INSTITUT PASTEUR



STRATEGIC PLAN

Pasteur 2030

Erik Orsenna's Foreword

French novelist, member of the French Academy, and ambassador for the Institut Pasteur

Once upon a time, nearly two centuries ago, there lived a young scientist named Louis. This young man possessed an unusual trait for a chemist: less interested in the interactions between nature's elements, he was captivated by the elusive origins of life itself. From his passion sprang forth discoveries of great consequence, benefiting at first animals of all sizes, from the silkworm to the cow, and eventually aiding humans, whether bitten by rabid beasts or afflicted by infectious disease.

This chemist also had the unique ability to balance a formidable ego with a profound commitment to collaboration. He was a vociferous patriot yet possessed an acute awareness that no true borders could be drawn when it comes to health.

Our Institute was born of these two sets of beliefs—beliefs that would have proven themselves contradictory in others, however, to him, were complementary.

Do we fully appreciate the treasure that has been gifted?

A treasure made up of diverse nationalities, united in their quest for discovery.

A treasure shared across the globe, with over thirty institutes, each charting its own course yet collectively engaged in the same crusade because health is universal.

Shall we then, with these following words, introduce our strategic plan?

It begins by expressing gratitude.

By saying "thank you," to all those who have chosen the path of knowledge, the path of inquiry over accumulation, to all those who seek a different kind of wealth, a wealth of knowledge: knowledge in the service of healing.

Knowledge and gratitude are twin sisters, or perhaps daughter and mother.

How could knowledge progress without gratitude? Gratitude for the dedication, the needs, and time committed to this quest.

Make no mistake: the perils that lurked during Pasteur's lifetime have not retreated, they have evolved to become more cunning, continuing to produce new threats. Our need for science has never been more pressing. Fortunately, science is meeting these challenges. Countless paths are still unfolding before us, and novel potential treatments continue to be discovered.

For nearly one hundred and fifty years, we have always stood at the forefront.

As a lifelong mariner, I perceive our Institute as a mighty ship. Nay, an ark. An ark aboard which researchers from over a hundred nations have embarked, each driven by the same unyielding desire.

Yes, this ark was designed not merely to survive the Deluge, but to foster understanding—together.

It was built to understand in order to protect.

Yasmine Belkaid's Foreword

President of the Institut Pasteur

I am honored to share our strategic vision for Pasteur 2030, a vision built and inspired by the philosophy of Louis Pasteur and the extraordinary legacy of the Institut Pasteur in transformative discoveries at the service of human health.

Now more than ever, protecting and advancing biomedical research is essential for understanding, preventing, and treating diseases. The rapidly evolving environmental and infectious threats, as well as the global increase in non-communicable diseases, highlight the critical importance of our mission. As humanity confronts a growing burden of both endemic and emerging health challenges, we are presented with an opportunity to refocus our strengths and expertise toward common goals. The Institut Pasteur remains steadfast in its commitment to driving scientific breakthroughs that improve global health outcomes.

"As an independent foundation acting in the interest of the public since 1887, the Institut Pasteur has the power and ability to adapt and represent a major answer within the French, European, and international scientific landscape."





The legacy and leadership of the Institut Pasteur in transformative discoveries for human health, along with its resolutely multidisciplinary approach and its rich ecosystem bridging research, medicine, education, and the application of research, place the Institut Pasteur in a unique position to lead in addressing the most significant health challenges of our time.



To accomplish this mission, the Institut Pasteur is further empowered by its integration within the Pasteur Network, a collective of over 30 institutes worldwide, spanning 25 countries across 5 continents, representing an unmatched potential in the development of transformative international programs, the global fight against infectious diseases, and fostering the growth of the next generation of international leaders.

Our international dimension is not just a defining feature—it is the cornerstone of our future that unites us in a shared vision for global impact. Finally, because of its unique positioning and legacy, the Institut Pasteur can play a fundamental role as an advocate for science and can fully engage in the necessary dialogue with society and decision-makers, thereby safeguarding the essential role of science in society's protection.

Contents

Erik Orsenna's Foreword 2

Yasmine Belkaid's Foreword 3

Pasteur 2030 Vision 6

Who we are today & what we aspire to become 10

Our values & commitments 13

Our scientific priorities at the service of society 16

PRIORITY 1 19
Infectious disease threats 19
PRIORITY 2 23
Environmental transitions & health 23
PRIORITY 3 28
Origins of diseases 28
PRIORITY 4 35
Health & diseases at the extremes of life 35

Our strengths & goals to push scientific boundaries and respond to societal challenges 38

I. OUR SCIENTIFIC EXCELLENCE 40
II. OUR LEADERSHIP IN MULTIDISCIPLINARY RESEARCH 41
III. PROMOTING TRANSLATIONAL SCIENCE 42
IV. PROMOTING QUANTITATIVE BIOLOGY & ARTIFICIAL INTELLIGENCE 42
V. INVESTING IN A POWERFUL TECHNOLOGICAL ENVIRONMENT
VII. ADVANCING MEDICINE & SURVEILLANCE THROUGH RESEARCH INTEGRATION 46
VII. STRENGTHENING OUR GLOBAL SCIENTIFIC PRESENCE 48
VIII. DEVELOPING OUR EXPERTISE TO PUSH FORWARD OUR VISION 53

Empowering our future 60

I. PLACING PEOPLE AT THE HEART OF OUR MISSION 60
II. EDUCATION AS A DRIVER OF SCIENTIFIC EXCELLENCE 63
III A SUPPORTIVE ECOSYSTEM AT EVERY STAGE OF THE CAREER 66
IV. PHILANTHROPY AND REDEFINED ECONOMIC MODEL 71
V. OUTREACH AND OPENESS TO SOCIETY FOR A STRONGER FUTURE 74
VI. ADAPTATION & EVOLUTION FOR A LASTING IMPACT 76

Conclusion 79

Pasteur 2030 Vision

As we confront the pressing societal challenges of our era—climate change, emerging infections, antimicrobial resistance, as well as the rapid rise in inflammatory disorders and cancer—we must leverage our renowned legacy and strengths to adapt and respond to these global issues. While upholding the fundamental freedom essential for fostering scientific creativity and discoveries, the Institut Pasteur will tackle these unprecedented health challenges head-on by building on its extraordinary expertise in transdisciplinary research, its leadership in microbiology and infection, and by addressing significant knowledge gaps, especially regarding how sex, age, and genetics shape host physiology and disease outcomes. The Institut Pasteur will also foster continuous improvements to support its collective performance. The focus will be on enhancing our operational excellence, reinforcing our organizational agility, and bolstering our financial resources.

As a collective of microbiologists, immunologists, geneticists, entomologists, physicians, chemists, physicists, computational biologists, developmental biologists, and neuroscientists, equipped with an unprecedented ability to develop integrative approaches to tackle complex questions, Pasteur 2030 will address the following societal challenges:



Infectious diseases threats: Because we remain vulnerable to infectious diseases and to the fast rise of antimicrobial resistance, our goal is to identify, understand, track pathogens, and control infectious diseases via the development of innovative therapies and vaccines.

Environmental transitions and health: Because we are living in a world undergoing an ecological transition, our goal is to understand and mitigate the impact of climate and environmental change on human health, with a focus on vector-borne diseases and emerging infections.





Origins of Diseases: Because the world is facing an alarming rise in inflammatory disorders and non-communicable diseases, our goal is to unravel, understand, and ultimately reverse the causal factors that disrupt biological homeostasis and promote diseases.

Health & disease at the extremes of life: Because health and disease are established early in life, we will explore the under-researched mother-child dyad and examine how aging affects host physiology and responses to vaccines and therapies. Our goal is to develop preventive and therapeutic approaches tailored to these vulnerable life stages



To enhance our scientific leadership and address these complex scientific challenges, the Institut Pasteur must continuously expand its expertise and cultivate multiscale and multidisciplinary approaches that range from atomic-level precision to whole-body physiological contexts. Artificial intelligence has emerged as a transformative tool for unlocking biological complexity, and the Institut Pasteur has positioned itself at the forefront of artificial intelligence applications in biological research since its inception, driving innovation and breakthroughs. By continuously exploring new frontiers of expertise, we will harness artificial intelligence to develop a unique advantage in addressing research questions, tackling these challenges creatively, and fostering innovative solutions.

Achieving these ambitious goals for the Institut Pasteur will necessitate a firm commitment to continuing to protect our values while also evolving into a more agile institution capable of swiftly integrating scientific disciplines and technological advancements. Equally important is cultivating an outward vision that strengthens our scientific ecosystem at the national, European, and international levels. The Institut Pasteur's adaptation will also require the evolution of our economic model, along with enhanced integration of basic discovery with translational research, education, and medical care and surveillance.

We are committed to empowering the next generation of scientific leaders and nurturing risk-taking and diversity as fundamental principles of transformative discoveries and scientific impact. Addressing the major societal challenges of our time will also require an unwavering commitment to our human capital. Now more than ever, the collaboration and expertise of every member of the Pasteurian ecosystem—including scientists and administrative staffs—are essential to advancing our mission. Together, we will continue to foster global collaboration, drive progress, and achieve our collective ambition in the service of human health

Pasteur 2030 : Our Scientific Vision

OUR SCIENTIFIC PRINCIPLES

- Intellectual freedom, risk and curiosity are the basis of transformative discoveries.
- To understand & prevent diseases, we need to develop a deep mechanistic understanding of both healthand pathological states at all scales.

OUR SOCIETAL HEALTH CHALLENGES

- Infectious disease threats
- Environmental Transitions & Health
- Origins of Diseases
- Health & Diseases at the extremes of life

TROUGHT THE LENS OF :

- Human Diversity
- Gender

TO PREVENT

- Surveillance
- Disease prevention

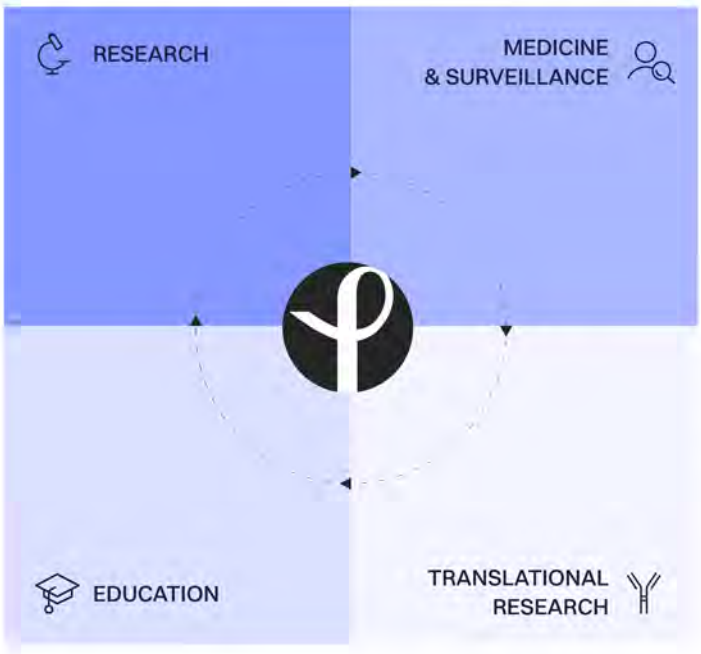
TO UNDERSTAND

- Discovery

TO TREAT

- Treatment
- Diagnostic
- Vaccines

Pasteur 2030 : Our Collective Vision



- Scientific excellence
- Risk taking Culture

- Interdisciplinary research
- Clinical research

- Evolving outward
- Fostering strategic partnerships

- A sustainable economic model

- Diversity, Equity & Inclusion
- Attracting and promoting the next generation of scientific leaders

Our Pasteur 2030 Strategy

Adressing the most important health issues

- INFECTIOUS DISEASES THREATS
- ENVIRONMENTAL TRANSITION & HEALTH
- ORIGINS OF DISEASES
- HEALTH & DISEASES AT THE EXTREMES OF LIFE

Leveraging our strenghts

- SCIENTIFIC EXCELLENCE
- MULTI-DISCIPLINAR RESEARCH
- TRANSLATIONAL SCIENCE
- QUANTITATIVE BIOLOGY & AI
- TECHNOLOGICAL ENVIRONMENT
- MEDICINE & SURVEILLANCE
- GLOBAL SCIENTIFIC PRESENCE
- DEVELOPING EXPERTISE

Empowering our futur

- PEOPLE AT THE HEART OF OUR MISSION
- PHILANTHROPY & ECONOMICAL MODEL
- COMMITMENT AND DIALOGUE WITH SOCIETY
- ADAPTATION & EVOLUTION

Who we are today & what we aspire to become

We are a global leader in scientific excellence, inspired by Louis Pasteur's legacy and driven by our mission to tackle humanity’s most pressing health challenges. From a fundamental understanding of biological processes to pandemic preparedness, we are committed to protecting and improving human health on a global scale.



We are an institution with a global impact and international reach, and our integration within an **ecosystem (Pasteur Network) of over 30 institutes across 25 countries** and 5 continents is the cornerstone of our future global impact.

The Pasteurian spirit is rooted in curiosity, humanism, and a deep commitment to society. It embodies our dedication to exploring the unknown and caring for humanity - a mission that all Pasteurians proudly stand for.

Our unique ecosystem, centered around our Parisian campus, is enriched by a vibrant community of over 3,000 Pasteurians, representing over 100 nationalities – a rich blend of cultures, ideas, and ambitions that fuels our creativity. Within the Institut Pasteur campus, 23% of our scientists belong to esteemed institutions such as CNRS, Inserm, Inrae, Inria, Université Paris Cité, Sorbonne Université, Université Paris-Saclay, Paris Sciences et Lettres, and hospitals, such as hospitals from Assistance Publique – Hôpitaux de Paris, and are supported by our ecosystem. These partnerships with French academic and clinical institutions are vital to strengthening our collective impact, driving scientific discovery and innovation.

Partnerships are key to our success. By engaging with academic institutions, startups, industry partners, non-governmental organizations, and foundations, we combine complementary expertise to integrate fundamental, translational, and clinical research. As part of the international Pasteur Network, we amplify our global reach, fostering collaborations that enhance scientific excellence worldwide.

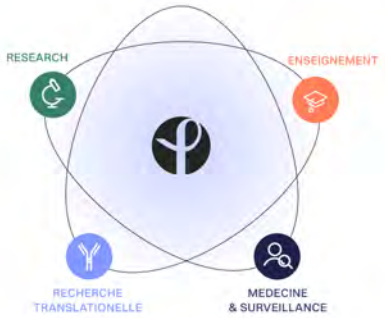
We champion diversity, equity, and inclusion – principles essential for sparking creativity and driving innovation. By embracing these values, we ensure that every voice strengthens our mission to make a global impact.

Our progress is enabled by a unique funding model, where philanthropy plays a vital role, allowing us to maintain our independence, and promote a risk-taking culture. Our funding allows us to accelerate innovation, respond swiftly to health crises, and ensure that our discoveries reach those who need them most.

While we adapt to meet the demands of a changing world, our core values – scientific excellence, ethics, integrity, and global collaboration – remain steadfast. This balance between transformation and enduring principles empowers us to push the boundaries of science with a bold vision for the future.

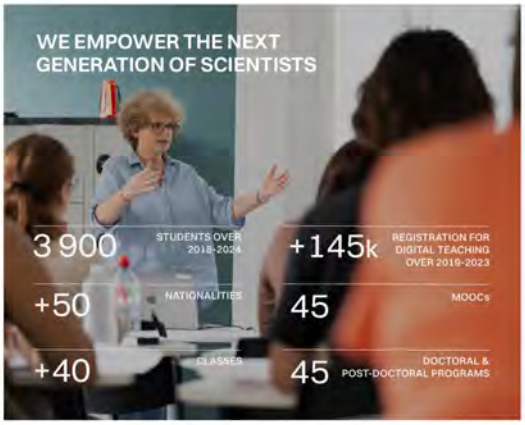
At the core of this vision is Pasteur 2030, a commitment to inclusion and collaboration as key drivers of progress. Our philosophy reflects a deep aspiration to unite as a global community. By dismantling barriers and fostering seamless collaboration across disciplines, we aim to tackle complex global health challenges with greater impact, ensuring that mutual support and teamwork remain central to our mission.

Advancing science for the good of humanity

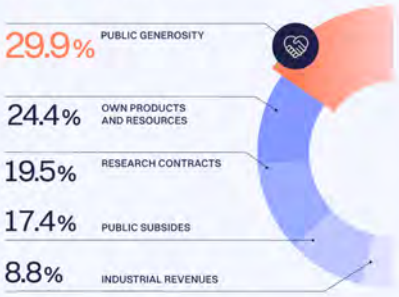


OUR VALUES & COMMITMENTS

inclusion
humanism environment
equity excellence diversity
ethics & integrity in research open science risks-taking culture
human capital freedom of science
dialogue between science & society



DONORS TRUST IS OUR FREEDOM & INDEPENDENCE



(2023, en %)

WE ARE A DIVERSE, EQUITABLE & INCLUSIVE COMMUNITY

The Pasteur's community counts more than 3000 members included

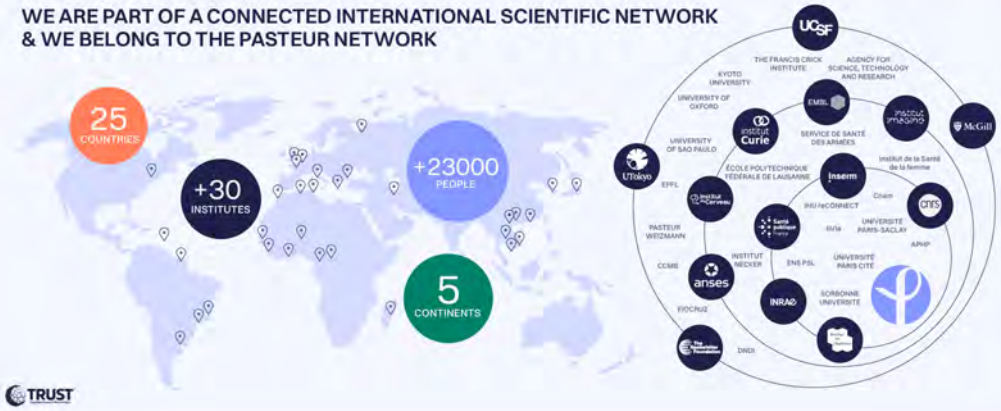
60% WOMEN
+100 NATIONALITIES
45% SCIENTISTS
23% OF RESEARCHERS ARE FROM CNRS,FRENCH UNIVERSITIES, INSERM, INRAE, HOSPITALS

We are working toward one common goal

A DIVERSE COMMUNITY AND DEI
ONE DEDICATED DEPARTMENT TO THE DIVERSITY, EQUITY & INCLUSION



WE ARE PART OF A CONNECTED INTERNATIONAL SCIENTIFIC NETWORK & WE BELONG TO THE PASTEUR NETWORK



Our values & commitments

Here are the eight guiding values and commitments that define who we are and what we stand for.

01

Science for the benefit of humanity

Inspired by Louis Pasteur's belief that "Science belongs to humanity," we are dedicated to the universal pursuit of knowledge, driven by a commitment to improve human health and equity. From its inception, the Institut Pasteur has aimed to alleviate the burden of disease, focusing on combating infectious diseases and improving global health. Our quest for knowledge is rooted in humanism, empathy, and ethical responsibility. Pasteur 2030 will embrace these values, leveraging our global partnerships and the Pasteur Network to turn scientific explorations and discoveries into transformative solutions for the benefit of all.

02

Freedom, excellence and risk-taking culture

Scientific freedom is an absolute requisite for cutting-edge discoveries and scientific excellence. We embrace bold exploration, inspired by Pasteurian pioneers like François Jacob, Jacques Monod, and Françoise Barré-Sinoussi. Their breakthroughs demonstrate how scientific freedom, and courage, drive transformative advances in science. Our unique funding model and the trust of our donors protect this freedom and creativity. Through Pasteur 2030, we are committed to fostering excellence, and a risk-taking culture that is required to drive the next era of scientific discoveries.

03

Ethics & integrity

A steadfast commitment to research integrity and exemplarity in ethics and responsible science is essential to pursuing our missions. We are committed to upholding human dignity and animal well-being by ensuring the protection of people and animals in research and operating with fairness. Our research follows principles of honesty, reliability, rigor, and transparency. To achieve this, we apply the highest standards through four charters on ethics (*link*, in French), research integrity (*link*, in French), anti-corruption (*link*, in French), and professional conduct (*link*, in French). This commitment is part of our Corporate Social Responsibility, with training and awareness activities to reinforce our culture of ethics. Pasteur 2030 aims to ensure dedication to ethics, research integrity, and responsible science, securing public trust and equitable access to innovation for the benefit of all.

04

Open science

The Institut Pasteur is dedicated to promoting open science, recognizing its importance in driving global collaboration and innovation. This approach ensures scientific discoveries are reproducible and impactful while accelerating progress through cross- disciplinary and cross-border collaboration (*link*). In addition to sharing our own work, we also emphasize the integration of external data sources, expanding access to a wider pool of information. Pasteur 2030 will uphold these values, notably via the creation of a dedicated Open Science office that will lead these efforts, ensuring transparency, accessibility, and public engagement in all scientific endeavors.

