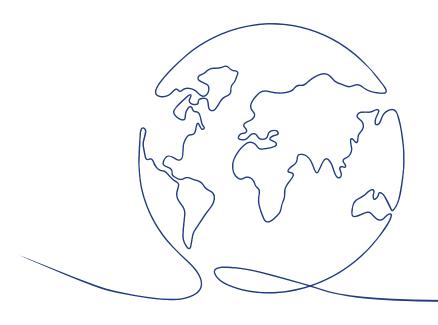
2021-2022 **REPORT**



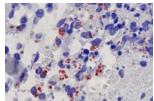
UNITED FOR GLOBAL HEALTH





























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The start of a new chapter

ur collective dedication to advancing global health through cutting-edge research, innovation, and collaboration has been the cornerstone of our success over the past two years. As we embark on this new chapter in the Pasteur network's story, we can build on these successes to ensure the network is

a global leader in public health, science, innovation, and education.

The Pasteur Network's diverse expertise and strong partnerships position us to make significant advances in these fields. Navigating the constantly shifting landscape of Global Health requires agility and adaptability to effectively respond together to the challenges ahead. As we implement a more robust financial framework and promote a more inclusive and equitable governance model, our

revamped organizational structure aims to enhance collective action and amplify our voice.

I am honored to participate alongside the board of the Pasteur Network through this transformative period. I am confident that by A global leader in public health, science, innovation, and education.

embracing this new governance model, we will strengthen the Pasteur Network's ability to respond to global health challenges and maintain our position at the forefront of public health innovation. Together we will continue to address infectious and emerging diseases focusing on One Health, fostering research, development, and innovation to act for the global good.

With the essential support and dedication of all members and the involvement of international organizations and funders, I have no doubt that the Pasteur Network will continue to make a tangible difference in the world. I eagerly anticipate collaborating with you all as we move ahead.

Sincerely,

Rebecca F. Grais

Executive Director - Pasteur Network



A NEW DYNAMIC FOR THE PASTEUR NETWORK

The Pasteur Network is a human and scientific community with more than 30 members in over 20 countries

its members, the Pasteur Network acts as a synergistic entity to address major scientific and public health challenges. Located in the heart of endemic areas, the Network has privileged access to a large number

the Pasteur Network a unique global actor in public health, science, innovation, and education, especially

contributing together to global health. By pooling scientific, human and technical resources among

of pathogens that it monitors and studies on all five continents. This exceptional diversity makes



Amadou Alpha Sall
President - Pasteur Network
General Administrator - Institut
Pasteur de Dakar

Unity and Collaboration for Global Health Equity

In recent years, the world has faced unprecedented health challenges, with the COVID-19 pandemic being a stark reminder of our interconnectedness and the need for solidarity to address public health issues in a globalized world. It is in this wake that the Pasteur Network has embarked on a dynamic of revitalization, inclusion and co-creation.

Our network has undergone a significant transformation with the appointment of an Executive Director and the implementation of a more participatory and balanced governance structure. At the heart of the Pasteur Network's renewed vision is a strong human dimension in line with Pasteurian values. We are dedicated to fostering solidarity, creating an environment that encourages intentional and active participation to enable individuals, members and the network itself to achieve their goals.

We believe that by leveraging the potential and complementary capabilities of our member institutes, the Pasteur Network can emerge as a key player in the research, development and manufacturing of affordable vaccines and therapeutics that are adapted to the needs of local communities.

It is my sincere hope that this new chapter in the history of the Pasteur Network will inspire our member institutes, our partners and all our stakeholders to join us in building a healthier and more resilient future for all.



Stewart T. Cole
President - Pasteur Network
Foundation
President - Institut Pasteur

Reflecting on Progress and Embracing the Future

As I approach the end of my tenure as President of the Institut Pasteur and the Pasteur Network Foundation, I am filled with gratitude and pride for the dedicated individuals who make up our global network. In this foreword, I would like to reflect on the progress we have made together.

The COVID-19 pandemic has underscored the vital importance of our work in infectious diseases, immunology, and public health. Faced with this unprecedented challenge, the Pasteur Network has demonstrated remarkable resilience and adaptability, continuing to advance research and develop innovative solutions to protect global health. Our collective efforts have not only contributed to the global response to the pandemic but also served to strengthen our network and reinforce our commitment to international solidarity.

The implementation of a participatory and balanced mode of governance has laid the foundation for a more inclusive and representative network. These changes have also positioned the Pasteur Network to better serve the needs of low- and middle-income countries and to address the most pressing health challenges of our time.

As we look to the future, I am confident that the network is well-positioned to confront the global health challenges of the 21st century and make lasting contributions to the well-being of populations worldwide.



in the fight against infectious diseases.

Discover the Pasteur Network in video via this link:

https://pasteur-network.org/ news/en/2-minutes-to-rediscoverthe-pasteur-network/

For more information, go to: https://pasteur-network.org/

▶ In June 2021

The Pasteur Network updated its governance to become more inclusive, participatory, and collaborative while respecting the autonomy of member institutions. At the end of June 2022, the restructuring of the Pasteur Network began with the arrival of Rebecca F. Grais, its new Executive Director, who will support collective action on the way to fulfilling the potential of the network as a global actor. https://bit.ly/3AWzU91





▶ In December 2022

A few days before the bicentenary of Louis Pasteur's birth, Rebecca F. Grais, Amadou A. Sall and Stewart T. Cole, co-wrote a comment in *The Lancet* that traces the network's main developments from its inception to the present day. The Pasteur Network is more than ever committed to this global vision to highlight the diverse nature of its members with Pasteur's legacy in research and public health. https://bit.ly/3P5HUwC







Pasteur Network members share strategic priorities such as:

- Epidemic and pandemic intelligence and preparedness;
- Supporting the research and development and innovation ecosystem;
- Support to diverse multi-disciplinary communities of knowledge favoring global and regional mobility;
- Promotion of excellence in basic and translational research

The Pasteur Network aims to foster synergies:

- To have a better understanding of the epidemiologic transition and its consequences on aging populations;
- To support mother and child health;
- To combat antimicrobial resistance;
- To study vector-borne diseases;
- To explore key endemic and emergent zoonoses through a One Health Approach.

ALL ABOUT THE PASTEUR NETWORK

More than 30 members in over 20 countries on 5 continents, bringing together more than 20,000 people.



Africa Americas Asia-Pacific Euro-Mediterranean



17

WHO Collaborating Centres

3

G4, 4-year research groups set up in Pasteur Network institutes

7

PIU Pasteur joint International research Units (PIU)

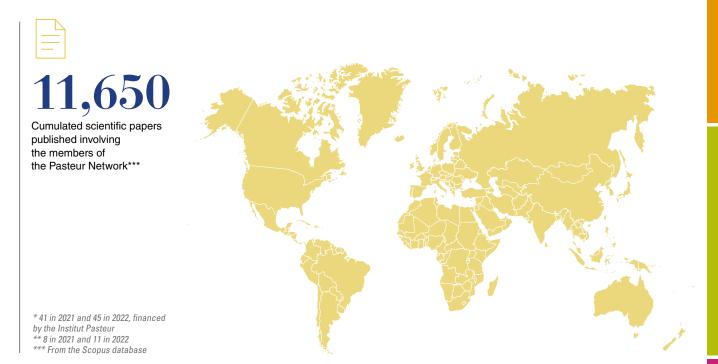


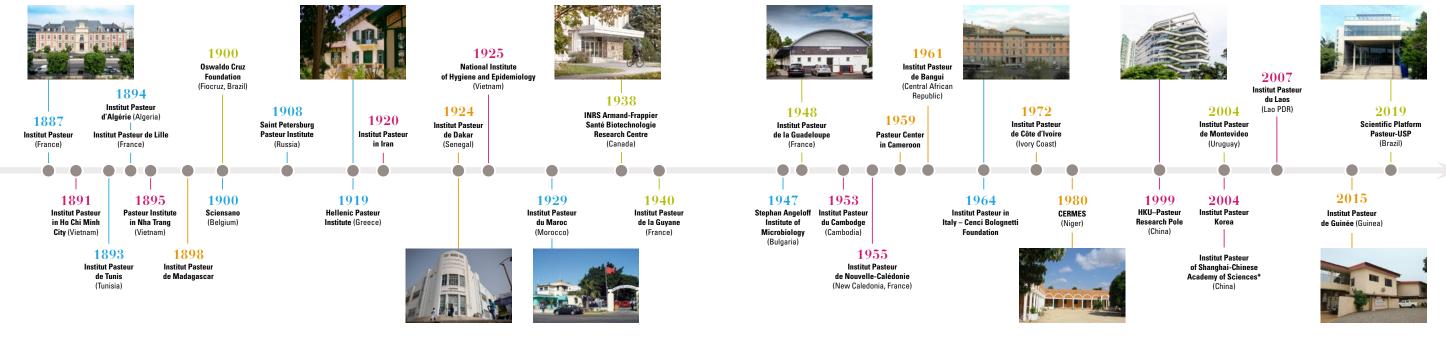
86

Pasteur Network scientists have been trained through the Calmette & Yersin program, including 9 postdoctoral fellows and 22 doctoral students*

19

Internships of young French researchers in the Pasteur Network financed by the Fondation Pierre Ledoux-Jeunesse Internationale**



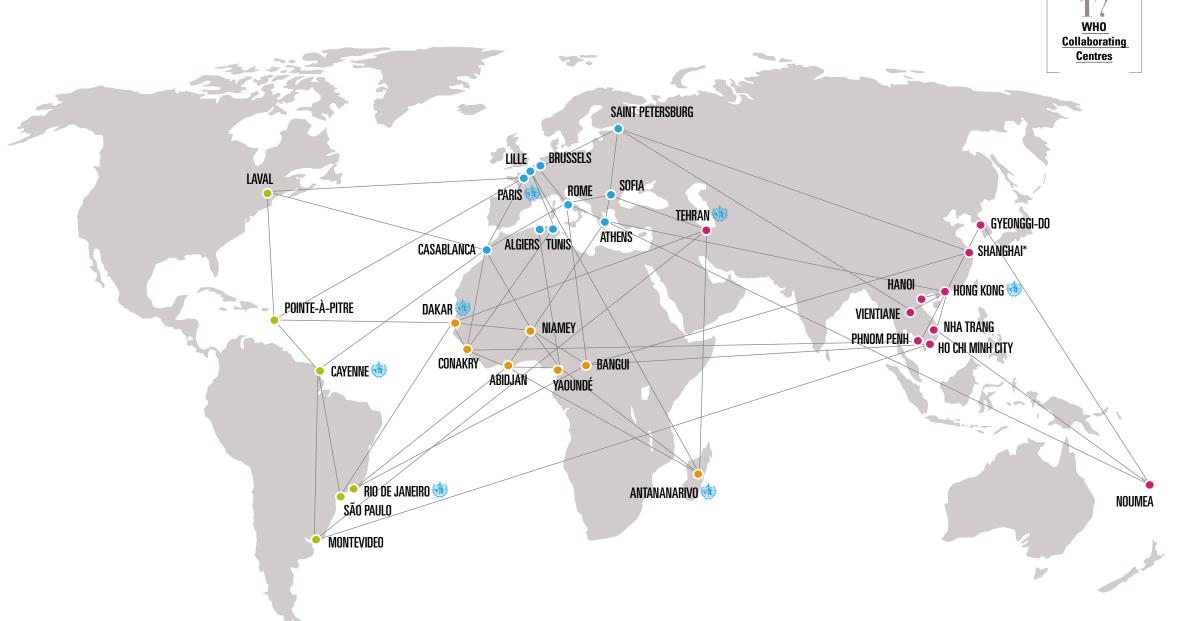


*The Institut Pasteur of Shanghai – Chinese Academy of Sciences is no longer a member of the Pasteur Network and is no longer able to use the name "Pasteur" since the end of 2022.



MEMBERS OF THE PASTEUR NETWORK WORLDWIDE

The Pasteur Network is present on all continents and had 32 members at the end of 2022. It is composed of four regions: Africa, Americas, Asia-Pacific, Euro-Mediteranean.



*The Institut Pasteur of Shanghai – Chinese Academy of Sciences is no longer a member of the Pasteur Network and is no longer able to use the name "Pasteur" since the end of 2022.

