

# 70 YEARS OF PRESENCE FOR THE BENEFIT OF SCIENCE AND HEALTH IN CAMBODIA



# PHNOM PENH

INSTITUT PASTEUR DU CAMBODGE 1953 - 2023



*Oil on canvas by Albert Edelfelt made in 1886 showing Louis Pasteur in his laboratory at the Ecole Normale Supérieure in 1885 holding a bottle containing the spinal cord of a rabbit inoculated with the rabies virus.*

*Painting exhibited at the Pasteur Museum, large dining room of Louis Pasteur's apartment.*

*Source : "Institut Pasteur / Pasteur Museum"*

# Louis Pasteur

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The last half of the 19<sup>th</sup> century was marked by two apparently unrelated facts but that circumstances would make complementary. On the one hand, European nations wishing to secure reserves of raw materials or economic openings intensified their entry into the immense tropical territories of Africa and Asia, introducing new pathologies and, on the other hand, *Louis Pasteur* developed his research on the origin of infectious diseases.

Within a few years were discovered and described the causative agents of relapsing louse fever, amoebic dysentery, leprosy, cholera, malaria. The rabies vaccine was developed by *Louis Pasteur* and *Emile Roux*, and the first vaccination was successfully carried out in July 1885. Thanks to this resounding success, the Institut Pasteur, financed largely by subscription, was built and inaugurated on November 14, 1888.



# Pasteurians: spreading around the world

Very quickly, *Louis Pasteur* encouraged his students to go where infectious diseases were hitting. Already during the Egyptian epidemic of 1883, during which *Robert Koch* had to isolate the cholera vibrio, *Louis Pasteur* had encouraged his apprentice *Emile Roux* to go to Alexandria. In 1890, *Albert Calmette*, a student of the Institut Pasteur's courses, was commissioned by *Louis Pasteur* to found the first Institute outside of France: the Institut Pasteur de Saigon (now Ho Chi Minh City), in 1891.

The expansion of doctors trained in Pasteurian disciplines then accelerates, *Charles Nicolle* in Tunisia in 1893 (Institut Pasteur de Tunis), *Edmond* and *Etienne Sergent* in Algeria in 1894 (Institut Pasteur d'Alger), *Alexandre Yersin* in Vietnam



Source : "Institut Pasteur / Pasteur Museum"

Alexandre Yersin at his office in Nha Trang around 1910. Behind him are parcels destined for the Michelin company

in 1895 (Institut Pasteur de Nha Trang) and *Emile Marchoux* in Senegal in 1896 (Microbiology Laboratory of Saint Louis which became the Institut Pasteur de Dakar in 1924).



Source : "Institut Pasteur / Pasteur Museum"

Albert Calmette and two Malay children treated for rabies, Saigon, April 18, 1891. These two boys, Ahman and Kameroodin, are the first people to have received preventive treatment against rabies in Asia (excluding Russia)

# Precursors in Cambodia: 1913-1952

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## Pasteurians present in Cambodia before the creation of the Institute

The interest of the Institut Pasteur de Paris in the health of Cambodia's population dates back to the early twentieth century. As early as 1910, *Dr. Emile Roux* (Director of the Institut Pasteur at the time) wrote to the Governor General of Indochina to suggest the appointment of a fact-finding mission to Cambodia and Laos, led by *Dr. Noël Bernard*. This study mission, funded by the Governor General of Indochina and the Institut Pasteur, was intended to “study contagious human diseases of particular interest in Cambodia and Laos, and the means of transmission of these diseases as well as the study of contagious diseases of domestic animals”.

It is specified in the letter of *Dr. Emile Roux* that *Dr. Noël Bernard* should not replace any of the agents currently acting on medical and veterinary services. While making himself immediately useful in questions of hygiene and clinical diagnosis, he will have to devote most of his effort to experimental research. The

Resident Superior in Cambodia will have to put in Phnom Penh “suitable premises at his disposal, that is to say about 4 or 5 rooms with the furniture, tables, cabinet, shelves and seats strictly essential, and put at his disposal two Cambodians able to serve as an aid”, as well as a “general service agent” (not termed as such, at the time), for the care of animals intended for experiments.

Although *Dr. Bernard* is not in charge of any regular service at the Phnom Penh hospital, he will naturally be the collaborator of the doctors of this establishment in bacteriological research that could be useful to them. He also invited the provincial doctors to contact him, and it would be advisable if *Dr. Bernard* could organize, with the collaboration of the attending physicians, a free consultation for the natives, with an infirmary capable of receiving some patients of interest to follow.

