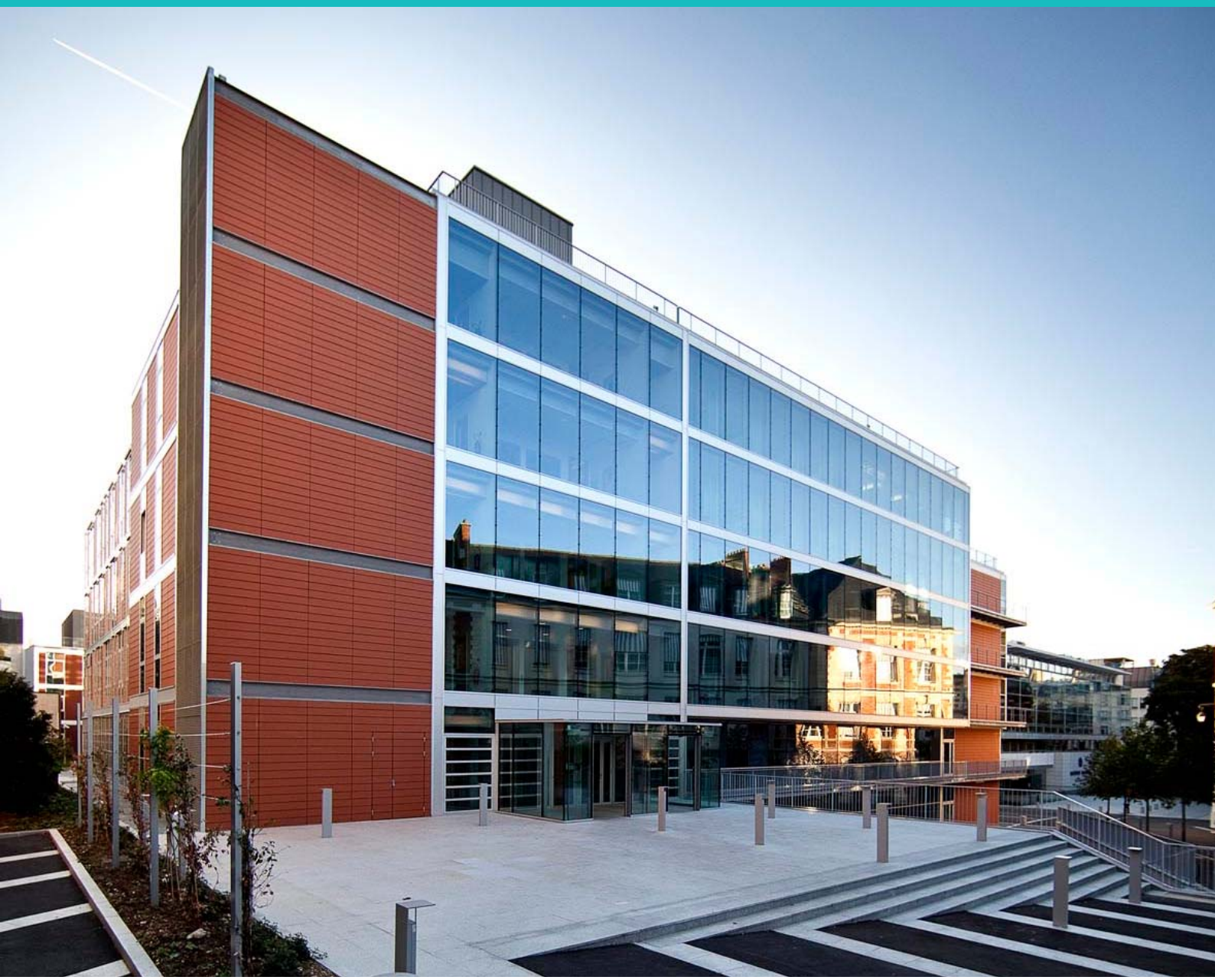
INAUGURATION OF THE FRANÇOIS JACOB CENTER

November 14, 2012

THE NEW INSTITUT PASTEUR RESEARCH CENTER FOR EMERGING DISEASES



PRESS KIT

FOR RESEARCH, FOR HEALTH,
FOR OUR FUTURE

Institut Pasteur

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WHY BUILD A CENTER FOR EMERGING DISEASES AT THE INSTITUT PASTEUR?

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Professor Alice Dautry,
President of the Institut Pasteur

According to the World Health Organization, a new disease emerges somewhere in the world each year. This alarming statistic can be explained in part by modern lifestyles that are characterized by unprecedented international travel and movement of goods. Microbes can spread from one side of the planet to another faster than ever before. SARS, the first severe epidemic of the 21st century, is a prime example: within just a few days, the virus had spread to every continent and affected more than 8,000 people in some twenty countries. With the risk of epidemics increasing dramatically, emerging diseases are one of the major challenges facing public health.

It is for this reason that the Institut Pasteur put forward its plan for a center dedicated to research into these new diseases. For us, this project was vitally important in order to equip scientists with the best possible resources to tackle current and future challenges. Today, 124 years to the day after the opening of the Institut Pasteur, we are proud to inaugurate a center that is firmly geared towards the future while remaining rooted in the Institut Pasteur's founding principles.

The new center is named after Professor François Jacob, laureate of the Nobel Prize in Medicine in 1965 with André Lwoff and Jacques Monod. The achievements of this eminent Pasteurian scientist and molecular biology pioneer will undoubtedly inspire the researchers working in this new building as they seek to follow in his intrepid footsteps.

The François Jacob Center has been designed to promote dialog and interaction between different disciplines, creating a breeding ground for new ideas and approaches. More than 400 scientists from diverse backgrounds will eventually be housed in its open-space laboratories, where they will work on a wide range of complementary subjects. One innovative feature of the center is an area specifically set aside for newly formed teams looking to develop joint projects in this dynamic, multidisciplinary environment.