AMERICAS

World Health

Laval, Canada

INRS Armand-Frappier Santé Biotechnologie Research Centre

inrs.ca/en/

Pointe-à-Pitre, France (Guadeloupe) Institut Pasteur de la

Guadeloupe web.pasteur-guadeloupe.fr/

Cayenne, France

Institut Pasteur de la Guyane pasteur-cayenne.fr/

Montevideo, Uruguay Institut Pasteur de Montevideo pasteur.uy/en/

Rio de Janeiro, Brazil
Oswaldo Cruz Foundation

(Fiocruz) portal.fiocruz.br/en

São Paulo, Brazil Scientific Platform Pasteur-USP http://sppu.com.br/

EURO-MEDITERRANEAN

Athens, Greece Hellenic Pasteur Institute https://www.pasteur.gr/en/

Paris, France Institut Pasteur (Paris) https://www.pasteur.fr/en

Algiers, Algeria Institut Pasteur d'Algérie https://www.pasteur.dz/fr/

Lille, France
Institut Pasteur de Lille
https://pasteur-lille.fr/

Tunis, Tunisia
Institut Pasteur de Tunis
http://www.pasteur.tn/

Casablanca, Morocco Institut Pasteur du Maroc http://www.pasteur.ma/

Rome, Ital

Institut Pasteur in Italy – Cenci Bolognetti Foundation https://www.istitutopasteuritalia.it/

Saint Petersburg, Russia

Saint Petersburg
Pasteur Institute
https://www.pasteurorg.ru/

Brussels, Belgium Sciensano https://www.sciensano.be/en

Sofia, Bulgaria
Stephan Angeloff Institute
of Microbiology
https://microbio.bas.bg/en/

AFRICA

Niamey, Niger CERMES Niger

https://cermes.net/le-cermes/

Bangui, Central African Republic

Institut Pasteur de Bangui https://pasteur-bangui.org/

Abidjan, Ivory Coast

Institut Pasteur de Côte d'Ivoire http://www.pasteur.ci/

akar, Senegal

Institut Pasteur de Dakar https://www.pasteur.sn/en

Conakry, Guinea

Institut Pasteur de Guinée https://bit.ly/3Nd3igZ

Antananarivo, Madagascar Institut Pasteur de Madagascar

https://www.pasteur.mg/

Pasteur Center in Cameroon https://www.pasteur-yaounde.org/ index.php/fr/

ASIA-PACIFIC

Hong Kong, China HKU-Pasteur Research Pole https://www.hkupasteur.hku.hk/

Nouméa, France (New Caledonia) Institut Pasteur

de Nouvelle-Calédonie https://www.institutpasteur.nc/

Phnom Penh, Cambodia Institut Pasteur du Cambodge https://www.pasteur-kh.org/

Vientiane, Lao PDR

Institut Pasteur du Laos https://www.pasteur.la/

Ho Chi Minh City, Vietnam Institut Pasteur

in Ho Chi Minh City http://www.pasteurhcm.gov.vn/

Tehran, Iran

Institut Pasteur in Iran https://en.pasteur.ac.ir/

Nha Trang, Vietnam Institut Pasteur in Nha Trang

Institut Pasteur in Nha Trang http://pasteur-nhatrang.org.vn/

Gyeonggi-do, South Korea Institut Pasteur Korea https://www.ip-korea.org/

— Shanghai, China*

Institut Pasteur of Shanghai-Chinese Academy of Sciences http://english.shanghaipasteur. cas.cn/

Hanoi, Vietnam

National Institute of Hygiene and Epidemiology (NIHE) https://nihe.org.vn/en





BICENTENARY

The members of the Pasteur Network were involved in commemorating the 200th anniversary of the birth of Louis Pasteur, a major figure of scientific progress (see below various examples). Louis Pasteur was born on December 27, 1822 in Dole (Jura, France).

For example, various Pasteur Network members participated by displaying the traveling exhibition "From Louis to Pasteur: 1822-1895". Designed by the Institut Pasteur — Musée Pasteur, it retraces the life and work of Louis Pasteur.

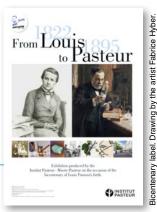


CONFÉRENCE 28 II 1 1881 ILLE BIAND PALAS ASTEUR

The Institut Pasteur de Lille organised a conference to retrace the shared destinies of Louis Pasteur and Albert Calmette.

LILLE

YAOUNDÉ



The travelling exhibition "From Louis to Pasteur: 1822-1895" is available in *French* and *English* on the Institut Pasteur website.



THE PASTEUR NETWORK LP200 PRIZE

To celebrate the bicentenary of Louis Pasteur's birth, a series of five prestigious scientific prizes were launched by the Institut Pasteur in 2022. The prizes are awarded for achievements that capture the Pasteur ethos, or "l'esprit Pasteur," in the fields of biomedical research, public health, or innovation. Among them, one was dedicated to the Pasteur Network. Leo Lit Man Poon, from the University of Hong Kong (HKU)-Pasteur Research Pole, member of the Pasteur Network, was awarded the Pasteur Network LP200 Prize at a ceremony organized by the Institut Pasteur (Paris).

More information about the Pasteur Network LP200 Prize awarded to Leo Poon: https://pasteur-network.org/news/en/the-pasteur-network-lp200-prize-awarded-to-leo-poon/



The Ministry of Information and Communications of Vietnam issued the "Birth Bicentenary of scientist Louis Pasteur (1822-1895)" stamp set designed by the Vietnam Post, including 1 stamp. In addition, the exhibition "From Louis to Pasteur: 1822-1895" has been adapted into Vietnamese with the support of the French Embassy in Vietnam.



Louis Pasteur is featured with his microscope on a stamp designed by the Korea Post to celebrate the 200th anniversary of his birth. http://www.koreastamp.go.kr/



The Centre for Immunology & Infection (C2i) and the HKU-Pasteur Research Pole are presenting an Institut Pasteur travelling exhibition at the University of Hong Kong with the support of the Hong Kong Science and Technology Parks Corporation (HKSTP) and the Consulate General of France in Hong Kong and Macau. https://bit.ly/3pxyeR4

infectious diseases animated by Noël Tordo with the students of the Lycée Français Albert Camus in Conakry was organized in the context of the 200th applyersary of the birth of Louis

A debate about climate change and

200th anniversary of the birth of Louis Pasteur. https://bit.ly/3Ph7gYL

The exhibition "From Louis to Pasteur: 1822-1895" was presented during the open days organized by the Institut Pasteur de la Guyane. https://bit.ly/44RSDjP



MONTEVIDEO

CAYENNE

Poster designed by Alfonso Rosso produced for an event called "Pasteurizarte" organized by the Institut Pasteur de Montevideo.



CONAKRY

The Pasteur Center in Cameroon celebrated Louis Pasteur with an exhibition and a conference-debate. https://bit.ly/42KWaOw



SOUTH KOREA

VIETNAN

HONG KONG

An exhibition was organized in close collaboration with the Institut Français de Madagascar with a historical tableau retracing the 125 years of its existence. https://bit.ly/42x0hhU

8 2021-2022 REPORT PASTEUR NETWORK 9

ANTANANARIVO







members

nembers

WHO Collaborating Centres

Arboviruses and Haemorrhagic Fever Viruses (Institut Pasteur de Dakar)

Plague control and research (Institut Pasteur de Madagascar)

Regional representatives:

Amadou Alpha Sall, Institut Pasteur de Dakar

Noël Tordo, Institut Pasteur de Guinée







TYPE: Public Institution

ADDRESS: BP1274 Yaoundé, 451, Rue 2005, Yaoundé, Cameroon

WEBSITE: https://www.pasteuryaounde.org/index.php/fr/

AREAS OF EXPERTISE:

Bacteriology, Parasitology, Epidemiology, Food, Hygiene and Environment, Immunology, Mycobacteriology, Virology, Entomology, Medical analysis



June 2021

One of the first MALDI-TOF in Central Africa

On June 29, 2021, in the presence of the Secretary General of the Ministry of Public Health, Professor Louis Richard Ndjock and the Japanese Ambassador to Cameroon, H.E. Tsutomu Osawa, the center inaugurated Central Africa's first MALDI-TOF mass spectrometer. Funded primarily by the Government of Japan and Fondation Mérieux, this acquisition marks a turning point for medical diagnostics and food analysis in Cameroon.

https://bit.ly/3mVcqOm

The Pasteur Center in Cameroon contributes to health promotion and disease control through public health, research, the prevention and surveillance of endemic and epidemic diseases and training.



February 2022

Visit by AFD's CEO

On February 3, 2022 Rémy Rioux, Chief Executive Officer of the French Development Agency (AFD) visited the Pasteur Center in Cameroon to witness its efforts in the COVID-19 response. Mandated by the Ministry of Public Health to implement and decentralize the molecular diagnosis of COVID-19, the center has organized several activities nationwide, enabling 9 out of 10 regions to become self-reliant for the Covid-19 diagnosis thanks to funding from the AFD. https://bit.ly/3iWRap9



February 2021

The impact of COVID-19 on health workers in Africa

A cohort study involving the Pasteur Center in Cameroon, the Institut Pasteur de Bangui, the Institut Pasteur de Madagascar, and the Institut Pasteur – all Pasteur Network members – looked at the impact of COVID-19 on health workers. After a 3-month follow-up period, the data showed that 40% of health workers became infected, pointing to the need for a better protection strategy.

https://pubmed.ncbi.nlm.nih.gov/33333249/

2021-2022

PlaCARD, a tool for managing diagnostic test data

The center developed PlaCARD, an open-source, real-time data management platform. PlaCARD was quickly adapted to the decentralized COVID-19 testing strategy and then rolled out to all laboratories and the regional emergency operations center in Cameroon. 71% of samples collected over 20 months were entered into PlaCARD. https://cutt.ly/j9r6j8D

AND ALSO -

- ► Dr. Mirdad Kazanji, new General Director
- ► An algorithm to reduce the cost of tuberculosis screening
- ► BulabNet Buruli ulcer 2022 Annual meeting

The Institut Pasteur de Côte d'Ivoire is a national public institution with industrial and commercial interests that serve the populations of Côte d'Ivoire and West and Central Africa through expertise and technical support.



YEAR OF ESTABLISHMENT: 1972

TYPE: Public Institution

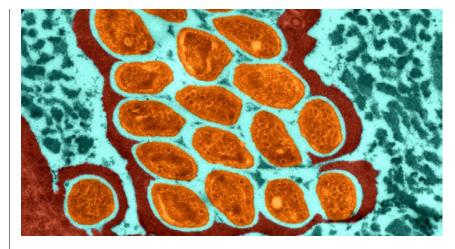
ADDRESS: 01 BP 490, Abidjan 01, Ivory Coast

WEBSITE:

https://www.pasteur.ci/index.php

AREAS OF EXPERTISE:

Training, Prevention, Epidemiology, Bacteriology, Biochemistry, Virology, Parasitology, Microbiology, Immunology, Entomology



August 2021

Assessing malaria diagnosis

Malaria is the leading cause of morbidity and mortality in Côte d'Ivoire. Scientists at the Institut Pasteur de Côte d'Ivoire conducted a retrospective study aimed at improving malaria diagnosis. They analyzed clinical features and evaluated the performance of a serological diagnostic kit, NovaLisa® Malaria. This involved analyzing 345 samples from institute patients to assess the test kit with the ELISA technique using a panel of antigens. The positivity rate for all samples was 92%. GLURP and schizont extract antigens produced the best results and suggest the serological diagnosis of malaria could be used. https://bit.ly/3H9sBhV

AND ALSO —

- ► SARS-Cov-2 sequencing
- ► Participating in the Inter-African Consultative Committees on Higher Education and Scientific Research
- ▶ Describing different haplotypes of sickle cell disease
- ► An. gambiae and An. coluzzii genome study



December 2022

Antiviral activity of two essential oils

The essential oils of two plants of the Ivorian flora, Lippia multiflora and Zingiber officinale, were studied in vitro to determine their chemical composition and their antioxidant, enzyme-inhibiting and antiviral activity against nonenveloped viruses, such as polioviruses or enteroviruses. The latter are notably responsible for hand-foot-and-mouth disease. The study identified 23 and 30 compounds in Lippia multiflora and Zingiber officinale, respectively. https://bit.ly/3LmLbp7



The Institut Pasteur de Guinée is an independent Guinean public

institution. As a leading platform for research and diagnostics, it provides the Guinean population with advanced technologies for the detection and analysis of pathogens.