05

Empowering our human capital

We are deeply committed to empowering the next generation of scientists, recognizing their success as vital to the future of both our organization and science itself. Today, with master's students, PhDs, postdoctoral fellows, and early-career scientists from over a hundred nationalities, we play a fundamental role in the growth of international scientific leaders. Pasteur 2030 will continue to strongly invest in future scientific leaders in France and internationally, promoting excellence, innovation and collaboration.

06

Dialogue between science & society

As a trusted advocate for science, the Institut Pasteur has always played a pivotal role in fostering dialogue between science, society, and policymakers. In the post-COVID-19 era, as misinformation continues to rise, societal engagement with science is more crucial than ever. Pasteur 2030 will strengthen the Institut Pasteur's role as a leading advocate for science and a central platform for societal dialogue. We will promote scientific literacy by expanding our outreach, enhancing educational programs, and our reimagined museum. Transparent communication will be a priority to ensure that the Institut Pasteur remains a trusted and independent voice in public debates. By reinforcing our pioneering status, we aim to make science a transformative force in addressing global health challenges and building public trust in science and society.

07

Environmental responsibility

Embracing our societal responsibilities, we integrate social, environmental, and economic considerations into all activities. Pasteur 2030 will prioritize sustainability in both our scientific pursuits and operations. Our dedicated 'green team' collaborates with institutional environmental groups to implement sustainable initiatives, and raises awareness through training programs for staff, students, and postdoctoral researchers. As discussed further, our scientific priorities are aligned with these values with a major commitment to understanding and mitigating the impacts of environmental changes on human health and ecosystems.

08

Diversity, equity & inclusion embedded throughout the institution

We recognize that diversity, equity, and inclusion are not just values but essential catalysts for innovation, agility, and progress. We envision a unified organization where everyone contributes uniquely to our mission, regardless of origin, gender, background, positions, or disability. By fostering an inclusive and supportive environment, we aim to unlock the full potential of our community. By fully embracing diversity, we will enhance the impact of our research, leading to more meaningful solutions for global health. As we move forward, Pasteur 2030 will deepen this commitment, ensuring that diversity, and inclusion remain at the core of our mission and continue to drive our future success.

Our scientific priorities at the service of society

Pasteur 2030 recognizes that transformative discoveries have dominantly developed from undirected and curiosity-driven research and will uphold the fundamental freedom essential for scientific creativity and discoveries. We are committed to promoting a strong basic research ecosystem and to protecting risk-taking as a fundamental core value. In this context, we will further cultivate our solid technological ecosystem, artificial intelligence, computational biology, and quantitative biology, while fostering key national and international partnerships.

As we confront the pressing societal challenges of our era—climate change, emerging infections, antimicrobial resistance, as well as the rise in inflammatory disorders and cancer—Institut Pasteur will also leverage its legacy and strengths to address some of the most pressing health challenges of our time. **Pasteur 2030** will also integrate new fundamental knowledge to our understanding of health and diseases and in particular how sex, gender, age, and genetics, along with their potential interactions, influence physiological responses to infections and disease outcomes. Within our dynamic scientific community, we will create new opportunities, foster partnerships, and develop diverse funding streams. These efforts will also support four key priorities, alongside the expertise required to sustain cutting-edge research (see section "VIII. Developing our expertise to push forward our vision"). We will continue to excel and make a strong impact in our legacy areas of expertise in infectious diseases, while also exploring new themes that are tailored to address the most pressing societal challenges of our time (priorities 2, 3, and 4).

Priority 1.

Infectious Disease Threats —

Fighting infectious diseases and antimicrobial resistance (antibiotics, antivirals, antifungals, antiparasitics).

Priority 2.

Environmental Transitions & Health —

Understanding and responding the impact of climate changes and ecological transitions on health and diseases.

Priority 3.

Origins of Diseases —

Investigating and acting on the mechanisms underlying non- communicable diseases and inflammation.

Priority 4.

Health & Disease at the Extremes of life —

Exploring physiology and immune responses during key life stages, including early development (focusing on the mother-child dyad) and aging.

The creation of new scientific opportunities, the development of partnerships, and the diversification of funding sources will support our four scientific priorities while strengthening the expertise needed for cutting-edge research (see section VIII. Developing our expertise to advance our vision). The implementation of these priorities will involve recruitment to enable transdisciplinary research, strategic national and international collaborations, as well as targeted incentive programs. A dedicated team works closely with scientists to manage the incentive programs, while actively collaborating with funding agencies. This approach aims to support ambitious, high-risk, and high-potential projects.

TO UNDERSTAND, PREVENT AND TREAT DISEASES

The Institut Pasteur adopts a holistic approach based on three guiding principles:

- A deep understanding of biological systems and their homeostasis is required;
- Diseases do not affect a single cell or organ but an entire system. Therefore, multiscale and multidisciplinary approaches are necessary;

- Disease trajectory and response to treatment are conditioned by the host genetic background, epigenetic factors, sex and age, from conception to aging.

These fundamental principles will apply to all dimensions of our research programs.

Focus on Incentive Programs

Within the Scientific Department of the Institut Pasteur, a dedicated team develops incentive initiatives to build a portfolio of **multidisciplinary, collaborative, and innovative research projects** that can be developed with public, private, and philanthropic partners.

Supporting Research and Innovation
The incentive programs support our Pasteur 2030 ambitions by energizing our research ecosystem. They promote scientific excellence, enhance the visibility of the Institut Pasteur, and serve as a springboard for emerging talents seeking external funding or strategic partnerships. These initiatives also coordinate efforts to address critical public health challenges and explore major technological innovations.

Calls for Proposals
Each year, internal and external calls for proposals identify and select outstanding research projects at the Institut Pasteur, often in collaboration with esteemed partners. These initiatives include :

- **Pasteur-Roux-Cantarini postdoctoral fellowships and Seed-Grants, aimed at supporting emerging talents and providing leadership opportunities on ambitious projects.**
- **Inter-Pasteurian Concerted Actions and Transversal Projects Research Programs,** focusing on major public health challenges and cutting-edge technological innovations.
- **Collaborative projects** through joint calls with institutions **such as EMBL, Institut Curie, Institut Imagine, ICM, and Weizmann Institute,** to address critical public health issues and develop advanced technologies

Adaptability and Crisis Response
These programs are designed for rapid adaptation in response to health crises. For example, during the COVID-19 pandemic, over 500 scientists collaborated on 105 research projects and 7 joint programs, supported by partners including the Pasteur Network, the Crick Institute, and Japanese universities. These efforts successfully raised over 2.5 million euros specifically for our COVID-19 research.

Outlook
The **Pasteur 2030** strategy will be driven by flagship projects that are in line with recognized scientific priorities. These initiatives will be carried out in close collaboration with renowned researchers, striving to engage the scientific community and secure support from funding bodies for these high-risk, high-potential programs.



PRIORITY 1

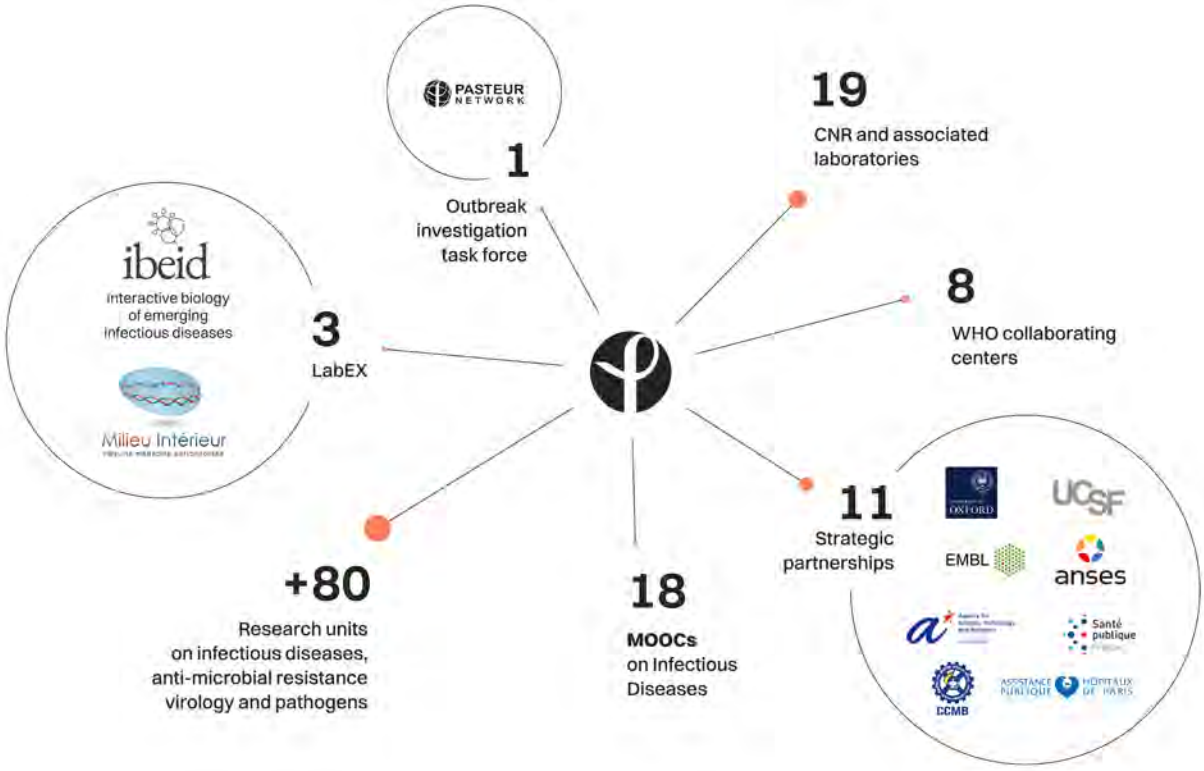
Infectious disease threats

Fighting infectious diseases and antimicrobial resistance (antibiotics, antivirals, anti-fungals, anti-parasitics).

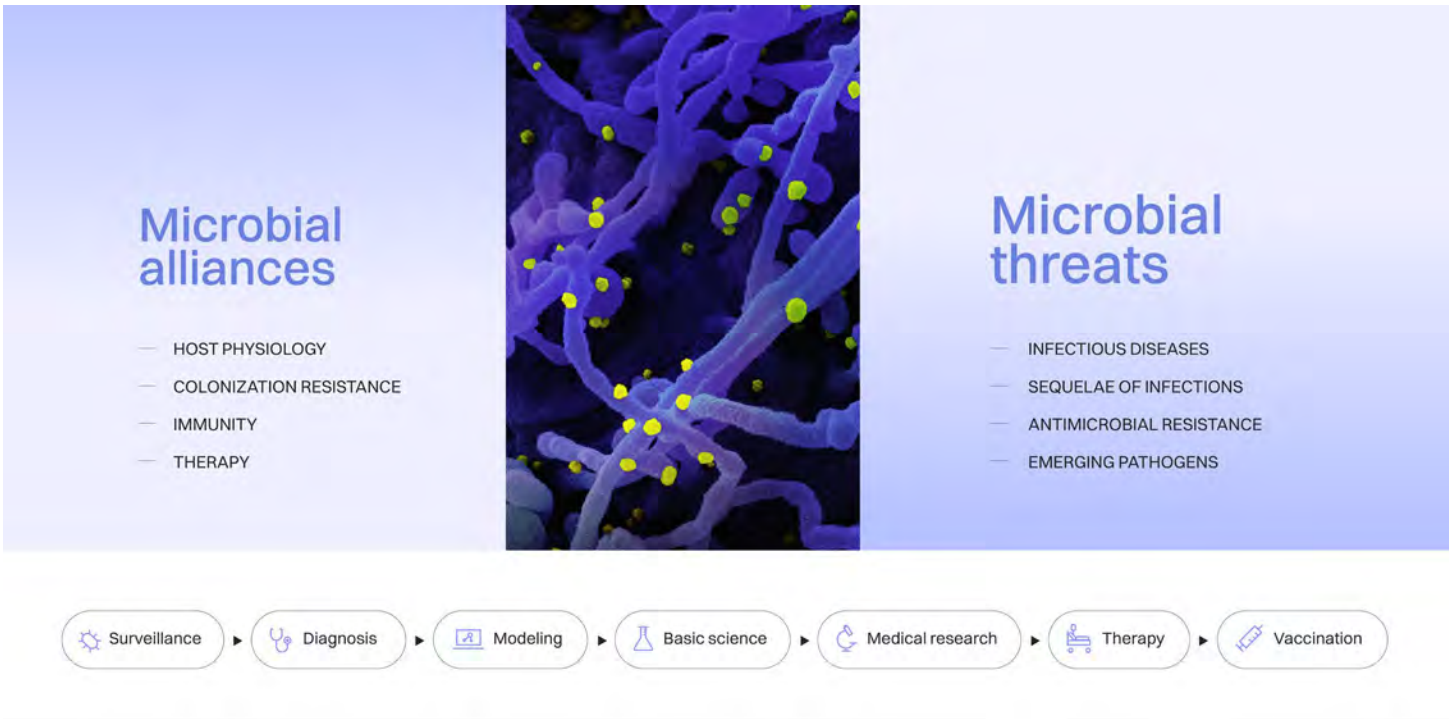
Infectious diseases remain one of the leading causes of illness and mortality in the world. According to the World Health Organization (WHO), infectious diseases account for approximately 15 million deaths per year. Despite progress from vaccines and antimicrobial therapies, diseases like HIV/AIDS, tuberculosis, malaria, respiratory infections and diarrhea continue to pose significant challenges. Additionally, antimicrobial resistance (AMR) represents an urgent public health threat. Antibiotic-resistant infections cause over a million deaths annually, with projections showing a significant increase in the coming decades. AMR is spreading rapidly due to overuse of antimicrobials in humans and animals, along with environmental factors. Critical antibiotic-resistant pathogens include certain Gram-negative bacteria and tuberculosis.

Urgent action is needed to develop innovative drugs and treatments for infectious diseases. These challenges are central to the Institut Pasteur's mission. Throughout its 137-year histo-ry, Pasteur scientists have made transformative contributions to understanding, preventing, and curing infectious diseases - from discovering and characterizing pathogens and associat-ed diseases, to developing therapies and vaccines.

Today, the Institut Pasteur remains a world leader in infectious disease research. Its collec-tive expertise across viral, bacterial, fungal, and parasitic pathogens is unmatched globally. Continued work in this field is critical for addressing current and future menaces. Spanning from basic to clinical research, the Institute’s expertise in epidemiology and modelisation is vital for understanding the determinants of infectious diseases, reconstructing transmission chains, assessing contamination risks, and modeling epidemic dynamics.



The Institut Pasteur comprehensive value chain spans from the exploration of microbial alliances (linked to the symbiotic microbiota discussed in axis 3), to infectious diseases, including surveillance, diagnostic, modeling, basic and clinical research, to therapy and vaccination.



Pasteur 2030 will continue to prioritize research on infectious diseases and antimicrobial resistance (AMR) as a fundamental pillar of our mission, in line with the legacy of Louis Pasteur. This continuity enables us to remain at the forefront of innovation and to provide tangible solutions for human health. The plan aims to develop cutting-edge projects that integrate clinical and field data with molecular, chemical, genetic, and physiological approaches.

THE KEY GOALS OF PASTEUR 2030 ARE:

Analyzing physiology, ecology and evolution of microbes (viruses, bacteria, fungi and parasites) by:

1. Studying molecular mechanisms governing microbial growth, metabolism, and resistance acquisition;
2. Integrating complex host-microorganism interactions, the role of the immune system and the microbiota to understand microbial pathology;
3. Examining the formation of complex structures like biofilms;
4. Investigating processes of quiescence, dormancy, latency, persistence, and tolerance that enable microbes to escape treatment.

Improving understanding of resistance by enhancing our comprehension of how resistance emerges and spreads, by combining multidisciplinary approaches.

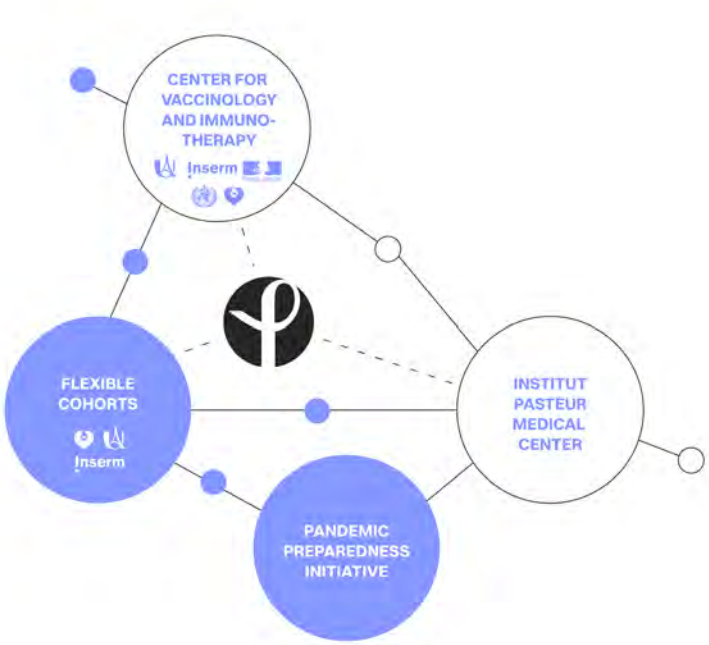
These approaches include epidemiology, genomics, statistics, evolutionary biology, structural biology, chemical biology, modeling.

Identifying new drugs and therapeutic strategies by:

1. Synthesizing focused chemical libraries;
2. Exploring new targets, including those involved in host-microbe interactions and pathogen life cycles;
3. Implementing phenotypic and molecular screening to identify selective inhibitors;
4. Further exploring phage therapy against bacteria;
5. Exploiting diverse environments to discover new natural products;
6. Developing novel vaccines and immunotherapies targeting microbes and resistant strains, within the framework, of the Center for Vaccinology and Immunotherapy (CVI).

FLAGSHIP PROJECT: CENTER FOR VACCINOLOGY AND IMMUNOTHERAPY (CVI)

The CVI, launched in 2024, aims to spearhead the development of next-generation vaccines and immunotherapies through collaborations with hospitals, academic and industrial partners, aligning with France Vaccins 2030 initiative. The CVI prioritizes vaccine development on emerging or re-emerging infections, and addresses the growing threat of antibiotic-resistant microbes.



In coordination with government initiatives, the CVI contributes to pandemic preparedness by accelerating research and development procedures for health emergencies. The CVI leverages the strong expertise on campus in immunology, structural biology and microbiology and will further promote a continuum between discovery and clinical research.

Flagship partnership: EMBL European program- "Amplifying Funds in Infection Biology"

The Institut Pasteur has recently joined the European Molecular Biology Laboratory (EMBL) initiative "Amplifying Funds in Infection Biology" that aims to foster interdisciplinary and collaborative research across Europe, addressing critical challenges posed by infectious diseases. This initiative will explore vital aspects such as pathogen mechanisms, host-pathogen interactions, human genetics influencing infection susceptibility, and innovative strategies to combat AMR. By leveraging cutting-edge techniques in deep learning, computational biology, imaging, and structural biology, the initiative fosters a game-changing collaboration among leading European institutions.



PRIORITY 2

Environmental transitions & health

Understanding the impact of climate changes and ecological transitions on health and diseases.

Our planet has entered an era of climate and environmental change as a direct consequence of industrialization and anthropization - the conversion of natural environments by human action. In a fast-evolving world, climate change, pollution, population displacement and deforestation contribute to the rapid evolution of microbial communities and pathogen transmission with major consequences on human health. Climate changes also significantly impact inflammatory and non-communicable diseases such as cardiovascular diseases, respiratory conditions, metabolic disorders, and cancers. Rising temperatures worsen air quality, leading to higher rates of asthma, chronic obstructive pulmonary disease and other diseases.

Novel pathogens are deemed to emerge in the coming years. By taking over wilderness areas for agricultural or urban development, interactions between wild animals and human populations have been modified. Microorganisms are increasingly crossing species barriers. HIV, Nipah, Ebola, COVID-19, Mpox originated from animal-borne viruses that have met human populations. Changes in temperature, precipitation, and humidity expand the habitats of vectors that carry pathogens, leading to increased incidence of diseases like malaria, dengue fever, and Lyme disease in previously unexposed regions. For instance, Europe has recently seen a South to North migration of Aedes albopictus, the mosquito that carries dengue, chikungunya, and Zika viruses, previously found only in tropical areas. Over the past three decades, 30 human pathogens have emerged from various routes (vector, air or food borne), driven by ecosystem changes and microbial adaptability.

Our unique expertise in infectious diseases: the Institut Pasteur has a longstanding commitment to monitoring, understanding, and exploring emerging infections, resulting in a unique legacy of discoveries related to new pathogens and disease-causing agents placing us in a leadership position to monitor and prevent epidemics and pandemics. With over 80 research units working on this topic, 19 national reference centers and associated laboratories, 8 WHO collaborating centers, and connections to the Pasteur Network, the Institut Pasteur is ideally positioned to promote programs aimed at understanding the basic principle of host pathogen interactions and mitigating the impact of environmental changes on human health.