This is followed by a long list of basic materials worth 4,833.96 francs. This list would not be irrelevant in a laboratory inventory today, but some names have changed, there is a little more information, and electric power and gas have replaced oil. This letter from *Dr. Roux* can still serve as a model for anyone who wants to establish a laboratory of hygiene and epidemiology in a tropical environment, a laboratory that could later have become the Institut Pasteur.

Unfortunately, this was not the case with the laboratory of *Dr. Bernard*. Shortly before his departure from France, here is *Dr. Yersin* speaking "at the request of the Superior Resident in Annam and the Director General of Public Works", the Governor of Indochina was led to modify temporarily the appointment of *Dr. Bernard*, who was placed at the disposal of the Superior Residence in Annam to carry out special water analysis work in Hue, Vietnam. *Dr. Bernard* arrived in Hue with the equipment planned for Cambodia and paid for by the budget of the Institut Pasteur d'Indochine. *Yersin* points out that "*Dr. Bernard* did not limit himself to this work of water analysis, he made himself available to the local health service for all bacteriological research concerning public hygiene and the treatment

of patients". Unfortunately for Cambodia, *Dr. Bernard's* temporary laboratory in Hue became definitive. Hue was indeed the seat of the imperial court! It seems that this laboratory became a dependency of the Institut Pasteur for reasons that appeared to *Dr. Yersin* to be "not very serious and inspired rather by a particular interest than by general interest in the future of the laboratory". Followed an argument between *Dr. Yersin*, representative of the Institut Pasteur de Paris in Indochina, and his superior in the military hierarchy, the medical inspector Clarac, the arbitrator being the governor general of Indochina. Finally, at the request of *Yersin*, *Mr. Roux* abandoned equipment at the Institute of Hygiene and Epidemiology in Hue and ended the mission of the Institut Pasteur de Hue.

Cambodia lost its laboratory and the equipment that was to be assigned to it. A letter from *Dr. Yersin* from 1912 to the Resident Superior in Cambodia tried unsuccessfully to revive the Pasteur mission in Cambodia. *Dr. Bernard* returned to France in 1914, where the First World War had just begun. But Cambodia did have a laboratory: in 1913, *Dr. Jean-François Kérandel*, Doctor Major, student of the Cours Pasteur, established a Microbiology laboratory in Phnom Penh. His research focuses on

rinderpest that rages in the region and reduces the production and export capacity of local livestock. Finally, the same *Dr. Noël Bernard*, who had meanwhile become director of the Institut Pasteur de Saigon, came on a mission to Phnom Penh in 1923 for a study on human plague, which he carried out with *Dr. Memet*, chief physician of the hygiene service of Cambodia and *Dr. Simon*, head of the microbiology laboratory of Cambodia (not to be confused with *Dr. Paul-Louis Simond* who had distinguished himself in India by discovering the role of the flea in the transmission of the plague, *Paul-Louis Simond* had retired in Valence for ten years already).

In 1946, the Institut Pasteur de Nha Trang in Vietnam, disorganized by the events of the Second World War, decided to temporarily create a veterinary annex in the Kingdom of Cambodia, for the production of vaccine against rinderpest. The

“Phnom Penh Veterinary Laboratory” directed by Veterinarian *Dr. Jacques Vittoz* opened its doors in August 1946. The chosen location was outside the city, in a quarantine park for cattle exports located at the tip of the peninsula of Chroy Changvar, between the Mekong and the Tonle Sap River, facing the Royal Palace. At that time, the facilities were reduced to a few stables.

Production was short-lived as the vast laboratories at Nha Trang were put back into service in 1947 and on April 17, the Cambodia project was put on hold. A contract was signed on January 7, 1948 between the Minister of Finance of the Kingdom of Cambodia and the Institut Pasteur de Nha Trang, for the supply of veterinary vaccines and serums.