November 2022

Structuring support teams

As the Institut Pasteur de Guinée continues to grow, it has structured its support functions through the coordination of administrative and technical teams. After a recruitment drive, the maintenance and IT services were brought back in-house, a Human Resources and Communications department was formed, and the finance team was expanded. The progressive implementation of these processes and teams will help to improve operations monitoring and optimize available resources. https://bit.ly/3AqxTlm

AND ALSO

- ▶ Sleeping sickness for the uninitiated (bulletins 240 and 242)
- ▶ New funding for research for the TRYPSKIN project
- ► Construction of the Medical Biology Laboratory
- ▶ Tracking three neglected zoonotic diseases in domestic ruminants

February 2022

SARS-CoV-2 evolution monitoring in Guinea

In collaboration with the Institut Pasteur de Dakar, Institut Pasteur de Guinée researchers published a review of SARS-CoV-2 circulation in Guinea from March 2020 to July 2021. This description of the genomic evolution of the virus and its variants underlines the importance of sequencing in monitoring the evolution of viruses. The study shows that the SARS-CoV-2 clades and variants of interest were mainly introduced by travelers from infected countries, particularly from Europe, before spreading across the country. https://bit.ly/3H9DyA3

November 2022

SHERLOCK4HAT: a new tool for diagnosing sleeping sickness

Sleeping sickness, or human African trypanosomiasis, can be transmitted by two Trypanosoma parasite subspecies: gambiense, in 95% of cases, and rhodesiense. A collaboration between the Institut Pasteur de Guinée and the Institut Pasteur resulted in a diagnostic tool that uses CRISPR's molecular scissors and SHERLOCK to identify the contaminant subspecies underlying the infection. Upon completion of the technical development phase, the tool can be adapted for epidemiological field monitoring. https://bit.ly/40AdR2j





YEAR OF ESTABLISHMENT: 2015

TYPE: Public Institution

ADDRESS: Université Gamal Abdel Nasser, Route de Donka, Quartier Landreah, Commune de Dixinn, Conakry, Guinea

WEBSITE: https://pasteur-network. org/fr/membres/afrique/institut-pasteurde-quinee/

AREAS OF EXPERTISE:

Virology, Parasitology, Medical biology and Vaccination center (opening soon)



December 2022

First Scientific Council

In December 2022, the Institut Pasteur de Guinée held its first Scientific Council. With 4 international experts, a representative of the Ministry for Higher Education, Scientific Research and Innovation and a representative of the Ministry of Health and Public Hygiene, it provided an opportunity for the institute's researchers to present their research findings. https://bit.ly/43irEMi

1,357

The number of serum samples collected from ruminants to study brucellosis, Q fever and Rift Valley fever.





YEAR OF ESTABLISHMENT: 1898

TYPE: Private foundation

ADDRESS: B.P. 1274, Ambohitrakely, Antananarivo, Madagascar

WEBSITE: http://www.pasteur.mg/

AREAS OF EXPERTISE:

Clinical biology, Entomology, Epidemiology, Bacteriology, Food and environmental hygiene, Immunology, Mycobacteria, Virology, Parasitology



Transfer of expertise regarding plague

In July 2022, the Pasteur Network International course on plague: laboratory diagnosis and surveillance was held at the Institut Pasteur de Madagascar. Organized by the Plague Unit in its capacity as the WHO Collaborating Centre for Plague, it brought together 18 participants from 10 different countries. The course covered many topics relating to diagnosis, biosecurity and biosafety, epidemiology, plague surveillance and bacterial evolution. https://bit.ly/3Awouc4

The mission of the Institut Pasteur de Madagascar is to contribute to

through research, training and public health activities.

the prevention and treatment of diseases and to economic development



April 2021

Inauguration of the Micropollutant Laboratory

April 9, 2021 witnessed the inauguration of the Institut Pasteur de Madagascar's Micropollutant Laboratory within its Laboratory of Food and Environmental Hygiene. The analysis of food contaminants in agricultural and agrifood products for export such as vanilla, spices, honey, fishery and aquaculture products, fruit and vegetables, dry grains, etc. can now be performed at the Institut Pasteur de Madagascar. https://bit.ly/4012UvM



September 2022

BIRDY 2 and NEOLIC project results

On September 28, 2022 the Institut
Pasteur de Madagascar organized a
day specifically for the return of BIRDY
2 and NEOLIC project results. The
BIRDY 2 project aimed to conduct a
review of neonatal infections in lowincome countries, including Madagascar,
Senegal and Cambodia. The NEOLIC
project focuses on ESBL-producing
Enterobacteriaceae (ESBL-PE).

www.pasteur.mg/journee-de-restitutiondes-projets-birdy-2-et-neolic/

August 2022

Diagnosis during plague epidemics: the contribution of statistics

When no suitable diagnostic test is available screening is performed using several tests. The interpretation of the results of the different tests then becomes more complex, meaning that the disease prevalence is underestimated. Using the 2017 plague outbreak in Madagascar as a case study, researchers from the Institut Pasteur and the Institut Pasteur de Madagascar propose an analytical framework for characterizing the performance of different tests and estimating the true prevalence of the outbreak.

https://journals.plos.org/plosbiology/ article?id=10.1371/journal.pbio.3001736



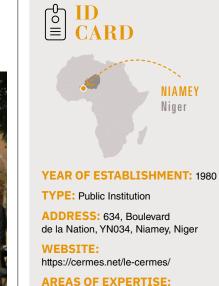
The vision of CERMES is to improve the health of the populations of Niger and the African sub-region. Its missions are research, public health and training, delivered through the Pierre and Anne-Marie Moussa Training Center.



March 2022

Awards for CERMES staff

On March 24, 2022, CERMES held an awards ceremony for its staff, Sixteen staff members received an award at the event, which was held under the patronage of two ministries and under the auspices of the Grand Chancellor of National Orders, General Mai Manga Oumara. It was an opportunity for the General Director of CERMES, Prof. Sabo Haoua Seini, to review the work of the Center during the COVID-19 pandemic. As the National Reference Laboratory for the diagnosis of influenza and hemorrhagic fevers, CERMES had responsibility for diagnosing the disease nationwide. https://bit.ly/3mYKedv



The number of National Reference Laboratories (NRL) hosted by CERMES Niger in addition to its 4 research units.

Epidemiology, Health Environment

Climate, Medical entomology, Bacteriology, Virology, Parasitology



November 2021

3rd edition of the Scientific Days

From November 10 to 12, 2021 the 3rd edition of the CERMES Scientific Days was held on the topic "the COVID-19" outbreak in West Africa: lessons for the future." It was an opportunity for participants to share their experiences on the public health impact of the pandemic, the coordination of the response. the diagnosis of infection, medical management, prevention of the disease through vaccination and lessons learned. https://bit.ly/3V9RG1H





YEAR OF ESTABLISHMENT: 1961

TYPE: Private foundation

ADDRESS: BP 923, Angle Avenue de l'Indépendance et Rue Pasteur, Bangui, Central African Republic

WEBSITE: https://pasteur-bangui.org/

AREAS OF EXPERTISE:

Bacteriology, Medical entomology, Parasitology, Epidemiology, Virology, Molecular biology

The Institut Pasteur de Bangui is a non-profit research foundation with a high-quality technology platform for tackling major public health problems through international cooperation.

December 2022

Tecovirimat for treating monkeypox



Tecovirimat is an antiviral medication used to treat monkeypox. In the Central African Republic, where the disease is endemic, researchers at the Institut Pasteur de Bangui took part in a study of 14 patients diagnosed with monkeypox between December 2021 and February 2022. The data collected helped improve knowledge about tecovirimat, pilot a community outreach program and sustainable community-based surveillance system, and increase clinical research capacity in the Central African Republic.

https://bit.ly/41ZKurf

AND ALSO

- ► SARA project to combat antimicrobial resistance
- ▶ 2nd edition of the Bangui Scientific Days
- ▶ Residual malaria transmission in the Central African Republic
- ► Portrait of monkeypox



November 2021

60th anniversary of the Institut Pasteur de Bangui

November 6, 2021 marked the 60th anniversary of the Institut Pasteur de Banqui. Following an agreement signed in 1960 between the Central African Republic's government and the Institut Pasteur, the Institut Pasteur de Bangui was inaugurated on February 29, 1961. For 60 years, it has operated in four areas: medical biology services for the population, vaccination and rabies treatment, research, and public health and training. https://bit.ly/3AwOcgq

January 2022

Measles review

The Institut Pasteur de Bangui was involved in providing an up-to-date review of current knowledge about measles. In an article, the researchers reviewed its epidemiology, the measures taken to control it, and its evolution. The article calls for renewed efforts to combat measles, which, despite the availability of a safe and effective vaccine, is still endemic in many countries and causes considerable morbidity and mortality. https://bit.ly/3Lcx04V



The number of African countries involved in the SARA project: Benin, Cameroon, Central African Republic, Madagascar, Morocco and Senegal.

NETWORKING TO SUPPORT **COLLABORATION IN AFRICA**

The Institut Pasteur de Dakar, a Senegalese foundation, is at the forefront of West Africa's fight against infectious diseases.

The institute is one of four WHO-pregualified manufacturers to supply yellow fever vaccines to UN agencies.



October 2022

Vaccine production in Africa

With funding from the Bill & Melinda Gates Foundation and vaccine technology transfer supported by Batavia Biosciences and the Univercells Group, the Institut Pasteur de Dakar has announced that it is to produce measles and rubella vaccines. The vaccines will be manufactured at the MADIBA facility on which building work began in 2021. This regional vaccine manufacturing center has capacity for up to 300 million doses. This will empower countries in the region in their routine, catch-up and major outbreak immunization campaigns. https://bit.ly/3p7ZOEA

The number of PCR tests used in the COVID-19 pandemic response in 2021.

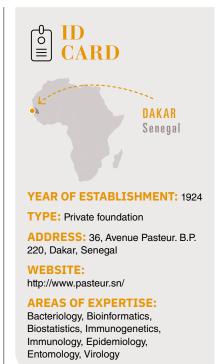
October 2022

Strengthening ties between science and iournalism

The first conference of French-speaking science journalists* was held in Dakar from October 10 to 16, 2022. It was attended by nearly 60 journalists from more than 20 countries. The Pasteur Network partnered with the event with the aim of sharing the scientific knowledge of its members, all experts in global health. Several scientists from the Institut Pasteur de Dakar spoke at the event, demonstrating this commitment to delivering quality scientific information. https://bit.ly/3XwJREH



* The conference was organized by the Frenchspeaking Africa Science Journalists' Network (RJSAF) with the French Association of Science Journalists (AJSPI), the Quebec Association of Science Communication (ACS) and the Swiss Association of Science Journalism (SASJ). It was held at the Center for Studies in Information Science and Technology (CESTI) at Cheikh Anta Diop University (UCAD).





December 2021

Prix Galien Africa 2021

The Prix Galien Africa 2021 was awarded to three scientists, including Dr. Cheikh Tidiane Diagne. Head of operations at the Institut Pasteur de Dakar's DiaTROPIX Unit, Cheikh received the Best Medical Technology Award for the SAYTU COVID-19 Ag Test on Saturday, December 11, 2021 at the Palais de la République in Senegal. This is the first rapid diagnostic test to be produced by DiaTROPIX and its partners. http://bit.ly/3XBMKIR



SARA – a project for surveillance of antibiotic resistance

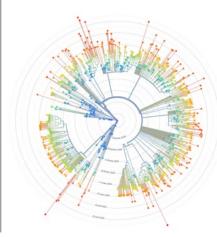
The SARA project seeks to define the strategies best suited to tackling antibiotic resistance in low-income countries across Africa through the launch of a surveillance network comprising 6 African countries. The institutes within the network will benefit from capacity-building opportunities through the pooling of microbiological data, and surveillance and research capabilities.