Pasteur 2030 will enhance its leadership in the understanding and control of vector- borne diseases and emerging infections. To this end, we will support deep mechanistic exploration of host-pathogen interactions, develop new tools for pathogen identification and identify factors associated with individual susceptibility to infections, including the role of genes, immunity, and the microbiota.

As further discussed, **we will also develop novel targets for diagnosis, vaccination and treatment.** We will have a strong focus on vector-borne diseases and vector-pathogen interactions (as highlighted by our flagship project Center for Infection, Climate, and Environment) and novel infrastructure associated.

We will embrace a One Health approach, recognizing the interconnectedness of human, animal, and environmental health. Our vision is to promote a holistic and collaborative approach with strategic partners that spans multiple scientific disciplines, medicine, veterinary and environmental sciences together with strategic partnerships (e.g., ANSES, Assistance Publique et Hôpitaux de Paris, Inserm, Inrae, Institut de Recherche Biomédicale des Armées, Institut de recherche pour le développement).

Indeed, through this focus on environmental transitions and health, Pasteur 2030 will leverage our expertise in infectious diseases to address the unprecedented environmental challenges facing humanity today.

Pasteur 2030 Pandemic preparedness, a local and international vision (that applies to priorities 1 and 2). The response to the threat posed by emerging infectious diseases requires the combination of active surveillance for early outbreak detection with research pipelines leading to biomedical countermeasures. The Institut Pasteur, together with the Pasteur Network, is uniquely positioned to address all aspects of emerging infectious disease response from early identification of new pathogens to their characterization, and the development of diagnostic, treatment and vaccine tools.

Of the institutes of the Pasteur Network, thirteen are in areas exposed to emerging infectious diseases threats such as Ebola, Mpox, plague and cholera in Africa, H5N1 influenza and beta- coronaviruses-associated diseases in South-East Asia, and dengue, yellow fever, Chikungunya, Zika and Oropouche in Latin America.

As a major collaborative effort within the Pasteur network, we aim to:

1 - Understand the conditions of pathogen emergence

Including climatic and environmental factors, and identify ways to prevent it.

2 - Detect and control outbreaks at their beginning.

Obtain early samples and data for pathogen characterization and understanding of modes of transmission; produce models of epidemic dynamics to guide health authorities.

3 - Describe and estimate the rate of severe clinical outcomes in infected individuals.

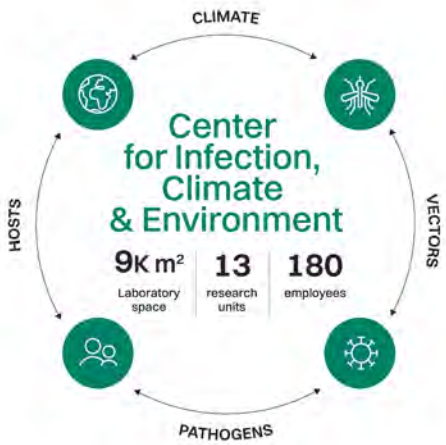
Identify the virological, genetic, epigenetic and immunological predictors of these complications; characterize virus-host interaction to identify targets for treatments and vaccines.

4 - Maintain, within sites of emergence, state-of-the-art technological platforms to ensure rapid development of diagnostic tests, treatments and vaccines during pandemics.

This international program, together with the reinforcement of infrastructures and partnerships within the French ecosystem (see Pasteur Pandemics Preparedness Initiative) will position us as a major player in the prevention and control of future infectious emergences.

FLAGSHIP PROJECT — CENTER FOR INFECTION, CLIMATE AND ENVIRONMENT (ICE)

The Pasteur Institute is building a research infrastructure to address the most significant emerging infectious diseases, particularly those transmitted by vectors (e.g., mosquitoes, ticks, parasites). This center will provide a unique high-security technological environment, with biosafety laboratories level 3, to study the most dangerous pathogens. It will enable researchers to conduct innovative experimental studies on pathogen- vector-host and pathogen-host interactions, using cutting- edge imaging approaches. The new building will feature flexible lab spaces setting up internal and external collaboration with national and international partners, as well as to provide training for young researchers. This infrastructure is expected to be operational by mid-2028.



FLAGSHIP PROJECT: THE PASTEUR PANDEMICS PREPAREDNESS INITIATIVE

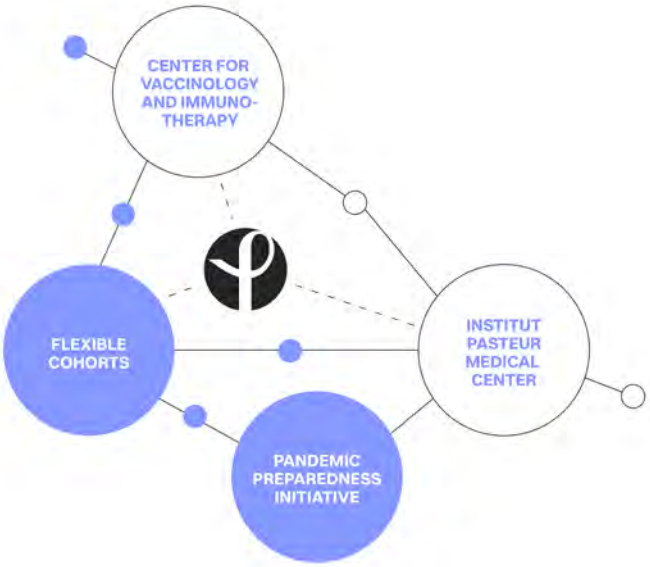
The Pasteur Pandemics Preparedness Initiative was launched to strengthen our capacity to swiftly respond to pandemics. This comprehensive initiative collaborates with local, national, and international pandemic preparedness initiatives.

The five main objectives are:

- Deepen knowledge of pathogens by focusing on the biology of viruses and the dynamics of infectious diseases.
- Boost counter-measures development with rapid development of diagnostics, vaccines, and therapeutics (*see the flagship project Center for vaccinology and immunotherapy), section "Scientific priorities")* and the Center for Drug Discovery and Development (*see section "Developing our expertise to push forward our vision"*).
- Enhance epidemic intelligence with early detection and surveillance of pathogens, the National Reference Centers, the Biological Emergency Response Unit (CIBU) and the Pathogen Discovery Laboratory.
- Improve outbreak response with the Outbreak Investigation Task Force (OITF), which provides scientific support to local authorities in virology, entomology, immunology, and epidemiology during emergencies. The OITF has a key role in generating high quality data, including laboratory, epidemiological and clinical information. Alongside partners at Université Paris Cité and AP-HP, a pipeline for rapid epidemic investigation in Paris is being established.
- Develop Flexible Cohorts by enhancing protocols for data sharing and analysis during emerging infections, while addressing legal and regulatory issues. It promotes collaboration between hospitals and research institutions, including Institut Pasteur, Université Paris Cité, Inserm, and various AP-HP hospitals. The project aims to characterize pathogens and develop diagnostics, treatments, and vaccines by establishing hospital-based cohorts for collecting biological samples and studying pathogen natural history. Annual protocol testing will concentrate on seasonal viruses, particularly respiratory and arboviruses, with progressive recruitment. Optimized pipelines will be prepared for new outbreaks and pandemic readiness.

Flexibles Cohortes:
Pandemic Preparedness







PRIORITY 3

Origins of diseases

Investigating the mechanisms underlying non-communicable diseases and inflammation.

This rapid increase in non-communicable diseases is caused by major shifts in the human exposome (e.g., exposure to environmental factors including infections, microbiota, diet, drugs or pollutants), which increasingly threatens our physiology. By 2050, WHO estimates that half of the world's population will be affected by asthma and allergies. We are also witnessing an alarming increase in autoimmune, neurodegenerative, and metabolic disorders as well as in colorectal cancers among younger populations.

Acute infections can lead to chronic inflammatory conditions that result in persistent and potentially debilitating outcomes for affected individuals. For instance, the recent COVID-19 pandemic is a striking illustration of the long-term consequences of infection. Furthermore, a recent cross-sectional data analysis from the UK Biobank has identified over 40 viral exposures as significantly associated with an increased risk of neurodegenerative diseases up to 15 years after infection.

Pasteur 2030 will confront this major global health threat associated with the rapid acceleration of inflammatory disorders and non-communicable diseases.

The Institut Pasteur legacy in the mechanistic understanding of biological systems places us in a leadership position to understand the etiology and trajectories of diseases. This strong mission, empowered by our multidisciplinary expertise is highlighted by our cutting-edge research on immunity and inflammation, neurodevelopmental disorders and cancer and has recently led to the creation, together with our academic and clinical partners, of two University Hospital Institutes (IHU) (see section "*Advancing medicine & surveillance through research integration*").

Understanding the origins of and trajectory to non-communicable disorders requires a paradigm shift in scientific approaches based on a deep understanding of homeostasis and consequences of exposure to stressors. The Institut Pasteur provides a truly unique transdisciplinary community of scientists that can untangle this causal complexity, with the aim to understand the etiology and trajectory to diseases.

To this end we need, via observational studies, experimental and theoretical models, and clinical collaborations, to develop transdisciplinary approaches that integrate past and present host states, including genetic background, sex, age, infection, status, microbiota as well as lifestyle (and in particular nutrition).

To understand the origins of diseases, we also need to explore host physiology through the lens of the metaorganism, i.e. as a dynamic system that reflects the constant interaction and (co)evolution between the host biology, microbes (inside and surrounding) and a rapidly changing world. Quantitative and computational biology, powered by artificial intelligence methods, will be crucial to advancing our understanding of the metaorganism, its homeostasis, and to predict how the exposome influences disease occurrence and progression.

Collectively, our leadership in genomic and epigenetic approaches together with microbiology, immunology, neurosciences, developmental and stem cell biology, cellular and structural biology, evolutionary biology, artificial intelligence and global health, places the Institut Pasteur in a unique position to understand and ultimately reverse the complex network of factors that disrupt homeostasis and physiology and promote disease.

Research areas

To strengthen our leadership in the mechanistic understanding of diseases and disease etiology we need to develop a deep understanding of tissue physiology (the logic and organization of each tissue); explore the host as a metaorganism (the relationships between host, tissues and microbes); understand how infections, nutrition, inflammatory insults, pollutants or stress, impact the metaorganism (how they perturb physiology) and integrate the effects of host genetics, sex and age on maladaptive trajectories and disease etiology (individual trajectories in health and disease).
This line of research also opens up promising prospects for the identification of new antimicrobial agents, in line with Pasteur 2030 axis 1.

1- Decoding tissue physiology:

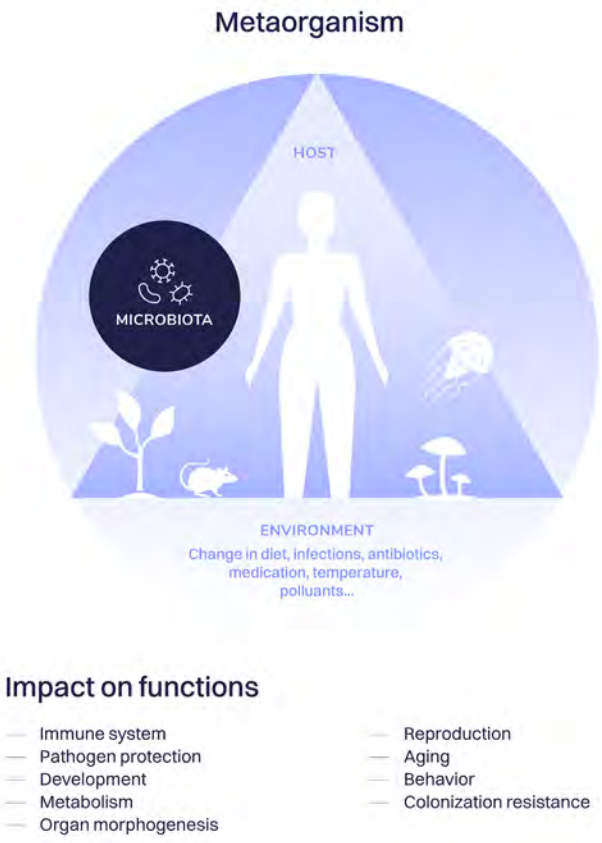
A deep characterization of tissue development and physiology is essential to understand the origins and trajectory of diseases. Cells in tissues constantly interact to maintain homeostasis in the face of perturbations, through repair and regeneration. A loss in resilience leads to tissue damage and increases susceptibility to both infectious and non-infectious diseases. For instance, tissue stem cells, which represent the core of tissue renewal, can develop “memory of past exposures”. Understanding tissue physiology and how tissues are impacted by environmental stressors will leverage our multiple expertise in tissue development, stem cell biology, immunology, neuroscience as well as stromal, vascular and epithelial cell biology. We propose to reinforce our exploration of barrier tissues such as the gut, lung and skin that are particularly exposed and susceptible to damage, infection, inflammatory disease, and cancer, and of key organs of central interest within the Pasteur community such as the brain, the heart, or muscles. This line of research will be supported by work in preclinical and organoid models developed in partnership with Institut Imagine and Institut Necker - Enfants Malades (INEM) and will significantly benefit from our enhanced integration and collaboration with clinical partners.

2- Host as a metaorganism:

The Institut Pasteur played a leading role in establishing **the concept of the host as a metaorganism. This concept integrates the intricate interactions between the host and its microbial communities, which include bacteria, viruses, fungi, as well as mitochondria (former bacteria) and retroviruses, collectively referred to as the microbiota.** The composition of microbiota is influenced by a variety of factors that include diet, genetics and the host immune system. The microbial-host symbiosis, starting in the embryo, also shapes our resistance to infection, development, physiology, metabolism, immunity, tissue repair and behavior.

The Microbes and Brain initiative at the Institut Pasteur is a good illustration of our pioneering role in understanding the physiology of the metaorganism in its entirety. Over the years, microbes have also been an inspiration for the development of transformative technological and therapeutic advances (such as the discovery of the CRISPR-Cas9 system, which aims to study bacteria and enables the specific elimination of pathogenic bacteria (*lien*). This line of research has strong potential for the discovery of novel antimicrobial agents, one of the aims of Pasteur 2030. CRISPR-Cas9 technology makes it possible to develop new targeted antibacterial strategies against pathogens while preserving the beneficial bacteria in our microbiome.


JAPAN



About metaorganism

Multicellular organisms exist as meta-organisms, comprising both the macroscopic host and its symbiotic microbiota. These complex communities of microbes that include bacteria, fungi, viruses, and other microbial and eukaryotic species, some inside the host's own cells, play a fundamental role in controlling all aspects of host physiology, including host metabolism, immunity and behavior. The impact of the microbiota begins during development, and early encounters with microbes contribute to long-term health. The metaorganism is as dynamic systems organized by constant interaction between the host biology, microbes (inside and surrounding) and a rapidly changing world.

It will be reinforced by our expertise on "Microbes and Microbial Communities,"(see section "*Developing our expertise to push forward our vision. 3- Developing an ecological approach to microbiology and infectious diseases*") that will integrate ecological approaches by exploring microbes and microbial communities within their broader context (climate, environment, insect vectors, host microecology,…).

To deepen our understanding of the metaorganism, significant investments will be required in metabolomics, genomic technologies, computational biology and deep learning, as well as the implementation of cutting-edge culturomics (organoid cultures). The Institut Pasteur will develop strategic and synergistic partnerships with French research institutions, such as Institut Curie and Institut Imagine.

3- Long-term sequelae, the long-term impact of infection, nutrition and other past exposure:

Using diverse experimental settings as well as collaborations with clinical partners **we will identify how unique challenges - whether nutritional, inflammatory or infectious - can disrupt tissue homeostasis and host physiology for the long term**. Based on the unique expertise of the Institut Pasteur in infectious diseases and microbiology, a significant part of this effort will be associated with infectious sequelae.

Humans are confronted by a rising number of acute respiratory and gastrointestinal infections, as the recent COVID-19 pandemic has dramatically demonstrated. This pandemic made us aware of the heavy burden of long-term sequelae of infection, which alter tissue homeostasis and the individual's trajectory in health and disease. Infections and the resulting immune responses can leave irreversible scars that increase susceptibility to inflammatory pathologies and their consequences (cancer,

neurodegeneration,…). The emerging concept of tissue and organismal memory of past infection and inflammation is currently changing our view of the origins of diseases.

The unique and complementary expertise at the Institut Pasteur in genetics, epigenetics, developmental biology, immunology, neurosciences and infectiology positions us uniquely to understand the long- term impact of infection and inflammation on the individual's susceptibility to disease.

4- Impact of sex and gender on physiology, response to infection and susceptibility to diseases

Clinical evidence has revealed significant differences in the incidence, tropism and severity of diseases between males and females. For instance, females tend to develop stronger responses to infections and vaccines and have a greater incidence of autoimmune disorders than males, a phenomenon that was recently highlighted in the context of the COVID-19 pandemic, with enhanced risk for severe infection and lethality in men compared to women.

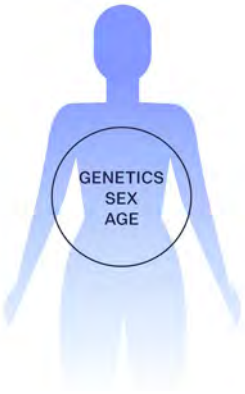
Despite the fundamental importance of this phenomenon, **our understanding of the key factors involved in shaping sex-specific physiology, immunity, and responses to pathogens or vaccines remains surprisingly limited.** This fundamental line of research represents a significant scientific gap and is crucial for understanding biological processes and disease outcomes, as well as for developing preventive and therapeutic approaches that are aligned with individual sex.

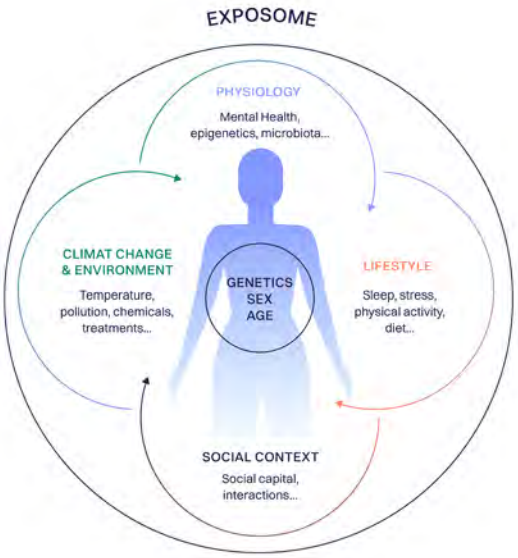
Moreover, this research has important implications for bridging the critical knowledge gap **in women's health,** and as further discussed in axis 4, the exploration of mother-child dyad. **Our goal is to, when applicable, integrate sex differences including control exerted by sex chromosomes and/or hormones on host physiology and disease etiology.**

This important line of research that is already a key component of the **Labex Milieu Intérieur** (a pioneering program, led by the Institut Pasteur, that explores the determinants of variability in the human population) and will benefit from strong collaboration with the Institut "Santé des femmes" of Université Paris Cité.

Our research aims to understand health and disease through the prism of diversity

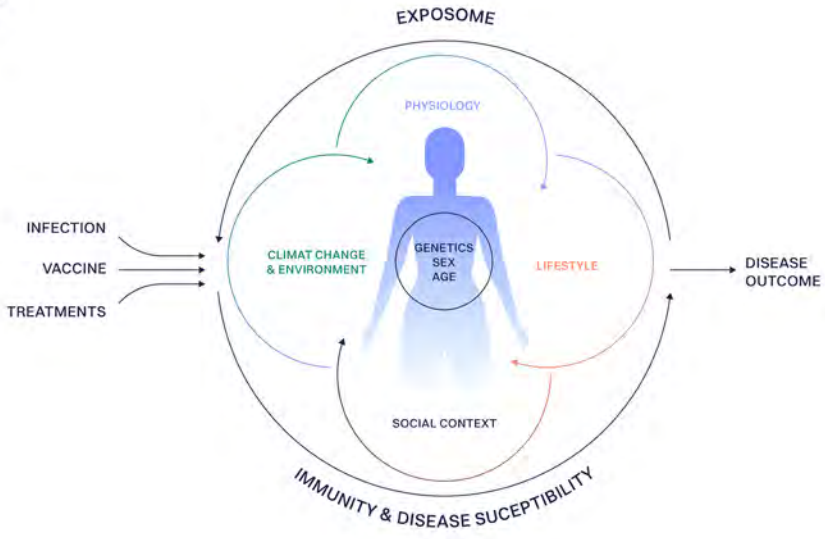
1. Our research takes into account the **intrinsic diversity** of each individual, defined by genetics, sex and age…





2. ... and approaches each human being as an ecological unit, integrating the variety of exposures to which a person is subjected throughout his or her life, known as the **exposome...**

3. ... in order to understand how health status emerges from particularly complex interactions between **intrinsic and extrinsic factors.**



Disease outcome, as a trajectory of disease and response to treatment, is conditioned by complex interactions between immunity, disease susceptibility, the exposome, infections, vaccines and treatments, and by the impact of all these factors from conception to senescence.



PRIORITY 4

Health & diseases at the extremes of life

Exploring physiology and immune responses during key life stages, including early development (focusing on the mother-child dyad) and aging.