The center's flexible structure means that its human and technical resources can be deployed quickly and effectively to tackle future research challenges posed by viruses, bacteria and other health threats. Its highly sophisticated technological facilities are unique in Europe. This cutting-edge equipment will benefit all the Institut Pasteur teams, as well as scientists from other organizations and institutions.

The overriding aim of the François Jacob Center is to create a hub of expertise and technological capability for the fight against emerging diseases. Here's hoping that this new facility will spur Institut Pasteur scientists on to ever-greater achievements – for the health of us all.

EMERGING DISEASES – A CHALLENGE FOR OUR ERA

The 21st century has already witnessed its fair share of major epidemics, from SARS to chikungunya and new forms of influenza. At the Institut Pasteur, several teams have been closely involved in efforts to develop new detection and diagnosis tools, and have made groundbreaking discoveries in understanding these new diseases. Research is still going on to find treatments and vaccines for these and other health threats. The François Jacob Center has been designed to offer an effective response to current and future challenges facing biomedical science. It represents an invaluable tool in the fight against modern-day diseases.

What do we mean when we talk about emerging diseases?

3 questions to Arnaud Fontanet

Head of the Epidemiology of Emerging Diseases Unit

What exactly is an emerging disease?

An emerging disease is a new disease that surfaces in the human population. Other diseases that had all but disappeared can also re-emerge or colonize new geographical areas following environmental changes. Most of these diseases are infectious; in other words, they are caused by microorganisms such as bacteria, viruses, parasites or fungi. They can emerge when microbes cross the species barrier from animals to humans, as has occurred with influenza viruses. This was also what happened with the AIDS virus, which was itself an emerging disease just thirty years ago.

How can we explain the high rate of emergence of these new diseases?

The first factor is the sheer density of humans on the planet, which quadrupled during the 20th century. The rapid growth in international trade has also led to a sharp rise in infectious agents circulating among humans. There are also climatic factors and changing environmental conditions – animals are more likely to come into contact with humans when their natural ecosystems are altered or start to shrink. Finally, and ironically, progress in medicine and the use of increasingly invasive medical procedures can lead to the emergence of new diseases.

What impact can these new diseases have on society?

Over and above the aspect of human suffering, emerging diseases can have an impact on all areas of society – they can cause economic slowdowns, hinder the free movement of goods and people and generate unexpectedly high costs. The WHO estimates that the 2003 SARS epidemic cost over $60 billion in terms of general expenses and loss of trade for Asian countries. Furthermore, emerging diseases can strike anywhere – although tropical climates are particularly conducive to the emergence of new pathogens, industrialized countries with widespread antibiotic use can give rise to new resistant bacterial strains that are extremely hard to treat.

A CLOSER LOOK

Emerging diseases in figures

1 new infectious disease emerges somewhere in the world each year.

Every **5** years, the human population is struck by a major crisis caused by the emergence or re-emergence of a virus.

24 hours was all it took for the SARS coronavirus to spread to six countries in 2003.

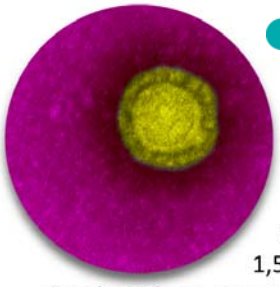
34 million people across the world are currently infected by the AIDS virus, 30 years after it was first discovered.

Influenza? SARS? What will be the next major epidemic of the 21st century?

Jean-Claude Manuguerra, Head of the Institut Pasteur Laboratory for Urgent Response to Biological Threats

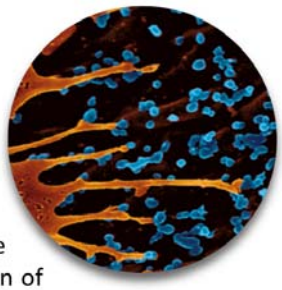
It is difficult to predict whether a microbe might go on to cause a severe worldwide epidemic. However, biological and statistical data can give us some pointers. Firstly, the scientific community currently believes that the next major epidemic will be caused by a virus, rather than a fungus or bacterium, which generally have slower and less direct modes of transmission. Secondly, the most likely candidates for a fast-spreading epidemic outbreak are what we call "respiratory" viruses, such as influenza or SARS, which are spread by person-to-person contact. In contrast, a virus that can camouflage itself or attack our immune defenses will most likely cause a slow-spreading epidemic such as AIDS. The phenomenon of climate change also means that tropical mosquitoes are populating new regions, increasing the risk of emergence of diseases spread by these insects, such as dengue or chikungunya. Although huge technical progress has been made in recent years, there is always the risk that a totally unknown infectious agent might appear. Furthermore, detecting an epidemic remains a tricky task. To overcome these new diseases, we need to tackle them fast.

FOCUS ON | III Some infectious diseases and threats



SARS

The SARS virus (severe acute respiratory syndrome), which spread to humans from civets, small carnivores that are eaten in Asia, was completely unknown until 2002-2003 when it caused the first serious communicable emerging disease of the 21st century. Sylvie van der Werf's unit at the Institut Pasteur[1] was heavily involved in the SARS surveillance system in France, working closely with the French Ministry of Health and the Institute for Public Health Surveillance. It was responsible for analyzing more than 1,500 samples from 800 suspected cases, and developed a detection test that was distributed to seven French laboratories. A global alert issued by WHO on March 12, 2003, led to unprecedented international efforts, enabling the infectious agent, a coronavirus, to be identified rapidly and the epidemic to be brought under control.