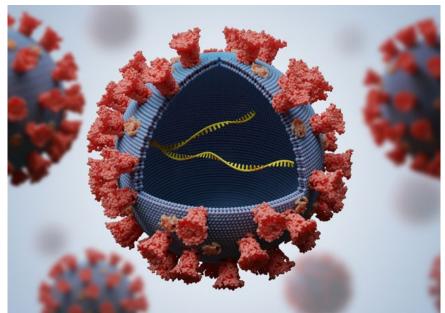
The network is funded by the French Ministry for Europe and Foreign Affairs and coordinated by the Institut Pasteur de Madagascar with support from the Institut Pasteur. It will comprise six Pasteur Network members – the Institut Pasteur, Pasteur Center in Cameroon, Institut Pasteur de Madagascar, Institut Pasteur du Maroc, Institut Pasteur de Bangui and Institut Pasteur de Dakar – and an additional key partner, Hubert Koutoukou Maga National University Hospital Center in Benin. https://bit.ly/413eCBe



More than 300 authors, including scientists from the Institut Pasteur de Dakar and nine other Pasteur Network members, combined their research and SARS-CoV-2 sequences in a study published in Science. The study of over 100,000 genomes indicates that most viral infections in Africa are of foreign origin. These results highlight the need for investment in genomic diagnostics and surveillance in Africa.

https://bit.ly/3KfwuEk





AFROSCREEN, a genomic surveillance network in **13** African countries

The AFROSCREEN project addresses a need for genomic surveillance of SARS-CoV-2 and other emerging pathogens through genomic sequencing capacitybuilding in laboratories. Funded by the French Development Agency (AFD) and coordinated by ANRS | Emerging infectious diseases in collaboration with the Institut Pasteur and IRD, the project is being rolled out in 13 countries in Africa through a network of 25 laboratories, reference centers and partners. Seven Pasteur Network members -Institut Pasteur de Bangui, Institut Pasteur de Dakar, Institut Pasteur de Côte d'Ivoire, Institut Pasteur de Madagascar, Pasteur Center in Cameroon, Institut Pasteur de Guinée and CERMES – are involved in this surveillance project. https://www.afroscreen.org/









TYPE: Public Institution

ADDRESS: Av. Brasil, 4365 -Manguinhos, Rio de Janeiro, Brazil

WEBSITE: https://portal.fiocruz.br/en

AREAS OF EXPERTISE:

Health technologies, Immunobiology, Infectiology, Women's, children's and adolescents' health, Public health



November 2022

Pfizer-BioNTech vaccine: a closer look at adolescents

Scientists conducting a case-control study involving Fiocruz observed a decline in protection from the Pfizer-BioNTech vaccine (BNT162b2) against symptomatic COVID-19 infection among adolescents in Brazil and Scotland 27 days after the booster dose. However, protection against severe COVID-19 remained high for at least 98 days. These results point to the importance of booster doses for adolescents. http://bit.ly/417AI5V

Health and social development promotion, knowledge creation and transfer are central to the work of the Fiocruz – Oswaldo Cruz Foundation, Latin America's biggest health institution.

FIOCRUZ - OSWALDO CRUZ FOUNDATION



August 2022

A. aegypti as the primary Zika virus vector

As part of the ZIKAlliance project, a study involving Fiocruz and Pasteur Network members in Guadeloupe, New Caledonia, Cambodia and Paris, 50 mosquito populations from six species were collected in 12 countries. The results show that *Aedes aegypti* is the main Zika virus vector. Noting a rise in *A. aegypti* spread and the absence of an available vaccine, the authors raise the prospect of a new Zika pandemic. https://go.nature.com/3KhwXUH



October 2021

Using genes to diagnose leprosy

Scientists have used RNA sequencing to compare skin lesions in leprosy patients with those in controls affected by other skin conditions. They identified five genes used to accurately distinguish multibacillary and paucibacillary leprosy from other skin conditions. The findings will pave the way for the development of better diagnostic tools.

http://bit.ly/3nSWj3M

December 2021

Inauguration of the Fiocruz COVID-19 Biobank

On December 13, 2021, Fiocruz inaugurated its COVID-19 Biobank, BC19-Fiocruz. The Rio de Janeiro-based Biobank is used to design and pursue research, technological development and clinical trials related to COVID-19. It has capacity for one and a half million samples of human and non-human biological material. http://bit.ly/417dCMX

AND ALSO -

- ► COVID-19 vaccine technology transfer agreement
- ► WHO selects Fiocruz for mRNA vaccines
- ► Fiocruz as one of the world's 15 main manufacturers of vaccines
- Nísia Trindade Lima appointed
 Brazilian Minister of Health

The Scientific Platform Pasteur-USP studies emerging and neglected infectious diseases transmitted by pathogens that cause complex immune responses or nervous system disorders.



YEAR OF ESTABLISHMENT: 2019

TYPE: Public Institution

ADDRESS: Av. Lucio Martins Rodrigues, 370, Block A, 3rd and 4th floors - Butantã, São Paulo, 05508-020, Brazil

WEBSITE: http://sppu.com.br/

AREAS OF EXPERTISE:

Applied mathematics, Vaccinology, Virology, Epidemiology, Nervous system disease modeling, Bioinformatics



March 2022

Review of Zika virus

Zika virus (ZIKV) is an arbovirus mainly transmitted by mosquito bites, although vertical and sexual transmission has also been reported. ZIKV infection during pregnancy causes malformations in developing fetuses, especially lesions in the central nervous system and microcephaly. These defects are collectively known as congenital Zika syndrome. To shed light on the pathogenesis of the virus, scientists from the Scientific Platform Pasteur-USP explored current knowledge about the teratogenic effect of ZIKV. They particularly focused on neurological clinical findings in humans, mechanisms, and experimental models used. http://bit.ly/3zDdx87

AND ALSO —

- ▶ Age, sex, inflammation, and COVID-19 in Brazil
- ▶ When RT-LAMP tests turn orange
- ► An agreement for three new G4s
- ► Global Virus Network member



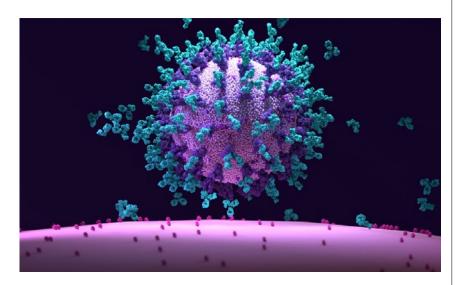
January 2022

RT-PCR or RT-qPCR to detect COVID-19

To test the efficacy of RT-PCR as compared to RT-qPCR for diagnosing COVID-19, an international interlaboratory ring trial involving ten global testing sites was conducted. Participating laboratories performed tests following a shared protocol. The scientists observed 100% concordance across the laboratories in correctly identifying all positive and negative samples. The results suggest that direct RT-PCR assay methods can be applied across different sites and therefore represent a feasible option for COVID-19 testing. http://bit.ly/3ZRGrM6



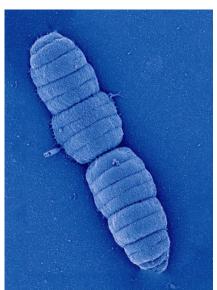
The INRS Armand-Frappier Santé Biotechnologie Research Centre contributes to Quebec's efforts in research, training, and technology transfer in the fields of disease detection and prevention with a view to improving human, animal and environmental health.



February 2022

Tannic acid, triple action against SARS-CoV-2

A multidisciplinary study suggests that tannic acid is involved in inhibiting three important molecular pathways in the stages of SARS-CoV-2 infection. The teams demonstrated that tannic acid prevents the Alpha variant's viral RBD protein from binding to its biological target, the ACE2 receptor. They also showed that this polyphenol can inhibit the activity of the enzyme that allows viral entry into our cells, TMPRSS, and that of the viral enzyme responsible for viral replication, 3CLpro. http://bit.ly/3ZPbLeD



August 2022

Caterpillar-shaped bacteria in our mouths

To adapt to the buccal cavity, some bacteria have evolved in such a way that they divide longitudinally without separating. A study involving the Armand-Frappier Santé Biotechnologie Research Centre described their caterpillar-like division and evolution. It proposed using bacteria from the *Neisseriaceae* family as novel model organisms to help identify new antimicrobial targets. bit.ly/3UhNL2t

A small RNA, ryfA, is thought to be responsible for the response of uropathogenic E. coli to environmental stress http://bit.ly/3Mpt0jp



YEAR OF ESTABLISHMENT: 1938

(creation of the Montreal Institute of Microbiology and Hygiene, now the INRS Armand-Frappier Santé Biotechnologie Research Centre)

TYPE: Public Institution

ADDRESS: 531, Boulevard des Prairies, Laval, Canada

WEBSITE: https://bit.ly/3KbwDXu

AREAS OF EXPERTISE:

Histocompatibility, Research in food sciences – Canadian Irradiation Center, Experimental biology, Microscopy



January 2021

Lipophagy to help with HIV-1 treatment

The inability to restore functional antiviral cytotoxic T-cell immunity is still the major limitation of current antiretroviral therapies. A study investigating whether lipophagy, or lipid autophagy, can influence this phenomenon showed that after activation, the cytotoxic T cells of patients receiving antiretroviral treatment were less degraded than those of elite controllers, people with natural protection against HIV-1. https://bit.ly/41b5wTk



YEAR OF ESTABLISHMENT: 1948

TYPE: Private foundation

ADDRESS: Lieu-dit Morne Jolivière, 97139 Les Abymes Cedex, France

WEBSITE:

http://web.pasteur-guadeloupe.fr/

AREAS OF EXPERTISE:

Environment and food hygiene, Medical biology, Transmission, Pathogen reservoirs and diversity

AND ALSO

- ► Olfactory perception among mosquitoes
- ► Study on cephalosporin resistance
- ► SITVITBovis, a database for bovine tuberculosis

The Institut Pasteur de la Guadeloupe is focused on biomedical research, public health and education. Research areas include medical entomology, environmental pathogens such as free-living amoebae, antimicrobial resistance and microbial biodiversity.



February 2021

Antibiotic resistance at wastewater treatment plants

Wastewater treatment plants are hot spots for antibiotic resistance. To take a closer look at this resistance, a study isolated *Enterobacter cloacae* strains from 35 clinical isolates, 29 wastewater samples, and 29 wild or domestic animals living in hospital sewers and near a wastewater treatment plant. Whole-genome sequencing confirmed local circulation of the pathogenic strain ST114 in the various animal species. https://bit.ly/42JO0WP



January 2021

Study on larvae and mosquito breeding sites

Scientists from the Institut Pasteur de la Guadeloupe characterized the physicochemical properties and bacterial microbiota of *A. aegypti* mosquito breeding sites and larvae in Guadeloupe and French Guiana. They revealed territory-specific differences linked with the bacteria found on larvae. The study points to the need for further research on the impact of these differences on pathogen transmission by *A. aegypti.* http://bit.ly/417axN9

December 2022

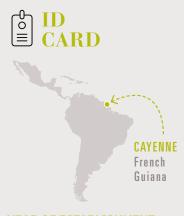
Measures against chlordecone

Chlordecone, a pesticide used from 1972 to 1993 to combat banana weevil, is classified as a persistent organic pollutant. In 2022, the Institut Pasteur de la Guadeloupe's analytical chemistry facility led several initiatives aimed at preventing chlordecone intoxication and the related effects on pregnant women. The institute is involved in three research projects on chlordecone. http://bit.ly/3KqvyLD

70,000

The number of COVID-19 diagnostic tests performed by the institute in 2021.





TYPE: Private foundation

ADDRESS: 23 Av Pasteur, B.P. 6010,

Cayenne, France

WEBSITE:

https://www.pasteur-cayenne.fr/

AREAS OF EXPERTISE:

Virology, Parasitology, Mycobacteriology, Virus-host interactions, Hygiene and environment, Microbiota of insect vectors. Medical entomology

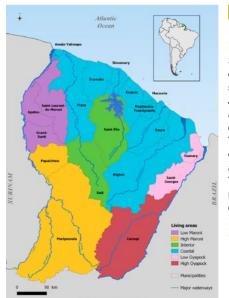


July 2021

Paramyxoviruses in bats in French Guiana

Bats are reservoirs of multiple viruses. To shed light on the circulation of paramyxoviruses in French Guiana, 103 bats of seven different species were sampled and screened using a molecular approach. Four distinct paramyxovirus sequences were detected in three bat species at high prevalence, highlighting the need for further investigation to limit the risk of transmission to humans. https://bit.ly/3XmoJkf

In French Guiana, the institute's mission to prevent and treat diseases, especially infectious diseases, is based around three priorities: research, support for public health, education and training with 11 students trained (4 PhD, 3 Master, 4 Undergraduate).