Host physiology, responses to infection, and susceptibility to diseases are closely related to a person's age, with both extremes of life being particularly vulnerable to health challenges. However, our understanding of the physiological factors that determine immunity, tissue responses, repair mechanisms, and the consequences of inflammation that predispose individuals to disease in early life and during senescence remains limited.

Pasteur 2030 has chosen to focus on these currently underexplored research areas, bringing together and developing its various areas of expertise. Thus, Pasteur 2030 will continue to explore the mechanisms that underline the very young age and senescence by

1. Developing a holistic understanding of the maternal-child dyad and determinant of maladaptive trajectories;
2. Exploring the unique determinants of aging associated diseases and immunity.

Maternal-Child Dyad

Despite the fundamental importance of early life and pregnancy, our knowledge of maternal-child dyad physiology and immunity during the critical first years of life is surprisingly sparse. Epidemiological and experimental evidence has demonstrated that **stresses encountered during pregnancy can result in vulnerable trajectories for both mother and child**. Much remains to be understood about the nature and mechanisms underlying these negative outcomes.

Given the important increase in inflammatory and autoimmune disorders, we must develop a deep understanding of maternal-child dyad physiology and immunity in the context of both optimal and maladaptive trajectories (aligned with *Axis 3, Origins of Diseases*).

This line of research, historically neglected in both high-income and low- and middle-income countries, pertains to vaccination strategies, pregnancy complications, optimal management of disease states during pregnancy, and the long-term health of children.

Throughout pregnancy, the mother's close interaction with the developing child influences growth and protects against infections in early life. At birth, pioneer microorganisms from the mother's microbiota are acquired, and breastfeeding along with skin-to-skin contact strengthens maternal attachment, child development, and immunity. These interactions also help establish the child's

microbiome, supported by the nutritional and immunological benefits of breast milk. From conception through early childhood, microbes, immune responses, and nutrition shape each stage of development.

The first 1,000 days are crucial, with disruptions in the maternal-child relationship and microbiome linked to rising diseases like asthma, eczema, obesity, diabetes, and cognitive disorders.

In high-income regions, reduced microbial diversity due to modern lifestyles (antibiotics, nutrition) has affected developmental, immune, and nutritional pathways, contributing to pediatric diseases like allergies and neurodevelopmental disorders. In contrast, in low- and middle-income regions, inadequate healthcare, malnutrition, and suboptimal sanitation lead to stunted growth, increased infection risk, and delayed cognitive development. Maternal malnutrition also affects fetal and postnatal development, particularly breast milk quality.

Using highly controlled experimental settings, and in the context of clinical collaborations, we propose to develop a holistic, multidimensional program bridging fundamental mechanistic research and clinical research to develop a deep understanding of maternal child dyad and how the “global exposome” (including infections) influences maternal health and child development, health, and disease predisposition. This line of research will also represent a priority of our collaborative effort within the Pasteur Network. This program is also aligned with French national efforts focused on the first 1,000 days of life and the development of a national plan to combat infertility (*link*, in French).

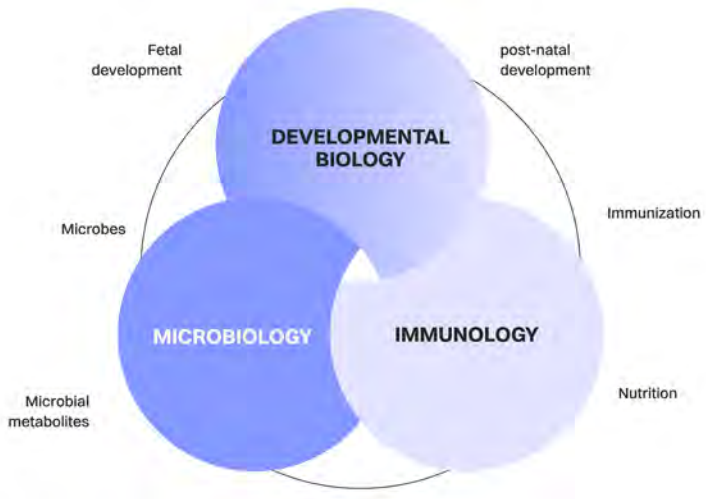
We aim to provide a robust nucleus of basic science on embryogenesis and maternal fetal dialogue and how defined derailers during pregnancy or early in life can impact child development, health and disease. In alignment with our "Origins of Disease" scientific axis, we will investigate how infectious or inflammatory events affect the maternal-child dyad, with particular attention to maternal immunity and the effects of inflammation, infection, and vaccination on both mother and child.

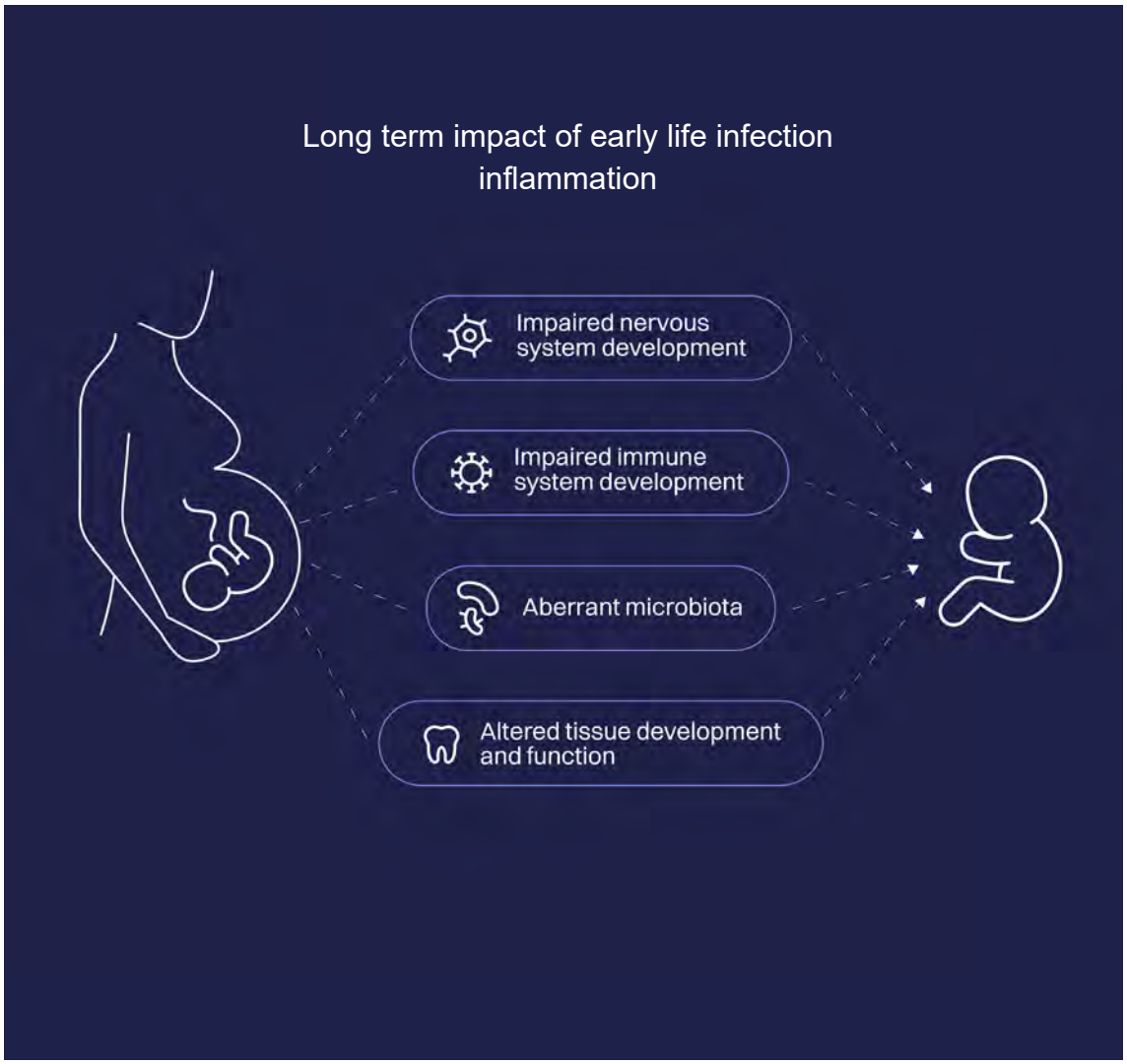
Aligned with the Microbes and Brain program already established at the Institut Pasteur, this axis will also examine the role of the maternal-child microbiome in neurodevelopment and immune system maturation, as well as the long-term health implications of early-life infections and weaning.

This ambitious program will leverage the strong foundational expertise already available at the Institut Pasteur including developmental and stem cell biology, genomic, microbiology and immunology as well as our partners institutes (such as the Université Paris Cité, Institut “Santé des femmes”, Institut Necker and Institut Imagine).

Collaborations with clinicians in France and in the Pasteur Network, will support research on the dysfunctions of the dyad that account for disease and will enhance precision medicine in mother-child health. This line of research is of fundamental importance for the protection of human health.

Maternal Child Dyad - Example flagship programs Toward our vision





Aging

According to the World Health Organization (WHO), the global population aged over 60 is projected to double from around 11% to 22% between 2000 and 2050. Aging—a process characterized by the gradual decline of physiological functions—represents another scientific frontier, poorly understood but essential for limiting neurodegenerative diseases, improving cancer surveillance and responses to infections or vaccinations.

The Institut Pasteur has a transdisciplinary working group dedicated to studying fundamental aging mechanisms such as mutations and repair, cellular senescence, stem cells, and aging physiology.

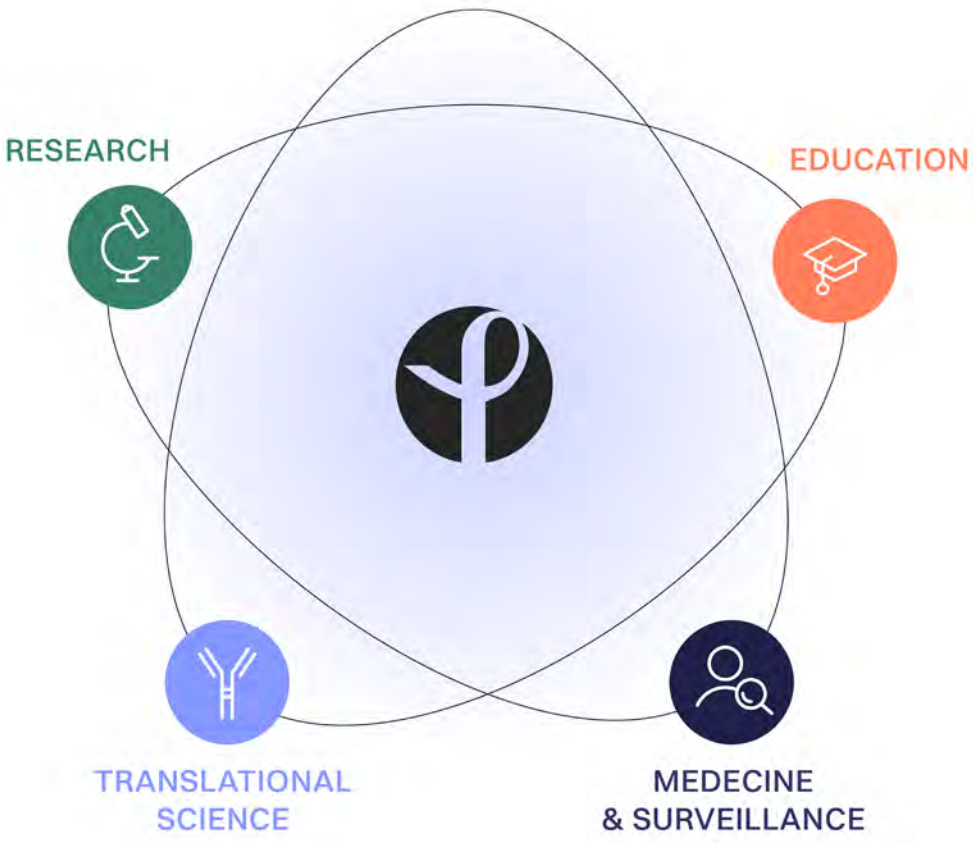
Pasteur 2030 will put a specific emphasis on the understanding on the determinant of immunity on aging with the Center for Vaccinology and Immunotherapy (CVI).

Our strengths & goals to push scientific boundaries and respond to societal challenges

The Institut Pasteur's ability to address ambitious scientific challenges is anchored in a wide range of unique strengths. Our leadership spans multiple disciplines, where expertise in quantitative biology and artificial intelligence **drives innovation and breakthroughs**. Supported by state-of-the-art technology, we push the boundaries of research and development. At the heart of the Institut Pasteur's commitment to scientific excellence is its **unique ecosystem, structured around four core missions: research, medicine and surveillance, education, and translational research**. This distinct framework empowers us to enhance scientific understanding, improve global health, and foster the next generation of leaders.

Pasteur 2030 proposes a unified vision where our four core missions—research, education, medicine and surveillance, and translational science—are engaged in a continuous, iterative dialogue. By fostering **true integration across** disciplines and promoting collaboration, each flagship project is designed to interconnect these four pillars within a **unifying strategy.** This holistic approach will ensure that scientific excellence, interdisciplinary collaboration, and leadership development work together seamlessly to position us at the forefront of shaping the future of health, science, and innovation. Our integration within the Pasteur Network facilitates global collaboration and knowledge sharing, further amplifying our impact. These strengths create a thriving ecosystem that allows us to tackle pressing societal challenges and advance scientific frontiers.

Within this section we will highlight the Institut Pasteur's defining strengths to push the boundaries of scientific exploration, as well as the defined area of expertise and technological advances we need to further develop to pursue our ambitious mission.



OUR SCIENTIFIC EXCELLENCE

We believe that breakthrough discoveries often stem from the pursuit of pure knowledge. This approach has empowered our scientists to explore new frontiers, resulting in transformative advances. Our research spans fundamental, translational, and clinical science, ensuring that each discovery enriches our understanding of biological principles, health and disease.

With over 1,000 publications in 2023 and strong national and international collaborations, the Institut Pasteur remains a leader in global biomedical research. Our ability to secure significant grants from institutions worldwide, including prestigious European Research Council (ERC) awards, testifies to the excellence of our research. The Institut Pasteur's Grants Office plays a vital role in helping our researchers secure the resources needed to focus on cutting- edge projects.

Furthermore, with 17 CNRS medals and 10 Nobel Prizes, awarded to scientists working at the Institut Pasteur, the Institute's contributions to science are globally recognized, solidifying its status as a leading center of excellence in research and innovation.

The Institut Pasteur's influence extends far beyond France, playing a pivotal role in both national and international collaborations.

From 2018 to 2022, the Institute secured 527 grants from 27 national funders, totaling €174.1 million. Key funding partners include the Agence Nationale de la Recherche (ANR), Fondation pour la recherche médicale (FRM), Agence nationale de recherches sur le sida et les hépatites virales (ANRS-MIE) and other prominent organizations dedicated to advancing biomedical research. Notably, the Institut Pasteur secured funding for 242 projects from the ANR alone, underscoring its competitiveness and ability to thrive in the evolving research landscape.

On the international stage, the Institut Pasteur has established itself as a leader in collaborative research. During the same period, it secured 88 grants from the European Union, totaling €69.2 million, including 24 ERC grants, highlighting its capacity to attract top-level funding for frontier research. Additionally, the Institut plays a critical role in global partnerships, with 38% of its international co-publications involving the United States, followed by the United Kingdom and Germany.

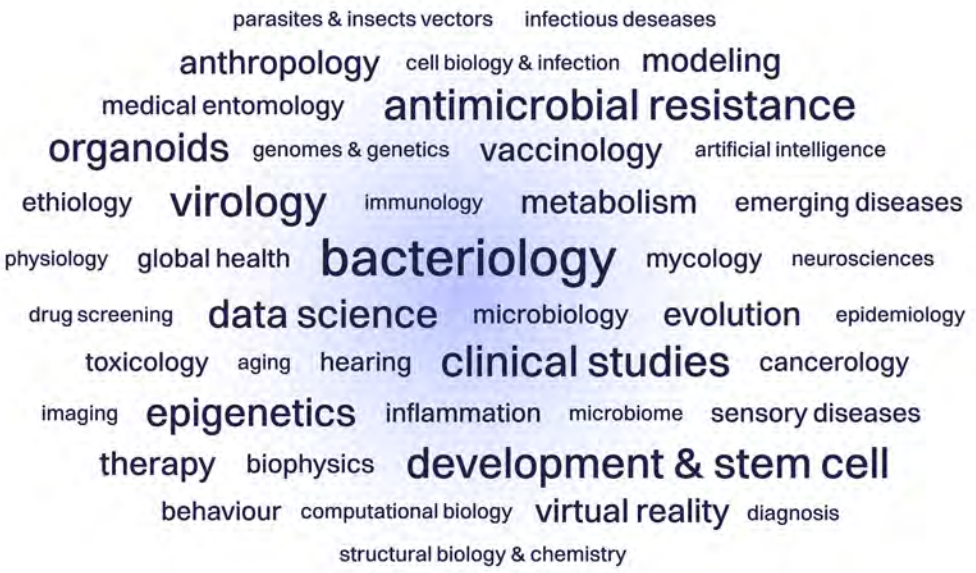
These collaborations are central to the Institut Pasteur's strategy, harnessing combined expertise to address global health challenges effectively. The Institut Pasteur's commitment to major research programs, such as the Laboratoires d'Excellence (LabEx) initiatives, demonstrates our focus on transforming scientific discoveries into tangible solutions. Our research in areas like regenerative medicine, infectious diseases, and personalized medicine reflects our ongoing leadership in advancing science and improving global health outcomes.



II. OUR LEADERSHIP IN MULTIDISCIPLINARY RESEARCH

From its inception, the Institut Pasteur has embraced a resolutely multidisciplinary approach to scientific exploration. The Institut Pasteur's ability to bridge disciplines is at the heart of our ground-breaking discoveries, spanning from our renowned expertise in microbiology and infectious diseases to cutting-edge fields like neurosciences, immunology, stem cell research, computational biology, modeling, and epidemiology.

OUR MULTIDISCIPLINARY RESEARCH



Pasteur 2030 is committed to further promoting this powerful legacy in interdisciplinary research by reinforcing complementary fields of expertise, developing transdisciplinary programs, and strengthening strategic partnerships in complementary fields. Our partnerships with leading French institutions such as APHP, CNRS, Inserm, and Inria and universities enhance this synergy. The transdisciplinary research ethos of the Institut Pasteur represents a formidable asset in support of the ambition of Pasteur 2030 to tackle complex biological systems and develop a holistic understanding of diseases.

III. PROMOTING TRANSLATIONAL SCIENCE

Innovation is at the heart of the Institut Pasteur's mission, where **groundbreaking scientific research is rapidly transformed into practical applications** with the potential to make a global impact. The Institut has a strong ability to convert discoveries into technologies and medical solutions that directly contribute to advancing health and science.

Transfer and Industrial Partnership Department facilitates this process by accelerating the development and transfer of innovations to the socio-economic sector through **industrial partnerships and startup creation**. These efforts are a clear reflection of the Institut Pasteur's drive to stay at the forefront of technological advancements in medicine and health.

Through initiatives like artificial intelligence, big data, and biotechnology, we focus on addressing emerging health challenges by developing advanced diagnostic tools and treatments for infectious diseases, cancer, and neurodegenerative disorders.

Our **Innovation Accelerator** contributes to bridge the gap between research and real-world products, actively supporting the development of new technologies and medical solutions. This team consists exclusively of senior researchers from industry, in the fields of therapeutics, vaccines, diagnostics, and biotechnologies, actively supporting the development of new technologies and medical solutions.

Additionally, the Institut Pasteur encourages its researchers to pursue innovative ideas that can improve health outcomes and contribute to the global fight against diseases. By fostering a culture of entrepreneurship, we have enabled the creation of over 30 startups and formed strong collaborations with more than 100 industrial partners.

Through Pasteur 2030, we aim to further strengthen this integrated model of research and innovation, ensuring that our knowledge, expertise, and leadership create a lasting impact on global health.

IV. PROMOTING QUANTITATIVE BIOLOGY & ARTIFICIAL INTELLIGENCE

The Institut Pasteur has cultivated a thriving ecosystem for scientific excellence in computational biology, quantitative biology, artificial intelligence and data science. With constant technological innovation, big data, the evolution of large-scale deep learning methods, combined with the growing leadership of tech companies in AI research, a new scientific era is emerging. This era is characterized by the rise of scientific processes where human cognition is no longer the sole driver of discoveries.

The Institut Pasteur was at the forefront of this new revolution with the creation in 2014 of the bioinformatics and biostatistics hub, gathering today over 70 highly trained research engineers. Our ability to generate unique, complex data through collaborative Pasteur initiatives, coupled with our capacity to integrate advanced expertise into machine learning pipelines and our

extensive reach in terms of accessible data sources and applications, continues to position Pasteur at the forefront of biology and medically informed AI.

The current revolution is marked by a change of scale in all aspects of research. The ability to record vast amounts of biological data using tools that offer unprecedented control over biomedical samples, coupled with the capacity to store, process, and analyze this data on a massive scale and the capability to assemble experimental results globally, will lead to a wealth of findings.

