **INSA Lyon** graduates to join its teams. It organizes career days and participates in the **INSA Business Forum**.



Since November 2017, bioMérieux has been a member of the **UNITECH Program** alongside **INSA Lyon**. This European excellence exchange program brings together eight European universities – **INSA Lyon (France)**, **Chalmers (Sweden)**, **Trinity College (Dublin, Ireland)**, **RWTH Aachen (Germany)**, **ETH Zurich (Switzerland)**, **Polytechnico de Milan (Italy)**, **Loughborough University (England)**, **UPC Barcelona (Spain)** – and 22 business partners. It allows bioMérieux to take part in selecting the best engineering students and in their training, with a strong focus on leadership skills and new technologies. The Company is able to suggest study projects, offer internships and recruit candidates over the course of their studies.



We also have longstanding partnerships with the Graduate School of **Biology-Biochemistry-Biotechnology (ESTBB)**, one of the schools of the science faculty of the **Catholic University of Lyon**. Nearly 180 bioMérieux employees are **ESTBB** graduates, and each year we host students for internships and work-study programs. Since 2008, the **EMEA (Europe-Middle East-Africa) HR Director** at bioMérieux has been a member of **ESTBB's Excellence Council**, a forum for educational directors to share professional opinions and develop the programs' curriculum in line with the new skills required by businesses. In October 2017, bioMérieux renewed its commitment to the school by signing an agreement formalizing its partnership for the next 3 years.

**IN THE UNITED STATES**, bioMérieux maintains close ties with institutes of higher education, which facilitates the recruitment of recent graduates. In **Durham, North Carolina**, we have partnerships with local colleges and several leading universities including the **University of North Carolina, North Carolina State University, and Duke University**. The Company sponsors the **Biomanufacturing Training and Education Center (BTEC)** and contributes to awarding scholarships to two students annually.

At our **St. Louis** site, bioMérieux employs work-study interns from **Washington University** and other universities in the state of **Missouri**. The Company awards scholarships to students selected from two universities.

### OUR COMMITMENT TO LOCAL COMMUNITIES



In early 2019, **Alain Mérieux**, President of **Institut Mérieux**, officially launched **L'Entreprise des Possibles**, a highly innovative social initiative that calls on businesses in the **Lyon area** and their employees to help homeless and vulnerable individuals. bioMérieux responded by becoming one of the founding companies in this group, and the Company encouraged employees who wished to become involved to do so in one of two ways: either by donating paid leave or by volunteering. In response to the first option, bioMérieux employees gave overwhelmingly, donating 214 days of paid leave. This was combined with 100% matching contributions from the Company to reach a total of €100,000 donated to the endowment fund of **L'Entreprise des Possibles** to help people in need. In early March 2020, a mobile village was inaugurated in **Lyon** to welcome the public until planned housing has been completed.





➔ For three years, bioMérieux has supported and participated in the **Bike&Run France** race, which is held each year on a university campus in Lyon. Participants run in pairs, comprised of one student from a local university or Grande Ecole and one representative of a business in the Auvergne-Rhône-Alpes region. The race provides an opportunity for local businesses to share their values with future graduates through a sports event, and an alternative way for them to meet young talent.

➔ In the United States, our Durham and Lombard sites organized a **Manufacturing Day** in October 2019. This initiative, which is overseen by the National Association of Manufacturers, aims to promote manufacturing jobs, in particular by organizing an open house to attract young people. The two bioMérieux sites welcomed nearly 150 high school and middle school students, university students and members of the local community.



Employees of our subsidiaries are active in projects to support local communities. Examples of initiatives in 2019:

- Fundraising and collecting gifts to help nine local families, in partnership with the volunteer organization of the Hazelwood Police Department in St. Louis (United States);
- Visits to Baby's Home in Shanghai (China), a center for orphans who are waiting to undergo medical treatment or surgery, to spend time with the children;
- Preparing and distributing meals for nearly 200 people in Brussels (Belgium) as part of an initiative called Opération Thermos;
- Support for the Ukukhula Program, which helps young people from underprivileged neighborhoods develop their own business activity as a way to combat unemployment (South Africa);
- Spending a day with children living at the Child Welfare Institute in Turkey;
- Donations to the Hogar Querubines home for children in Buenos Aires (Argentina);
- For World Cleanup Day in September 2019, bioMérieux employees and their families volunteered to take part in local initiatives to clean up litter and waste in 15 countries worldwide.



# COMMITTED TO OUR WORKFORCE

Promoting the professional development and success of our employees is a strategic and societal priority at bioMérieux. In a context of sustained growth, our Company implements a dynamic social policy to support our employees on their career path and leverage their commitment. With 70% of our workforce located in France and the United States, these two countries are the benchmark and the drivers of the socially responsible policy that we seek to apply to all our employees worldwide.

Two systems are in place to meet professional development needs: Mériieux Université, a corporate university created to train the employees of Institut Mériieux, and a regional organization that allows HR teams to address local requirements.





## SUPPORTING THE SUCCESS AND SKILL DEVELOPMENT OF EVERY EMPLOYEE



**ALEXIA DE MONTERNO**

GLOBAL DIRECTOR OF MÉRIEUX UNIVERSITÉ

**“Mérieux Université’s primary role is to prepare employees for the jobs of the future. Our teams work with bioMérieux employees to allow them to develop in a supportive professional environment while also meeting the ever-changing needs of our business. For us, it is essential to pursue our strong commitment to ongoing training, which has always been part of the Group’s DNA.”**

Since it was created in 2014, Mérieux Université has supported the development of the employees of the Institut Mérieux Group. It provides training and ensures the transmission of a strong entrepreneurial culture within the Group, helping to build bridges among its different entities. Mérieux Université teams are active in three regions: EMEA (Europe, Middle East and Africa), the Americas and Asia Pacific, where they provide core training courses.

Our priority is blended learning, which combines complementary remote learning and face-to-face training approaches. In 2020, we will be focusing on improving our e-learning offering.

Training programs target key areas:

- learning new job skills to keep pace with market trends, technologies and digitalization;
- strengthening managerial practices in line with the bioMérieux culture and adopting an inter-cultural approach.

In 2019, Mérieux Université organized:

4,501 days of job training

representing 31,507 hours of training

### EMPLOYEE SKILLS TRAINING

These training programs cover a number of different functions in order to improve employees' skills in line with the changing demands of their jobs and customer needs. Programs are gradually being organized into "academies" to offer a genuine learning trajectory to employees worldwide, including skills acquisition and training to prepare them for the jobs of tomorrow, and to develop their aptitudes as much as their attitudes. Another challenge we face is to provide more and more training courses that allow employees to earn a certificate or a degree, which facilitates their training record and their employability.

#### ■ SALES

We continued to develop inter-regional training programs for sales forces and began setting up an international network of trainers so that our employees can receive training in their local language.

#### ■ SUPPLY CHAIN

In partnership with Mérieux Université and the Rennes School of Business, bioMérieux Supply Chain teams have developed a training program based on six modules for remote and face-to-face training, including one which is open to all Company employees. The "Supply Chain Academy" aims to harmonize knowledge, develop skills and bolster future talent so that the bioMérieux Supply Chain continues to bring us a competitive edge and build customer satisfaction.

#### ■ MARKETING

We continued to roll out "Marketing 4 Impact" for global and local marketing teams. This training program revisits the position and role of marketing, especially the connection with R&D and local marketing.

#### ■ PURCHASING

The "Purchasing Academy" was founded to strengthen two key skills for purchasing employees: complex negotiating skills and capacity to influence. Global deployment of training sessions took place in 2019.

1,940 people received job-related training

894 people received "change management" support

1,685 people received management and leadership training

### Workshops for employee-trainers at bioMérieux

bioMérieux employees may be called upon to be trainers, particularly for skills training. Mérieux Université organizes "MU just for you" workshops to help employees learn teaching skills



■ **INFORMATION SYSTEMS (IS)**

Four pilot training modules were introduced in 2019. Two modules cover general topics to provide standardized information about the basics of IS and digital technologies. Two additional modules aim to improve teams' knowledge while facilitating the connection between infrastructure and job-related applications.