July 2021

Emerging arboviruses in French Guiana

Scientists from the Institut Pasteur de la Guyane conducted a serological survey among 2,697 individuals from June to October 2017 to identify antibodies against the dengue, chikungunya, Zika and Mayaro viruses. The study provided a comprehensive overview of the burden of emerging arboviruses in French Guiana. The findings may be useful for risk mapping and the development of prevention and control programs. https://www.mdpi.com/1999-4915/13/7/1299



July 2022

Effects of control measures on the malaria parasites

Scientists have explored the effects of a large decrease of the parasite population on the genetic of *Plasmodium* falciparum. The results show how the selective pressure affects the reproductive strategy of parasites for a most efficient transmission.

https://bit.ly/3KQxYVh

February 2021

Studying the role of the microbiota in mosquitoes

The mosquito microbiota influences larval development and pathogen transmission. A study establishes a tool to study the microbiota in insects and deepens our knowledge on the metabolic contribution of bacteria to mosquito development. https://bit.lv/400dOa5



The Institut Pasteur de Montevideo is focused on scientific research in **biomedicine**, with state-of-the-art scientific core facilities in fields including genomics, proteomics, bioinformatics, and molecular and cell biology.



December 2022

Human microbiota driving antimicrobial resistance

The composition of urban microbial communities is mainly determined by human activity. Scientists have shown how urban metagenomics and outbreak genomic surveillance can be combined to inform about infection control, antibiotic stewardship and pathogen epidemiology. The findings highlight the need to improve characterization of the spread of humanderived bacteria and resistance in urban environments. http://bit.ly/416Vzgg

AND ALSO

- ▶ Softwares optimized for building and simulating enveloped virus-like particles
- ▶ Genome correction in the N. caninum and T. gondii genome database
- ► COVID-19 surveillance in Uruguay
- ▶ Institute recognized by the Uruguayan National Academy of Medicine



December 2022

First LAB+ international call for applications

LAB+ Venture Builder is an initiative promoted by the Institut Pasteur de Montevideo, with funding and expertise from a venture capital fund led by Ficus Advisory. The aim of the pilot project is to transfer knowledge produced by scientists to benefit society. The first international call was launched for 2023 to attract research and innovation group leaders keen to found startups in a bid to transfer life sciences to benefit society as part of a One Health approach.

https://labplus.com.uy/es/llamado/

July 2021

An oncogenic role for AID

Using chronic lymphocytic leukemia (CLL) as a model, scientists from the Institut Pasteur de Montevideo created transgenic mice overexpressing activation-induced cytidine deaminase (AID), which causes B-cell DNA mutations in a physiological setting. In CLL, AID expression correlates with poor prognosis. The results demonstrate a direct link between aberrant AID activity and mutations with oncogenic effects in CLL. http://bit.ly/3KVCLET



CARD



YEAR OF ESTABLISHMENT: 2004

TYPE: Private foundation

ADDRESS: Mataojo 2020, Montevideo, Uruguay

WEBSITE: https://pasteur.uy/en/

AREAS OF EXPERTISE:

Biochemistry, Biotechnology, Bioinformatics, Cell biology, Innovation, Virology, Immunology, Functional genomics

August 2022

Response to heterologous CoronaVac and BNT162b2 vaccination

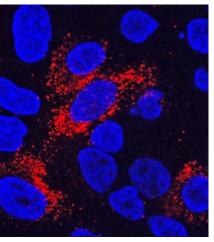
CoronaVac and BNT162b2 are the most widely used COVID-19 vaccines. To assess the efficacy of heterologous vaccination, 50 healthy individuals who received primary vaccination with this combination vaccine were enrolled in a study published in the journal Vaccine. As well as elucidating the humoral immune response, the study determined the level of protection afforded against SARS-CoV-2 infection.

https://bit.ly/3KtApf8

The Chan Zuckerberg Initiative supports four projects led by Uruquayan scientists.



The Institut Pasteur du Cambodge is a research institution established in 1953. Its mission is to contribute to the prevention and treatment of disease through research, public health, training mainly on infectious diseases and emerging pathogens.



June 2021

Fucose, a new indicator to predict the severity of dengue

Dengue virus causes an average of 500,000 hemorrhagic cases annually, posing a threat to over 2.5 billion people throughout the world every year. A study conducted by the Institut Pasteur du Cambodge with the Institut Pasteur and The Rockefeller University reveals that the absence of a specific sugar, fucose – a component of the structure of anti-dengue antibodies - is responsible for these severe forms of the disease. This novel tool could facilitate early management of potentially fatal cases. https://bit.ly/43poZSe

AND ALSO

- ▶ Residual malaria transmission in northern Cambodia
- ► Mosquito diversity in a bird sanctuary
- ▶ PCR tests and COVID-19 monitoring
- ▶ Poultry farming and zoonotic spread



November 2022

The effects of mosquito saliva

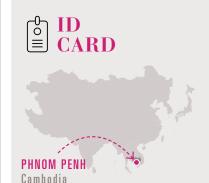
Models and studies have shown that mosquito saliva can induce an immune response in the skin. The Institut Pasteur du Cambodge was involved in assessing this response for the first time in human volunteers following an Aedes mosquito bite. The results show that immune cells in contact with mosquito saliva produce fewer soluble inflammatory mediators. They can be used to develop universal vaccines or treatments for mosquito-borne viral infections. https://bit.ly/3Uy5ItX

November 2021

Contribution to the 2021-2022 Northern Hemisphere influenza vaccine

SARS-CoV-2 infection control measures have resulted in a significant reduction in the circulation of many respiratory diseases. Influenza activity has remained at historically low levels globally since March 2020, even when testing was performed. Maintenance of the influenza surveillance system in Cambodia in 2020 allowed for detection and response to an influenza A(H3N2) outbreak in late 2020, enabling the virus to be included in the 2021-2022 Northern Hemisphere influenza vaccine. https://bit.ly/3o7YXml





YEAR OF ESTABLISHMENT: 1953

TYPE: Private organization

ADDRESS: No. 5 Monivong Boulevard, BP 983, Phnom Penh, Cambodia

https://www.pasteur-kh.org/

AREAS OF EXPERTISE:

Immunology, Entomology, Epidemiology. Clinical research. Virology, Genomics, Medical biology, Bacteriology, Vaccination



October 2022

Plastic pollution and infectious diseases

The effect of macroplastics on the proliferation and spread of infectious diseases and thus on human and animal health has been poorly studied. Plastic debris that traps water can promote arthropod-borne diseases or the growth of pathogenic bacteria. https://bit.ly/41bvYq8



The number of RT-PCR tests performed by the institute between the start of the pandemic and December 2021.





YEAR OF ESTABLISHMENT: 1999

TYPE: Public Institution

ADDRESS: 7/F Hong Kong Jockey Club Building for Interdisciplinary Research, 5 Sassoon Road, Hong Kong, China

WEBSITE:

China

http://www.hkupasteur.hku.hk/

AREAS OF EXPERTISE:

Computational biology. The gut microbiome in health and disease, Immunology, Virology



February 2022

Study of the Hong Kong SARS-**CoV-2 elimination strategy**

During the SARS-CoV-2 pandemic, Hong Kong used an elimination strategy to control the evolution and spread of the virus by introducing stringent measures such as traveler guarantine. In seeking to assess the impact of this strategy. scientists showed that the majority of community cases, occurring prior to January 2021, were the result of three imported cases, and that increased transmission arose after long periods of restrictions.

https://bit.ly/3ovy5gj

The University of Hong Kong-Pasteur Research Pole is a medical research laboratory that aims to produce biological knowledge to advance the understanding and treatment of infectious diseases.



January 2022

Vaccination strategies to face the SARS-CoV-2 Omicron variant

The Omicron variant is becoming rapidly dominant around the globe, and exploring vaccination strategies is crucial to tackle the challenge. Investigating virus neutralizing activity in convalescent or vaccinated individuals, this study suggests that countries primarily using CoronaVac vaccines should consider messenger RNA vaccine boosters in response to the spread of Omicron. https://bit.ly/3ojlb3Q



March 2021

Link between ethnicity and food sensitivity

While the role of gut microbiota in the development of atopic diseases in early life is increasingly recognized, environmental factors are not. One study found a correlation between persistently low levels of Bacteroides, a type of bacteria found in the gut during infancy, and peanut sensitization in childhood. https://bit.ly/3N1EYQE

March 2022

Transmission of a SARS-CoV-2 variant from hamsters to humans

In a case study, researchers detected the first case of SARS-CoV-2 transmission from hamsters to humans. This study provided a better understanding of the host panel of SARS-CoV-2 and highlighted the complexity of SARS-CoV-2 transmission in the wild. It also reaffirmed the importance of SARS-CoV-2 surveillance in humans and animals. https://bit.ly/3ovbKiY

AND ALSO -

- ► Children's responses to COVID-19
- ▶ Impact of the pandemic on influenza
- ► Winner of the Knowledge Transfer Award
- **▶** Zoonotic Diseases and Climate Change workshop

The former Institut Pasteur of Shanghai-Chinese Academy of Sciences is dedicated to basic research in the control and prevention of infectious diseases, as well as the transfer and commercialization of scientific advances. The Institut Pasteur of Shanghai – Chinese Academy of Sciences is no longer a member of the Pasteur Network and is no longer able to use the name "Pasteur" since the end of 2022.



September 2022

30 minutes to diagnose monkeypox

The monkeypox virus is a neglected tropical pathogen that has been the focus of renewed research following a recent outbreak. Researchers at the Institut Pasteur of Shanghai-Chinese Academy of Sciences and the Institut Pasteur de Bangui have developed rapid diagnostic tests for the monkeypox virus that provide results visible to the naked eye in under 30 minutes. The test results are as reliable as the gold-standard PCR-based nucleic acid assay. They can therefore be used to diagnose potential cases of the disease in its early stages, and will contribute to the prevention and control of current and future outbreaks. https://www.mdpi.com/1999-4915/14/10/2112



YEAR OF ESTABLISHMENT: 2004

TYPE: Public Institution under Chinese law

ADDRESS: Life Science Research Building 320 Yueyang Road, Xuhui District, 200031, China

http://english.shanghaipasteur.cas.cn/

AREAS OF EXPERTISE:

Innovation in pathogenesis, Immunology, Vaccinology, Infectious disease prevention

This is the percentage of the institute's 29 postdoctoral fellows from abroad, including 5 enrolled in joint training programs.



June 2021

On the trail of monkeypox in the Central African Republic from 2001 to 2018

In a collaborative effort that included other members of the Pasteur Network. researchers at the Institut Pasteur of Shanghai-Chinese Academy of Sciences participated in the whole-genome sequencing of 10 monkeypox virus isolates collected during outbreaks in the CAR between 2001 and 2018. The objective was to determine their phylogenetic relationships within previously described monkeypox virus lineages from Central and West Africa. https://www.nature.com/articles/ s41598-021-92315-8





YEAR OF ESTABLISHMENT: 1955

TYPE: Private foundation

ADDRESS: 9-11, Avenue Paul Doumer, BP 61, 98845 Noumea, New Caledonia

WEBSITE:

http://www.institutpasteur.nc/en/

AREAS OF EXPERTISE:

Bioactivities of natural compounds. Viruses (Dengue and Arboviruses). Medical and environmental bacteriology, Medical entomology



July 2021

Importance of the vector in the occurrence of dengue epidemics

The evolution of the dengue virus is characterized by frequent substitutions in its genotypes and lineages which modulate severity. A study involving the Institut Pasteur de Nouvelle-Calédonie supports the hypothesis that the vector could contribute to the selection of dengue strains that cause an epidemic. This natural selection in the mosquito vector could play a major role in the shortterm evolutionary dynamics of dengue epidemics. https://bit.ly/43Uw7Xe

The Institut Pasteur de Nouvelle-Calédonie is a healthcare research institution. As a member of the Pacific Public Health Surveillance Network, it shares its expertise through training and links with health authorities.



October 2022

MALDI-TOF MS: a tool for dengue vector surveillance

Vector surveillance can be used to detect dengue vector species rapidly before they become established. Pasteur Network scientists at the Institut Pasteur de Nouvelle-Calédonie, the Institut Pasteur du Cambodge, the Institut Pasteur du Laos and the Institut Pasteur de Madagascar have shown MALDI-TOF MS to be a promising tool for international surveillance of arbovirus vectors. https://bit.ly/3Ahw0an



September 2022

Reducing Staphylococcus aureus resistance

Between 2015 and 2020 in New Caledonia, the percentage of methicillinresistant Staphylococcus aureus or MRSA increased from 19.9% to 38.1%. A study, within the framework of the MRSA-Pac project, has highlighted the expansion of a CC6 clone probably selected by the intensive use of fusidic acid, the use of which is now suspended to reduce the resistance rate. https://bit.ly/3oyNL2v

June 2021

Advocating for bacterial zoonoses

Bacterial zoonoses such as leptospirosis or Q fever cause acute fevers unrelated to malaria. Although easily treated with antibiotics, their misdiagnosis results in more severe cases. The Institut Pasteur de Nouvelle-Calédonie and the Institut Pasteur are jointly calling for greater awareness of these emerging bacterial zoonoses to improve understanding of their epidemiology and access to appropriate diagnostics in resource-poor regions. https://bit.ly/3H3MkiY

The Institut Pasteur in Iran is one of the oldest public health and research center in the Middle East. Its mission is to support advanced research and offer programs in the medical sciences with a special focus on infectious diseases.