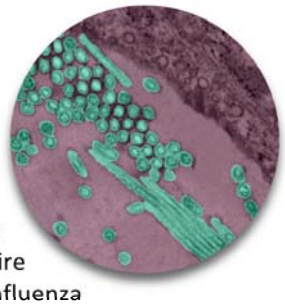


Chikungunya

Infection by the chikungunya virus, which is spread by mosquitoes, causes joint pain and headaches that can last for several months. The disease has reached epidemic proportions in Africa and Asia, and spread to Europe in 2007, with the first indigenous cases (cases contracted in the country and not acquired from foreign travel) recorded in France in 2010. The threat of an epidemic in France is real. The Institut Pasteur's response to the threat of chikungunya back in 2005 is a prime example of the swift, effective action of its scientists. They rapidly developed diagnostic tests, traced the evolutionary history of the virus, sequenced the genomes of six strains, confirmed mother-to-child transmission and identified the origins of the epidemic. The scientists also developed an animal model of the disease designed a vaccine candidate and deciphered the 3D structure of the virus. Around ten teams are still focusing their research on chikungunya.

[1] The Institut Pasteur's Molecular Genetics of Respiratory Tract Viruses Unit, which houses the National Reference Center for Influenza Viruses and is also a WHO Collaborating Center for influenza viruses and other respiratory tract viruses – see page 7 to find out more about this unit.

Influenza viruses

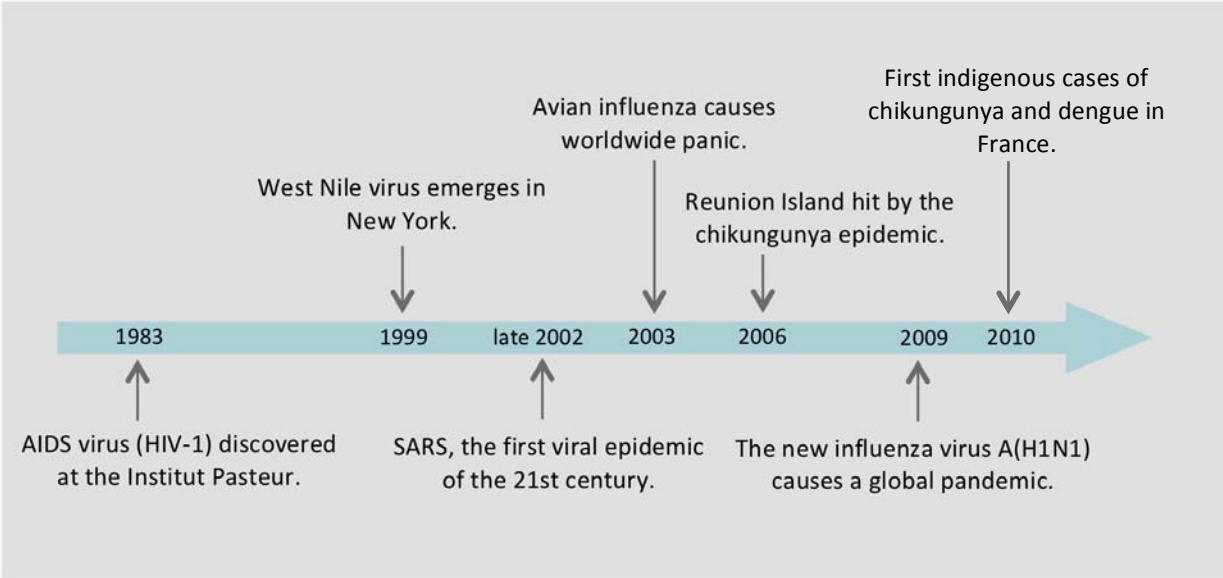


Influenza viruses, which are highly contagious respiratory viruses whose genomes can undergo frequent mutation, have the potential to spawn a serious epidemic. In its more familiar seasonal form, "flu" affects millions of people across the world each year, resulting in hundreds of thousands of deaths. Over the centuries, influenza viruses have also been responsible for epidemics that have wiped out huge populations across entire continents. Recent influenza viruses – avian influenza in 2003 and the pandemic influenza A(H1N1) in 2009 – have caused widespread concern among the general public and the scientific community. Major research efforts are focused on monitoring and studying these viruses. Four Institut Pasteur structures are involved in the French National Influenza Pandemic Prevention and Response Plan and are deployed as soon as the first alerts are issued. They work closely with the French Institute for Public Health Surveillance. In 2009, the efforts of these teams enabled the Institut Pasteur swiftly to develop a detection test for the new pandemic virus A(H1N1) and to distribute it to accredited laboratories.

Dengue

The incidence of Dengue, known as "tropical flu" since the 18th century, has grown at an alarming rate in recent decades. According to WHO estimates, there are 50 million cases worldwide each year, 500,000 of which develop into dengue hemorrhagic fever, the severe form of the disease, with a death rate of 20%. Dengue hemorrhagic fever re-emerged in 1996 in Cuba after a fifteen-year absence, despite attempts to eradicate the *Aedes aegypti* mosquito, which spreads the disease. It is therefore known as a "re-emerging" disease. Dengue is a major focus of research at the Institut Pasteur, with several teams working on complementary research areas including diagnosis, therapy and the development of a vaccine candidate. Research is also carried out by the Institut Pasteur International Network, which is in a unique position to study this disease, having several institutes near areas and populations exposed to the virus. Since January 2012, the Institut Pasteur has been coordinating the DENFREE international project, involving 14 partner institutions from eight countries across Europe, Asia and Latin America. The aim of this project is to improve understanding of the dengue epidemics that are affecting new world regions in order to help bring them under control. Research targets include developing predictive models to anticipate epidemics, identifying effective mosquito control measures and creating a diagnostic kit that is more sensitive and less invasive than current diagnostic tools.