The Institut Pasteur's involvement in highly interdisciplinary research is driving our engagement in the use and development of AI. Fourteen labs are directly engaged in developing their own AI approaches driven by their biological scientific questions and half of Pasteur labs are using AI tools in their research, from image analysis to structural biology and modeling.

Pasteur 2030's ambition is to further reinforce its leadership in bio-data sciences and AI to tackle groundbreaking computational challenges to help decipher the complexity of biology and diseases with a three-pronged approach:

- **Developing a data-centric ecosystem**, to generate, harmonize, catalog and ensure reliable access to large, value-added datasets from our unique internal datasets and external sources to enable AI development, championing open science principles.
- **Expand Institut Pasteur's research capabilities in AI, computational and quantitative biology.** Form new in silico and hybrid teams, and promote a multidisciplinary approach. Encourage the early independence of young researchers in AI and computational biology, in order to foster the emergence of novel solutions in life sciences.
- **Forming key strategic partnerships and collaborations.** Expand AI expertise in biomedical topics through the PR[AI]RIE Institute and the Paris School of AI, of which we are a founding member. Pool both data and computing infrastructures with biomedical centers to develop AI for our strategic priorities, notably the study of microbes and microbial communities, the mother-child relationship, and the etiology of non-communicable diseases.

V. INVESTING IN A POWERFUL TECHNOLOGICAL ENVIRONMENT

Access to advanced technologies is key to scientific progress and innovation, and the **Institut Pasteur ensures that researchers have access to the cutting-edge tools** and expertise needed to address complex questions in life sciences. At the Institut Pasteur, core facilities provide more than just equipment and routine services; they actively participate in research projects by offering advice, reviewing relevant literature, and developing new methodologies to meet the specific needs of each project.

The Institut Pasteur's core facilities model provides an ideal solution by centralizing resources and technology access. This approach ensures efficient use of equipment, minimizes redundancy, and develops cross-disciplinary innovation, representing a defining asset for the ambition of Pasteur 2030.

Pasteur 2030 will continue to foster innovative technologies as a driving force for scientific excellence. To strengthen its leadership in biomedical research, and enhance its diverse and exceptional technological environment, the Institut Pasteur will continue to introduce innovative technologies that are unique on a global scale.

The Institute will notably focus on three critical projects:

1. Cryo-Electron Tomography (Cryo-ET), organoid-based systems, and biobanking to address evolving challenges in the field. The implementation of Cryo-Electron Tomography (Cryo-ET) in BSL- 3 containment, enabling detailed visualization of pathogens of high importance for human health.

2. Organoid-based models: These three-dimensional biological models cultured in vitro offer a new way to study biological interactions and disease mechanisms.

3. Biobanking: We will help valorize the Institut Pasteur unique biocollections by developing a transversal and centralized biobank. This platform will ensure the availability of this collection for the international scientific community with the goal of increasing our knowledge of biodiversity and microbial evolution. This collection can also be the source of unique material for innovative biotherapies (e.g. phage). It is already the custodian of more than 200,000 clinical samples, including a well-annotated WHO collection of Human African Trypanosomiasis, and of more than 26,000 bacterial strains, including over 1,000 strains of species of international concern related to antibiotic resistance, isolated before 1970 and even before 1950.

The Institut Pasteur will continue to strengthen flexible access to a broad range of technologies, including -omics technologies, multi-modal imaging, animal research and organoids, biobanking, computational biology, and data science.

This technological ecosystem will continue to advance scientific research and position the Institut Pasteur at the forefront of developing novel therapies, diagnostics, and vaccines.

Flagship partnership — TOTEM

- The Totem partnership between Imagine, Curie, and the Institut Pasteur is dedicated to fostering transformative technological advancements.
- This collaboration promotes interdisciplinary research and projects that engage diverse teams from the three institutes.
- It promotes shared resources and infrastructure with flexible spaces and open laboratories.
- It will enhance data management and data science capabilities to accelerate innovation.

VI. ADVANCING MEDICINE & SURVEILLANCE THROUGH RESEARCH INTEGRATION

The Institut Pasteur's clinical interface plays a pivotal role in monitoring, preventing, and controlling infectious diseases. Our medical center, which serves over 60,000 individuals annually, is integral to both the French and international public health ecosystems. The 19 National Reference Centers (CNR) and associated laboratories, and the Unit for Urgent Response to Biological Threats (CIBU) are essential to our surveillance efforts, allowing us to rapidly respond to emerging health threats.

To further embed our medicine and surveillance missions into the broader Institut Pasteur ecosystem, Pasteur 2030 aims to foster tighter connections between vaccination, medical infectiology, and our core research programs. A key initiative is the integration of our vaccination mission within the flagship Center for Vaccinology and Immunotherapy (CVI) program, which will explore vaccine response by identifying its individual determinants, such as age, genetics, sex, and microbiome. This work will leverage large cohorts, including travelers vaccinated at the medical center, to enhance the efficacy and personalization of vaccination efforts. Additionally, the CNRs will act as vital bridges, facilitating a bidirectional flow of insights between basic and clinical research.

Promoting a "Bench to Bedside and Back" approach

We aim to create a dynamic, iterative dialogue between researchers and clinicians by prioritizing advancements that address unmet medical needs. This "bench to bedside and back" approach will enrich our scientific understanding through continuous feedback between clinical observations and laboratory research, delivering deeper insights into human disease. Through Pasteur 2030, we are streamlining support for research projects involving human subjects and fostering collaboration with University-Hospital Institutes and more specifically InovAND and re-Connect. Furthermore we need to advance our clinical research partnership with Pasteur Institutes in regions like the West Indies, French Guiana, and New Caledonia (our 3 affiliated Institutes), and across the global Pasteur Network.

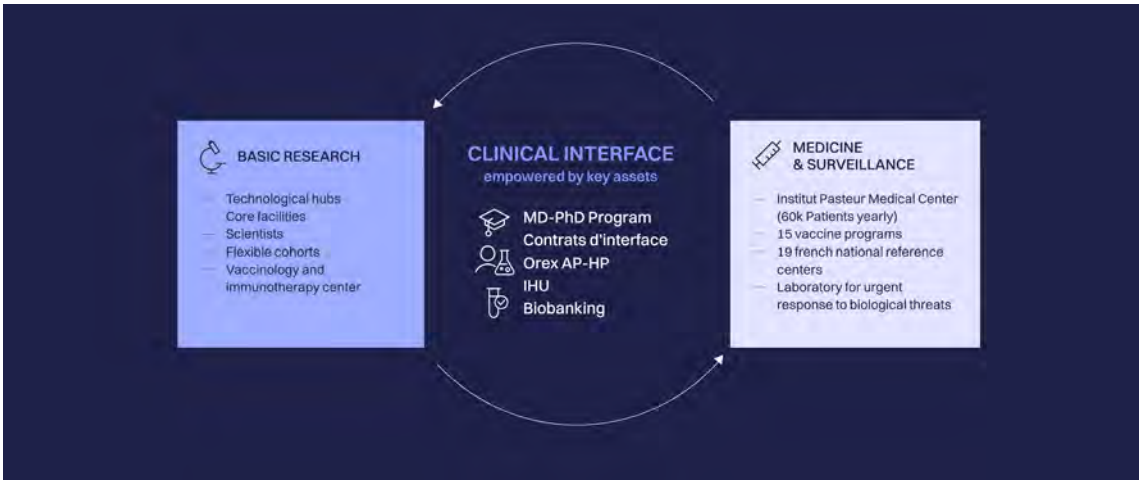
Training future clinical-research leaders

A key objective of Pasteur 2030 is to attract elite MD-PhD candidates to strengthen the integration of basic research with clinical practice. These dual-trained professionals will play a critical role in advancing research that translates into direct patient benefits, accelerating innovation in medical sciences. We are leveraging our unique environment to recruit and train these motivated individuals, ensuring that they are equipped to drive the future of medical research.

Strengthening partnerships with medical institutions

Partnerships with leading medical institutions are a cornerstone of our vision. Through Pasteur 2030, we aim to further strengthen ties with clinicians and hospitals, including a deeper collaboration with Assistance Publique - Hôpitaux de Paris and other major medical institutions. We encourage specialist doctors, whether at the start or mid-point of their careers, to consolidate their research skills by engaging with our ecosystem. Our interface contracts enable these doctors to develop their own research programs under the mentorship of seasoned Institut Pasteur scientists, while maintaining strong links with their medical teams. Many of these translational doctors have already gone on to lead ambitious collaborative centers, furthering the integration of research and clinical practice.





PASTEUR 2030 FLAGSHIP IHU PROJECT

IHU Institut du Cerveau de l'Enfant

Located within the Robert Debré University Hospital, the Institut du Cerveau de l'Enfant (ICE) aims to develop a transdisciplinary and integrated approach focused on children's neurodevelopmental disorders. Institut Pasteur is a major funder together with Université Paris Cité, Assistance Publique Hôpitaux de Paris, Inserm, CEA, and the Child Mind Institute (NY, USA). This IHU will also promote innovation and training programs for child development, and a supportive environment that enhances children's health, well-being, and psychosocial skills.

IHU reConnect

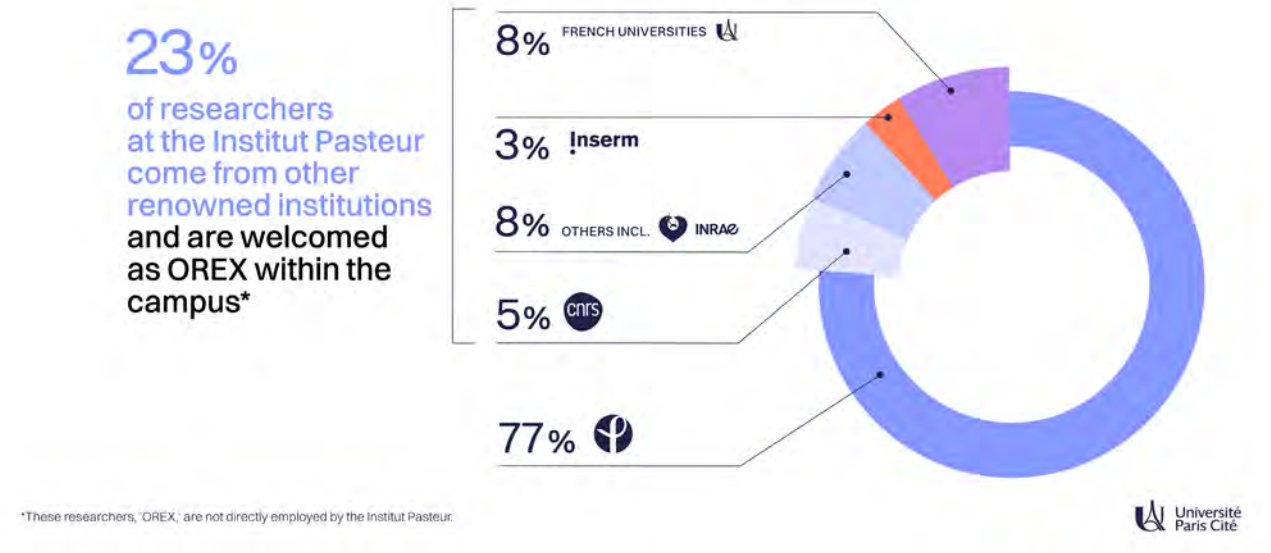
The IHU aims to better detect and manage hearing and speech disorders. The Institut Pasteur is one of the founders together with APHP, Université Paris Cité, Inserm, Fondation Pour l'Audition and Institut Pasteur to create an IHU project (Institut Hospitalo-Universitaire). In this multidisciplinary structure, research and innovation will serve clinical practice and academic training. Its goal will be to address the medical, societal, and educational needs raised by hearing disorders.

VII. STRENGTHENING OUR GLOBAL SCIENTIFIC PRESENCE

The challenges we face today – whether in research, public health, medical innovation or public trust – are too vast and global to be solved by any single institution or country. The Institut Pasteur is deeply embedded within **a broad scientific ecosystem at the French, European, and international levels**, and is the founding member of the Pasteur Network. The Institute's vision emphasizes the necessity of interconnectedness among research institutions, public health organizations, and local communities worldwide to tackle pressing health challenges and enhance the quality of life for populations across the globe. Our push toward a reinforced international dimension will be empowered by our strong integration within the French ecosystem and our integration within the Pasteur Network.

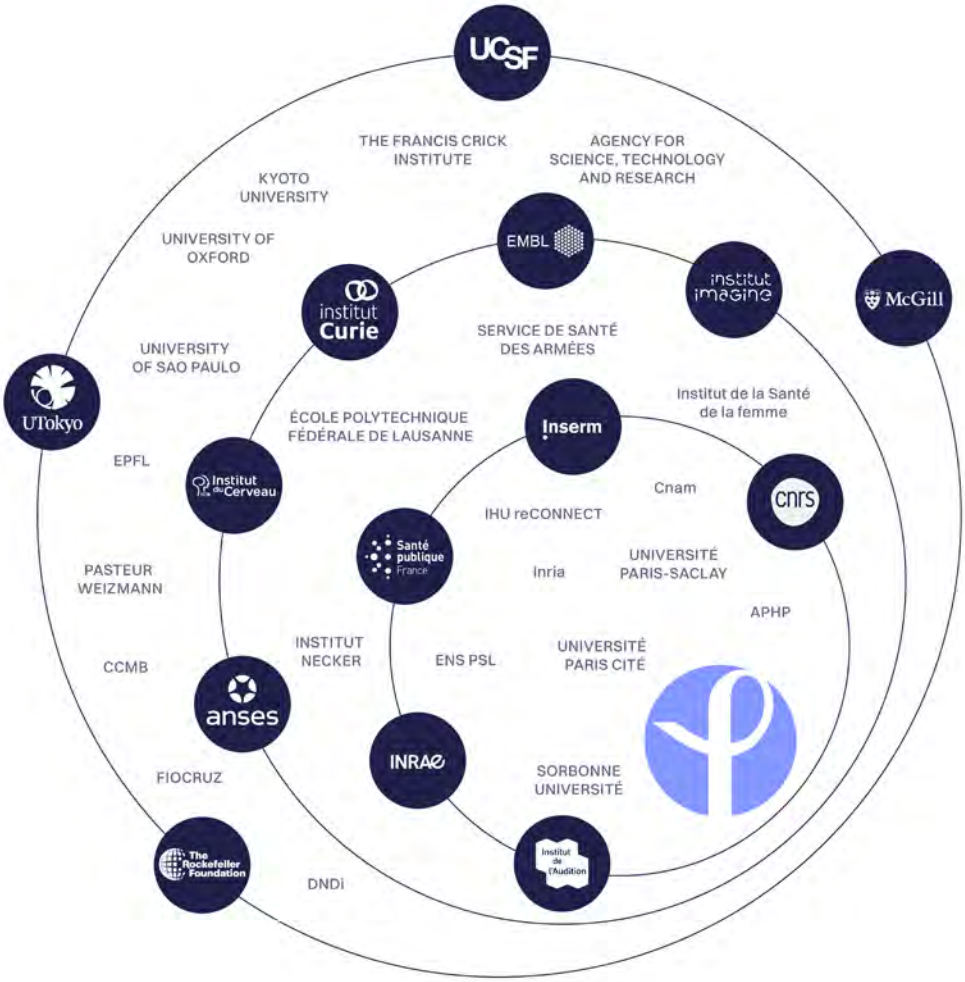
Pasteur 2030 will adopt a resolutely outward-facing **strategy by strengthening partnerships with key French, European, and international institutions**. These collaborations will encompass research, academia, medicine, and public policy. This approach will develop translational projects that ensure our scientific efforts directly contribute to addressing major societal challenges and advancing global health.

Our outward vision is grounded in a strong French ecosystem



The Institut Pasteur is an integral part of the French research ecosystem with 23% of our researchers from institutions such as the **CNRS, Inserm, INRAE, Inria, and hospitals**, particularly AP-HP.

In the realm of higher education, the Institut Pasteur has strong ties with French universities. The Institut Pasteur has partnered with Université Paris Cité to develop a unified and collaborative scientific strategy. This strategy aims to strengthen and co-develop existing themes, encompassing fundamental and translational research as well as training initiatives. The Institut Pasteur also has close connections with the Sorbonne Université, Université Paris-Saclay, and Paris Sciences et Lettres.



This integration within the French research ecosystem is a significant asset for the Institute, fostering exchange and expertise across fields while supporting its transdisciplinary leadership. Moreover, this partnership also benefits public institutions by providing structural and financial support, as well as access to all available cores and platforms within Institut Pasteur, thereby maximizing public investment in the advancement of research.

Pasteur 2030 will further these partnerships to reinforce key expertise and areas of research needed to support our vision, such as with ANSES in the context of one health, with the CNRS and Inria for artificial intelligence, and Université Paris Cité for chemistry.

A strong commitment to the European scientific ecosystem

The Institut Pasteur is proud to be part of Europe's research ecosystem, sharing core values of collaboration, innovation, and inclusivity. In line with the European Research Area (ERA) and its commitment to researcher mobility, open science, and gender equity, we implemented the Human Resources Strategy for Researchers (HRS4R) in 2021 (*link*). This step further reinforces our dedication to creating a supportive environment for researchers, while contributing to Europe's leadership in addressing global challenges through scientific excellence and cooperation.

With this strengthened foundation, the Institut Pasteur's scientific vision is closely aligned with Europe's societal challenges, focusing on infectious diseases, emerging health threats, and One Health approaches. This commitment aims to tackle urgent public health concerns while contributing to key EU objectives of strengthening prevention, enhancing resilience, and boosting competitiveness through research and innovation. The Institut Pasteur is dedicated to fostering collaborative partnerships with leading European institutions, and research and public health laboratories.

Through these strategic initiatives and collaborative efforts, the Institut Pasteur is intent on reinforcing its status as a premier research institution in Europe and as a key player in the global health innovation landscape, ultimately contributing to a robust and innovative health research environment in Europe and beyond.

The implementation of Institut Pasteur's European strategy will be coordinated by the Head of EU Public Affairs. With a strengthened presence in Brussels, the aim is to facilitate access to European funding, enhance strategic dialogues with European partners, and promote the Institut Pasteur at the European level.

This vision was recently illustrated by our newly established partnership with EMBL on infectious diseases. The Institute aims to actively engage with European funding opportunities and structured doctoral networks, leveraging initiatives such as the DURABLE consortium, which aims to develop a one-stop shop for emerging disease laboratory preparedness and supporting the Health Emergency Preparedness and Response Authority (HERA) in decision-making related to cross-border health threats. Two other notable examples of our commitment to European research excellence are the Yellow4FLAVI project, which utilizes the yellow fever vaccine as a model to understand long-lasting immune protection against flaviviruses, and the PvSTATEM project, which aims to eradicate malaria (P. vivax type) in Ethiopia and Madagascar.

Reaffirming our integration within the Pasteur network through global scientific and training programs

What sets the Institut Pasteur apart is its unique, globally interconnected ecosystem, anchored by the strength of the Pasteur Network, which comprises over 30 institutes in 25 countries across 5 continents. As a distinctive collective of scientific expertise, the Pasteur Network can address the most urgent global health challenges. Its strength lies in its diversity and ability to mobilize scientific and technical resources, including over 50 national reference laboratories, several Biosafety Level 3 labs, and 17 WHO Collaborating Centers that are prepared to respond to public health threats.



By integrating fieldwork with advanced laboratory research, the Network tackles health issues from multiple perspectives, including surveillance, outbreak control, and the development of diagnostics, and therapeutics. Collaboration with national organizations such as the CNRS and INSERM, as well as international entities, enhances global health governance focused on epidemic preparedness and equitable practices.

At the request of its members in 2021, the governance of the Pasteur Network was modernized to align with the values articulated in its Charter—a renewal aimed at realizing the full potential of the Network as a global health actor. As a partner member, the Institut Pasteur contributes to the promotion of the Pasteur Network's mission through scientific collaborations, grants, logistical support, and human resources. This mission aligns with the Institut Pasteur's commitment to research and scientific growth on a global scale, particularly within low- and middle-income countries and on neglected diseases.

Pasteur 2030 will further strengthen our scientific engagement with the Pasteur Network, aiming to develop federating projects, particularly within the context of the mother-child dyad, antimicrobial resistance, epidemiology, and genomic surveillance. Furthermore, aligned with our mission of empowering the next generation, our goal is to contribute to the development of programs that nurture collaboration and collective growth among the younger generation within the Network. Additionally, we promote global ethical standards in collaboration and equity in research (TRuST code).

The Institut Pasteur is also involved in various multilateral organizations, notably through its involvement with UN institutions such as the World Health Organization, and contributes to the development of urgently needed, affordable treatments for neglected patients such as through partnerships with organizations like Drugs for Neglected Diseases Initiative (DNDi).



Dynamic of interactions within the Pasteur network based on the number of publications in common regarding epidemiological and clinical research over 2019-2024. Source: Gephi software.