*Abandoned for 18 months, the production of vaccine against rinderpest was restarted in 1948 with the arrival of Veterinarian Dr. Yves Goueffon and a credit equivalent to five million francs allocated by the High Commission of France in Saigon. For four years (1949-1952), the manufacture of vaccine against rinderpest increased and allowed very effective prophylaxis against this disease in Cambodia.*





*Entrance of the Institut Pasteur du Cambodge to Chroy Changvar (1953)*

Source : "Institut Pasteur / Pasteur Museum"

**1953-1975**

# **THE INSTITUT PASTEUR IN CHROY-CHANGVAR**



# 1953 : creation & inauguration

*The independence of the Kingdom of Cambodia in 1953 led to the separation between the Nha Trang Institute and its annex in Phnom Penh.*

Dr. Maurice Surgeon, a first contract was signed on 15 July 1953 between the Institut Pasteur Paris (*Dr. Henri Marneffe*, Indochina Agent for the Institut Pasteur) and the Royal Cambodian Government (*Mr. Danh Suong*, Minister of National Economy), which recognized the administrative and financial autonomy of the Institut Pasteur de Phnom Penh, a subsidiary of the Institut Pasteur de Paris.

**The official inauguration of the Institut Pasteur de Phnom Penh took place on December 5, 1953** on the site of the former Chroy Changvar Veterinary Laboratory, in the presence of high personalities, both Cambodian and French.

In his speech, after recalling the role of his predecessor, *Dr. Genevray*, the main architect of this institute, *Dr. Marneffe* planned to considerably expand the list of vaccines for veterinary use manufactured at the Institut Pasteur de Phnom Penh. It also envisioned giving greater prominence to biological screening for animal infections and parasites and participating in the teaching of biology at the Phnom Penh Veterinary School. He stated:

“The scale of such a mission, and the considerable interest attached to it from an economic point of view, shows the confidence placed in the Institut Pasteur.”

The program was defined as follows: the watchword will be that of Louis Pasteur: **to serve**. The mission of the Institut Pasteur de Phnom Penh is not to help the sick man, but it will be no less beautiful no less fruitful. Serving will contribute to the prosperity of the Cambodian nation [...]. To give a wider diffusion to the disciplines and techniques of biology, to spread the disinterested love of observation and scientific research: in a word, to exploit and make known the resources of science in what is beneficial and constructive”.

*His Excellency Yem Sambaur*, Minister of National Economy representing the Royal Government, responded by paying tribute to the Board of Directors and Management of the Institut Pasteur de Paris for the valuable assistance they provided to the Kingdom of Cambodia in producing the anti-plague vaccine at a particularly difficult time. He assured the representative of the Institut Pasteur of all his solicitude and that of his Government"... so that this scientific work may live and prosper on Khmer soil for the good of the people and for the glory of the name of Pasteur. He was already planning in his speech to build a new institute closer to Phnom Penh and *Dr. Maurice Huard*, Director of the Institut Pasteur, interviewed by the press, planned to install the new institute near the School of Farmer and Breeding "in little Takeo". Barely born, our institute was already full of projects, but yet the site of Chroy Changvar was preserved for at least twenty years.

*Dr. Maurice Huard* thus became its first director. The laboratories of the Institut Pasteur de Phnom Penh were placed at the service of the Government of Cambodia and the Regional Heads of Administration for all studies, research and analyses of microbiological expertise relevant to the prevention of epizootics and requested by the Veterinary Services. The Institut Pasteur carries out investigations and microbiological study missions requested by the veterinary services within Cambodia. It also provides technical training, further education and further training for the staff of the Veterinary Services and the School of Agriculture. Any other product intended for human and bovine prevention at the request of the Cambodian Government was initially supplied by the Institut Pasteur de Paris (vaccines and serums against anthrax, porcine pasteurellosis, red mullet, and against human rabies and barnyard birds).

*Placed in a flowery and well-maintained setting, the Institut Pasteur de Phnom Penh is then included in the circuits of official visits of the city and receives the praise of distinguished visitors of Chroy Changvar.*

In the Khmer illustrated magazine “CAMBODIA” of April 1954, Mr. Audière, visiting journalist, writes an article on this establishment where 43 people are active, including the Director and the Econome.