■ **HUMAN RESOURCES AND FINANCE**

These two functions drove the creation of their job training programs, with the first pilot courses planned in 2020.

■ **ETHICS, COMPLIANCE AND CYBERSECURITY**

Training was provided to all employees on the General Data Protection Regulation (GDPR), the rules of ethical conduct applicable across the Group, and information security, empowering each individual to feel responsible and to respect good practices.

■ **ORGANIZATIONAL EFFECTIVENESS**

Mérieux Université works with bioMérieux teams during individual career coaching and team-building exercises in order to enhance the organization's collective performance and help teams develop, transform and improve the way they work together based on a clear understanding of roles and responsibilities.

In 2019, 894 bioMérieux employees received coaching, individually or as part of group.

■ **MANAGEMENT AND LEADERSHIP**

The bioMérieux employee training program is designed to support our Group mindset and leadership model.

■ **NEW LEADER INDUCTION**

This training program for newly recruited managers fosters the development of a shared management culture to facilitate their on-boarding. Since it was created in 2015, it has been an added feature to enhance the Company's attractiveness. In 2019, 30 people participated in the program.

■ **FIT FOR THE FUTURE**

This week of intensive training is a genuine talent booster, bringing together employees to work on topics that are of key interest to bioMérieux. They also attend presentations by renowned speakers from outside the Company. After working on their projects for six months, participants present them to the Executive Committee for validation and implementation of actions plans across the Company. In 2019, 25 bioMérieux employees took part in the fifth edition of this training program.

■ **MANAGERIAL AND RELATIONAL CULTURE**

Mérieux Université also supports bioMérieux teams through courses on managerial and relational culture so that they can meet the challenges of making decisions, taking initiatives and working cross-functionally with collective agility.

**Training for customer biologists**

For biologists working outside the Group, Mérieux Université also offers a catalog of 80 training courses in microbiology. In 2019, more than 100 training sessions took place for nearly 1,000 health professionals in France.

**Scientific conferences**

Each year, two types of events are held for Group employees to provide information on scientific topics.

In 2019 :

- "Immunity for diagnostics and care" was the chosen theme of the Institut Mérieux Encounters;
- The bioMérieux Days were held twice and focused on the topics of "Aging well with PTH and Vitamin D," and "Healthcare-associated infections: How to stop transmission?"



**PROMOTING PROFESSIONAL DEVELOPMENT AND WELL-BEING IN THE WORKPLACE**



**SOCIAL DIALOGUE**

In France, the establishment of Social and Economic Committees at all French sites, required by law prior to January 1, 2020, provided the opportunity for bioMérieux to renegotiate an agreement on social dialogue. This agreement builds on progress made in terms of social dialogue granted to employee representatives, whether elected by employees or designated by representative national labor unions.

In 2019, the bioMérieux SA Central Works Council (which became the Central Social and Economic Committee as of November 1, 2019) met 11 times for information or information and consultation meetings.

Additionally, the European Works Council, created in 2008, met twice during the year and had the opportunity to discuss the same topics.

**6 agreements signed by labor unions**

- Agreement on Quality of Life at Work, signed unanimously on January 31, 2019.
- Agreement on the 2019 Mandatory Annual Negotiations, signed unanimously.
- Agreement on additional profit sharing for employees in France so that employees share in the fruits of 2018 growth.
- New profit sharing agreement signed unanimously for the years 2019 to 2021.
- Agreement on social dialogue and the establishment of Economic and Social Committees (ESC) at each French site, signed unanimously.
- Agreement and amendment on the organization of professional elections at the 5 French sites.

**70 agreements signed in 5 years in France**

In late 2019, bioMérieux SA received a silver medal at the Victoires des Leaders du Capital Humain awards, in the social dialogue category.



## EMPLOYEE ENGAGEMENT

In 2019, a survey was conducted among more than 2,000 employees in the United States to measure their engagement. Participation reached 71%. The engagement rate stood at 76%, which was 4 points more than a sampling of North American companies, and 2 points more than a sampling of international companies in the biotechnology and medical devices sector. A separate survey was also conducted in the Asia Pacific region (China, Japan, Korea), where participation was 82%.

bioMérieux plans to roll out this approach on a broader scale with a worldwide survey in 2020.

## AN INNOVATIVE QLW AGREEMENT

In France, the first agreement on Quality of Life at Work (QLW) was signed unanimously in early 2019 by the unions present in the Company. The French Ministry of Labor commended bioMérieux, which also received an award for the second most innovative agreement of the year during the Labor Law Conference. Such distinctions encourage bioMérieux to continue the pursuit of excellence in quality social dialogue as has been its practice since the Company was founded. The agreement was based on the results of a QLW questionnaire distributed to nearly 12,000 bioMérieux employees worldwide. It reflects the Company's wish to continue to develop conditions to foster employee engagement, motivate teams and ensure the individual and collective well-being of employees in France and the rest of the world. It builds on numerous initiatives already in place within the Company. In particular, it establishes new ways of organizing work, such as, for example, additional teleworking days upon request (FlexJob) on top of regular teleworking, as well as several other measures that contribute to employees' wellbeing and quality of life.

## MYSHARE, A GLOBAL EMPLOYEE SHARE OWNERSHIP PLAN

bioMérieux wishes to allow employees to be more closely involved in the Company's performance. With this in mind, we launched a global employee share ownership plan in 2019. Between November 4 and 18, all eligible employees living in one of the countries authorizing this operation were able to buy existing bioMérieux shares.

NEARLY ONE IN TWO EMPLOYEES IS A SHAREHOLDER

As a result of bioMérieux's initial public offering as well as the employee savings plan and the share ownership plans of the last few years, nearly one in two employees is a shareholder of the Company.

## ATTRACTIVENESS

### TOP EMPLOYER

Top Employer Certification is a label recognizing excellence in human resources management and working conditions. Four countries where bioMérieux operates have obtained this label: China (2019 label renewed in 2020), South Africa, France and the United States. Being chosen to receive this label reflects quality and innovation in Human Resources practices.

### RANDSTAD AWARD

For the 3<sup>rd</sup> year in a row, in 2019 bioMérieux was a recipient of the Randstad Awards. The Company confirmed its place as the third most attractive company in France from a list of 250 firms. A survey of the general public, conducted in late 2018 by the agency TNS Sofres, covered over 10 criteria including job security, career opportunities and corporate social responsibility.

### UNIVERSUM RANKING

For the first time, in 2019 bioMérieux joined the Universum France ranking of the most attractive French employers for future graduates of engineering, business and management schools, and for junior executives graduating from schools with a wide variety of fields of expertise. The ranking is based on the results of surveys of 130 French companies.

## DIVERSITY AND INCLUSION

### HIRING YOUNG PEOPLE

Attracting and hiring young people, who represent a talent pool for the future, is a priority of bioMérieux's HR policy. Through training programs, it supports their integration into the workforce. The Company opens its doors to young people through a wide range of options:

- Job shadowing internships for high school students;
- Pharmacy student internships;
- International internship program (V.I.E): in 2019, 23 young people worked at one of the Company's subsidiaries, 12 of them completed their assignments, and 9 were offered a contract at the end of their assignment;
- Internships and work-study: 167 interns and 173 work-study candidates (with qualifications ranging from a high-school diploma to a graduate degree) were taken on in 2019.



THE COMPANY PARTICIPATED IN CLOSE TO 20 STUDENT FAIRS

## DISABILITY

In application of the 2018-2021 agreement on disability, bioMérieux allocates an annual budget of €257,000 to fund a policy for the hiring, integration and training of people with disabilities. The Company also supports job retention by adapting workstations and promotes awareness-raising and training for stakeholders involved in integrating employees with disabilities.

Initiatives in 2019 included:

- "Handibio" days organized in France at the Verniolle, Saint-Vulbas, La Balme and Marcy l'Étoile sites;
- #HandibioRecrutement, a half-day "job dating" event organized by the EMEA\* recruitment team in France, for candidates with a two-year degree after their high-school diploma who are looking for a job, a work-study contract or an internship.