Pasteur 2030 - Key actions with the Pasteur Network

- Clearly define the respective roles and interactions between the Division of International Affairs and the Pasteur Network.
- Enhance collaborative projects focused on maternal-child health, genomic surveillance, AMR, as well as G4/G5 programs.
- Reinforce the animation between the medical department and the Pasteur Network.
- Facilitate collaboration within the Pasteur Network through dedicated platforms and resources for tenure-track researchers.

In addition of its integration within the Pasteur Network, the Institut Pasteur is involved in various multilateral organizations, notably through its involvement with UN institutions such as the World Health Organization, and the Institute contributes to the development of urgently needed and affordable treatments for neglected patients such as through partnerships with organizations like **Drugs for Neglected Diseases initiative (DNDi).**

Flagship partnership: Institut Pasteur & DNDi

- The collaboration synergizes innovative technologies and target identification at the Institut Pasteur with DNDi expertise in the development of new therapeutics.
- We have initiated joint clinical research projects in Sleeping Sickness, Leishmaniasis, Chagas disease, and Rabies, facilitated by optimized biobanking at Institut Pasteur (CRBIP), and will apply together to national and international calls.

VIII. DEVELOPING OUR EXPERTISE TO PUSH FORWARD OUR VISION

To strengthen our scientific leadership and address our four key priorities, the Institut Pasteur must continuously evolve and expand its expertise. The collaborative work of our scientific community, including dedicated working groups led by heads of departments, has identified several emerging fields of expertise that are essential to this effort.

The interconnected areas of knowledge described below all emphasize the need for multiscale, multilevel, and multidisciplinary approaches, spanning from atomic-level precision to whole-body physiological contexts. By embracing these new frontiers of expertise, we are positioning ourselves to drive groundbreaking innovations and maintain our leadership at the forefront of scientific discovery.

Tackling complexity: Developing our ability to address the complexity of biological systems and disease pathogenesis

Diseases, of infectious origin or not, affect entire systems. Disease trajectory and response to treatment are conditioned by the host genetics, epigenetics, age, sex, microbiome, inflammatory status, and the impact of all these factors, along with their potential interactions, from conception to senescence.

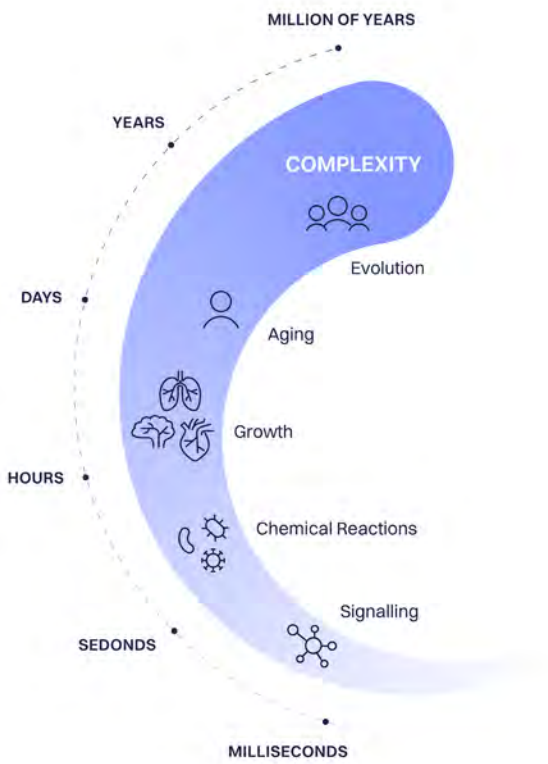
All biological processes, whatever their spatial or temporal scales from molecules to whole organisms and even populations, both result from and generate complexity. These processes are defined in relation to their environment, leading to context-dependent responses and biological adaptations. Beyond the classical reductionist approach, an in-depth understanding of such complex phenomena requires specific integrative approaches that consider the interconnectedness of various components at multiple scales. The ultimate goal would be to describe and then model life's complexity at spatial and temporal scales. Harnessing the complexity of biological systems will go through the following steps:

- **Develop multidimensional approaches to complex disorders:** by combining state-of-the-art experimental approaches with physics and biology-informed modeling tools, powered by deep learning solutions, as well as high dimension data analysis offer the adequate frame to study complex disorders such as non-communicable diseases or the long-term impact of infections.

- **Bridge spatiotemporal scales (molecules, intracellular structures, cells, tissues, organs, systems, individuals):** the different expertise available on campus covers all spatiotemporal scales, and the data retrieved, can be the foundation of mechanistically informed deep-learning and modeling algorithms.

- **Integrate emerging properties in synthetic biological models:** predictive capacities accessible by AI tools can be leveraged for the construction of novel biological properties and objects, such as complex organoids or robotics structures.

- **Trace the evolution of complexity:** integrating evidence from genomic data, fossil records, and genetic, epigenetic, epidemiological, and ecological studies across different species can help us understand the emergence of biological functions or structures and how evolution shaped the susceptibility to infections and diseases.

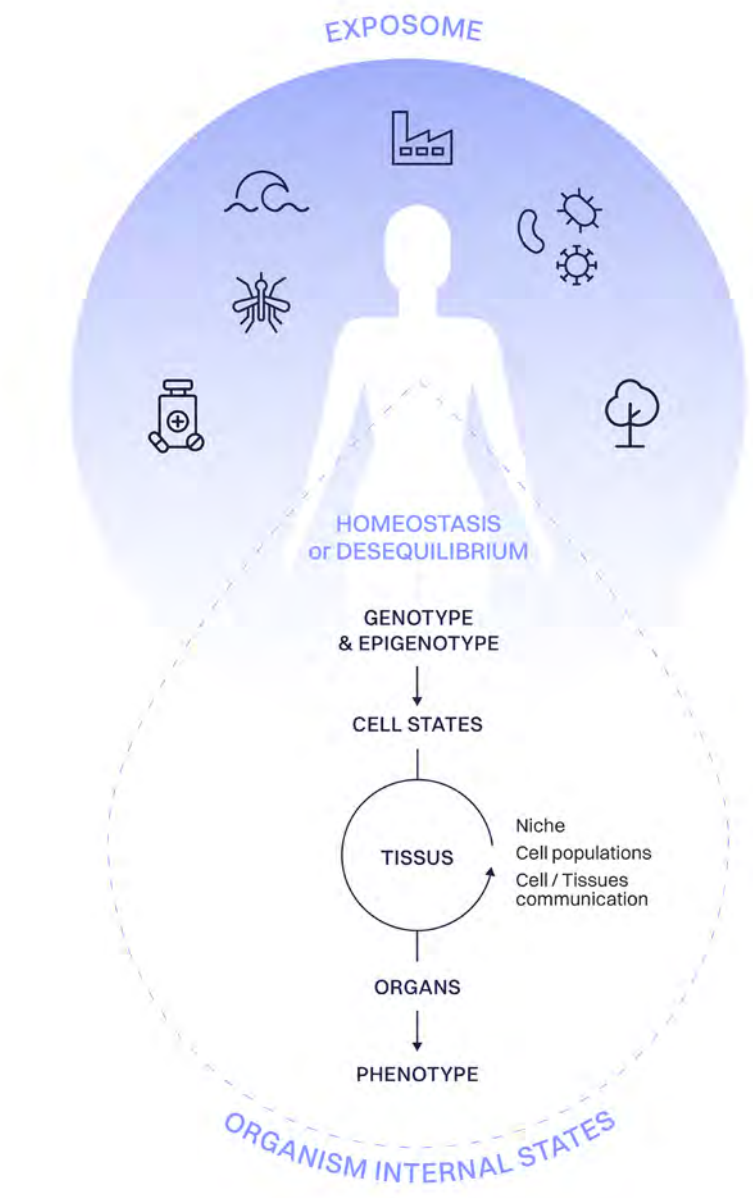


Tissue development & physiology: Developing our expertise and research on tissue development, physiology in health and disease

Living organisms integrate multi-layered regulatory scales interfacing their environment spanning from genes to proteins, cells, interconnected tissues, and organs. Such complexity generates biological diversity between stages of development, individuals, populations, and species, influencing responses to external aggressions that ultimately shape the delicate balance between homeostasis and susceptibility to disease. Within this theoretical framework, the concept of tissue is central. Indeed, tissues are fundamental integrative functional units of the body over a lifetime, essential for preserving organismal health. We aim to create the conditions for developing a multi- disciplinary approach to tissue biology, allowing us to study infectious and non-communicable diseases in a new framework and identify hidden variables in organismal health. This will involve:

- **Deciphering the mechanisms that govern tissue dynamics and tissue-tissue interactions:** through adequate tissue and animal models, we aim at mapping the dynamics of multiscale bidirectional mechanisms linking the molecular level to the tissue scale, and the tissue scale to individual behaviors, as well as the interactions between a specific tissue and organism levels.
- **Study organismal variability at tissue level:** we will work along the temporal and spatial dimensions to uncover critical periods for the impact of perturbations (prenatal, birth, juvenile and adult time frames), and to decode the interplay between external cues and internal states to control tissue robustness.

- **Integrate insights gained from model systems at the tissue level to enhance comprehension of human physiology:** we will include human development in our investigations, which will help translate mechanistic studies into relevant human cell-based models.
- **Move from a description of clinical symptoms during disease to the identification of fundamental pathophysiological mechanisms stemming from tissues:** through body-level analyses and mathematical modelling and AI-based prediction models, we will understand how key disease mechanisms at local tissue level may be propagated to the whole organism to explain clinical manifestations.


EXPOSOME
HOMEOSTASIS
or DESEQUILIBRIUM
GENOTYPE
& EPIGENOTYPE
CELL STATES
TISSUS
Niche
Cell populations
Cell / Tissues
communication
ORGANS
PHENOTYPE
ORGANISM INTERNAL STATES

Developing an ecological approach to microbiology and infectious diseases

The study of microbes and infectious diseases is a central theme of research at the Institut Pasteur and in the scientific priorities outlined in this strategic plan. To tackle these priorities, we will explore how microbes, their communities, and their environment are connected. Changes in living or non-living factors can affect microbial communities, leading to new diseases, invasive species, or resistance to treatments.

Environmental shifts such as climate change, diet, health, aging, and diseases can alter host-residing microbes. In turn, changes in these microbes can influence metabolism and health. Climate change affects disease-carrying organisms and their microbes, which can increase human infections. Addressing these questions requires multilevel and multiscale approaches in the study of microbes and microbial communities, in isolation or in the context of their different hosts.

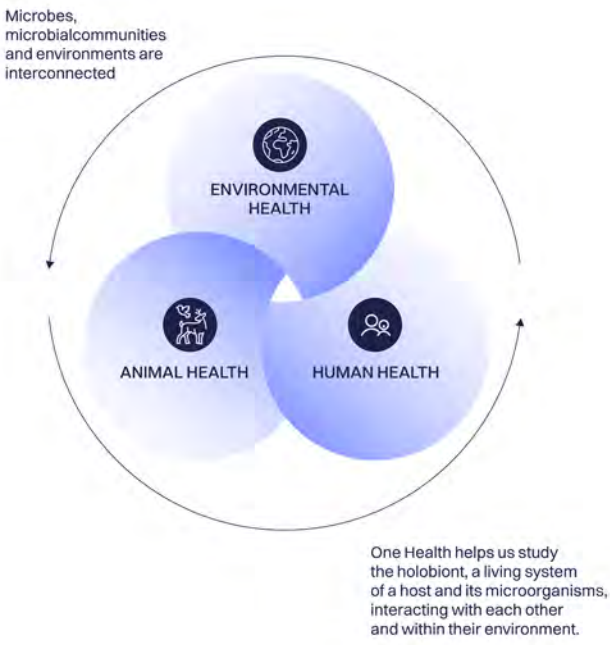
To facilitate such approaches, we will:

- Develop **culturomics and innovative strategies in omics and high-resolution imaging, combined with AI,** to recover and study microbes and microbial communities.
- Reinforce **our capacities for the study of bioactive molecules and metabolites** produced by microbes as these play important roles in the control of microbial population.
- Develop **new models and analytical methods of host-microbe interaction** to understand the impact of microbes and microbial communities on host development and health, including links to non-communicable diseases.
- Initiate a new line of research whereby the **impact of microbes and microbial communities on the environment and global cycles will be investigated**, with the aim to provide contributions to decarbonation and remediation strategies. This will require dedicated hires and partnerships.

Implementing the 'One Health' approach

The 'One Health' approach is based on an integrated and systemic vision that recognizes the inseparable links between human, animal, and environmental health. This interdisciplinary and collaborative approach is a key lever for preventing, understanding, and managing emerging health risks such as new zoonoses, the impacts of climate change on health, and the rise of antimicrobial resistance. These issues require coordinated actions, as the interactions between ecosystems, animal populations, and humans create risk dynamics that no single discipline can address alone.

The concept of One Health can be understood through various interconnected examples.



- Relationship **between health and the environment:** The El Niño-Southern Oscillation (ENSO) is a climate phenomenon characterized by fluctuations in ocean temperatures that can significantly impact rainfall and temperature patterns across multiple regions. For example, these environmental changes can increase the risk of cholera outbreaks by negatively affecting water quality and sanitation conditions in Bangladesh.
- Relationship **between human and animal health**: Zoonotic diseases present a serious threat, as pathogens can be transmitted from animals to humans, potentially leading to significant health crises. A notable example is HIV, which originated from simian immunodeficiency viruses in primates and has resulted in widespread human infections, posing a global health challenge.
- **Ecology and disease management:** Ecological interventions can play a vital role in disrupting disease transmission cycles. For instance, introducing *Wolbachia* bacteria into *Aedes aegypti* mosquitoes has been shown to significantly decrease the transmission of diseases such as dengue and Zika.

These examples illustrate how the One Health approach highlights the critical interconnections among environmental health, human health, and animal health, underscoring the necessity for collaborative strategies to comprehensively address health challenges. Embracing this integrated vision means protecting human populations, and preserving the vital balances of ecosystems that underpin our collective survival.

Preventing the emergence and spread of diseases

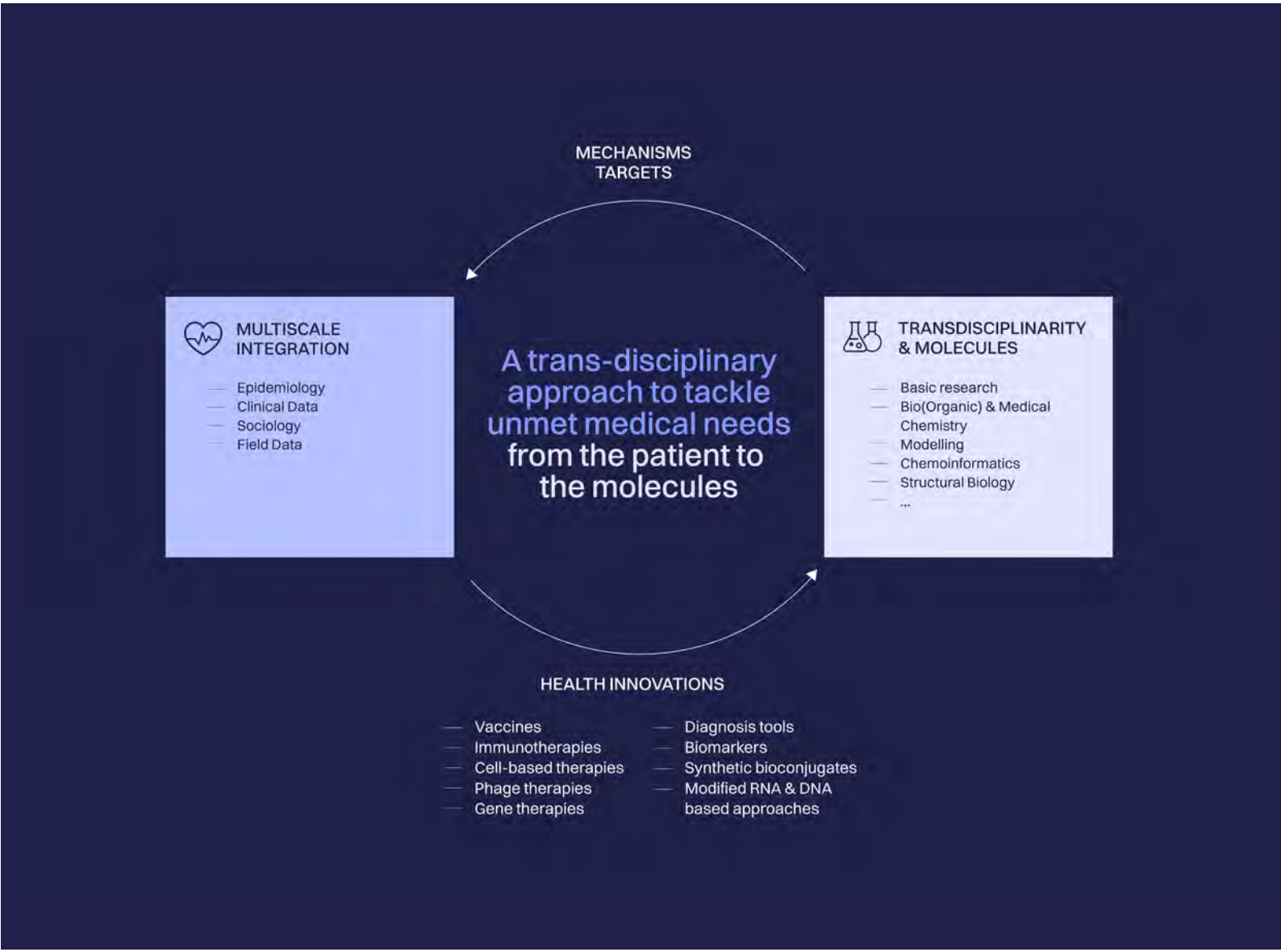
Major health challenges lie ahead of us – (re)emerging infectious diseases, antimicrobial resistance, and non-communicable diseases – and it is the historical mission of the Institut Pasteur to develop therapies that address these unmet medical needs. Research teams are studying a variety of organisms, from human to bacteria, viruses, parasites and fungi, as well as different animal models and 3D cellular models. They all rely on state-of-the-art technologies, and integration with clinical, epidemiological, sociological, and field data.

Though the **Pasteur 2030** strategic plan, we will reinforce the framework linking the mechanistic understanding of pathogenesis to the design of novel therapeutic tools, diagnostics and vaccines:

- **Explore biological processes in their whole** relying on appropriate observational studies and experimental models to access a more relevant physiological context, cutting-edge imaging technologies, data integration, and AI-based analysis.
- **Identify new biomarkers:** combined with a deeper understanding of human response variability to extrinsic factors across all life stages, paving the way to precision medicine.
- **Develop new diagnostics:** the development of better tools to rapidly identify and characterize new pathogens is instrumental to increase our epidemic preparedness, as well as companion tests to support novel therapeutics.
- **Develop novel treatments:** newly identified targets will lead to innovative treatment options, including vaccines, immunotherapies, cell-based therapies, phage therapy, and gene therapies. This will require new capacities in chemical synthesis (synthetic bioconjugates, modified RNA and DNA-based approaches) and in vitro and in vivo screening (see box Center for Drug Discovery and Development).

Flagship Program -
The Center for Drug Discovery and Development (C3D)

- Louis Pasteur was trained as a chemist and made seminal contributions to chemistry that led him to the field of microbiology. Institut Pasteur has had a long history of research in chemistry, exemplified by the discovery of sulfa drugs, antihistamines and anesthetics. Today, this tradition is continued by the Structural Biology and Chemistry Department and several core facilities with expertise in drug screening, structural biology.
- Our aim is to bring together this expertise in a Center for Drug Discovery and Development (C3D). This Center will offer Institut Pasteur scientists an end-to-end pipeline for the in vitro and in silico selection of chemical hits, hit-to-lead chemistry, structural exploration of the mode-of-action of leads, and their in vivo evaluation. An effort will be made towards increasing our capacities in hit- to-lead chemistry through the establishment of a Biomedical chemistry core facility due to open in 2026 in collaboration with UPCité. The application and development of dedicated AI will also be at the core of the C3D, combined with other in-silico approaches throughout the hit-to-lead path



III. Empowering our future

The Institut Pasteur is driven by the belief that scientific excellence stems from placing people at the core of its mission, and that the commitment of passionate individuals, alongside the support of those who share its vision, is essential.

I. PLACING PEOPLE AT THE HEART OF OUR MISSION

PROMOTING COLLABORATION, INCLUSION, AND LEADERSHIP

The Institut Pasteur places people at the center of its mission, with the firm belief that scientific research achieves excellence through the dedication of passionate individuals and the support of those who believe in its mission.

This approach is founded on gratitude for **the unique contributions of each individual**, whether in scientific, administrative, or technical roles. Every member of our community plays a crucial part in driving the success and impact of the Institut Pasteur.

Thus, **we acknowledge and celebrate the contributions of each member.** Scientific and organizational excellence relies on the combined efforts of all. By empowering our community members and leveraging this diversity of perspectives, we strengthen our ability to tackle the most complex scientific challenges.

A culture of growth, inclusion, and leadership is essential to guarantee innovation and excellence at every level. It is through the collective effort and mobilization of our diverse community that the Institut Pasteur can fulfill its mission. **Pasteur 2030** supports this vision by cultivating the essential resources and backing needed to foster bold initiatives, leading to meaningful contributions to science and global health.