A CLOSER LOOK | III A recent chronology of emerging diseases



3 A PLATFORM FOR COLLABORATIVE RESEARCH

With its François Jacob Center, the Institut Pasteur wanted to create an environment that would encourage new, inventive strategies and foster innovative, competitive research. To realize this vision, it focused on three key concepts: interaction, multidisciplinarity and advanced technology. Its aim is to offer a rapid response to new emerging diseases and also to carry out more long-term research that will help shed light on the intricate workings of living organisms.

New approaches and cutting-edge technology

The François Jacob Center was designed to house teams working on complementary research areas including virology, human genetics, structural biology, epidemiology, histopathology and modeling. The aim is to stimulate constructive dialog between specialists from different fields, resulting in new and innovative approaches. Powerful technological equipment such as dynamic microscopy and proteomic platforms will underpin the scientists' efforts to combat the spread of viral and bacterial diseases, the development of drug resistance and the emergence of new diseases.

The first research teams

The first research teams have already begun working at the François Jacob Center. The Institut Pasteur decided to house both experienced units and more recently created groups in the center, selected according to current needs in the field of biomedical research, before introducing new teams. An area has been specifically set aside for new research groups created to work on innovative projects and led by young scientists. An international call for tenders has been launched for scientists specializing in areas including modeling, *in silico* epidemiology and arbovirology. With its strong scientific environment and its long history of work in the field of infectious diseases, both in Paris and in the Institut Pasteur International Network, the Institut Pasteur occupies a unique position in the research landscape.

FOCUS ON | III The first teams at the center

Respiratory viruses – potential emerging diseases

The **Molecular Genetics of RNA Viruses** Unit, directed by Prof. Sylvie van der Werf, houses the **Influenza National Reference Center** and is at the forefront of the international network of expertise on respiratory viruses. Its work includes monitoring influenza and other respiratory viruses at national and international levels, centralizing epidemiological data, and alerting health authorities to new mutations, the emergence of new strains, resistance to antiviral drugs and unusual clinical forms. Sylvie van der Werf is also coordinating the new European program PREDEMICS, launched in 2012 by a consortium of 17 European research and public health institutes to unravel the complex mechanisms involved in virus-host relationships. This research should enable the scientists to model the evolution of pathogens in potential risk environments.

Find out more on pages 5 (SARS) and 6 (influenza viruses).

Viruses in 3D

The **Structural Virology** Unit, directed by Félix Rey, examines the three-dimensional architecture of viral particles. The aim of this research is to determine the functions of these particles so that specific molecules capable of blocking viruses can be identified. The scientists particularly focus on dengue, chikungunya, hepatitis C and herpes. Félix Rey's team has successfully solved the 3D structure of the chikungunya virus envelope proteins, and in 2012 it also characterized the structure and mechanism of action of an antibody that can neutralize all four forms of the dengue virus simultaneously. These discoveries represent major breakthroughs for research into antiviral, preventive and therapeutic strategies.

AIDS: an emerging disease that became a pandemic

Almost 30 years after Françoise Barré-Sinoussi discovered HIV-1, earning her the Nobel Prize in Medicine in 2008, AIDS is still responsible for the deaths of some two million people worldwide each year. Research into HIV/AIDS is understandably one of the Institut Pasteur's priorities. The work of the **Regulation of Retroviral Infections** Unit, directed by Prof. Françoise Barré-Sinoussi, focuses particularly on the early mechanisms associated with natural control of HIV infection and its development into AIDS. The scientists in her team have established several partnerships in Africa and Asia via the Institut Pasteur International Network.

Using genetics to understand how microbes develop

Anavaj Sakuntabhai directs the **Functional Genetics of Infectious Diseases** Unit. His team is investigating the genetic basis of susceptibility to two major human infectious diseases transmitted by mosquitoes: malaria and dengue. The aim is to identify new genes in humans that control these infections, and also to understand how these genes determine whether a given person will be resistant to the disease or not. The scientists have adopted a two-pronged approach, using statistics to provide predictive models from epidemiological data, and genetics to understand what happens at the cellular level in carriers of susceptibility-conferring genes. Since January 2012, Anavaj Sakuntabhai has also been the coordinator of the DENFREE program. This ambitious international project involving 14 partner institutions in Europe, Asia and Latin America aims to shed light on dengue epidemics that are rapidly spreading to new regions where the disease was previously not found, including Europe.

How the human genome can reveal the mysteries of infectious diseases

The **Human Evolutionary Genetics** Unit, directed by Lluis Quintana-Murci, examines the variability of the human genome at a worldwide level. The team's research provides valuable data on human history and migration, making it possible to trace the natural evolution of different diseases. The scientists use genomics and evolutionary analysis to identify genetic factors involved in susceptibility or resistance to infectious diseases. This research covers a broad range of disciplines including genetics, immunology, epidemiology and anthropology.

The human body under the microscope

The aim of the **Histopathology** Unit, set up in 2010 and directed by Fabrice Chrétien, is to understand how cells are organized and work together within a complex tissue to keep it running smoothly or repair it. Two main research models are used – brain and muscle tissue. The team is investigating how brain tissue can be damaged despite the protective barrier between the bloodstream and the brain. In their work on muscle tissue, scientists in the unit are looking at tissue repair by stem cells. Recently, Fabrice Chrétien's team demonstrated that some of our organs contain stem cells that can survive after our death. This discovery opens up potential therapeutic avenues for transplants.

Analyzing nerve impulses

The new **Molecular Mechanisms of Membrane Transport** group, set up in 2012 and directed by Nicolas Reyes, is investigating the transmission of nerve impulses in the brain and spinal cord. The scientists are particularly focusing on how small molecules known as neurotransmitters, which are responsible for transmitting signals between neurons, are transported across the cell membrane. Nicolas Reyes and his team are taking a multidisciplinary approach combining X-ray crystallography, calorimetry, fluorescence spectroscopy and electrophysiology.