In 2019, for the first time bioMérieux France exceeded the mandatory minimum employment rate for employees with disabilities. This achievement is the outcome of several disability agreements, dedicated budgets and grass-roots work by Disability Delegates.

➔ In 2019, bioMérieux supported a project for author Jean-Baptiste Laissard to write *Handicap et Travail* (Disability and Work). The book contains testimonials by two employees with disabilities who describe their careers at the Company.

### PERCENTAGE OF EMPLOYEES WITH DISABILITIES IN THE WORKFORCE

	IN 2019	IN 2018
RÉGION EMEA* (NOT INCLUDING FRANCE)	1.2%	1.1%
FRANCE	4.8% 6.07% of gross employment rate	4.5% 5.96% of gross employment rate
AMERICAS REGION	2.1%	2.1%
ASIA PACIFIC REGION	0%	0.2%

\* Europe, Middle East, Africa.

## GENDER EQUALITY

- ➔ In France, the gender equality index reached 88/100 in 2019.
- ➔ In France, women represent 55% of the workforce. Worldwide, 48% of the workforce is made up of women and 44% of management positions are held by women.
- ➔ The Board of Directors of bioMérieux will be renewed, as a matter of priority, through the appointment of women until parity has been achieved.
- ➔ In 2019, 848 internal promotions took place and 49% were positions filled by women.

The Women Ready for Leadership Diversity (WoRLD) network is open to all bioMérieux employees worldwide, both women and men. Since it was created in 2013, it has been promoting greater diversity in management positions in parallel to initiatives by the Human Resources Department.

In France, in 2019, the WoRLD network continued its partnership with the *Alliance pour la Mixité en Entreprise* (AME), an organization that connects the networks of some 15 companies operating in the Auvergne-Rhône-Alpes region. The partnership allows bioMérieux employees to participate in inter-company events about gender equality in business. Among the year's highlights were two networking events. The WoRLD network also supported the organization of a conference with the Healthcare Businesswomen's Association (HBA).

## HEALTH

Protecting the health of employees takes many forms:

- All Group employees are covered by health insurance;
- Sites encourage employees to engage in sports activities;
- On a regular basis, actions to build awareness about hygiene measures and public health priorities as well as seasonal influenza vaccination campaigns are organized at most sites;
- In the United States, a pilot healthcare and education program is being developed through a medical center for employees and their families in St. Louis. The St. Louis and Durham sites raise awareness among employees and their families about priority public health measures and a digital program to help people lose weight is also available to employees.

## ENJOY&SHARE

Building on the "iDay Idea Tank" organized in 2018, providing all employees worldwide an opportunity to make suggestions and share ideas about improving employee engagement, bioMérieux continues to implement and follow up on the suggested initiatives. For example, the Enjoy & Share collaborative platform used by bioMérieux employees worldwide (for swapping houses during holidays and traveling abroad to learn a new language) was enhanced in 2019 with a classified ads section so that employees can sell, donate or swap goods and services.

## CONCIERGE SERVICE

After opening at the French sites of Craponne, Marcy l'Étoile and Campus de l'Étoile, a concierge service was inaugurated at the La Balme site in November 2019. bioMérieux covers the cost of this multiservice desk, and employees pay for their orders at a preferential rate.



## RAISING EMPLOYEE AWARENESS ABOUT SAFETY

# Proud to be a daily hero

HSE IN MOTION



To reach the ambitious Vision 2020 objectives concerning the environmental impact of our business activity and to maintain the level of vigilance, bioMérieux launched an in-house global awareness campaign in October 2018, encouraging employees to act in a clean and safe manner.

The first focus of the campaign was to prevent accidents as employees move from place to place, with the goal of reducing the number of injuries in situations where employees could be more alert. Since a majority of the accidents recorded were due to avoidable unsafe behaviors, such as using one's phone while walking, for example, a training program, "Discutons Sécurité," was introduced in 2019. An e-learning version will be rolled out in 2020.

PERFORMANCE INDICATOR	2020 TARGET	2019
FREQUENCY RATE OF LOST-TIME ACCIDENTS*	≤ 1.3	1.8
FREQUENCY RATE OF ACCIDENTS WITH AND WITHOUT LOST TIME**	-	3.6

\* (Number of accidents with lost time/hours worked) x 1,000,000.

\*\* (Number of accidents with and without lost time/hours worked) x 1,000,000.

For **World Safety Day** in April 2019, employees used the bioMérieux in-house social network to share photographs and videos of safe practices that illustrated their involvement.

### OHSAS 18001 CERTIFICATION

9 sites have been certified in Australia, Brazil, Spain, United States, France and Italy.

In 2020, all OHSAS 18001 sites will receive ISO 45001 certification, and in the future will keep only this reference certification.

### PREVENTING PSYCHOSOCIAL RISKS

In connection with the initiatives organized by the Human Resources Department to prevent psychosocial risks, the Health, Safety and the Environment (HSE) policy focuses on reducing employees' exposure to musculoskeletal disorders. Each year, our sites develop projects to improve workstation ergonomics, which are measured and assessed for their efficiency. Following a grass-roots survey conducted in June 2018 on risk exposure, an action plan for 2019-2020 was drawn up to apply the HSE model adapted to commercial operations worldwide. A training module on car safety adapted to local languages and regulations was also rolled out to nearly 2,000 drivers.



# COMMITTED TO RESPECTING THE ENVIRONMENT

## VISION 2020 : ABOVE AND BEYOND OUR ENVIRONMENTAL TARGETS

We have exceeded the objectives of Vision 2020 thanks to the success of projects concerning energy savings, Supply Chain optimization and waste reduction.





We have begun to establish bioMérieux's environmental objectives and our roadmap for the coming years, including how we adapt to climate change.

Once again in 2019, energy and water consumption and greenhouse gas emissions increased less than the growth of bioMérieux's business activity. Supply chain optimization and the reduction of avoidable waste resulted in an overall decrease in waste produced in 2019.

In 2016, bioMérieux laid out its "Vision 2020" policy, through which it aims to achieve ambitious objectives to protect the environment and the safety and health of employees on all company sites. This policy is aligned with the Corporate strategy, and is managed and monitored by a global Health, Safety and Environment Committee, chaired by the Chief Executive Officer.





PERFORMANCE INDICATOR*	REDUCTION TARGET, 2015 TO 2020	ACHIEVED IN 2019
 ENERGY CONSUMPTION	- 20%	- 20%
 WASTE GENERATED	- 25%	- 35%
 WATER CONSUMPTION	- 20%	- 19%
 REDUCTION IN GREENHOUSE GAS EMISSIONS (SCOPE 1 & 2)	- 20%	- 26%

\* Intensité basée sur le chiffre d'affaires.

We continued efforts to meet ambitious objectives and the roll-out of our policy on Health, Safety and the Environment (HSE), relying on the commitment of our subsidiaries, sites and employees, who made suggestions about areas for improvement thanks to training and awareness building.

In addition, we organized initiatives to introduce the bioMérieux HSE standards in relations with suppliers and to support their deployment, in particular among logistics providers.

### ENERGY SAVINGS

Energy management systems operate at our main sites. Today, 50% of the electricity consumed by our European sites comes from renewable sources. Since October 2018, CO<sub>2</sub> emissions related to natural gas consumption at French sites have been 100% offset. In the United States, energy audits took place in 2019 at the St. Louis and Durham sites, with the aim of assessing insulation in buildings, establishing consumption profiles of machinery, and reassessing that equipment consumption is aligned with production needs in order to take actions for improvement.

### ISO 14001 CERTIFICATION

Our ambition is for all bioMérieux industrial sites to earn ISO 14001 certification. By late 2019, nine sites had been certified ISO 14001:2015 (Marcy l'Étoile, Craponne, La Balme, Saint-Vulbas, Tres Cantos, Florence, Combourg, Grenoble and Verniolle). The sites located in Durham, St. Louis and Lombard (United States) will apply for certification in 2020.

The bioMérieux Spain and bioMérieux Italy commercial subsidiaries have also received ISO 14001 certification.

## REDUCING THE ENVIRONMENTAL IMPACT OF OUR PRODUCTS DURING THEIR LIFE CYCLE

### ECO-DESIGN APPROACH

As part of our environmental policy, bioMérieux rolls out an environmental impact assessment program for products and related materials at each step of the life cycle, in order to improve our practices.