INVESTING IN HUMAN CAPITAL AS THE FOUNDATION FOR SCIENTIFIC DISCOVERY

Advancing scientific discovery and ensuring impactful, lasting research requires **a strong commitment to training, career development, and the fostering of interdisciplinary skills.** To meet this goal, the Institut Pasteur has implemented innovative programs designed to train the next generation of leaders.

These initiatives, ranging from **undergraduate internships** to **advanced opportunities for doctoral and postdoctoral researchers**, are designed to provide young scientists with comprehensive expertise. Simultaneously, they focus on fostering critical thinking, project management skills, and effective collaboration. By promoting an interdisciplinary approach, these programs empower researchers to transform global health challenges into actionable solutions.

Pasteur 2030 initiative deepens this commitment by ensuring that every individual at the Institut Pasteur—whether a young scientist, experienced researcher, or support staff member—has access to the resources, opportunities, and support necessary for both personal and professional growth. By **promoting collaboration, innovation, and inclusivity** at all levels, we are building a resilient, forward-looking community poised to shape the future of science and global health for generations to come.

A SHARED RESPONSIBILITY FOR THE FUTURE OF SCIENCE

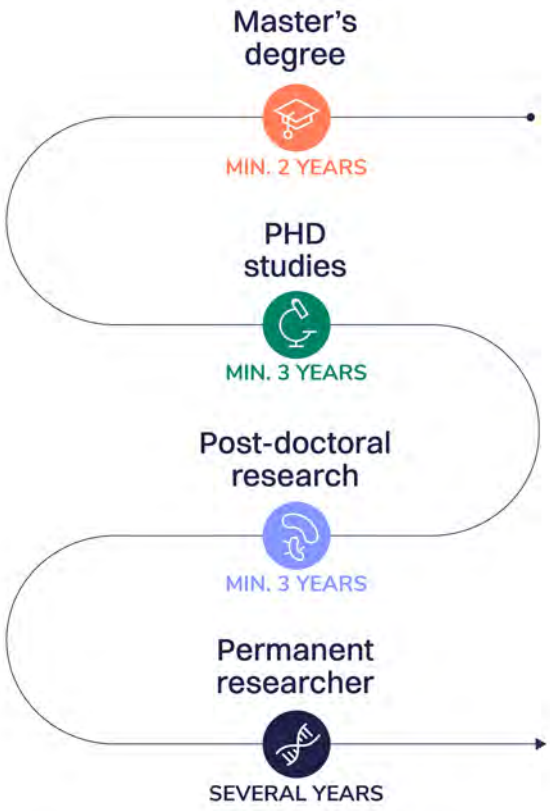
Embarking on a scientific career is a demanding journey that requires immense personal dedication, time, and resilience. Becoming a researcher often entails over **15 years of rigorous training**, continuous learning, and professional development. This path, marked by many uncertainties, presents scientists with significant challenges, including personal and financial instability.

In today's research landscape, young scientists face intense competition, a limited number of academic positions, and declining investments in research. These challenges are further exacerbated

by limited awareness of diverse career opportunities, diminishing the attractiveness of pursuing a career in science.

The vision of **Pasteur 2030** is rooted in a deep **commitment to supporting and training scientists at every stage of their careers.** From the foundational education of students to the mentorship of experienced researchers, our goal is to provide the tools, guidance, and resources needed to help individuals excel throughout their professional journeys. This mission eflects a broader dedication**: advancing science in the service of human as a shared priority embraced by our entire institution.**

Pasteur 2030 also emphasizes fostering **the early independence of researchers, enhancing internal funding for interdisciplinary projects, and creating shared infrastructures to accelerate scientific progress and innovation.**



Pasteur 2030: Key Actions to Promote Scientific Excellence

- Recruit top-tier scientists whose interdisciplinary approach and groundbreaking research address priority areas including vaccinology, immunology, antimicrobial resistance, neuroscience, and chemistry.
- Develop a dedicated pathway to support the autonomy and growth of young scientists, with a particular focus on advancing expertise in artificial intelligence.
- Increase internal funding to encourage interdisciplinary projects within the Institute and with strategic partners.
- Establish shared infrastructures to drive the development of innovative technologies and push the frontiers of scientific discovery.

II. EDUCATION AS A DRIVER OF SCIENTIFIC EXCELLENCE

DIVERS EDUCATIONAL OPPORTUNITIES

The transmission of knowledge lies at the heart of the Institut Pasteur's mission. Every year, promising scientists and professionals from around the world are drawn to its world-class educational programs, designed and delivered by leading experts. These initiative not only disseminate the latest scientific and medical advancements but also nurtures a global network of researchers, scientists, and healthcare professionals committed to advance public health.

The Institut Pasteur's Education Department plays a pivotal role in offering diverse opportunities tailored to each stage of a career. Each year, we offer:



Internships and pre-doctoral programs (*link*).

Doctoral and postdoctoral programs (*link*).

Pasteur courses and workshops, covering cutting-edge topics (*link*).

Online courses (MOOCs) accessible worldwide, to ensure the equitable dissemination of knowledge (*link*).

Numerous online workshops (webinars) to promote practical learning and collaboration (*link*).

Through these diverse and innovative programs, the Institut Pasteur nurtures intellectual curiosity, upholfs scientific rigor, and equips scientists to tackle complex global challenges. Every year, **over 2,000 participants** benefit from its educational offerings, which seamlessly blend **cutting-edge theoretical education with** hands-on **laboratory training**. These programs include Pasteur courses specifically tailored specifically for graduate students, graduates, and professionals. Grounded in the **latest advancements in life sciences and public health**, these intiatives are designed to deliver comprehensive expertise and practical skills, addressing both current and emerging scientific challenges.

Through digital initiatives, the Institut Pasteur extends its educational reach on an international scale. Its **free scientific webinars are open-access online courses (MOOCs)** that reach **over 30,000 participants** each year. These resources, covering critical topics such as vaccinology, infectious diseases, and emerging global health issues, are instrumental in disseminating knowledge and fostering the development of scientific expertise worldwide.

To address specific public health challenges, the Institute also offers specialized programs, such as the **Pasteur-Cnam-EHESP Master's in Public Health**. This advanced curriculum, along with other continuing education opportunities empowers healthcare professionals with the knowledge and tools needed to navigate the ever-evolving scientific and medical landscape.

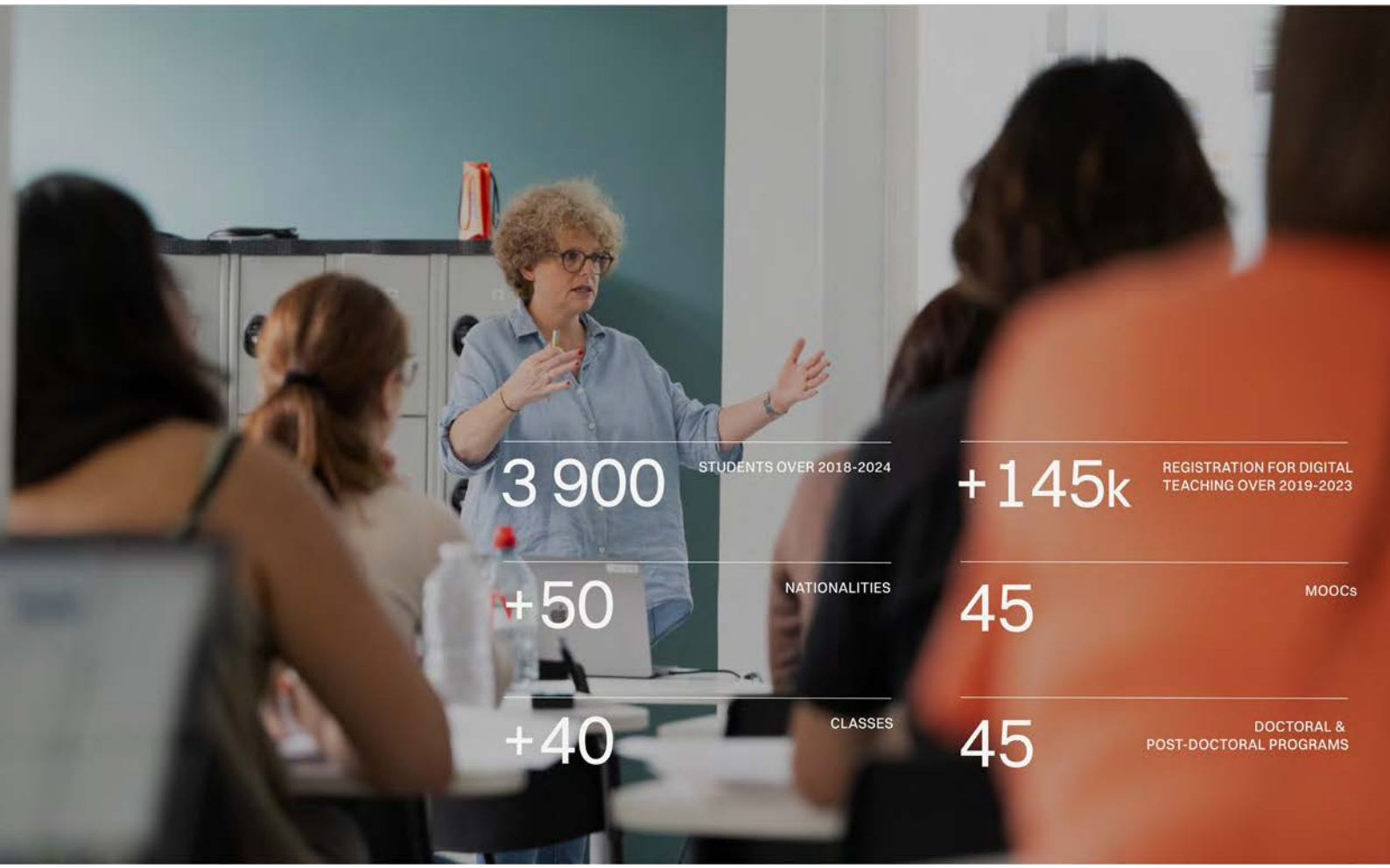
In **partnership with the Open Medical Institute,** the Institut Pasteur actively contributes to the training of physicians from developing countries and scientists from the Pasteur Network on critical public health topics such as virus-induced cancers, microbiology of infectious diseases, epidemic

response, pathogen vectoring. This mission is carried out through an annual rotation of three in-person courses held at training hubs across three continents.

With **Pasteur 2030**, the Institute is set to **expand its educational programs and enhance its skills development initiatives**. This visionary plan will builds on defining aspect Pasteur experience: the integration of rigorous theoretical education with in-depth practical learning. Students will gain hands-on expertise in handling cutting-edge equipment and mastering advanced experimental techniques, eqquiping them to become world-class scientists who will lead research and innovation on a global scale.

TRAINING A NEW GENERATION OF SCIENTISTS

The vibrant research environment at the Institut Pasteur created a dynamic synergy among undergraduate and graduate students, doctoral and postdoctoral researchers, junior and senior scientists, and physicians. This collaborative ecosystem facilitates a continuous exchange of knowledge, where experienced researchers inspire and mentor the next generation. At its core, the Institut Pasteur upholds enduring values such as scientific rigor, intellectual curiosity, and humanism—principles that have shaped its identity for over a century.



Undergraduate Students: Fostering Scientific Curiosity

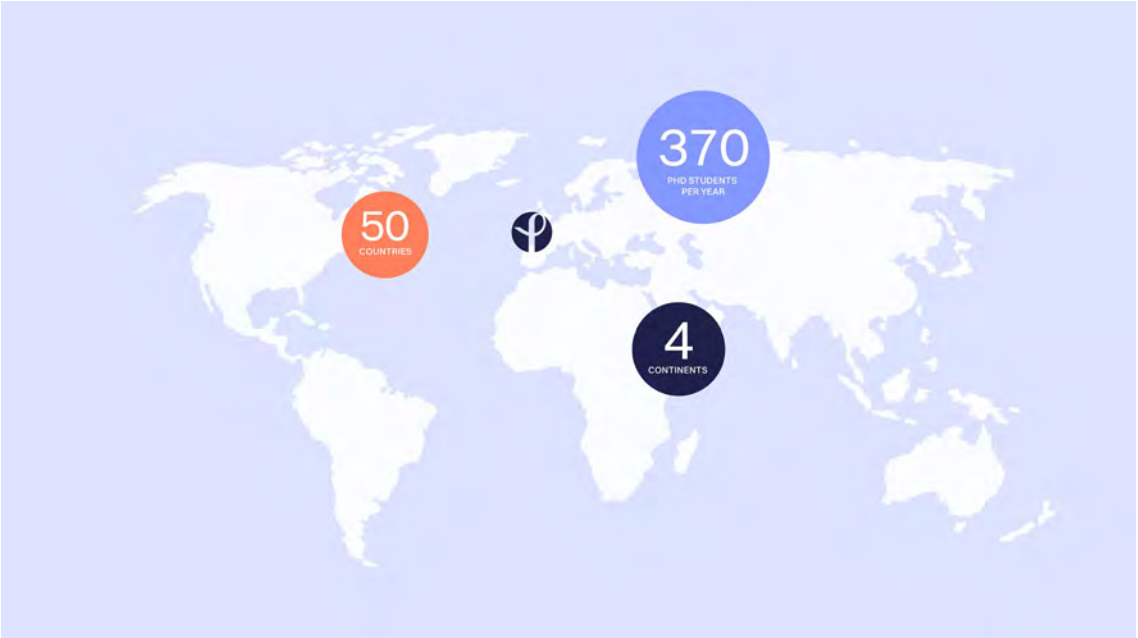
The scientific journey starts at the undergraduate level, where students are immersed to the world of research through hands-on experiences and participation in international educational programs.

The Institut Pasteur offers several initiatives to introduce young students to scientific careers. The **Education Department** plays a vital supporting these students, providing both academic and logistical assistance to help them focus on their studies and personal development.

Prestigious programs such as **Amgen** (*link*) and **Erasmus+** (*link*) further enrich this opportunities by providing undergraduate and graduate students invaluable international laboratory experience. These programs not only help students develop their scientific skills but also broaden their professional networks, inspiring and empowering them to pursue careers in science.

Doctoral Candidates: Developing Expertise and Independence

The Institut Pasteur dedicated to strengthening the scientific expertise of doctoral candidates while fostering their independence as researchers. Each year, approximately 370 doctoral candidates from around the world join the Institute, forming a vibrant and diverse international scientific community, representing fifty nationalities from across four continents.



The Education Department's **Doctoral Student Office** (*link*) plays a critical role in the personalized support of doctoral candidates. A dedicated team offers administrative support to PhD students in their interactions with their affiliated universities. The office also provides a range of professional development opportunities, including both online and in-person transversal skills training as well as personalized mentoring. This office also provides personalized mentoring and oversees the Institut Pasteur's international doctoral program. Its overarching goal is to help students navigate their academic and research journey, balancing education and practical experience within an optimal professional framework, all while instilling the Institut Pasteur's core values.

Programs like the **Pasteur-Paris University International Doctoral Program (PPU)** (*link*) and the ***Médicine-Sciences*** **Doctoral Program** (*link*, in French) bridge the gap between fundamental research and clinical applications. These interdisciplinary iniatives prepare students, with medical, master's, and doctoral backgrounds, to adress urgent global health challenges by equipping them with the technical expertise and knowledge required for contemporary biomedical science.

The Institut Pasteur also emphasizes the importance of complementary skills, such as **scientific communication**, to make research more accessible to the public. In this context, four doctoral students at the Institut Pasteur created the **Piplettes** (*link*), an online magazine that provides an engaging and accessible perspective on science. By sharing personal and fun aspects of research, the platform fosters better communication between the public and researchers, while giving scientists the opportunity to refine their ability to communicate complex ideas effectively—an essential skill in bridging the gap between science and society.

As part of the **Pasteur 2030** strategy, these initiatives are bolstered by innovative programs such as the **PPU Participatory Science** and **the PPU-MD-PhD program** (*link*). These programs integrate medicine, surveillance, and research equipping students with the tools needed to tackle complex an evolving health challenges

III. A SUPPORT ECOSYSTEM AT EVERY STAGE OF THE CAREER

Postdoctoral Researchers: From Training to Leadership

Postdoctoral researchers hold a distinctive role within the scientific community. At the Institut Pasteur, over **480 postdoctoral fellows** are engaged in groundbreaking research while serving as mentors to younger scientists. This pivotal stage of their career allows them to begin defining their own research trajectories, while still benefiting from the guidance of mentors and access to the institutional resources that support their professional growth.

The **Office of Postdoctoral Affairs**, part of the **Career Development Service for Scientists (CARE),** is dedicated to addressing the specific needs of postdoctoral fellows. This office builds a vibrant postdoctoral community by offering tailored programs, facilitating their integration into the broader scientific network, and encouraging collaboration and peer support. Additionally, it works to establish external partnerships that assist postdoctoral researchers in navigating career transitions and provide opportunities for advanced training and development.

As part of **Pasteur 2030**, new initiatives will further empower postdoctoral researchers by fostering their **independence and encouraging innovation**. By offering resources for interdisciplinary exploration, the Institut Pasteur ensures that postdoctoral fellows are prepared to become visionary leaders who make significant contributions to their fields and shape the future of research.

Emerging Leaders (G5) and Senior Researchers (U5): Leading High-Impact Research

Throughout their careers, researchers at the Institut Pasteur are empowered to lead their own research groups and undertake high-impact projects. The G5 initiative provides emerging leaders with the **independence and ressources needed to build their teams** and pursue bold discoveries. With mentoring and institutional support, these future leaders play a crucial role in advancing biomedical research.

The U5 program, in contrast, supports senior researchers by enabling them to **continue conducting high-level work while mentoring the next generation of scientists**. These experienced experts not only contribute to the advancement scientific knowledge but also help shape the Institut Pasteur's strategic vision, serving as key figures in its future research efforts.

As part of Pasteur 2030 strategy, opportunities for both emerging and senior researchers will be expanded, ensuring they reach their full potential. By **fostering leadership in projects and initiatives**, the Institut Pasteur is building a dynamic scientific community that will drive the future of biomedical innovation.

Supporting Career Progression

Supporting the next generation of researchers is central to the mission of the Institut Pasteur, but this commitment stands far beyond that. At the Institut Pasteur, we view **career development as a lifelong journey** and are dedicated to support the professional growth of both our scientific and non-scientific collaborators.

The **CARE service** offers a wide range of career development opportunities tailored to the unique needs of scientists. It provides **mentorship programs and guidance to help individuals make informed professional choices**. Recognizing the challenges and uncertainties faced by young scientists during transitional phases, the service plays a crucial role in equipping them with resources and leadership skills and research expertise necessary to secure independent research positions.

By fostering an supportive environment, the **Pasteur 2030** strategy promotes a **culture of continuous growth**. This commitment empowers every member of the Pasteur community to thrive their own professional journey while making meaningful contributions to the institution's missions and success.

Pasteur 2030: Key Actions to Cultivate a Supportive and Innovative Work Environnement

- Develop a comprehensive system for mapping job positions to better understand roles, re-sponsibilities, and career trajectories.
- Design clear and structured professional mobility pathways to facilitate career progression and internal opportunities.
- Introduce tailored career development frameworks that address the unique needs of staff across all roles.
- Create a dedicated a career development program for non-scientific staff, drawing inspira-tion from the successful CARE model to ensure holistic support for their professional growth.

VALUING INDIVIDUAL IMPACT

At the Institut Pasteur, we recognize and value the unique contributions of every employee. Excellence steams from the collective efforts of researchers and support staff, and we are committed to ensuring that each individual's contributions are acknowledged. While metrics can provide important insights, we understand that true impact often stands beyond quantitative measures.

To support the careers of our community members, we have implemented evaluation frameworks grounded on transparency, fairness, and inclusivity. These frameworks are designed to provide equal opportunities for professional growth. They align with the principles of open and merit-based recruitment (OTM-R), as outlined by the HRS4R approach, ensuring a supportive and equitable environment for all.

Pasteur 2030: Key Actions to Ensure Excellence and Integrity in Evaluation Processes

- Expand the definition of excellence in collaboration with the ethics committee to encourage and recognize high performance across diverse contributions.
- Establish fair, transparent, and unbiased evaluation processes that promote trust and equity.
- Enhance ongoing evaluations by incorporating regular management reviews to drive continuous improvement.
- Provide personalized development plans tailored to individual needs, informed by evaluation outcomes.
- Integrate performance metrics in evaluation criteria, including those related to diversity, equity, and inclusion initiatives, alongside broader management and leadership skills.

PROMOTING INTEGRATION, WELL-BEING, AND A HEALTHY WORK-LIFE BALANCE

The diversity of the Pasteur community, with nearly **50% international scientists**, many in the early stages of their careers, presents unique challenges that require tailored support. Balancing high demands of research with personal responsibilities, such as family life or relocation, can significantly impact well-being and job satisfaction.

The Institut Pasteur is distinguished by its strong commitment to **workplace well-being**. On campus sports facilities managed internally allow employees to engage in physical activity at their own pace, promoting physical health. **An in-house health service** provides personalized medical care, ensuring a proactive approach to the overall health of our teams. Additionally, an on-site psychologist offers emotional support, addressing **mental health** concerns and helping staff navigate professional stressors. These resources are essential to enhancing well-being, enabling employees to flourish both personally and professionally.