*“Rare explorers venture to take the rowboat to dock at Chroy Changvar. However, lovers of folklore and especially of rural calm find there, in front of the Capital of Cambodia, in the middle of the tangles of floating villages and fishermen’s canoes, the potter molding his jars, the vermicelli manufacturer drying the dough under the sun, brilliant whiteness the dyer drying pieces of cloth spread over the green lawn. It is in the middle of these craftsmen, in the vicinity of a very pretty Wat, shaded by giant banyan trees, that the Institut Pasteur de Phnom Penh is located. Imagine the setting of a very welcoming inn with meticulously clean kitchens where graceful young girls wearing starched white headdresses bottle a juice in a room bearing a Stock Solution sign.”*

*But after crossing a flamboyant shaded alley, bordered by a magnificent rose garden, the visitor sees a whole row of boxes where oxen chew sugar canes. Every week, they are laid down and 2 to 3 liters of blood are collected to prepare the preventive and curative serum used in serotherapy. The visitor then enters the “enclosure of voluntary animals” where a hundred young bovine swam; they are the raw material for the vaccine. Then is a perfectly enclosed area for the passage of the virus and the bleeding and slaughter rooms. To get out of the enclosure of the contagious, it is necessary to disinfect the feet with a footbath. After the sterilization room dominated by huge autoclaves, the visit ends with the crossing of a whole series of workshops, laundry, vaccine packing room and finally with the lingerie, and changing rooms. The Director would like to explain to me many more things and his plans for a modern and vast Institute located in Phnom Penh itself, but the staff is asking for him ... ». This project will be achieved 40 years later!*

# 1954-1957

*Between 1954 and 1957, the Institute improved considerably, and the production of the anti-plague vaccine alone was joined by a whole series of new biological preparations for both human and veterinary use, against rabies, vaccinia, and bovine pasteurellosis.*

In 1955, *Dr. René Triaux*, veterinarian and physician, succeeded *Dr. Maurice Huard* and became Director of the Institut Pasteur de Phnom Penh. In the same year, a smallpox vaccine laboratory for human use was established, while the production of vaccines against bovo-bubalin pasteurellosis, symptomatic anthrax, anthrax, dog rabies and avian cholera began.



Source : "Institut Pasteur / Pasteur Museum"

*Harvesting of vaccinated beef blood for the preparation of antiserum (1955)*

The year 1956 saw the creation of a freeze-drying laboratory for the production of vaccines stabilized by desiccation. A new freeze-dried vaccine against rinderpest was produced, as well as a dry smallpox vaccine and a vaccine against human rabies (2,777,180 doses produced in 1957). Within a few years, all the vaccines necessary for the protection of Cambodian livestock were prepared and each in sufficient quantities.



Source : "Institut Pasteur / Pasteur Museum"

*The barn of oxen intended for the preparation of anti-pestosy serum (1955)*

The closure of the Vietnamese border led the Institut Pasteur de Phnom Penh to organize a depot for organic products at the Institut Pasteur de Paris. Previously, Cambodia stocked up on serums and vaccines in Saigon.

In 1957, a human cholera laboratory, an egg culture laboratory for the preparation of vaccines on embryonated eggs and a physico-chemistry laboratory were opened, while a large poultry farm was set up.

Garden and large building of the former Institut Pasteur du Cambodge in Phnom Penh, on the Chroy Changvar peninsula, 1960.



Source : "Institut Pasteur / Pasteur Museum"

## 1958: The Institute becomes the Institut Pasteur du Cambodge

In January 1958, this institution change its name to Institut Pasteur du Cambodge. The ten-year contract between the Royal Government of Cambodia and the Institut Pasteur de Paris was officially signed on **April 20, 1958** between the President of the Council of Ministers, *Mr. Penn Nouth* and the Director of the Institut Pasteur de Paris, *Dr Jacques Tréfouel*. The laboratories were moving towards human biology and pathology.

This new contract, which came into force on January 1, 1958, referred to human biology activities: (i) preparation of the typhoid vaccine, (ii) human plague vaccine, (iii) creation of a pathological anatomy laboratory, (iii) commissioning of living tissue culture techniques for virological studies.

Source : "Institut Pasteur / Pasteur Museum"

Plan of the Installations of the Institut Pasteur du Cambodge. Annual Report of 1959.