At the same time, the Company has for several years taken an eco-design approach to products. This approach is based on sobriety in terms of the choice and utilization of materials in a broad sense to manufacture and commercialize our diagnostic systems. The aim is to think about manufacturing, transportation, use and end-of-life of our products right from the beginning of the innovation process as part of a sustainable approach.

In 2019, a life cycle analysis of VIDAS® from the environmental viewpoint was carried out in order to assess this instrument's environmental impact, essentially taking place during its period of utilization. In 2020, we will conduct analyses of other products.

### SAVINGS DURING TRANSPORTATION AND DISTRIBUTION

bioMérieux works closely with suppliers and logistics providers to improve our HSE results. In 2018, we launched an HSE roadmap to reduce the carbon footprint due to distribution. Since 2017, for certain shipments on long distance transport, maritime transportation has begun to replace air transportation, going from 13% in 2017 to 30% in 2019.

Pivotal initiatives are designed to experiment with using alternative means of transportation to limit bioMérieux's carbon footprint. For the first time, in 2018 a shipment was transported by rail from France to Mongolia. In 2019, road transport instead of air shipment was used for delivery from the United States to Mexico. Within the city of Paris, deliveries now take place exclusively using electric vehicles.



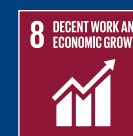
# COMMITTED TO ETHICS IN BUSINESS

## 2019 PRIORITIES

In applying the General Data Protection Regulation (GDPR), special attention has been focused on monitoring actions related to risk analysis and to the input of all new processing of personal data.

### KEY AREAS OF FOCUS:

- Preventing corruption
- Securing the distribution network
- Preventing conflicts of interest
- Applying export regulations
- Protecting patient data



bioMérieux has put in place internal rules and procedures to protect the Company against risks in connection with its international industrial business activity, and to provide employees with the necessary tools to anticipate and manage such risks.

The Company also carries out initiatives to secure its network of partners.



### PROTECTION OF PERSONAL DATA

bioMérieux has implemented and monitors a compliance program for the protection of personal data.

A network of data privacy representatives is active at all Company sites and subsidiaries and the global functions. The network serves as the interface between the Data Protection Officer and the business entities, particularly as concerns compliance with the GDPR.

Every employee accessing personal data receives training and must adhere to the principles of these regulations.

The compliance plan can be found on our corporate website, [www.biomerieux.com](http://www.biomerieux.com).

### ETHICSLINE: A DEDICATED HOTLINE FOR EMPLOYEES ACROSS THE GLOBE

Any employee faced with an ethics question may contact a Compliance Officer. Across the globe, employees can call a local hotline to speak to someone in their local language, or send an email to a dedicated website to report any situation giving rise to concern. This system, which was introduced in France in 2014, has been rolled out in the 44 countries where bioMérieux operates. Employees regularly receive messages about the EthicsLine and how to use it.

The hotline is also available for customers and distributors.

### PREVENTING CORRUPTION

Risk mapping has been undertaken within each subsidiary so that procedures to manage corruption risks may be analyzed, improved and strengthened. In 2019, a global risk reduction action plan was developed for each subsidiary. A new process was introduced globally to identify third parties associated with a high risk of corruption.

In 2019, a certification program for distributors of bioMérieux products was deployed. Each new distributor must adhere to the program.

In compliance with the French law on the corporate duty of vigilance, bioMérieux will publish its vigilance plan for the first time in 2020. The plan includes reasonable vigilance measures designed to identify and prevent severe impacts on human rights and fundamental freedoms, the safety of persons and the environment, as well as health risks resulting from the companies' activities and those of their subsidiaries, subcontractors and suppliers, whether located in France or another country.

### EMPLOYEE TRAINING

Training is one of the primary ways we build awareness among all bioMérieux employees about international rules and in-house procedures to promote respect for ethics and compliance.

A mandatory annual training program is attended by all employees, in addition to modules tailored to their specific function and risk exposure. Within the first few months of joining the Company, new hires receive training on the Global Code of Conduct, the Corruption Prevention Manual and the conflicts of interest policy. Each year, employees must validate a certificate of compliance with the rules of the Code of Conduct. In 2019, nearly 19,000 on-line training modules were provided to employees across all subsidiaries, including courses on the Code of Conduct, fighting corruption and managing relationships with third parties.



### A GLOBAL CODE OF CONDUCT AVAILABLE IN 9 LANGUAGES

The Global Code of Conduct, which sets out the rules of conduct and integrity and the procedures governing the behavior of employees wherever bioMérieux conducts business, is now available in 9 languages: English, French, Spanish, Portuguese, Italian, German, Turkish, Russian and Chinese.

### STRENGTHENING OUR ORGANIZATION

In a context of increasing geopolitical risk and ever more rapid changes in market regulations – particularly those affecting exports – we have increased the number of Ethics & Compliance employees worldwide and strengthened our organization. Local compliance teams, which are active at each of our sites, have taken on an increasingly important role to ensure that the Company's global policies are adequately applied across all business entities. In addition, the local compliance "Champions" appointed in 2018 received special compliance training in 2019.

### RESPONSIBLE PURCHASING

As part of our commitment to the sustainable management of our relationships with partners, we engage our suppliers in a continuous improvement approach and involve them in our sustainable growth strategy based on environmental protection, social progress and respect for human rights and ethics in business. Our commitments to our suppliers and what we expect of them are outlined in the Charter for Responsible Purchasing between bioMérieux and its Suppliers, which was updated in 2018.

We have stepped up our supplier evaluations by adding Corporate Social Responsibility (CSR) criteria to the selection process and by monitoring our strategic partners' annual CSR performance. After launching a supplier CSR assessment process in 2018, around 100 strategic suppliers, representing 23% of bioMérieux purchases, received a rating from the EcoVadis agency in 2019.

### TAX POLICY

bioMérieux operates in more than 160 countries. The Company implements a responsible tax policy in compliance with applicable local and international rules.



# GOVERNANCE & FINANCIAL TABLES



# CORPORATE GOVERNANCE

## EXECUTIVE COMMITTEE

The Executive Committee is responsible for implementing the Company's strategy decided by the Board of Directors. It meets once every three months and monthly using telepresence technology.

As of the date of publication of the annual report, the members are:

### ALEXANDRE MÉRIEUX

Chairman and CEO

### PIERRE BOULUD

Chief Operating Officer,  
Executive Vice President, Clinical Operations

### GUILLAUME BOUHOURS

Executive Vice President,  
CFO, Purchasing & Information Systems

### PIERRE CHARBONNIER

Executive Vice President,  
Global Quality, Manufacturing & Supply Chain

### FRANÇOIS LACOSTE

Executive Vice President,  
R&D

### VALÉRIE LEYLDÉ

Executive Vice President,  
Human Resources & Communications

### MARK MILLER

Executive Vice President,  
Chief Medical Officer

### YASHA MITROTTI

Executive Vice President,  
Industrial microbiology

### ESTHER WICK

Executive Vice President,  
Legal, IP & Compliance

## BOARD OF DIRECTORS

Since 2017, Alain Mérieux, Chairman and CEO of Institut Mérieux, is Founding President of bioMérieux.

The Board of Directors, which met 4 times in 2019, is comprised of 9 members as of January 1, 2020:

### ALEXANDRE MÉRIEUX

Chairman and CEO, bioMérieux

### PHILIPPE ARCHINARD

Chairman and CEO, Transgene

### JEAN-LUC BELINGARD

Vice President, Institut Mérieux

### HAROLD BOËL

Chief Executive Officer, Sofina (Belgium)

### MARIE-HÉLÈNE HABERT

Director of Communication and Patronage,  
Dassault Group

### MARIE-PAULE KIENY

INSERM Research Director;  
formerly Assistant Director General,  
World Health Organization

### AGNÈS LEMARCHAND

Director, various companies

### FANNY LETIER

Co-founder of GENE0, capital entrepreneur

### FRÉDÉRIC BESÈME

Director representing employees

## COMMITTEES OF THE BOARD OF DIRECTORS

### THE AUDIT COMMITTEE

Comprised of Agnès Lemarchand,  
Philippe Archinard and Harold Boël,  
who chairs this committee,  
it met 6 times in 2019.

