# The Institut Pasteur International Network: a century-old global public health powerhouse

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In the *Lancet* France: nation and world Series, Laëtitia Atlani-Duault and colleagues[1] discuss the historical origins of the Institut Pasteur International Network (IPIN) and underline the link between the public health and scientific objectives of the institutes and French policy. The legacy of public health service of the Institut Pasteur to local populations and the century-old bonds within the national health systems of the countries that are part of the IPIN make this network unique in its activity and scope. After countries achieved independence from France, many of the Instituts Pasteur kept their original names in recognition of the valuable services delivered to the community. These institutes continue to have an important role in global health and three of the key contributions of the IPIN are worth highlighting.

## 1 A century-old unique network adapted to the present global context

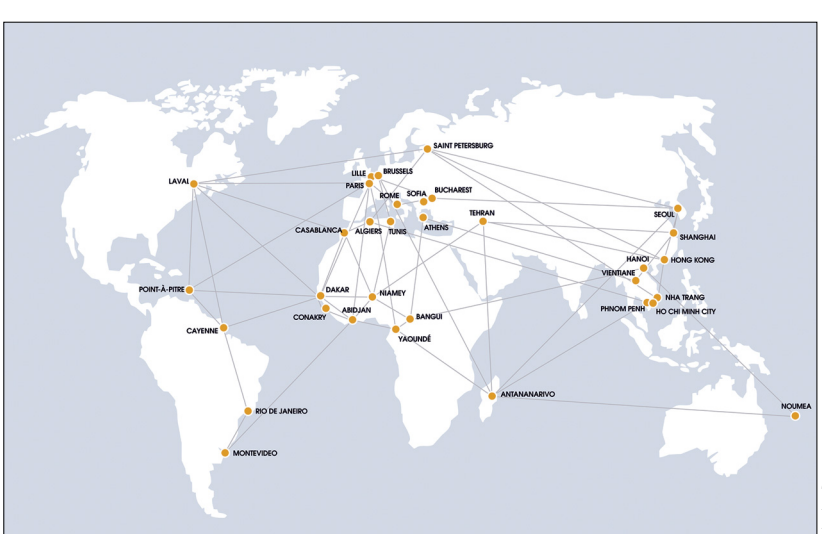
2016 marks the 125th anniversary of the Institut Pasteur's international presence as the first Institut Pasteur outside France was established in Saigon (now Ho Chi Minh City) in 1891. The IPIN comprises today 33 members in 26 countries and has experienced different historical stages that reflect the dynamics of French, European, and global health diplomacy.

Since the first half of the 20th century, most members of the IPIN have been involved in a close partnership with the national Ministries of Health to define their missions: surveillance and response for infectious diseases, research activities linked with public health priorities, investigation of outbreaks, and training of scientists.

A unique characteristic of the IPIN is the voluntary agreement of institutes from different countries to share common goals and values, stipulated in a charter signed by their directors. Among the IPIN's many achievements outside of France are the development of vaccines (eg, yellow fever vaccine elaborated by the Institut Pasteur in Tunis from 1931 to 1934 and tested at the Institut Pasteur in Dakar in 1934);[2] the formulation of innovative medical concepts (eg, subclinical infection defined by Charles Nicolle in Tunis during the early 20th century);[3] and scientific inventions (eg, the development of rapid diagnostic tests for meningitis[4] and plague[5] and the identification of the artemisinin resistance gene[6] in 2013). The admission of Pasteur International Network Association as a non-governmental organisation in official relations with WHO in January, 2016, is a recognition of this contribution to human health.[7]

Over the past decade, new institutes have emerged in Montevideo, Shanghai, and Seoul, capitalising on the expertise of the Institut Pasteur and the commitment and funding of national governments. This new integrative model is reinventing multi-disciplinary, cross-cutting partnerships through two main approaches.

First, the development of large research consortia within the institutes of the network that bring together international and local partners. The Karma Consortium, which comprises 41 partners from 59 countries focused on the important issue of artemisinin combination therapy, illustrates the approach through its collaborative process and global reach. Resistance to these drugs, already characterised in southern Asia, is a threat for endemic countries in Africa. The Pan-African Coalition for Training, a new initiative supported by the Institut Pasteur aimed at promoting Master curricula




The Institut Pasteur

**The Institut Pasteur International Network's 33 members in 26 countries**

in African universities and creating partnerships with English and Portuguese-speaking countries, is another example of the variety of our international partners. Second, the IPIN fits into the One Health approach, with the launch of the Centre for Global Health Research and Education, and the agreement between the Institut Pasteur and the World Organisation for Animal Health (OIE).[8]

## 2 A pillar of global health diplomacy

The IPIN is integral to French health and scientific diplomacy. The efficient network of national reference centres and WHO collaborating centres enables the IPIN to be a leading actor against large-scale epidemics. The Institut Pasteur in Dakar, which hosts the WHO Collaborating Centre for Arboviruses and Viral Haemorrhagic Fevers, provided the first African team to be deployed in Guinea to support Ebola outbreak investigation and response.[9] Later, several institutes of the network gathered in response to the Ebola outbreak to propose a large-scale task force, which will lead to the opening of the 33rd member of the IPIN in Guinea in 2017.

Involved in research on the Zika virus well before the recent outbreak,[10,11] the IPIN has rapidly responded to the requests from national authorities. Institutes in Paris, French Guiana, New Caledonia, Guadeloupe, and Dakar have mobilised their teams, in partnership with Fundação Oswaldo Cruz (FIOCRUZ) and the University of São Paulo, to work on the epidemiology of the virus, develop diagnostic tools, and undertake research on the vector. This capacity to deliver a rapid field response with the support of strong, high-level scientific skills and equipment has a key role in the coordination of France's scientific forces.

The IPIN is a key partner for the French Ministries of Foreign Affairs and International Development, Social Affairs and Health, and National Education, Higher Education and Research in the implementation of International Health Regulations (IHR). The IPIN brings its unique perspective to this work and complements advice provided by the other French national research institutions. A cooperation agreement between the Institut Pasteur and WHO in 2012 has confirmed the role of the IPIN in the implementation of IHR and to help resource-limited countries strengthen alert, response, and reporting capacities.[12]

## 3 A network that advances competitive South–South cooperation

The IPIN fosters South–South cooperation and health systems strengthening. The Institut Pasteur's 4-year group capacity building programme serves this objective. This programme gives internationally trained postdoctoral researchers (from the North or the South) the opportunity to set up new research groups in an institute of the IPIN for national or regional public health issues. The development of these postdoctoral researchers requires partnerships with stakeholders which can contribute to levelling the field for research in resource-limited countries by partnering with local public health players and infrastructures.

Such efforts, however, require state-of-the-art scientific equipment that is too costly for many institutes. One solution is to encourage the pooling of equipment and facilities between resource-limited institutes and the progressive specialisation of institutes by region, leading to the development of networks with complementary expertise. An example of such a network is the Pasteur Global Health Genomic Center that aims at advancing genomic research by using next-generation patient information systems combined with biobanking of well annotated samples. The centre will contribute to the upgrade of laboratory facilities within the network by creating 12 regional hubs by 2020.

Recent outbreaks such as Ebola have led to a strong international mobilisation of expertise and funding, but these efforts have been limited because of insufficient human resources in the affected countries. The real challenge is in strengthening durable health systems that can maintain such efforts over time. The IPIN, being composed of national institutions, calls for longer term efforts to reinforce local skills and establish sustainable long-term partnerships.

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I am President of the Institut Pasteur. I declare no competing interests.

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