November 2021

Prevalence of Covid-19 in Iran

To estimate the prevalence of COVID-19 in the Iranian population, a study enrolled 28,314 randomly selected individuals of whom 11,256 were tested. The adjusted prevalence of SARS-CoV-2 infection was 14.6%, 13.8%, 16.6%, 11.7%, and 19.4% in males, females, the urban population, the rural population, and individuals aged 60 years or older, respectively. Since a large proportion of the population has not been infected, the study calls for hygiene and distancing measures to remain in place at least until the completion of the vaccination process. https://bit.ly/3NbAelj



September 2021

PastoCoVac against COVID-19

Together with the Finlay Institute in Cuba, the Institut Pasteur in Iran has completed a Phase III clinical trial of the PastoCoVac vaccine against COVID-19. PastoCoVac is in the process of obtaining an emergency license for use in children over 5 years of age as an initial and booster dose for all vaccines in the country. https://bit.ly/3CB0iWH

16 million

The number of doses of the PastoCovac vaccine produced by the end of 2022.





October 2022

Imported tires, a source of mosquito replication

International trade in tires introduces invasive mosquito species to many countries. To establish better entomological surveillance in Iran, researchers from the Institut Pasteur in Iran participated in a study on tire imports. It showed that the mapping of entry points, the origin of tires, but also greater surveillance and regulation were critical in prioritizing entomological monitoring sites. https://bit.ly/41wAAxn





YEAR OF ESTABLISHMENT: 2004

TYPE: Non profit foundation

ADDRESS: 16, Daewang Pangyo-ro 712 Beon-Gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, Republic of Korea

WEBSITE: https://www.ip-korea.org/

AREAS OF EXPERTISE:

Biomedical research, Bioinformatics, Parasitology, Medicinal chemistry, Technology development, Immunology, Virology



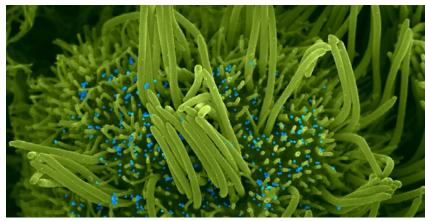
December 2022

A better prognosis for liver cancer

Hepatocellular carcinoma is a type of liver cancer whose incidence and mortality are on the rise. Researchers from the Institut Pasteur Korea have published a study showing that expression of sorbitol dehydrogenase, a liver and seminal vesicle enzyme in tumor tissue, results in good prognosis. In excess, it inhibits tumor growth by enhancing necrosis, or cell death, thus making it a promising therapeutic strategy.

https://bit.ly/41RancH

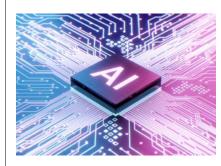
The Institut Pasteur Korea is home to multinational researchers from over 10 countries. They strive to address global public health issues by developing new therapies and prevention strategies and by elucidating disease mechanisms.



January 2022

Preventing SARS-CoV-2 entry by binding it to ACE2

In a study co-authored by the Institut Pasteur Korea, researchers identified a molecule that inhibits interactions between the receptor-binding domains of SARS-CoV-2 and ACE2, a protein required for viral entry into the cell. While it prevents viral entry, the molecule does not alter the physiological function of ACE2. The study thus suggests that ACE2 screening could offer a new therapeutic approach for the treatment of COVID-19. https://onlinelibrary.wiley.com/doi/10.1002/anie.202115695



May 2021

Launch of a new Pasteur International Joint Research Unit (Ai3D)

The Institut Pasteur Korea and the Institut Pasteur (Paris) have launched a PIU, or Pasteur International Joint Research Unit. Named "Artificial Intelligence for Imagebased Drug Discovery and Development" (Ai3D), it will focus on the development of a next-generation technology for therapeutic discoveries in infectious diseases. https://bit.ly/43Jm5HQ

July 2021

Repurposing drugs for a rapid response

Drug repurposing allows for the rapid development of antivirals. During the COVID-19 pandemic, the Institut Pasteur Korea conducted advanced virtual screening of 6,218 drugs. This screening identified three effective combinations against SARS-CoV-2 and demonstrated the effectiveness of the conversion strategy. https://bit.ly/3AqBm36

AND ALSO -

- ► The 2021 Excellent Institution for Living Modified Organisms Safety Management award
- ► A natural component of Platycodon grandiflorum used to hinders SARS-Cov-2
- ► Review of the Business of Managing Science course

The Institut Pasteur du Laos is engaged in research and training, education and capacity building. It also provides technical diagnostic assistance to the National Center for Laboratory and Epidemiology for arboviral outbreak monitoring.



February 2022

SARS-CoV-2-like viruses discovered in northern Laos

To better understand the evolution of SARS-CoV-2 and detect the possible presence of related coronaviruses in the wild, researchers from the Institut Pasteur du Laos conducted field missions in northern Laos with different species of bats living in limestone caves. Analysis of the collected samples, in collaboration with the Institut Pasteur, identified SARS-CoV-2-like viruses that recognize human cells with similar efficacy to the original SARS-CoV-2 strain. https://www.nature.com/articles/s41586-022-04532-4



August 2021

Low seroprevalence of COVID-19 in Laos, late 2020

In late 2020, a serological study for SARS-CoV-2 antibodies was conducted by the Institut Pasteur du Laos and collaborators to determine whether viral spread in the country was genuinely low. Out of all 3,173 participants, no evidence of widespread virus circulation was found. However, a subpopulation of participants in contact with bats had high seroprevalence of anti-N-protein antibodies suggesting exposure to "similar" coronaviruses. https://bit.ly/3L2icFJ

3,173

The number of participants in the COVID-19 seroprevalence survey in Laos, conducted in 2020.



YEAR OF ESTABLISHMENT: 2007

TYPE: Public Institution

ADDRESS: Ban Kao-Gnot, Sisattanak district, Vientiane, Lao People's Democratic Republic

WEBSITE: https://www.pasteur.la/

AREAS OF EXPERTISE:

Entomology, Parasitology, Serology and molecular diagnostics of Vaccine Preventable Diseases, Emerging Viral Pathogens and Medical Virology



December 2022

Identification of several hepatitis C risk practices in southern Laos

In an earlier study, researchers from the Institut Pasteur du Laos found high exposure to and chronic infection with hepatitis C virus (HCV) in the Samuoi district, Saravan Province. A follow-up study identified risk practices and risk factors among exposed individuals. Risk practices included parenteral drug administration, tattooing and accidental blood exposure. The results highlight the need for extensive community-based testing and treatment and further studies to better understand the epidemiology of hepatitis C virus. https://bit.ly/3HaKgWI

The Institut Pasteur in Ho Chi Minh City is dedicated to the study of science and public health through its national and international cooperation strategy. A specialized medical center, it is a leader in preventive medicine in the southern region of Vietnam.



YEAR OF ESTABLISHMENT: 1891

TYPE: Public Institution

ADDRESS: 167 Pasteur street, Ward Vo Thi Sau, District 3, Ho Chi Minh City, Vietnam

WEBSITE: http://www.pasteurhcm.gov.vn/

AREAS OF EXPERTISE:

Virology, Bacteriology and antimicrobial resistance, Diagnostics, Immunology, Molecular and developmental biology, Vaccination



June 2021

Zika virus and maternity in southern Vietnam

Following the Zika virus outbreak in the Americas in 2015 and 2016, epidemiological surveillance of Zika virus infection was done up in southern Vietnam. Between 2016 and 2017, 68 pregnant women tested positive for the virus at the Institut Pasteur in Ho Chi Minh City by RT-PCR. In cooperation with the Institut Pasteur, the team revealed the viral and epidemiological consequences of these infections and described pregnancy-related complications, including fetal abnormalities consistent with Zika virus-related microcephaly or fetal deaths. The results underscore the need for continued surveillance of the virus in Southeast Asia. https://bit.ly/3HwnylD

AND ALSO -

- ▶ Relation between vaccine effectiveness and rotavirus genotype
- ► SARS-CoV-2 antibodies among blood donors
- ► Estimating HIV drug resistance
- ► First case of monkeypox diagnosed in Vietnam



May 2022

A vaccine against enterovirus 71 in Phase III

Children are susceptible to severe or fatal enterovirus 71 infection. In a study involving the Institut Pasteur in Ho Chi Minh City, scientists evaluated the efficacy, safety, and immunogenicity of a novel enterovirus 71 vaccine – an inactivated aluminum phosphate-adjuvanted vaccine – in children aged 2 to 71 months. A randomized, double-blind, placebo-controlled Phase III trial of 3,663 children was conducted in five hospitals in Taiwan and two in Vietnam. The study demonstrated that the vaccine was safe, well tolerated and effective in the target study population. https://bit.ly/3H8A6W8





TYPE: Public Institution

ADDRESS: 06-08-10 Tran Phu Street, Nha Trang City, Khanh Hoa province, Nha Trang, Vietnam

WEBSITE: http://ipn.org.vn/

AREAS OF EXPERTISE:

Infectious diseases, Non-communicable diseases, Food hygiene, Environmental and occupational health, Microbiology, Immunology, Medical services, Scientific research and training

The role of the Pasteur Institute in Nha Trang is to organize and implement activities and targeted programs in the field of public healthcare and preventive medicine in 11 central provinces from Quang Binh to Binh Thuan, Vietnam.

January 2021

Pooling to improve COVID-19 screening



To optimize COVID-19 screening, researchers pooled nasopharyngeal throat swabs from 96,123 asymptomatic individuals with suspected SARS-CoV-2 infection. They also created 22,290 pools, each containing samples of between two and seven people. It took them 14 days to identify the positive samples instead of the 64 days needed without this procedure. This strategy could be used in settings where reagents are in short supply and disease prevalence is low, but there is high demand for testing to ensure more effective screening. https://bit.ly/41FsnY8

AND ALSO

- ► Colistin resistance bacteria in retailed raw food in Nha Trang
- ▶ The impact of public health interventions on COVID-19
- ► Red meat and (pre)diabetes in rural Vietnam
- ▶ Adult weight and parental absence in childhood

June 2021

Rubella in Vietnamese women

Mass vaccination campaigns against measles and rubella were launched in Vietnam for children aged 1 to 17. Subsequently, a cohort study investigated the susceptibility of pregnant women to rubella, the incidence of congenital infection, and related factors. It was found that many pregnant women who were not covered by the vaccination campaign are still at risk of rubella infection. https://bit.ly/43Xk8rK

August 2022

Correlation between parental absence and depressive symptoms in adults in Vietnam

The association between parental absence during childhood and depressive symptoms in rural communities in Khánh Hòa province was assessed. Only information on parental absence before age 15 was obtained, not after. However, the study shows that parental absence during childhood significantly increases the prevalence of depressive symptoms in adults. https://bit.ly/40AlfK7

3,000

The number of people included in a cohort for a cardiovascular study in Khánh Hòa that was made available for other studies.

The National Institute of Hygiene and Epidemiology (NIHE) works in the fields of preventive medicine, disease control, scientific research, training, international cooperation and population services.