### THE HUMAN RESOURCES, APPOINTMENTS AND COMPENSATION COMMITTEE

Comprised of Marie-Hélène Habert,  
Jean-Luc Belingard and  
Fanny Letier, who chairs this committee,  
it met 3 times in 2019.

### THE STRATEGY COMMITTEE

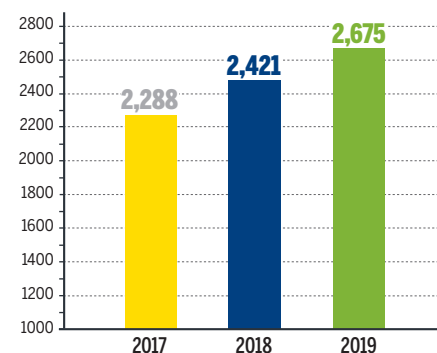
Chaired by Jean-Luc Belingard,  
it is comprised of all directors.  
It met twice in 2019.



# KEY FIGURES

## SALES

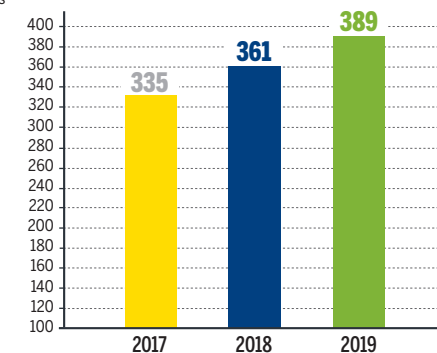
in millions of euros



In 2019, sales amounted to €2,675 million versus €2,421 million in 2018, an increase of 7.2% at constant exchange rates and scope of consolidation.

## CONTRIBUTIVE OPERATING INCOME BEFORE NON-RECURRING ITEMS\*

in millions of euros

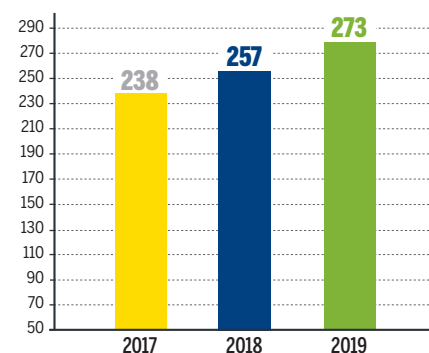


Contributive operating income reached €389 million, representing 14.5% of sales. It increased by nearly 7% compared to 2018, in line with annual targets.

\* Contributive operating income before non-recurring items corresponds to operating income before non-recurring BioFire acquisition and integration costs and before accounting entries relating to the company's purchase price allocation.

## NET INCOME ATTRIBUTABLE TO THE PARENT COMPANY

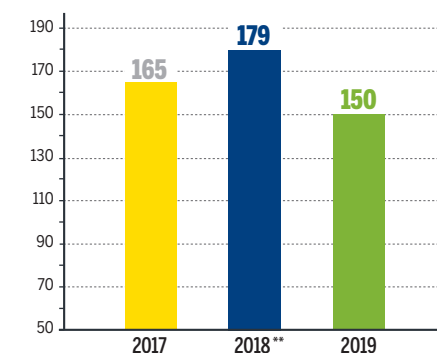
in millions of euros



Net income amounted to €273 million, up by 6.2% compared to 2018, representing 10.2% of sales.

## FREE CASH FLOW\*

in millions of euros



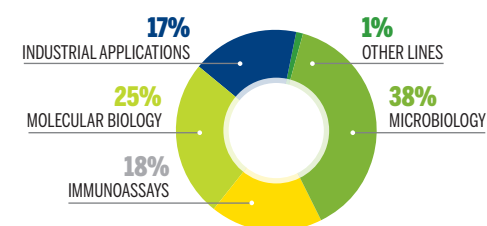
Free cash flow came to €150 million in 2019, compared to around €179 million in 2018. This drop may be explained by an increase in investments, both in industrial capacity and the installed instrument base for customers. In addition, working capital requirements increased due to a rise in inventories.

\* Cash flow before acquisitions of companies, divested operations, share buyback programs and dividends.

\*\* Comparative data for 2018 have been restated to reflect the application of the IFRS 9 standard.

## BREAKDOWN OF SALES

by application

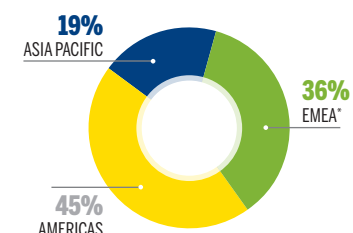


Approximately 60% of sales were generated in clinical and industrial microbiology, two areas where bioMérieux is the world leader.

In 2019, sales growth in molecular biology continued to be driven by the success of the BIOFIRE® FILMARRAY® line (+20%). Supported by the commercial strength of the VITEK® and BACT/ALERT® lines, microbiology represented 38% of revenue, a rise of more than 5%.

## BREAKDOWN OF SALES

by geographical region

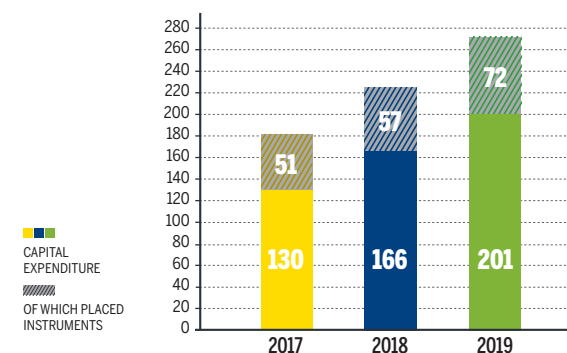


The Group's growth was chiefly driven by strong sales in the Asia-Pacific region, as well as microbiology and molecular biology lines, in particular BIOFIRE®

\* Europe, Middle East, Africa.

## CAPEX

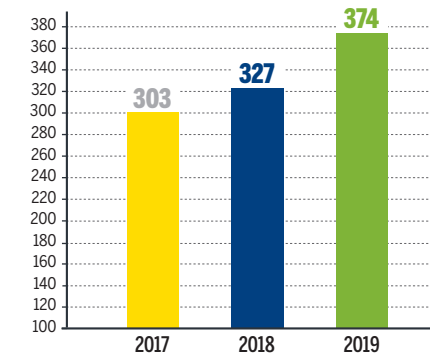
in millions of euros



Capital expenditure outlays for the year represented €273 million, the result of the industrial investment strategy primarily intended to boost BIOFIRE® production capacity in Salt Lake City. The total capital expenditures for the year represented around 10% of sales.

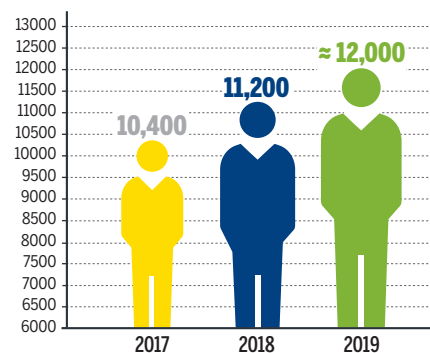
## R&D EXPENSES

in millions of euros



The Group invested €374 million in R&D expenses, representing 14% of sales, as part of an ongoing drive to foster innovation. This increase of around 9% at constant exchange rates and scope of consolidation reflects the faster pace of development in microbiology and the intensification of activity to support the BIOFIRE® FILMARRAY® line.