Cutting-edge microscopy techniques

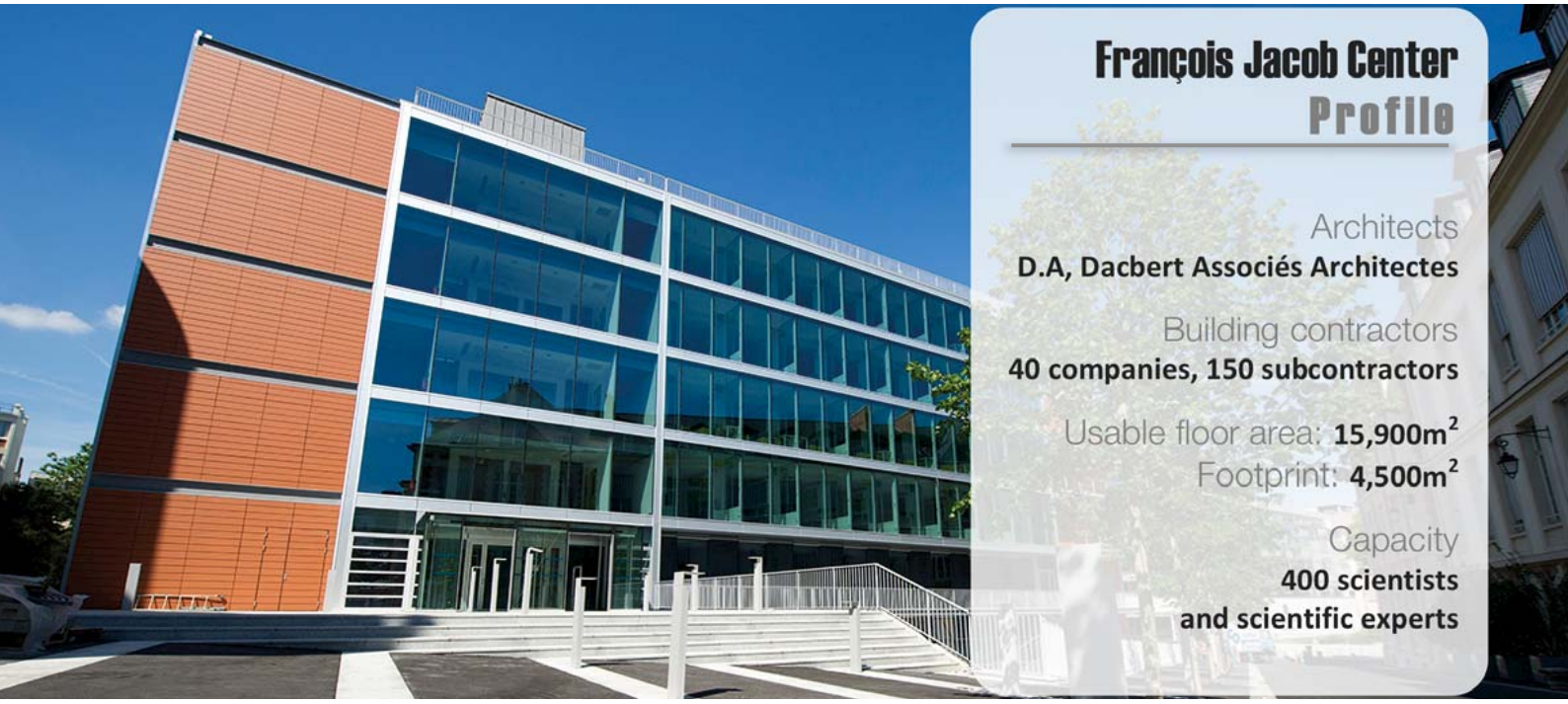
The **Dynamic Imaging** Platform, supervised by Spencer Shorte, is working to develop effective techniques to analyze the relationship between cells and tissues and the role it plays in the infectious process. Dynamic imaging covers a vast array of technologies including particle fluorescence and bioluminescence, which enable scientists to monitor cell development in time and space. These technologies, in conjunction with bioinformatics, can be used to model cellular mechanisms such as those that occur during infection by an emerging virus.

Exploring the intricacies of proteins

Julia Chamot-Rooke directs the **Structural Mass Spectrometry and Proteomics** Unit. Her team is developing innovative analysis methods to identify, characterize and quantify proteins that play an important role in human health. Unlike traditional methods, which analyze small protein fragments and can lead to considerable information loss, this research is based on the extremely precise mass measurement of whole proteins. Scientists in the unit recently used this cutting-edge technology to characterize a chemical modification on a small protein involved in the virulence of *Neisseria meningitidis*, the bacterium that causes meningitis.

AN ARCHITECTURAL TOUR DE FORCE

With its emphasis on light, open spaces, the François Jacob Center is designed to promote interaction and dialog. The building's atrium, multipurpose facilities and walkways, together with the highly sophisticated scientific equipment, offer the best possible environment for world-leading research.



3 questions to Robert Chapellier

Associate architect – D.A Architectes

How did the project get off the ground?

The initial planning phase began before 2006 and the actual building work started in 2008. We wanted to come up with a design for the Institut Pasteur that would really facilitate exchange and discussion between researchers. The first scientists out of a total of 400 have now moved into the building.

What were the main architectural considerations?

There were two main aspects to take into account – we had to design a center that would meet the requirements of modern-day research, in a style that was in keeping with the Institut Pasteur's architectural heritage. We decided to go for a classic terracotta look for the façade, but with full-length windows that give it a decidedly modern twist.

If you had to name one stand-out feature of this new building, what would it be?