June 2022

Antibiotic distribution in community pharmacies in Vietnam

A study involving the NIHE aimed to assess the appropriateness of antibiotic dispensing in private pharmacies in Vietnam. Four clinical scenarios were represented by patient actors and the proportion of interactions resulting in inappropriate antibiotic dispensing and counseling was recorded. Patient actors visited 949 pharmacies for a total of 1,266 clinical interactions. Inappropriate antibiotic dispensing has been shown to be widespread and points to the need for a global WHO action plan on optimal antimicrobial use. https://doi.org/10.1016/j.lanwpc.2022.100447



April 2021

Tracing COVID-19 contacts of air passengers

International air travel spreads viruses like SARS-CoV-2 around the world. Contact tracing was integral to the response to COVID-19. To evaluate the timeliness of contact tracing among air passengers arriving in Vietnam, a study included data from 2,228 passengers on 22 inbound flights between March 2 and 19, 2020. The study shows that contact tracing was completed appropriately. https://bit.ly/3JJ84li

104 million

The number of participants in a pooled-analysis of 1,201 population-based studies to assess hypertension prevalence. https://bit.ly/3Nw3LMH





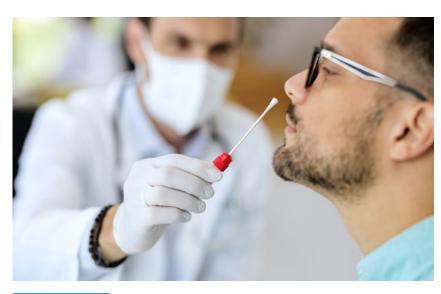
February 2022

Effect of previous influenza infection on vaccination

The impact of immune memory from previous infections is rarely considered in influenza vaccination campaigns and is difficult to verify because cases are often asymptomatic. In this context, a study of influenza vaccination among adults in a cohort in Hà Nam, Vietnam, suggests that the recall of immune memory generated by previous infection enhances antibody responses to inactivated influenza vaccines. https://bit.ly/3Lp0cGV



The mission of the Institut Pasteur d'Algérie is to identify infectious, parasitic and immune disorders, and to develop methods and tools to prevent, diagnose and treat them.



February 2022

Invasive bacterial infection monitoring

A study involving the Institut Pasteur d'Algérie and the Institut Pasteur conducted for the MENINGSTOP project in Algeria, Morocco and Tunisia used real-time PCR to detect, identify and type the three major pathogens causing invasive bacterial infections: Neisseria meningitidis, Streptococcus pneumoniae and Haemophilus influenzae. Of the 752 samples tested, 18% were positive for one of the three pathogens. https://bit.ly/3HAIYW3



January 2021

Enterococcus faecium resistance

Vancomycin resistance of Enterococcus faecium, which causes enterococcal infections, is a major public health problem worldwide. From September 2010 to April 2017, 48 samples were isolated in a number of Algerian hospitals to help shed light on the problem. All isolates were multidrug resistant but susceptible to tigecycline and daptomycin. https://bit.ly/42hP18D

842

The number of genomes studied to monitor the development of the COVID-19 pandemic in Algeria.





Immunology, Bacteriology, Biochemistry, Microbiology, Parasitology, Virology, Control of biological products, Preventive medicine



January 2022

Predicting COVID-19 severity

The immune system plays a crucial role in our response to different COVID-19 symptoms. An exploratory study examined the links between lymphocyte subsets, cytokines and disease outcomes in 57 patients. Measuring immune parameters and setting a risk threshold may help separate patients who develop severe disease from those with mild symptoms. https://bit.ly/3p5jSHm



YEAR OF ESTABLISHMENT: 1900

TYPE: Public Institution

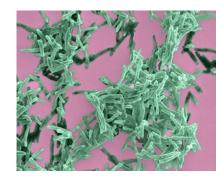
ADDRESS: Rue Juliette
Wytsmanstraat 14, Brussels, Belgium

WEBSITE:

https://www.sciensano.be/en

AREAS OF EXPERTISE:

Biological health risk, Quality control Infectious agents for human & animal, Chemical health risk, Physical health risk, Health data, Public health, Health systems, Scientific support in case of health crisis



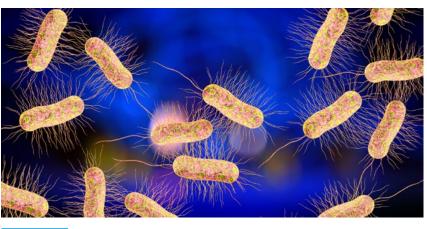
May 2022

A breakthrough in tackling TB antibiotic resistance

Scientists from Sciensano joined forces with scientists from the Institut Pasteur de Lille to evaluate a new drug prototype for tuberculosis known as SMARt751. This small molecule up-regulates expression of the mymA operon, an oxidase that activates the antitubercular drug ethionamide, thereby reversing Mycobacterium tuberculosis resistance in mouse models. https://bit.ly/3NzBeGp

Science and health are central to Sciensano's mission, with

900 staff members working to improve human and animal health. The strength of Sciensano lies in its unique holistic, multidisciplinary approach to health.



May 2022

Antibiotic resistance detection with the AMR-ARRAY

Scientists from Sciensano published a study on how the AMR-ARRAY can improve understanding of antibiotic resistance, especially of *Enterobacteriaceae* like *E. coli*. The AMR-ARRAY is a highly multiplexed array that detects resistance determinants with selectivity and specificity of 99.3% and 100% respectively. It can be used as an alternative screening method that is more cost-effective than whole-genome sequencing. https://bit.ly/44lrpBP

AND ALSO

- ▶ Shotgun metagenomics used for foodborne outbreaks
- ▶ Titanium dioxide detection in textile fibers in face masks
- ► Whole-genome analysis of the influenza A virus
- ► The effects of vaccination with Lumpivax

July 2022

COVID-19 vaccination in nursing home residents

To measure immune responses to SARS-CoV-2 vaccination in nursing home residents, 78 residents and 106 staff members, either infection-naive or previously infected with SARS-CoV-2, were recruited before vaccination. After vaccination, naive residents had lower antibody levels than naive staff. Previously infected residents and staff had comparable antibody levels. Cluster analysis revealed that poor responses included both naive residents and naive staff, highlighting the heterogeneity of the vaccine response. https://bit.ly/3VoonsB





TYPE: Public Institution

ADDRESS: 26, rue Georgi Bonchev, Sofia, Bulgaria

WEBSITE: https://microbio.bas.bg/

AREAS OF EXPERTISE:

Biotechnology, Microbiology, Immunology, Mycology, Virology, Molecular biology, Biochemistry, Genetics



February 2021

Omics approaches for new fuel development

The depletion of oil reserves is a global problem. Microbial production of butanol, a promising new fuel, is a possible solution, but the high toxicity of butanol for microbial species is an obstacle. Moreover, no species tolerates or produces enough butanol to bring it to market. The use of omics approaches shows that the introduction of new pathways for butanol synthesis in the most tolerant hosts could be a promising future strategy. https://bit.ly/3AVQSEI

The Stephan Angeloff Institute of Microbiology is a national research center for microbiological science. Its research focuses primarily on public health and biotechnology, and it also provides teaching and doctoral training.



October 2021

Thermophilic bacteria for tackling plastic waste

The accumulation of plastic in the environment is reviving interest in thermophilic bacteria as plastic degraders. Poly-6-caprolactone (PCL) is one of the main biodegradable plastics that could replace non-biodegradable polymers. A *Brevibacillus thermoruber* strain proved most effective in degrading waste. Over 28 days, biodegradation with 100% weight loss (total degradation) was observed. https://www.mdpi.com/2218-273X/11/10/1488



December 2022

Betulinic acid to counter obesity

Institute scientists described the mechanism of action of betulinic acid in lipid accumulation. It reduced desaturase enzymes involved in lipogenesis and modulated key transcription factors and microRNAs associated with lipid metabolism in *C. elegans*, confirming its potential for obesity management. https://bit.ly/3LPMRrk

June 2022

3397/20/6/392

Snails against cancer

One goal of oncology research is to find effective new compounds of natural origin to produce anti-cancer vaccines. Gastropod hemocyanins, coppercontaining proteins, are promising anti-cancer agents. The properties of hemocyanins isolated from the marine snail *Rapana thomasiana* and the land snail *Helix aspersa*, when used in conjugate vaccines, were studied in a mouse melanoma model. The study represents a promising approach for cancer therapy.

https://www.mdpi.com/1660-

The Institut Pasteur is a non-profit foundation whose mission is to help prevent and treat diseases, primarily infectious diseases, through research, innovation, education, and public health initiatives.



May 2021

Origin of COVID-19 related anosmia

Loss of smell, or anosmia, is one of the earliest symptoms of COVID-19. Several research institutions, including the Institut Pasteur, determined the mechanisms involved in the loss of smell at different stages of the disease. Their study shows that SARS-CoV-2 infects sensory neurons and causes persistent epithelial and olfactory nervous system inflammation. https://www.science.org/doi/10.1126/scitransImed.abf8396

AND ALSO -

- ► COVID-19 Delta variant sensitivity study
- ► Kamala Harris salutes the Institut Pasteur's response to the COVID-19 pandemic
- ► A new UCSF QBI-Institut Pasteur partnership
- ► Celebrating the 200th anniversary of Louis Pasteur's birth

October 2022

A genetic link between the Black Death and autoimmune diseases

Scientists at the Institut Pasteur were part of a collaboration that identified genes conferring protection against the devastating bubonic plague pandemic that swept through Europe, Asia and Africa nearly 700 years ago, also known as the Black Death. The same genes that once conferred protection against the Black Death are today associated with increased susceptibility to autoimmune diseases. https://www.nature.com/articles/s41586-022-05349-x

April 2022

Direct dialog between the gut microbiota and the brain Products derived from gut microbiota

can modulate host physiological processes. A collaborative study with the Institut Pasteur revealed the role of the hypothalamus in detecting variations in bacterial activity, and appetite and body temperature adaptations in an animal model. These results demonstrate the existence of crosstalk between gut microbiota and the brain, thus opening up new avenues for therapeutic approaches to metabolic disorders such as diabetes and obesity. https://bit.ly/3LOxIXs



April 2021

Genetic adaptations to life on the Pacific islands

Immunology, Microbiology, Mycology,

Neuroscience, Virology

It is essential to describe genetic diversity in human populations in order to improve our understanding of diseases and their geographical distribution. Using genome sequencing from 320 individuals, researchers including some from the Institut Pasteur looked at the as yet largely under-researched South Pacific populations. They traced adaptations of these populations to the Pacific islands and the consequences for their current health status, while revealing unexpected aspects of human settlement history in the region. https://bit.ly/3nrxRqo

200

The year 2022 marked the bicentenary of the birth of the Institut Pasteur's founder. Louis Pasteur.

For more than 120 years, the Institut Pasteur de Lille has been dedicated to combating disease through research into pathogens, the study of neurodegenerative disorders and disease prevention.

INSTITUT PASTEUR DE LILLE



January 2021

Genetic alteration in the Alzheimer's brain

Alzheimer's disease is the leading cause of dementia in the elderly. To gain a better understanding of its pathology, the Institut Pasteur de Lille participated in a study to establish altered gene expression in the diseased brain. The study looked at different brain regions in healthy subjects and patients with Alzheimer's disease using data from three transcriptomic studies: Mayo Clinic, the Mount Sinai Brain Bank and ROSMAP. It proposes a novel integration strategy to analyze RNA sequencing data in Alzheimer's and other neurodegenerative diseases.

https://www.nature.com/articles/s41514-020-00052-5



Aging, Diabetes

The Institut Pasteur de Lille has raised the necessary funds to modernize its campus by 2025.



July 2021

Mycobacterium tuberculosis adaptation

Tuberculosis (TB) claims more than 1.5 million lives worldwide every year. The pathogen that causes TB, Mycobacterium tuberculosis, has evolved, acquiring the ability to infect and persist within human hosts for longer periods. To better understand this adaptation phenomenon, teams from the Institut Pasteur de Lille and the Institut Pasteur in particular attempted to mimic this transition in the lab. An analysis of these mutations led to the discovery of novel adaptation pathways used by the bacillus. https://www.nature.com/articles/ s41564-021-00938-4



YEAR OF ESTABLISHMENT: 1919

TYPE: Private non-profit foundation

ADDRESS: 127 Vasilissis Sofias Avenue, 11521 Athens, Greece

WEBSITE: https://www.pasteur.gr/en/

AREAS OF EXPERTISE:

Bioinformatics and applied genomics, Immunology, Microbiology, Neurobiology, Translational research, Innovation



August 2021

Predicting COVID-19 prevalence in elderly people

In a study led by the international COVID Human Genetic Effort consortium, which includes the Institut Pasteur and the Institut Pasteur de Lille, the Hellenic Pasteur Institute used a combination of genome sequencing and bioinformatics analysis to demonstrate that autoantibodies neutralizing type I interferons predict the prevalence of SARS-CoV-2 infection in individuals aged over 70 and account for approximately 20% of critical cases in the over 80s. https://bit.ly/3LV73bB

The Hellenic Pasteur Institute aims to improve disease prevention and **treatment** through basic research, education and public health services, with a particular focus on infectious, autoimmune and neurodegenerative diseases.