## WORKFORCE AS AT DECEMBER 31\*

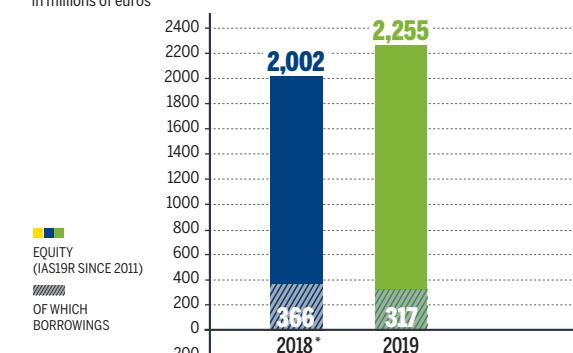


Changes in the workforce in 2019 mainly reflect the strengthening of BioFire Diagnostics' industrial and commercial teams to support the growth of the BIOFIRE® FILMARRAY® line, as well as the acquisition of Hybiome in Asia Pacific and Invisible Sentinel in the United States.

\* Full-time equivalent.

## CHANGES IN THE FINANCIAL POSITION

in millions of euros



Net debt stood at €317 million at the end of the year, representing only 14% of equity. This leaves a high degree of flexibility to promote the Group's strategic ambitions.

\* Comparative data for 2018 have been restated to reflect the application of the IFRS 9 standard.



# FINANCIAL TABLES

## CONSOLIDATED INCOME STATEMENT

In € millions	12/31/2019	12/31/2018 restated <sup>(1)</sup>
<b>NET SALES</b>	<b>2,674.8</b>	<b>2,421.3</b>
Cost of sales	-1 208.2	-1 119.0
<b>GROSS PROFIT</b>	<b>1,466.6</b>	<b>1,302.3</b>
<b>OTHER OPERATING INCOME</b>	<b>45.9</b>	<b>31.2</b>
Selling and marketing expenses	-567.6	-479.9
General and administrative expenses	-182.2	-163.2
Research and development expenses	-374.3	-326.9
<b>TOTAL OPERATING EXPENSES</b>	<b>-1,124.1</b>	<b>-970.0</b>
<b>CONTRIBUTIVE OPERATING INCOME</b>	<b>388.5</b>	<b>363.5</b>
BioFire acquisition's fees and depreciation costs <sup>(2)</sup>	-17.9	-17.5
<b>OPERATING INCOME BEFORE NON-RECURRING ITEMS</b>	<b>370.7</b>	<b>346.0</b>
Other non-recurring income (expenses)	0.0	0.2
<b>OPERATING INCOME</b>	<b>370.7</b>	<b>346.1</b>
Cost of net financial debt	-20.6	-21.3
Other financial items	-2.5	-4.5
Income tax	-77.8	-65.1
Investments in associates	0.0	0.2
<b>NET INCOME OF CONSOLIDATED COMPANIES</b>	<b>269.7</b>	<b>255.4</b>
Attributable to the minority interests	-3.1	-1.1
<b>NET INCOME, GROUP SHARE</b>	<b>272.8</b>	<b>256.5</b>
Basic earnings per share	2.31 €	2.18 €
Diluted earnings per share	2.30 €	2.17 €

■ (1) Comparative data for 2018 have been restated to reflect the first-time application of IFRS 16. ■ (2) Non-recurring items relating to the acquisition and integration of BioFire, and accounting entries relating to the BioFire purchase price allocation.

## CONSOLIDATED BALANCE SHEET

ASSETS (In € millions)	12/31/2019	12/31/2018 restated <sup>(1)</sup>
Intangible assets	508.4	526.0
Goodwill	652.5	603.0
Property, plant and equipment	894.7	761.4
Right of use	130.5	137.7
Financial assets	41.9	66.9
Investments in associates	0.2	0.3
Other non-current assets	16.1	16.2
Deferred tax assets	99.0	78.5
<b>NON-CURRENT ASSETS</b>	<b>2,343.5</b>	<b>2,189.9</b>
Inventories and work in progress	494.7	418.8
Accounts receivable	552.1	491.8
Other operating receivables	61.1	63.4
Tax receivable	42.3	39.2
Non-operating receivables	13.3	12.9
Cash and cash equivalents	275.0	288.3
<b>CURRENT ASSETS</b>	<b>1,438.5</b>	<b>1,314.4</b>
<b>ASSETS HELD FOR SALE</b>	<b>0.0</b>	<b>0.1</b>
<b>TOTAL ASSETS</b>	<b>3,781.9</b>	<b>3,504.4</b>

LIABILITIES AND SHAREHOLDERS' EQUITY (In € millions)	12/31/2019	12/31/2018 retraité <sup>(1)</sup>
Share capital	12.0	12.0
Additional paid-in capital & Reserves	1,919.1	1,659.5
Net income for the year	272.8	256.5
<b>SHAREHOLDERS' EQUITY</b>	<b>2,203.9</b>	<b>1,928.0</b>
<b>MINORITY INTERESTS</b>	<b>50.7</b>	<b>74.0</b>
<b>TOTAL EQUITY</b>	<b>2,254.6</b>	<b>2,002.1</b>
Net financial debt - long-term	153.7	524.9
Deferred tax liabilities	141.2	134.2
Provisions	62.3	47.1
<b>NON-CURRENT LIABILITIES</b>	<b>357.2</b>	<b>706.1</b>
Net financial debt - short-term	438.6	129.1
Provisions	47.0	45.0
Accounts payable	211.9	179.7
Other operating liabilities	381.1	352.2
Tax liabilities	32.3	33.5
Non-operating liabilities	59.3	56.9
<b>CURRENT LIABILITIES</b>	<b>1,170.1</b>	<b>796.3</b>
<b>LIABILITIES RELATED TO ASSETS HELD FOR SALE</b>	<b>0.0</b>	<b>0.0</b>
<b>TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY</b>	<b>3,781.9</b>	<b>3,504.4</b>

■ (1) Comparative data for 2018 have been restated to reflect the first-time application of IFRS 16.