Probably its technical sophistication. The new building is a bit like an iceberg, with a huge number of facilities below ground level – refrigeration tanks, air handling units, ducts and shafts. It really is a demonstration of the latest in technical innovation for top-quality research. One feature that springs to mind is the 10 MW refrigeration plant, which is not located on the roof, where it would normally be put, but underground so that it doesn't become an eyesore or cause noise disturbance. Another strong point is the large technical facility containing high-security laboratories and experimentation stations.

THE BUILDING SITE

October 23, 2008

Laying the first stone

Bertrand Delanoë, Mayor of Paris, Marc Lipinski, Vice President of the Greater Paris Regional Council, Alice Dautry, President of the Institut Pasteur, and Valérie Pécresse, French Minister for Higher Education and Research, officially lay the first stone of the new center.

December 2008 – August 2009

Excavation work

The excavation work revealed old tunnels that had served as limestone quarries for the City of Paris.

The lowest of the building's three underground levels is located 18m below the surface.

August 2009 – August 2010

Structural work

The work required three cranes.

Traditional 30cm-thick concrete floors were used to guarantee sound and vibration insulation.

January 2010 – September 2011

Technical fittings and finishings

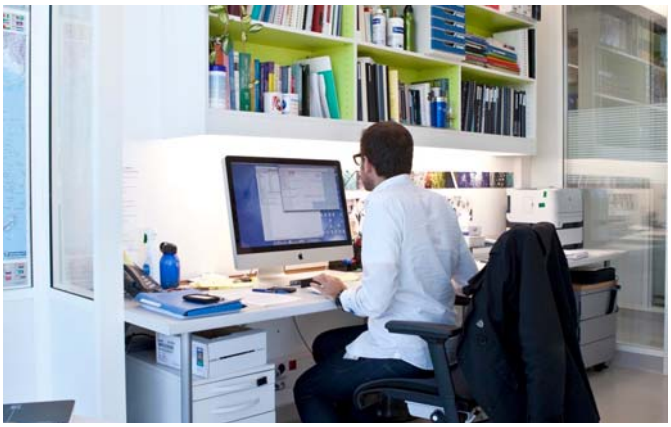
Once the air conditioning, heating, ventilation, electricity and plumbing systems had been installed (January 2010–June 2011), work started on the finishings, which took until September 2011. Preparations were then made to welcome the first research teams – furniture, washrooms, scientific equipment, etc.

Atrium

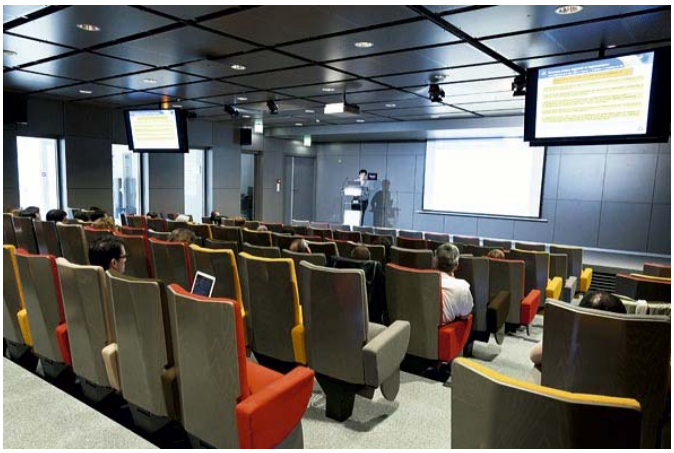
The main entrance opens onto the atrium, with walkways on each floor leading to laboratories.

Laboratories

The laboratory facilities offer large, open spaces in which scientists from different teams can meet and share equipment.



A suite of experimentation stations can be found at the center of the laboratory facilities, with offices located on each side.



Meeting rooms

The building's design provides ample opportunity for scientists to meet together and share ideas.
A 120-seater auditorium on the ground floor will be used for lectures and meetings. The François Jacob Center also has nine meeting rooms.

Refrigeration unit and chilled water pump

More than 940m^2 of underground space is taken up with refrigeration facilities.

The production plant contains nine refrigeration units and two 180m^3 ice tanks, which can produce up to 11 MW of chilled water (maximum instantaneous production).

Chilled water distribution pipes

These pipes supply chilled water to all the laboratories in the François Jacob Center and also to the other buildings on the north campus. The water is piped via underground channels to avoid any noise disturbance.

Spring-mounted equipment

All the technical equipment at the center (piping, networks, pumps, etc.) has been spring mounted to prevent vibrations being transmitted to the rest of the building.
The building has been equipped with two spring-mounted anti-vibration platforms for scientific equipment, such as electron microscopy, which requires highly accurate measurements.