As part of **Pasteur 2030, we** aim to create an environment where everyone feels fully supported. Efforts are underway to facilitate the **integration** of new arrivals into campus life, with comprehensive support and logistical assistance to ensure a smooth transition.

Recognizing the importance of work-life balance in the demanding field that is scientific research, we will implement specific measures, such as childcare support and programs to ease the return to work after personal leave. These initiatives help staff manage their daily responsibilities more effectively, fostering a healthy and productive community at the Institut Pasteur.

Pasteur 2030: Key Actions to Enhance Integration, Well-being, and Work-Life Balance

Integrating Newcomers

- Implement onboarding processes to ensure that each person feels supported from day one
- Introduce inclusive tools and resources to enhance integration and foster a sense of belonging for everyone on campus
- Expand the availability of housing to accommodate the growing needs of staff and researchers
- Enhance logistical and administrative support for housing to streamline processes and improve accessibility

Promoting Work-Life Balance

- Establish emergency childcare services to support employees during unforeseen circumstances
- Provide technical laboratory support to ensure continuity of research during maternity leave and sick leave
- Organize post-parental leave and post-sick leave meetings to facilitate smooth transitions and reintegration into professional responsibilities

Improving Well-being

- Develop and promote mental health initiatives aimed at supporting staff in achieving personal and professional well-being, including access to counseling, stress management programs, and workshops on maintaining work-life balance

CREATING A COLLABORATIVE, SAFE, AND RESPECTFUL WORK ENVIRONMENT

Achieving excellence requires a **positive, respectful, and inclusive workplace**. The Institut Pasteur is committed to fostering an environment in which every employee feels safe, valued, and empowered to contribute fully to our shared mission.

Several dedicated offices work closely together to provide comprehensive support to early-career scientists, assisting young researchers and students in the critical early stages of their academic and professional journeys. The **STAPA association** plays a crucial role in welcoming and integrating young scientists, fostering a sense of belonging, and providing them with resources for both professional and personal growth (*link*).

Our commitment to creating a positive and respectful work environment is demonstrated through our **zero-tolerance policy against harassment, discrimination, and any other form of unacceptable behavior**.

With **Pasteur 2030**, we are deepening this commitment by embedding inclusion into the core of our institutional priorities. We are actively working to build a culture where every employee, regardless of their background or career stage, feels supported and empowered to contribute fully to our mission. This inclusive approach reinforces our commitment to a dynamic, respectful, and tolerant scientific community—an essential foundation for achieving scientific excellence and fulfilling the Institut Pasteur's missions.

Pasteur 2030: Key Actions to Ensure Accountability and Ensure Workplace Safety

- Enforce a clear code of conduct with zero tolerance for violations, ensuring a safe and respectful workplace.
- Implement confidential and easily accessible reporting systems, along with support mechanisms to address harassment and discrimination effectively.
- Develop leadership and management training programs to cultivate a culture of accountability, inclusivity, and effective team management.
- Publish a management charter that clearly outlines the rights, responsibilities, and expectations for all leaders and managers.
- Conduct regular assessments and surveys to evaluate organizational culture, identifying areas for improvement and promoting continuous growth.
- Introduce a system for recognizing exemplary behavior and leadership, while implementing appropriate disciplinary measures for breaches of conduct.

STRENGTHENING THE SYNERGY BETWEEN SCIENTISTS AND ADMINISTRATIVE SERVICES

The success of the Institut Pasteur's mission relies on **seemless and effective collaboration between scientists and administrative services**. While scientific excellence drives our discoveries, support staff provide an indispensable strategic support enabling research teams to maximize their potential.

To achieve this, it is essential for support staff to adopt an integrated and proactive approach aligned with the Institute’s four core missions: research, medicine and surveillance, education, and translational research. This requires a deep understanding of the unique demands of each mission and the ability to anticipate the needs of scientific teams, ensuring they receive the specialized, high-level support necessary for success.

This collaborative approach benefits not only the researchers but the entire organization, strengthening our collective ability to meet strategic objectives. By ensuring scientists have access to the expertise and resources they need for cutting-edge research, the Institut Pasteur places administrative teams at the heart of its mission, reinforcing their essential role in driving scientific and institutional excellence.

Pasteur 2030: Key Actions to Strengthen Collaboration and Streamline Operations for On-going Improvement

- Promote cross-departmental collaboration between scientific and administrative staff to foster mutual understanding and strengthen teamwork.
- Provide opportunities for administrative teams to deepen their understanding of research processes and scientific work.
- Implement robust feedback mechanisms to gather input from both scientists and administrative staff, driving continuous improvement in support services.
- Appoint liaison officers or create cross-functional teams to effectively bridge the gap between research and administrative departments, ensuring seamless communication and collaboration.

IV. PHILANTHROPY AND REDEFINED ECONOMIC MODEL

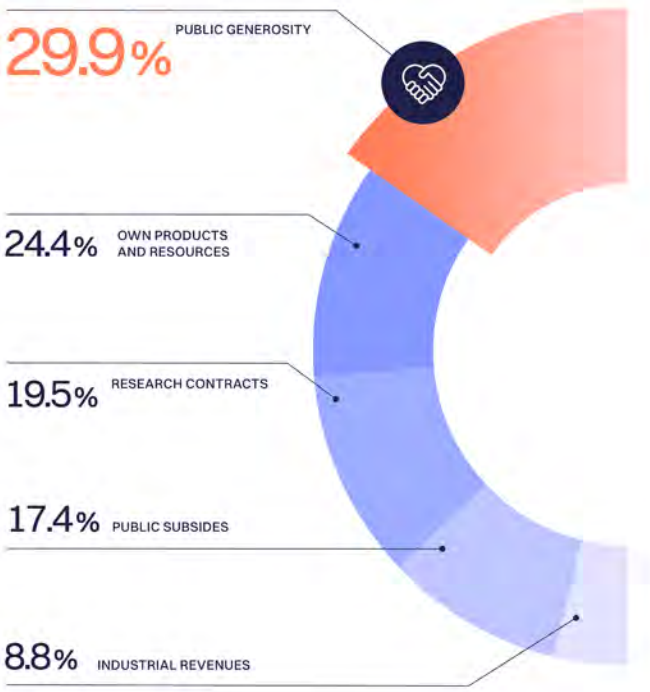
AN INDEPENDENCE BOTH HISTORICAL AND ESSENTIAL TO OUR MODEL

Our independence is defined as our ability to make choices guided solely by the objective of advancing science for the benefit of humanity. This autonomy enables us to pursue long-term and high-impact research, focusing on the most critical areas of public health, such as disease prevention, understanding, and control. Our independence is guaranteed by a unique funding model, combined with our public interest organization status, and the unique composition and interaction of our governance bodies.

Our current funding model is characterized by diverse and balanced revenue sources: philanthropy, public subsidies, public and private research contracts, industrial revenues, own products and resources. However, our model is currently facing significant challenges. While biomedical research is more crucial than ever to understand, prevent, and treat diseases, research costs are increasing steeply, and global financial support is reducing. Talent development, attraction, and retention are also critical.

While this conjuncture affects the scientific enterprise globally, France is in a particularly vulnerable situation, with reduced public funding for academic research and academic-industry partnerships, compared to other countries of similar GDP. These environmental, economic and societal challenges are threatening the scientific ecosystem necessary to confront the current health challenges and to protect future generations. **Ensuring the future of the institute will require a diversification of our philanthropic effort and an evolution of our economic model.**

INSTITUT PASTEUR FUNDING MODEL
(2030, %)



Our reinforced commitment to philanthropy

Since the Institute's foundation in 1887, thanks to an international fundraising campaign, **philanthropy has always been a central pillar of our funding.** Today, **it accounts for nearly a third of our revenue**. It provides our scientists with the flexibility and freedom to follow their intuition, take risks, and tackle the most complex questions. Indeed, our model which combines sustainable income from the endowment fund with recurring contributions, provides a crucial foundation for tackling major scientific challenges and maintaining the excellence that defines our reputation.

Established thanks to the generosity of our donors at the time of the Institute's founding, our **endowment fund** generates regular income through strategic investments, allowing us to finance recurring needs such as rent or research scholarships. It ensures **sustainable** support for our missions. By absorbing the financial risks associated with investments, it protects the research ecosystem, empowering us to pursue ambitious research goals. Indeed, this ecosystem requires **substantial resources** to attract the best talent and develop the **cutting-edge infrastructures** needed to maintain scientific excellence.

Our model also relies on annual fundraising efforts. The annual donation drive plays a key role in directly supporting our operational budget. Each year, philanthropy contributes **around 100 million euros,** nearly a third of our annual budget, enabling us to fund cutting-edge research, support strategic infrastructures, and attract the world's top talents.

Philanthropy will remain central to maintaining our freedom and advancing innovation. To protect and enhance our independence, **Pasteur 2030 will continue to strengthen our fundraising efforts, protect and grow our endowment, and explore innovative approaches to rethink and reshape our economic model**.

Pasteur 2030 will also champion **a renewed approach to philanthropy for research, uniting a French, European, and international community** around a shared vision and common values. We will launch an initiative to build **lasting connections** with individual donors, foundations, partner companies, and scientific and academic institutions.

Through our foundations —**Pasteur UK, Pasteur US, and Pasteur Switzerland**— we will broaden our international philanthropic outreach to individual international donors. We will develop partnerships in line with our strategic plan, particularly in areas such as pandemic preparedness, antimicrobial resistance, and the mother-child relationship. Through collaboration and multidisciplinary efforts, scientists will be equipped to address the growing complexity and urgency of the challenges humanity faces.



Adaptation of our economic model

Pasteur 2030 is committed to **optimizing its economic model by diversifying its revenue sources** and strengthening its global reach. An **advisory group of experts** will be established to develop a sustainable economic model, enhance the Institute's **competitive positioning**, ensure its independence, and rethink its funding strategies.

To this end, we will implement several initiatives for sustainable growth and innovation:

Fostering Translational Research
: Pasteur 2030 will continue to enhance translational research projects both on campus and in collaboration with startups, industries and external institutions. We will provide support to these projects whenever possible. Strengthening ties with industrial partners and startups will consolidate the value chain from fundamental research to patient solutions and services.

Continuing to Develop Research Contracts
: Pasteur 2030 will continue to develop research contracts by targeting diverse funding opportunities and expanding partnerships at national, European, and international levels. These collaborations will address complex research challenges while affirming our European leadership and emphasizing the importance of life sciences.

Engaging with government and public stakeholders to optimize public subsidies
: Pasteur 2030 will actively engage with governments and public entities to co-develop innovative solutions that maximize our impact on science and health within an increasingly economically constrained environment.

Continuing to Optimize Resources and Strengthen Efficiency
: Resource optimization will focus on overhead and administrative costs, maximizing internal synergies, organizational efficiency, and asset management, ensuring that resources are allocated wisely across our scientific initiatives.

V. OUTREACH AND OPENNESS TO SOCIETY FOR A STRONGER FUTURE

At a time when the relationship between the public and science changes profoundly, the Institut Pasteur remains a voice that is respected and listened to. Building on our rich heritage, we are determined to modernize our image and humanize our identity so that they reflect current societal realities and remain both relevant and inspiring in the eyes of the public.

As part of this process, we will formalize **the fundamentals of our brand image**, through a brand platform and associated visual universe, and strive to embody this new identity within the Institut Pasteur and outside, through dedicated actions and campaigns.

We will be also adapting our editorial roadmap to address the public's priority concerns: scientific discoveries, their impact on disease prevention and treatment, and the day-to-day reality of a dynamic and diverse institute. At the same time, we are currently reorganizing our Museum to create a new place dedicated to the epic story of modern microbiology, highlighting the Institute's contributions to human health and its far-reaching impact on society. By revitalizing our historical heritage, we aim to reaffirm our position as a benchmark institution without betraying the tremendous trust that has been placed in us over the generations.

In a post-Covid context marked by growing mistrust of science, the Institut Pasteur recognizes the need to defend the integrity of science while actively combating misinformation. By participating in public debate and scientific communication, we tackle preconceived ideas and promote an evidence-based scientific culture. These efforts are essential to maintain public confidence and ensure the success of public health interventions, such as vaccination campaigns or

disease prevention measures. By combining relevant research and transparent communication, the Institut Pasteur will consolidate its role as a trusted scientific authority, contributing to the emergence of a better-informed and more engaged society.

The visibility and accessibility of science are crucial to its future. The Institut Pasteur's involvement with civil society promotes informed decision-making and enhances the attractiveness of scientific careers, particularly for younger generations. In the face of growing disinterest in scientific careers, we have a responsibility to make these careers more inspiring, particularly for women and under-represented groups. The Institut Pasteur is committed to highlighting inspirational role models, particularly women scientists, to illustrate their key role in advancing knowledge.

We are committed to guiding the next generation of researchers, ensuring that science is seen as a vital activity, and a field that is both inclusive and innovative. Through outreach efforts, we inspire curiosity, encourage engagement and demonstrate that a career in science can be both rewarding and crucial to the future of society.

In this context, scientific mediation is essential to the popularization of complex scientific concepts. By actively engaging with a variety of audiences, including students, young researchers and the general public, Institut Pasteur helps to bridge the gap between research and society. This enables everyone to see the relevance of science to their daily lives, reinforcing their confidence in research and fostering an informed commitment to it.

PASTEUR 2030 KEY PROJECT — SCIENCE OUTREACH PROGRAM

The 7th-graders observation week offers, twice a year, a first-hand week-long immersion in research careers and support functions, sparking early interest in science (*link*). **The Apprentice Researchers program** takes it a step further, providing middle school and high school students with a six-month laboratory research experience. This program culminates in a presentation at a scientific conference, giving young participants a unique opportunity to share their discoveries (*link*).

PASTEUR 2030 KEY PROJECT — INSTITUT PASTEUR MUSEUM

The Institut Pasteur's Museum is embarking on a transformative journey. This major renovation project aims to restore the museum's architectural heritage, unveil new spaces, and amplify its scientific and cultural impact. Central to this reimagined experience is the 'Pathfinders of life' concept, designed ro bridge the gap between science and the public.



Pasteur 2030 key actions to re-centering our historic image toward the future

As we advance into a new era, the Institut Pasteur's brand remains both a powerful communication tool and a philanthropic asset. Grounded in our rich history, we are committed to revitalizing and modernizing our brand to reflect today's realities, making it more attractive and relevant for contemporary audiences. Our goal is to restore Pasteur's role as a trusted landmark institution in society, preserving the immense capital of trust we have built over generations.

This journey will involve a collaborative, integrated approach that fosters long-term engagement and meaningful change. By uniting people around a shared, impactful mission, we aim to create a structure where every member of our community contributes to our success. Key to this effort is the close collaboration between our communications and philanthropic departments, with recent achievements laying a strong foundation for future growth.
Internally, our Pasteurian community will be engaged in the Pasteur 2030 strategic plan, presenting its progress regularly and creating new event formats that strengthen our internal community. Regular surveys, enhanced communication channels, and new initiatives like Art & Science and Pasteurdon will build a stronger sense of belonging.

Externally, we will focus on refining the Institut Pasteur's brand platform, revamping our communication tools, and developing new metrics to evaluate our progress. With fresh energy behind initiatives like Pasteurdon and the enhancement of our media production capabilities, we are positioning the Institut Pasteur to continue its legacy of excellence and innovation while adapting to the challenges and opportunities of the future.

Pasteur 2030 will redefine our image by building on our historical strengths while embracing a modern, dynamic approach to communications and philanthropy. Through a revitalized brand, enhanced internal engagement, and innovative initiatives, we will unite our community around a shared vision and ensure The Institut Pasteur continues to be a trusted beacon of excellence and societal impact for generations to come.

VI. ADAPTATION & EVOLUTION FOR A LASTING IMPACT

As the scientific landscape evolves, we remain committed to leading high-performance research while staying grounded in the values that have shaped our legacy.

Balancing innovation with our core principles allows us to continue making a lasting global impact. In this dynamic environment, enhancing organizational agility and efficiency is crucial for competitiveness, as we focus on supporting our people, improving performance, and developing a culture of continuous evolution.

To thrive globally and sustain impactful contributions, we must uphold organizational excellence and strengthen our financial resources. The newly established Transformation Department will be instrumental in aligning processes and frameworks with the Institut Pasteur's strategic goals, ensuring our evolution is both effective and sustainable.

Pasteur 2030 - Key actions to drive agile transformation for lasting impact

- Streamline decision-making and ensure transparency through well-defined roles and gender- balanced leadership.
- Streamline operations by implementing standard operating procedures, adopting project management methodologies, clarifying roles to enhance accountability, and making data-driven decisions for optimal outcomes.
- Evaluating and continuously improving our internal processes.
- A dedicated office will be established to monitor and support all strategic projects, ensuring alignment with Institut Pasteur's long-term goals.
- Define Key Performance Indicators (KPIs) and implement monitoring systems, create feedback mechanisms, train teams to interpret and act upon KPI data, continuously review the effectiveness of the KPIs and the processes in place.

In tandem, the Internal Audit & Internal Control Department will encourage responsible risk-taking, enabling bold research while safeguarding the long-term stability of the organization. This balance will ensure we advance knowledge without compromising the sustainability of the Institute.

We are also taking a transformative step by creating the first DEI Department in a French research institution. The implementation of the Gender Equality Plan (GEP) reinforces our commitment to achieving gender balance, especially in leadership roles, and advancing equality throughout the institution (*link*). This ambitious initiative sets a new standard, integrating innovation and equity as we build a more inclusive scientific community.

These initiatives mark a powerful shift in modernizing our culture, ensuring that diversity and inclusivity are embedded in our identity—not as goals, but as fundamental principles of our success.

Pasteur 2030 key actions to create a more diverse and inclusive workplace

- Collect diversity institutional data and measure progress.
- Create a DEI multidisciplinary research hub.
- Embed DEI into our culture with dedicated training and equitable policies.
- Ensure continuous feedback and accountability through regular DEI assessments and updates to policies and practices based on data-driven insights.

We will implement targeted Corporate Societal Responsibility initiatives that align with our core values, addressing social, economic, and environmental challenges. Through transparent communication and regular reporting, we aim to showcase our commitment to CSR and engage our audience in our mission to create a positive impact.

Pasteur 2030 is our blueprint for agile transformation, designed to ensure long-term impact and excellence. By optimizing governance for transparency and gender-balanced leadership, streamlining processes for efficiency, and fostering a culture of continuous improvement, we are positioning the Institut Pasteur for the future.

Pasteur 2030 key actions to improve our Corporate Societal Responsibility

- Roll out the decarbonisation strategy to 2030 following the completion of the first Bilan Carbone® (carbon footprint assessment), which will be reviewed annually.
- Developing the GreenTeam community and encouraging collaborative networks to maximise the impact of sustainable initiatives.
- Support scientists in controlling the environmental impact of their research activities and thus increase the sustainability of the research carried out at Institut Pasteur.
- Inform, raise awareness and train all staff, students and post-doctoral researchers.
- Integrate into all projects, wherever possible, the preservation or even enhancement of biodiversity.
- Implement the responsible purchasing policy at all levels.
- Encourage the reuse and recycling of the Institute's equipment and consumables.
- Promote sustainable mobility and responsible digital solutions for employees.

Conclusion

The Institut Pasteur stands at a pivotal moment in its history. As we confront urgent global health challenges, it is more essential than ever that we harness our rich legacy and unique strengths to respond effectively.

We face these unparalleled challenges with a renewed commitment to our mission, recognizing that the collaboration and expertise of every member of our ecosystem—from scientists to administrative and support staff—are critical to our success. Together with our national and international partners, and supported by our valued donors, we will rise to meet these demands.

Our independence and distinct identity, long-standing cornerstones of our success, continue to give us a competitive edge on the global stage. It is this autonomy that allows us to innovate and adapt quickly, remaining agile in a rapidly evolving world. By bringing together the diverse talents and expertise within the Pasteur Network, we will continue to advance science without borders, making significant contributions to global health.

As we look toward the future, our diversity remains our guiding force, enhancing unity, collaboration, and innovation. We will build on our strengths and the trust of our partners to navigate this critical juncture. Our commitment to scientific excellence, human capital development, and impactful research will enable us to shape the future of global health, ensuring that the Institut Pasteur remains at the forefront of scientific discovery.

With our eyes fixed on the future and our values firmly rooted in the past, we are poised to lead the next wave of scientific breakthroughs. Together, as a unified community we will continue to thrive, innovate, and contribute to a healthier, more resilient world.

At this moment of transformation, we are uniquely positioned to act as both a leader in scientific research and a global advocate for the role of science in society. As we confront growing skepticism and the erosion of trust in science, the Institut Pasteur will stand as a beacon of credibility, leading the essential dialogue between science, policymakers, and the public. Our work extends beyond the laboratory, as we strive to uphold the values of transparency, inclusivity, and integrity that are foundational to both our research and our engagement with the world.

Together, we will rise to these unprecedented challenges, not only by advancing biomedical research but by reaffirming the indispensable role of science in shaping a better, healthier future for all.