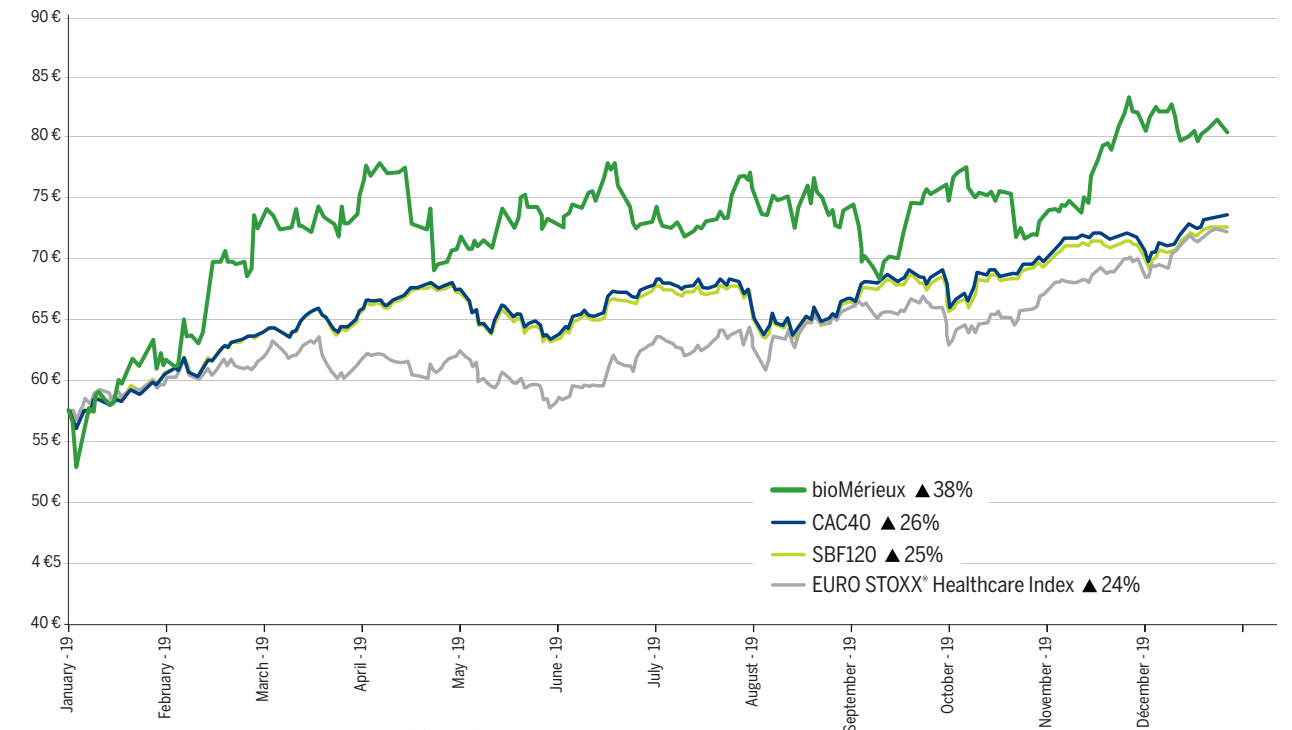
## CONSOLIDATED CASH FLOW STATEMENT

In € millions	12/31/2019	12/31/2018 restated <sup>(1)</sup>
<b>Net income of consolidated companies</b>	<b>269.7</b>	<b>255.3</b>
Investments in associates	0.0	-0.2
Cost of net financial debt	20.6	21.4
Other financial items	2.5	4.5
Current income tax expense	77.8	65.0
Operating depreciation and provisions on assets	189.5	177.0
Non-recurring items and BioFire acquisition's fees and depreciation costs	17.8	17.4
<b>EBITDA (before non-recurring items)</b>	<b>577.9</b>	<b>540.4</b>
Other non current operating gains/losses (w/o exceptional depreciations, assets losses and capital gains/losses)	-0.1	0.1
Other financial items (w/o accruals & disposal of financial assets)	-2.0	-4.6
Operating provisions for risks and contingencies	-6.8	-47.8
Change in fair value of financial instruments	-1.4	0.3
Share-based payments	9.4	6.7
<b>Elimination of other gains and losses without any impact on cash or operations</b>	<b>-0.9</b>	<b>-45.3</b>
Change in inventories	-71.0	-26.9
Change in accounts receivable	-57.3	-30.6
Change in accounts payable	32.9	13.1
Change in other operating working capital	26.0	36.0
<b>Change in operating working capital <sup>(2)</sup></b>	<b>-69.4</b>	<b>-8.4</b>
Other non operating working capital	2.1	1.8
Change in non-current assets	0.4	-1.5
<b>Other cash flows from operation</b>	<b>-66.9</b>	<b>-8.1</b>
<b>Income tax paid</b>	<b>-81.6</b>	<b>-65.8</b>
<b>Cost of net financial debt</b>	<b>-20.6</b>	<b>-21.4</b>
<b>NET CASH FLOW FROM OPERATIONS</b>	<b>407.9</b>	<b>399.8</b>
Purchase of property, plant and equipment	-272.5	-226.4
Proceeds on fixed asset disposals	17.1	5.4
Purchase of financial assets / Disposals of financial assets	-2.4	0.0
<b>FREE CASH FLOW <sup>(3)</sup></b>	<b>150.1</b>	<b>178.8</b>
Purchase / Disposals related to minority interests	48.4	-5.4
Impact of changes in the scope of consolidation	-72.8	-186.7
<b>NET CASH FLOW FROM (USED IN) INVESTMENT ACTIVITIES</b>	<b>-282.2</b>	<b>-413.1</b>
Purchases and proceeds of treasury stocks	0.0	-22.3
Dividends to shareholders	-41.3	-40.2
Change in confirmed financial debt	-69.2	105.5
Variation of interests without taking or loss of control	-23.5	0.0
<b>NET CASH FLOW FROM (USED IN) FINANCING ACTIVITIES</b>	<b>-133.9</b>	<b>43.0</b>
<b>NET CHANGE IN CASH AND CASH EQUIVALENTS</b>	<b>-8.2</b>	<b>29.7</b>
<b>NET CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE YEAR</b>	<b>278.2</b>	<b>260.4</b>
Impact of currency changes on net cash and cash equivalents	-6.1	-11.8
<b>NET CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>	<b>264.0</b>	<b>278.2</b>

■ (1) Comparative data for 2018 have been restated to reflect the first-time application of IFRS 16. ■ (2) Including additions to and reversals of current provisions. ■ (3) Available cash flow is defined as cash flow from operating activities plus cash flow from investing activities, excluding net cash and cash equivalents from acquisitions and disposals of subsidiaries.

## THE BIOMÉRIEUX SHARE

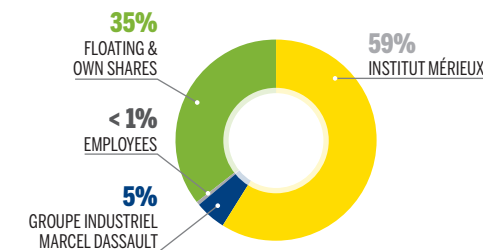
### SHARE PRICE PERFORMANCE IN 2019\*



\* Indexes rebased on bioMérieux's stock price as at 12/31/2018 (€57.50).

### BREAKDOWN OF CAPITAL

as at December 31, 2019



### CALENDAR OF EVENTS 2020

- February 26, 2020** → Fourth-quarter 2019 sales and 2019 financial results
- April 16, 2020** → First-quarter 2020 revenues (before start of trading)
- June 30, 2020** → Annual General Meeting
- September 2, 2020** → Second-quarter 2020 revenues and first-half 2020 results (before start of trading)
- October 20, 2020** → Third-quarter 2020 revenues (before start of trading)

### THE BIOMÉRIEUX SHARE

bioMérieux shares have been traded publicly since July 6, 2004 in the CAC Mid 60®, SBF 120®, CAC Mid & Small®, CAC All-tradable® and CAC All-Share® French market indices. In addition, bioMérieux has been included in new indices since 2017, specifically MSCI France Index and STOXX® Europe 600. The Company's shares are listed on compartment "A" of the Euronext market and are eligible for deferred settlement service (*Service de Règlement Différé – SRD*).

bioMérieux's social and environmental commitment has been recognised for a number of years by non-financial rating agencies that evaluate its CSR performance and have included it in their SRI (socially-responsible investing) indicators. In particular, bioMérieux has been evaluated by the following agencies: ISS ESG, FTSE Russell (FTSE4Good Index), Vigeo Eiris, CDP (Carbon Disclosure Project), Forum Ethibel (Ethibel Sustainability Index (ESI) Excellence Europe), EcoVadis and Corporate Knights Global 100 Index.

At December 31, 2019, the closing price for the bioMérieux share was €79.35 (€57.50 at December 31, 2018), and the Company's market capitalisation was €9.4 billion.

In 2019, 23,879,941 of the Company's shares were traded on Euronext compared with 30,711,238 in 2018.

### INVESTOR RELATIONS CONTACT

**Sylvain Morgeau**  
 Phone: +33(0)478872237 • Email: investor.relations@biomerieux.com  
 The Universal Registration Document approved by the AMF is available upon request or on our Web site: [www.biomerieux.com](http://www.biomerieux.com)



# GLOSSARY

**Acute kidney injury (AKI)** ■ Abrupt loss of kidney function that develops within 7 days, it is a broad clinical syndrome encompassing various etiologies, including specific kidney diseases, which can occur in the community, as well as in the hospital or ICU. AKI can be prevented through early detection and rapid treatment.

**Antibiotic resistance** ■ A microorganism's natural ability to withstand the effects of antibiotics: taking an antibiotic puts selective pressure on bacteria, eliminating bacteria that are susceptible to the antibiotic and selecting resistant bacteria, which then multiply. The widespread and often inappropriate use of antibiotics contributes to rising rates of antibiotic resistance, which is one of the biggest threats to public health worldwide.

**Antibiotic Susceptibility Testing** ■ Determines the susceptibility of a bacterium in the presence of antibiotics and classifies it as susceptible, resistant or intermediate.

**Biomarker** ■ Any indicator (nucleic acids, enzymes, metabolites and other types of molecules: histamines, hormones, proteins, etc.) present in or excreted by the body as a biological response to a disease.

**Blood culture** ■ Laboratory analysis used to detect bloodstream infections, carried out by taking a sample of venous blood, which is then cultured to reveal the presence or absence of pathogenic microbes.

**Coronavirus MERS-CoV** ■ Middle East respiratory syndrome coronavirus (MERS-CoV) was first identified in September 2012 in Saudi Arabia and is responsible for the Middle East respiratory syndrome (MERS). Among people affected by the disease, symptoms include fever, coughing and shortness of breath, as well as gastrointestinal symptoms in some cases. Approximately 35% of reported patients with MERS-CoV infection have died.