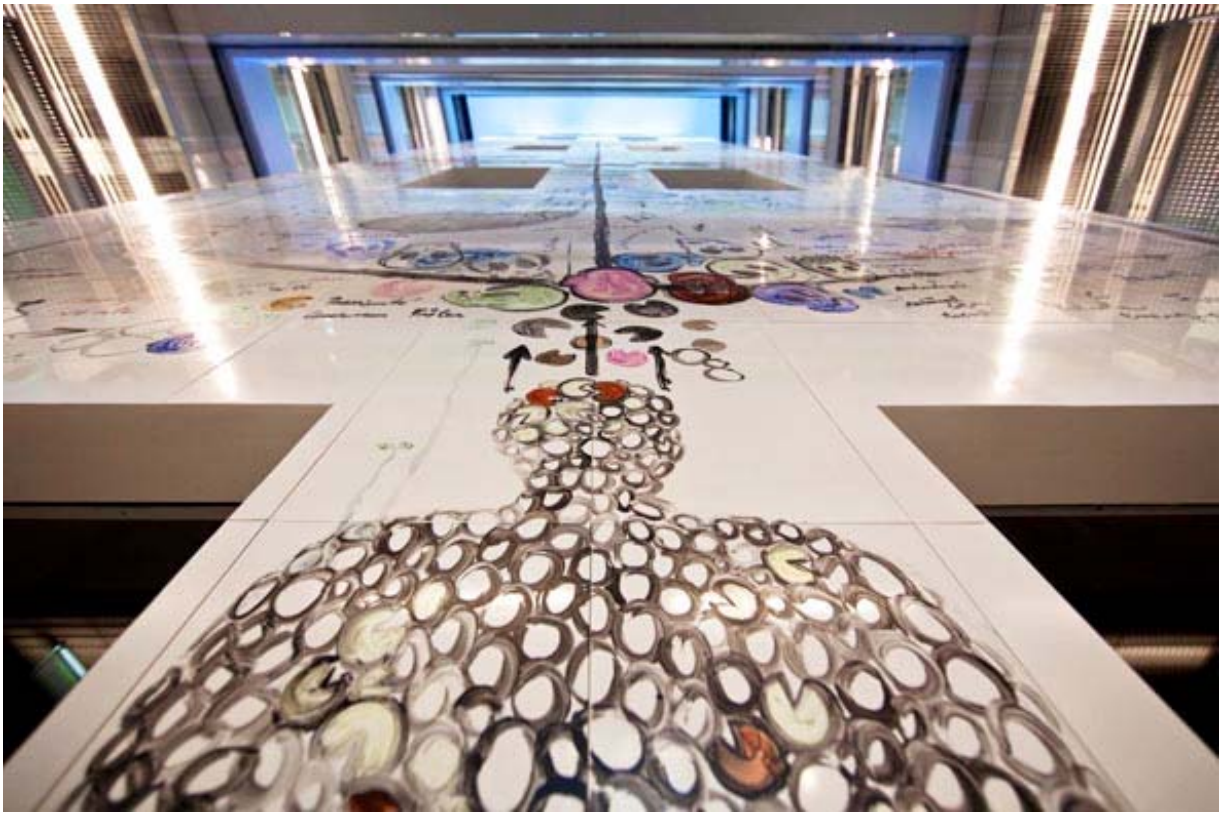
Low-voltage generator panel

Power flows through an extra-high-voltage cable (20,000 V) to an underground delivery substation that is independent from the rest of the campus. Seven transformers then distribute the power to low-voltage generator panels.

Fabrice Hyber, one of France's most celebrated contemporary artists on the international circuit, has paid tribute to the inspirational work of the Institut Pasteur with his giant fresco "Sans gêne", which takes pride of place inside the new François Jacob Center. This monumental work captures the visionary spirit of the institute's scientists and its esteemed founder.

Fabrice Hyber's fresco, created from 800 tiles donated by the Sèvres Cité de la Céramique, is 18m high and 8.2m wide, covering the elevator walls over five floors of the Institut Pasteur's new research center for emerging diseases.

"I would like to offer my sincere gratitude to Fabrice Hyber for his enthusiasm for the Institut Pasteur's scientists and their work, and for this marvelous gift," said Alice Dautry, President of the Institut Pasteur. *"When he was a child, Louis Pasteur claimed to be more interested in pastels and charcoal than scientific research. His artistic talents have remained a well-kept secret, but they show that innovation and creativity can take many forms, and when they come together great things can happen. Science was Fabrice Hyber's inspiration, and it is my fervent hope that this work of art will become a source of inspiration and discovery for our scientists."*



5 FUNDING THE FRANÇOIS JACOB CENTER

The François Jacob Center was funded by contributions from the French government and local authorities, private sponsorship and generous gifts. The total budget allocated to the building was €61 million.

Government grants amount to €23 million, of which €10 million came from central government, €10 million from the Greater Paris Authority and €3 million from the City of Paris.

The remaining €38 million come from the generous gifts of its donors and from the Institut Pasteur's own funds. The Total Foundation and Sanofi are the main sponsors behind the new François Jacob Center, with many private donors also making contributions.

The financing plan for the center provides for €17 million to be raised in funds over several years. €7.5 million has been raised to date.

IN THE FOOTSTEPS OF FRANÇOIS JACOB

"I arrived at the Institut Pasteur in the summer of 1950, and since that time the institute has undergone a formidable transformation. Today, fifty years on – can you believe it, fifty years?–, I am delighted to see what the institute has become today.

From the new building I can see my old laboratory, André Lwoff's laboratory. It was stifling in that attic room... but there was one clear advantage: we were all running into each other all day long. It was a hive of activity and really quite extraordinary. It was one of the most enjoyable and productive periods of my life. To achieve an atmosphere of such enthusiasm, people need to be prepared to work and play together".

François Jacob, May 2012.

François Jacob led pioneering research at the Institut Pasteur and his research laid the foundations of modern molecular biology, culminating in the Nobel Prize for Medicine in 1965, alongside Jacques Monod and André Lwoff. The new Institut Pasteur center dedicated to emerging diseases is named after him as a tribute to his life and work. François Jacob is not only a scientist at heart, but also a firm believer in the progress of science and a committed, passionate and a profound humanist.

François Jacob's original vocation was surgery and he began his medical studies in Paris. However, war broke out and he joined the Free French Forces in London, serving in military operations and sustaining serious wounds in Normandy, in 1944. After the war, unable to pursue a career in surgery due to his injury, he turned to biology.