January 2021

Proteasome activation in Alzheimer's disease

Alzheimer's disease has been identified as a protein misfolding disorder, with the ubiquitin-proteasome system – a protein degradation mechanism – providing a potential therapeutic target for its treatment. A study involving the Hellenic Pasteur Institute confirmed that activation of proteasome in vivo significantly reduces beta-amyloid load, improving motor function and reducing patient anxiety and frailty. https://bit.ly/3AWAnbn



September 2021

Antagonist effects of the TNF family

A study involving the Hellenic Pasteur Institute demonstrated that neuronal receptors of TNFs, a family of tumor necrosis factors, perform fundamentally different roles in central nervous system infections in vivo, with TNFR1 promoting neurotoxicity and TNFR2 mediating neuroprotection in excitotoxicity, the pathological process of neuronal cell death. https://bit.ly/3nwRhu8

AND ALSO

- ► Antibiotic resistance of Helicobacter pylori in Europe and its relationships with antibiotic consumption
- ► Investigating long COVID
- ► Tropheryma whipplei Intestinal Colonization in Migrant Children
- ► Involvement in celebrations for Louis Pasteur's bicentenary

of life through its research.



YEAR OF ESTABLISHMENT: 1964

TYPE: Private non-profit foundation

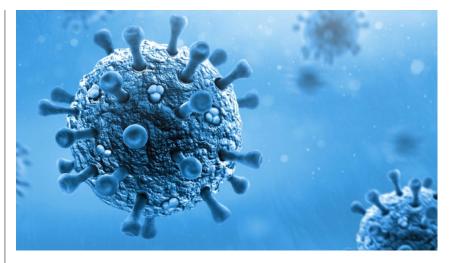
ADDRESS: Viale Regina Elena 291, Rome, 161, Italy

WEBSITE:

http://www.istitutopasteuritalia.it/

AREAS OF EXPERTISE:

Biochemistry, Bioinformatics, Cell biology, Genetics, Immunology, Microbiology, Virology, Parasitology, Neuroscience, Pharmacology



September 2022

Immune memory and SARS-CoV-2

To better understand immune responses to mRNA vaccines, scientists at the Institut Pasteur in Italy analyzed the immune memory of B and T cells against the Spike protein of the original SARS-CoV-2 strain and its variants of interest in patients. Two types of immune responses were identified 3 months after the first dose: high and low. In particular, patients with high responses had enhanced antibody neutralization. In those with a weak immune response, breakthroughs due to variants of interest were associated with lower binding antibody titers and specific memory T cells. https://bit.ly/3VAk3Xo

AND ALSO

- ► Role of the TLR7/8 pathway in COVID-19
- ► A possible treatment for chronic hepatitis C
- ► Science Festival 2022
- ▶ Influence of age on the response of Natural Killer cells to SARS-CoV-2



December 2021

New avenues for cystic fibrosis research

To further our knowledge of cystic fibrosis, and more specifically the role of CFTR protein mutations, researchers from the Institut Pasteur in Italy have identified antimicrobial peptides, namely Esc peptides, using electrophysiological and computational techniques, and have shown their potency against *Pseudomonas aeruginosa*. In particular, the researchers discovered their ability to control membrane ionic currents, thus suggesting potential new pharmacological approaches to cystic fibrosis.

https://bit.ly/42nOfXH



YEAR OF ESTABLISHMENT: 1929

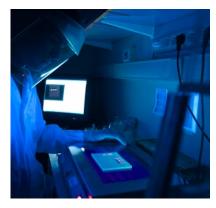
TYPE: Public Institution

ADDRESS: 1. Place Louis Pasteur, 20360 Casablanca, Morocco

WEBSITE: http://www.pasteur.ma/

AREAS OF EXPERTISE:

Microbiology, Genetics, Immunology, Virology, Bacteriology, Molecular biology, Parasitology, Venoms and Toxins, Vector-Borne diseases



August 2021

HIV polymorphism

The Institut Pasteur du Maroc participated in a study investigating the impact of PDCD1 rs10204525 polymorphism on susceptibility to HIV, progression to AIDS, and response to treatment in a Moroccan population. A total of 214 HIV-positive and 250 HIV-negative subjects were recruited. The results show that the rs10204525 polymorphism does not affect HIV infection but may impact response to treatment. https://bit.ly/3nup8DP

The Institut Pasteur du Maroc promotes and develops basic and applied research. Alongside teaching in diverse biological disciplines, the institute also produces and distributes vaccines and other products for therapeutic or diagnostic use.



November 2021

COVID-19 Vaccination Center of Excellence

Africa CDC has designated the Institut Pasteur du Maroc to serve as part of a network of Centers of Excellence (CoE) for COVID-19 vaccination. The CoE will provide capacity building services to professionals across Africa and share best practices on vaccine storage, distribution and usage. The Institut Pasteur du Maroc hosted an experience-sharing workshop with Africa CDC on COVID-19 vaccination from November 22 to 26, 2021. https://bit.ly/3LzDEC7



September 2022

Institute designated a North African Center of Excellence

To build Africa's capacity and expertise in genomic sequencing, Africa CDC has established an African Network of Laboratories of Excellence for Genomic Surveillance. The Institut Pasteur du Maroc has been designated as a North African Center of Excellence and a regional hub for genomic surveillance in North Africa.

March 2021

First diagnostic center for tuberculosis in Casablanca

At a ceremony attended by the President of the Mérieux Foundation and the French Ambassador to Morocco on March 31, 2021, the Moroccan Minister of Health, Prof. Khalid Ait Taleb, officially launched construction of Casablanca's first center for diagnostics and expertise in tuberculosis at the Institut Pasteur du Maroc. The center will address national public health needs in the biological diagnosis, tracking and monitoring of tuberculosis, and will provide training and education in mycobacteriology. https://bit.ly/3HEftkO



TYPE: Public Institution

ADDRESS: 14, ul. Mira, Saint Petersburg, Russian Federation

WEBSITE: https://www.pasteurorg.ru/

AREAS OF EXPERTISE:

Genetics, Diagnostics, Epidemiology, Virology, Immunology, Bacteriology, Biotechnology, Microbiology, Screening



* Capture and recording of biomaterials.

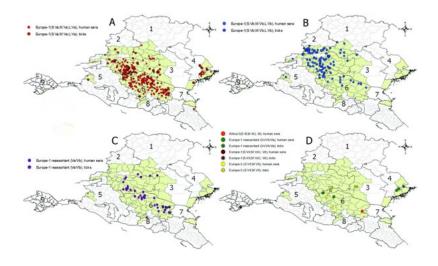
August 2021

SARS-CoV-2 seroprevalence in the Russian population

Scientists from the Saint Petersburg Pasteur Institute were involved in a longitudinal cohort study conducted in 26 regions of Russia. From June to December 2020, they studied the distribution and proportions of individuals with SARS-CoV-2 nucleocapsid antibodies. For all cohort volunteers, they also determined the proportion of seropositive convalescents and people who had been in contact with patients, and the prevalence of asymptomatic forms of infection in seropositive volunteers. A significant link was found between contacts and confirmed cases, and between contacts and asymptomatic seropositive individuals. https://www.mdpi.com/1999-4915/13/8/1648

AND ALSO -

- ► Acquisition of bedaquiline resistance by *M. tuberculosis*
- ► CoronaDerm PS, a skin test for COVID-19
- ▶ Studying population immunity in four countries (Armenia, Belarus, **Kyrgyzstan and Tajikistan)**



May 2022

Crimean-Congo hemorrhagic fever virus in Russia

Scientists from the Saint Petersburg Pasteur Institute contributed to a report presenting new data on the diversity and geographical distribution of genetic variants of Crimean-Congo hemorrhagic fever virus (CCHFV) in Russia. Partial sequences of the CCHFV genome were obtained from 500 serum samples from patients and 103 pools of ticks collected in the southern European region of Russia from 2007 to 2017. The viral strains investigated belonged to the Europe 1 and Africa 3 lineages and a new genetic lineage, Europe 3.

https://bit.ly/3LVx5eG

The Institut Pasteur de Tunis conducts scientific research related to human and animal health and vaccine production.

Its missions also involve diagnostic and training.



January 2021

A valuable tool for medical genomics in North Africa

The North African populations remain underrepresented in public genetic databases in terms of single-nucleotide variants as well as for larger genomic mutations. A team from Institut Pasteur de Tunis reported the first CNV map of the Tunisian population. It represents valuable clues to understand the genetic diversity and for the implementation of personalized medicine in the Tunisian population as well as in the ethnically similar populations from North Africa. https://www.nature.com/articles/ s41525-020-00166-5



December 2021

Developing next-generation anti-venom therapy

Tunisia

YEAR OF ESTABLISHMENT: 1893

ADDRESS: 13, Place Pasteur, BP 74,

WEBSITE: http://www.pasteur.tn/

Microbiology, Parasitology, Virology,

Immunology, Human Genetics and

Venoms, Epidemiology, Vaccinology,

genomics, Oncology, Neurosciences, Bioinformatics, Biostatistics

AREAS OF EXPERTISE:

TYPE: Public Institution

1002 Tunis, Tunisia

The Institut Pasteur de Tunis' NanoBioMedika team has received funding from the Wellcome Trust to develop new cobra anti-venoms. The team will collaborate with the Institut Pasteur d'Algérie, the Institut Pasteur in Iran, and the Institut Pasteur to identify candidates to address the dual obstacle of toxins' weak immunogenicity and fast diffusion while offering improved functional and structural properties. https://bit.ly/3nvg2qp

PASTEUR NETWORK

October 2022

Vaccine development agreement signed with Moderna

The Institut Pasteur de Tunis and Moderna have signed a partnership agreement for the development of messenger RNA-based vaccines against leishmaniasis and rabies. The institute therefore joins the mRNA Access program, which is dedicated to the search for innovative vaccine solutions to combat infectious diseases posing a risk to public health. https://bit.ly/3NDj9ao

AND ALSO -

- ► A parkinson project selected by EPFL's Excellence in Africa initiative
- **▶** Enhancing efficacy of the BCG vaccine
- **▶** Opening of the Rodolphe **Mérieux Laboratory**
- **▶** End of the PHINDaccess project



A NETWORK WITH RECOGNIZED EXPERTISE

The Pasteur Network has strong epidemiological capabilities, which are anchored in national health systems and robust public health mandates with MOHs, including more than 50 national and regional reference centers and 17 WHO Collaborating Centres.

National and regional reference laboratories are recognized by national health authorities for their expertise in the field of diagnostics. WHO collaborating centres (WHOCC) are research institutes, university or academic departments designated by the Organization to carry out activities in support of national and international health programs*.

*Source: https://www.who.int/about/collaboration/collaborating-centres

List of WHO Collaborating Centres (WHOCC) hosted by members of the Pasteur Network

Institut Pasteur

- WHOCC for Rabies
- WHOCC for Salmonella
- WHOCC on Plague control and research
- WHOCC for Research on the Epidemiology and Macroevolution of Polioviruses and Non-Polio Enteroviruses
- WHOCC for Bacterial Meningitis
- WHOCC for Human African Trypanosomiasis
 Biobank
- WHOCC Listeria

Institut Pasteur de Dakar

 WHOCC for Arboviruses and Haemorrhagic Fever Viruses

Institut Pasteur de Madagascar

WHOCC on Plague control and research

Institut Pasteur in Iran

WHOCC for Reference & Research on Rabies

HKU-Pasteur Research Pole

WHOCC for Infectious Disease Epidemiology and Control

Institut Pasteur de la Guyane

• WHOCC for Surveillance of Anti-malarial Drug Resistance

Fiocruz

- WHOCC for Pharmaceutical Policies
- WHOCC for Education of Health Technicians
- WHOCC for Leptospirosis
- WHOCC to Strengthen Human Milk Banks
- WHOCC for Global Health Diplomacy and South-South Collaboration

Further information about public health expertise in the Pasteur Network directory (sort by members): https://pasteur-network.org/en/our-network/

Focus: a global partnership in the field of emerging diseases

By pooling scientific, human and technical resources among its members, the Pasteur Network acts as a synergistic entity to address major scientific and public health challenges.

In July 2022, The Rockefeller Foundation's Pandemic Prevention Institute and the Pasteur Network signed a Memorandum of Understanding (MoU) to advance

early detection and reporting for climate sensitive emerging and re-emerging diseases. The MoU will build a robust decentralized global surveillance network that strengthens local capacity for sharing high-quality data across countries.

Further information: https://bit.ly/3W45kUE

THANKS

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We thank Françoise Barré-Sinoussi, honorary president of the Pasteur Network and take the opportunity to address our sincere thanks to all the partners, institutions and funders, present and future. Their continuous support contributes to the development of the Pasteur Network.

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