**Coronavirus SARS-CoV-2** ■ This coronavirus, which is responsible for the Covid 19 pandemic, causes an acute respiratory infection (fever, cough), breathing difficulties, and pulmonary complications such as pneumonia, as well as more severe forms. The frequency of the most severe forms is between 17% and 23%; they lead to death in 2% to 3% of cases.

**Dengue** ■ Dengue is a viral infection transmitted by the *Aedes* mosquito that causes "flu-like" symptoms. A person with dengue may develop life-threatening complications.

**DNA Sequencing** ■ Method used to determine the order of the nucleotide bases for a given DNA fragment.

**Ebola virus disease** ■ Serious, often deadly disease in humans. The virus is initially transmitted from wild animals to humans and then spreads among the population through person to person contact.

**Endotoxin** ■ Component of the outer membrane of certain Gram-negative bacteria that can cause high fevers. Pharmacopoeial standards require that endotoxins be absent from pharmaceutical products that come into contact with the bloodstream or the central nervous system, such as injectable drugs and medical devices. It is also recommended that the endotoxins be quantified in raw materials or in-process materials.

**Healthcare-Associated Infection (HAI)** ■ HAIs are infections occurring in a patient during the process of care in a hospital (or other healthcare facility) that were not present at the time of admission and are directly related to the care received.

**Immunoassay** ■ Diagnostic test based on an antigen/antibody reaction, enabling the detection of infectious agents (bacteria, viruses, parasites) and pathogen markers.

**In vitro diagnostics** ■ Analysis of biological samples (urine, blood, etc.) performed outside the human body.

**Mass spectrometry** ■ Technique used to identify a molecule and determine its chemical structure by analyzing the mass and the charge of its ions.

**Microbiology** ■ The study of microorganisms. In the field of *in vitro* diagnostics: culturing biological, food and pharmaceutical samples in growth medium allows any bacteria that may be present to multiply. The bacteria are subsequently identified and their susceptibility to antibiotics tested in certain cases.

**Molecular Biology** ■ Technique that can detect a bacterium, virus, yeast, parasite or a biomarker through the presence of DNA or RNA genetic sequences in a sample.

**Pathogen** ■ A microbe that causes or has the potential to cause an infectious disease.

**PCR (Polymerase Chain Reaction)** ■ Molecular biology technology for *in vitro* amplification of genetic sequences, used to copy known DNA or RNA sequences in large quantities (by an order of magnitude of a billion) from an initially small quantity. This technology is particularly useful for detecting the presence of viruses.

**PCT (Procalcitonin)** ■ An early and specific host marker of a bacterial infection, PCT is useful to adapt antimicrobial prescriptions.

**Plague** ■ This zoonotic disease, caused by the bacterium *Yersinia pestis*, is most often transmitted by fleas from rodents to humans, and also from person to person via respiratory droplets.

**Sepsis** ■ A serious systemic infection characterized by the presence of bacteria, fungi, viruses and parasites in the blood and combined with an inflammatory immune-reaction (host response) that can result in the rapid deterioration of the patient's general condition leading to possible organ failure.

**Syndromic approach** ■ Medical approach based on analyzing a syndrome (i.e., a set of symptoms and/or clinical signs) that uses a single test to identify the disease-causing organism(s) responsible for this syndrome, whether they are viruses, bacteria, fungi or parasites.

# REFERENCES

## PAGE 13

■ 1) *Tackling drug-resistant infections globally: Final report and recommendations, The Review on Antimicrobial Resistance*, Chaired by Jim O'Neill, May 2016.

■ 2) Press release from the World Bank: "By 2050, drug-resistant infections could cause global economic damage on par with 2008 financial crisis," September 19, 2016.

## PAGE 17

■ 3) Global, regional, and national sepsis incidence and mortality, 1990–2017: analysis for the Global Burden of Disease Study. Kristina E Rudd, MD, Sarah Charlotte Johnson, MSc, Kareha M Agesa, BA, Katya Anne Shackelford, BA, Derrick Tsoi, BS Daniel Rhodes Kievlan, MD et al. *The Lancet*, volume 395, issue 10219, P200-211, January 18, 2020. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)32989-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32989-7/fulltext).

## PAGE 19

■ 4) Mehta RL, Kellum JA, Shah SV, Molitoris BA, Ronco C, Warnock DG, Levin A (2007). "Acute Kidney Injury Network: report of an initiative to improve outcomes in acute kidney injury". *Critical Care* (Londres, Angleterre). 11 (2): R31.

■ 5) Hoste EAJ et al. Acute Renal Failure in Patients with Sepsis in a Surgical ICU: Predictive Factors, Incidence, Comorbidity, and Outcome. *J Am Soc Nephrol*. 2003;14:1022-1030.

■ 6) Kidney International Supplements (2012) 2, 19–36. Siew ED, Davenport A: The growth of acute kidney injury: a rising tide or just closer attention to detail? *Kidney Int* 2015;87:46-61.

■ 7) O'Connor ME, Kirwan CJ, Pearse RM, Prowle JR: Incidence and associations of acute kidney injury after major abdominal surgery. *Intensive Care Med* 2016;42:521-530.

■ 8) Susantitaphong P, Cruz DN, Cerda J, Abulfaraj M, Alqahtani F, Koulouridis I, Jaber BL: World incidence of AKI: a meta-analysis. *Clin J Am Soc Nephrol* 2013;8:1482-1493.

## PAGE 20

■ 9) Guzzi, L.M., Bergler, T., Binnall, B. et al. Clinical use of [TIMP-2]+[IGFBP7] biomarker testing to assess risk of acute kidney injury in critical care: guidance from an expert panel. *Crit Care* 23, 225 (2019). <https://doi.org/10.1186/s13054-019-2504-8>.

■ 10) Berdugo MA, et al, *Journal of Medical Economics*, 2019, VOL. 22, NO. 12, 1281–1289, DOI:10.1080/13696998.2019.1636053.

■ 11) Engelman DT, Ben Ali W, Williams JB, et al. Guidelines for Perioperative Care in Cardiac Surgery: Enhanced Recovery After Surgery Society Recommendations. *JAMA Surg*. Published online May 04, 2019. doi:10.1001/jamasurg.2019.1153.

## PAGE 21

■ 12) GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018 10;392(10159):1789-1858.

■ 13) Global Health Estimates 2016: deaths by cause, age, sex, by country and by region, 2000–2016. Geneva, World Health Organization; 2018.

■ 14) McDermott KW, Elixhauser A, Sun R. Trends in hospital inpatient stays in the United States, 2005–2014. HCUP Statistical Brief #225. June 2017. Agency for Healthcare Research and Quality, Rockville, MD.

■ 15) <https://www.who.int/fr/news-room/fact-sheets/detail/pneumonia>

## PAGE 22

■ 16) Serial Procalcitonin Predicts Mortality in Severe Sepsis Patients: Results From the Multicenter Procalcitonin Monitoring SEpsis (MOSES) Study. Schuetz P, Birkhahn R, Sherwin R et al. *Crit Care Med*. 2017 May;45(5):781-789.

## PAGE 36

■ 17) Extensive Gene Amplification as a Mechanism for Piperacillin-Tazobactam Resistance in *Escherichia coli*, Schechter LM, Creely DP, Garner CD, Shortridge D, Nguyen H, Chen L, Hanson BM, Sodergren E, Weinstock GM, Dunne WM Jr, van Belkum A, Leopold SR. *mBio*. 2018 Apr 24;9(2). pii: e00583-18. doi:10.1128/mBio.00583-18.

## PAGE 43

■ 18) Point prevalence survey of antimicrobial use and health-care-associated infections in Belgian acute care hospitals: results of the Global-PPS and ECDC-PPS 2017, Vandael E, Latour K, Goossens H, Magerman K, Drapier N, Catry B, Versporten A; Belgian Point Prevalence Survey Study Group, Antimicrobial Resistance & Infection Control, 2020. 13:9:13.



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