PLAN DES INSTALLATIONS AU 31 DECEMBRE 1958

- 1 Ponton
- 2 Accès au ponton
- 3 Cabine de transformation
- 4 Conciergerie
- 5 Bungalow du directeur
- 6 Elevage des lapins et souris
- 7 Animalerie
- 8 Microbiologie
- 9 Buanderie
- 10 Chimie
- 11 Stérilisation leverie
- 12 Service des vaccins
- 13 Magasin aux essences
- 14 Poulailier
- 15 Elevage des poussins
- 16 Menuiserie
- 17 Atelier mécanique
- 18 Funière
- 19 Four crématoire
- 20 Salle autopsie
- 21 Atelier alimentation
- 22 Douches - vestiaire
- 23 Charnier
- 24 Magasins généraux
- 25 Grands animaux inoculés
- 26 Singerie
- 27 Elevages en batteries
- 28 Incubation artificielle
- 29 Parquets de jeunes volailles (1.000)
- 30 Poulailiers (700 x 3 volailles)
- 31 Service des virus
- 32 Logement chef de laboratoire
- 33 Parc d'élevage
- 34 Plantation
- 35 Fosse à serpents
- 36 Cobayeraie - lapinière



Nouveaux laboratoires  
en construction (1959 - 60)

Vers le bac  
du Ta... INSTITUT  
PASTEUR

## 1961-1969

*On December 1, 1960, Dr. Yves Goueffon succeeded Dr. René Triau at the head of the Institute which then counted 106 people. He held this position until November 30, 1975.*

After overcoming many difficulties until 1960, the Institut Pasteur du Cambodge then met harmonious and flourishing growth. The situation improved considerably, thanks to French aid, providing equipment and financing the five heads of laboratory as experts from the Technical Cooperation Service. This led to the development of new laboratories, a library, an animal facility for mice breeding, etc. Then begins the implementation of a research and investigation program and new analysis laboratories.

While keeping its activities of production of veterinary and human vaccines, necessary in the Kingdom, the Institut Pasteur du Cambodge has become increasingly interested in human pathology.

In 1961, *Dr. Claude Chastel* created the Department of Human Virology and Medical Entomology, the first arbovirology laboratory located outside of France to undertake this type of research and obtain innovative results. This laboratory quickly isolated the **Chikungunya virus** (1961), various dengue virus serotypes (1962), and **Getha** and **Japanese encephalitis** viruses (1966). Many scientific publications have resulted from this first in-depth work in Southeast Asia. *Dr. Claude Chastel* also worked on the polio virus and human rabies. The Virology Unit will also address the problem of poliomyelitis and human rabies, for which a vaccine was being prepared at the Institute. The Institut Pasteur was also preparing and monitoring a smallpox vaccine that greatly contributed to the eradication of smallpox in this part of the world.





Staff of the Institut Pasteur du Cambodge in Chroy Changvar (1960)

Source : "Institut Pasteur / Pasteur Museum"

An Entomology Laboratory was created in 1967 by *Dr. Klein* of ORSTOM (now IRD) to study the fauna of bloodsucking insects of medical and veterinary importance, their infection by the microbes they transmit, and their transmission cycles, in close collaboration with the virology department.

Thanks to modern and efficient equipment, a versatile Analytical Chemistry department has been serving the Cambodian economy through hydrological analyses on the nature and composition of water for industrial uses, industrial and pharmaceutical chemistry, and bromatology to verify the commercial quality of products, their falsification and toxicity.

Fun fact, this laboratory pointed out in the region of Rattanakiri, at the time, the presence of a water similar to Evian water by its composition. This laboratory also made it possible to detect gross errors. Thus, a large batch of linseed oil from England, via Singapore, was found falsified at 40% by a mineral oil, and was hence unusable for the manufacture of paints. It was during the control of peanut meal intended for export that aflatoxin, a hepatotoxic poison prohibiting their use in food, was discovered.



*Microscopic observation (1960)  
Laboratory (1960)*

Source : "Institut Pasteur / Pasteur Museum"

The Medical Chemistry Laboratory created in 1962 provided routine biomedical analyses and vaccine analyses (*Dr. Srey Thonn*, Veterinary Biologist and Bacteriologist) and made available to hospital services finer analyses such as biological chemistry and immunology necessary for particular examinations and investigations. These chemistry laboratories carried out, in the 60's, research work on aflatoxin or hemoglobinopathies and Glucose-6-Phosphate Dehydrogenase.

A Pathological Anatomy laboratory created by *Dr. Jean-Jacques Salaun* responds to the requests of doctors and participates in experimental studies on animals for virological research purposes. He isolated the Phnom Penh Bat virus in 1969. At that time, the staff counted 142 people. The effective support of the Khmer national services and the French assistance have enabled



Source : "Institut Pasteur / Pasteur Museum"

Preparation of broth for bacterial culture (1960)

this undeniable success and are an example of fruitful cooperation between the two countries in the scientific field.