In 1950, he joined the Institut Pasteur and the laboratory of André Lwoff, where he was appointed head of the Department of Cell Genetics in 1960. His work initially focused on a strange phenomenon observed in virus-carrying bacteria. It proved possible, through the use of ultraviolet radiation, to “wake up” these viruses, known as “bacteriophages” or “phages”, and destroy the bacterial host. At the same time, Jacques Monod was working on another bacterial growth phenomenon, namely the fact that the enzymes needed to metabolize lactose are produced solely in the presence of this sugar. Synthesis of this enzyme is therefore “induced” by lactose, and can vary over the course of time. This led to a stroke of genius: noting the parallel between their research, the two scientists developed a novel and original model for explaining both the lactose system and prophage induction.

The discovery was of paramount importance. It established for the first time that our genes are not expressed linearly over time, but that they are finely regulated – activated or repressed – to meet the needs of our body. This has enabled us, for example, to understand that digestive enzymes are not produced constantly, but only after a meal. The discovery also proved that our immune system, under normal conditions, only reacts if the body is under threat from foreign agents. The study of genetic regulations and flaws that are responsible for many diseases is today a major area of research in biology, used by new generations of scientists to investigate the living world.
Following this discovery, which earned them and André Lwoff the Nobel Prize in 1965, François Jacob and Jacques Monod went on to develop a whole series of new concepts, such as those of messenger RNA, regulatory genes, operons and allosteric proteins.

François Jacob is a member of the Académie française, recipient of the Grand Croix de la Légion d’Honneur and was Chancelier de l’ordre de la Libération. He is also a foreign member of several academies, including the Danish Royal Academy of Arts and Sciences, the American Academy of Arts and Sciences, the National Academy of Sciences of the United States of America and the American Philosophical Society.

THE INSTITUT PASTEUR AT A GLANCE

7

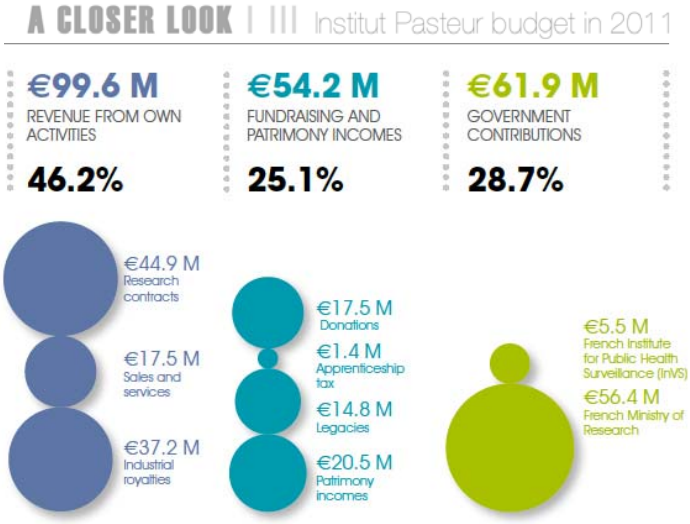
In a word

The Institut Pasteur is a world-renowned center for biomedical research. The state-approved institute was founded by Louis Pasteur in 1887. Its mission is to play an active part in preventing and fighting disease through scientific and medical research, teaching and public health initiatives both in France and throughout the world. Some 2,400 people work on its Paris campus. Much of its work focuses on the study of infectious diseases, genetic diseases, the mechanisms of certain cancers and the neurosciences, along with research into the properties of living organisms. The Institut Pasteur is at the center of an International Network of 32 institutes, stretching across all 5 continents. Since its foundation, 10 of its scientists have been awarded the Nobel Prize in Physiology or Medicine.

A private foundation

The Institut Pasteur is a private non-profit state-approved foundation entitled to receive donations and legacies for the purpose of sustaining its research and teaching programs in order to benefit world health. It relies on gifts from private individuals (donations and legacies) for approximately 25% of its budget, and patrimony incomes. The remainder of its budget comes from its own activities (agreements, licenses, etc.) for just over 45% and a government contribution of roughly 29%.

Thanks to donors' support, the Institut Pasteur is able to maintain its independence and freedom of research, and to provide a fast response when called upon in an emergency.



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A policy of ethics and transparency governs management of Institut Pasteur funds. The accounts are inspected annually by auditors and subject to the approval of the Board of Directors. The Institut Pasteur also enjoys the approval of the Comité de la Charte, a supervisory body for associations and foundations that rely on public generosity..

Discoveries spanning more than 120 years

1888 Inauguration of the Institut Pasteur.
1894 Alexandre Yersin, a disciple of Louis Pasteur, discovered the plague bacillus.
1907 Alphonse Laveran was the first Pasteurian to win the Nobel Prize in Physiology or Medicine, for discovering the parasite responsible for malaria.
1908 Elie Metchnikoff won the Nobel Prize in Medicine for his work on immunity.
1921 Albert Calmette and Camille Guérin developed the BCG, a vaccine against tuberculosis.
1932 Jean Laigret developed the first vaccine for yellow fever.
1983 The AIDS virus, HIV-1, was discovered by Françoise Barré-Sinoussi and Luc Montagnier.
2003 A team of scientists discovered the first gene associated with autism.
2008 Françoise Barré-Sinoussi and Luc Montagnier were awarded the Nobel Prize for Medicine.
2010 Scientists developed a DNA microarray capable of detecting emerging viruses.
2012 A team discovered the intricate mechanisms of the primary cause of human deafness/blindness.
2012 Teams discovered two molecules that block development of the malaria parasite.

ACKNOWLEDGMENTS 8

The Institut Pasteur extends its sincere thanks to all public and private sponsors who contributed funding to the François Jacob Center.

INAUGURATION OF THE FRANÇOIS JACOB CENTER

November 14, 2012

THE NEW INSTITUT PASTEUR RESEARCH CENTER FOR EMERGING DISEASES

Credits for visual materials: Institut Pasteur Image and Reprography Service; Thomas Lang; avantgarde

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