*Dr. Yves Goueffon*, as well as his predecessor, had the daunting task of managing and supervising the implementation of the construction of the new Institut Pasteur de Phnom Penh on the site of Chroy Changvar. It was a magnificent 90m long building, built on two floors and with a ground floor. This building had laboratories for 3/4 of its surface and administrative services. While the ground floor housed the air conditioning plant and shops, the 1st floor was for biology laboratories and the 2nd floor for vaccine production. This was the result of a contract concluded in 1956 between the government of Cambodia (and not the Institut Pasteur de Phnom Penh) and the French economic aid service. After difficulties of all kinds, this magnificent building designed by the famous architect **Van Molyvann**, which can still be seen on the site of the former Institute in Chroy Changvar, slowly emerged but was never functional. The events of 1975 were the beginning of its end, before it could even be inaugurated.

## 1975-1979 : The Dark Hours

*From 1975 to 1979, the years of war in Cambodia hit the Institute hard. All staff went missing and the buildings were largely destroyed.*

During this time, the country went through a period of total health regression: no vaccination activity, total absence of biological diagnosis and care. The extreme physical weakness of the population in 1979, combined with the absence of an organized public hygiene system, had created an extremely serious epidemiological situation. The diagnosis of communicable diseases was essentially clinical, given the poverty or lack of biological diagnosis means and the absence of missing scientific personnel to perform examinations. Malaria and tuberculosis were the most serious problems and, with the help of UNICEF, special programs for these two diseases were put in place. But Cambodia also had to experience epidemics that frequently accompany displaced persons, refugees, and deportees, such as cholera and dysentery. Cases of plague, anthrax, rabies, tetanus were also reported, foot-and-mouth disease caused serious problems in the farms. Leprosy continued to be a special case, given the systematic physical elimination of lepers in the years 1976-1977.

The former Institut Pasteur du Cambodge no longer has biochemistry and virology laboratories, they have been totally destroyed, as well as the animal facility. The bacteriology pavilion is still standing but is badly damaged. The three-story building built from the 50's and never opened was intact in terms of structural work, but the plumbing and electrical installations were badly damaged, and all the windows broken. All the scientific material was gone. The premises are occupied as housing by the families of workers at the nearby glutamate factory and sawmill. This condition was the same, and perhaps even worse, in 1983 during the site visit of *Professor Durosoir* with *Dr. Krui Sunlay*.

**From 1979, the Ministry of Health of the People's Republic of Kampuchea hopes of rebuilding the Institut Pasteur du Cambodge.**

*Overview of the 2nd  
Institut Pasteur de  
Toul Kork (1986)*



# 1986-1994

# INSTITUT PASTEUR DE TOUL KORK



# Towards a first revival

*In 1981, via the INSPE (National Institute of Public Health and Epidemiology) in Hanoi, contacts were established between scientists from the Institut Pasteur de Paris and the Cambodian people. The first priority in 1981 was to establish a project of the organization of the network of epidemiology and public hygiene, insisting on the urgency of training its scientific executives..*

In May 1981, the revival of the Institut Pasteur de Phnom Penh had been cited as a priority by the Congress of the Front for the Construction of the Fatherland, but it didn't make sense to restore an Institute that was only accessible by river, as the bridge connecting the city to the peninsula of Chroy Changvar had been destroyed in 1972... This isolation could have worked for a veterinary institute but not for an institute with a human vocation.

In September 1985, while in Paris (private trip), the Vice-Minister of Health of Cambodia – *Dr. Nouth Savong* - requested an appointment with Professor *Jean-Luc Durosoir*, General Delegate of the Institut Pasteur International Network. During the interview, the different productive and difficult phases experienced by the Institut Pasteur du Cambodge are discussed, as well as the close relations in the past between the IP du Cambodge and the Faculty of Medicine of Phnom Penh, the

training of scientific executives and the establishment, with the help of the National Institute of Hygiene and Epidemiology of Hanoi and the help of various NGOs, of the beginning of a national hygiene and public health laboratory. The idea that more official aid from the Institut Pasteur is envisaged.

The prospect of an exploratory mission of Pasteurians to Cambodia in 1986 will come true, thanks to an invitation to participate in the inauguration of a laboratory department within the Institute of Hygiene and Epidemiology and Public Health that UNICEF, with the help of the Association for the Development of Relations with Cambodia (ADRAC), had decided to set up. This was in the suburbs of Phnom Penh, at Toul Kork in a former station (work on this construction will begin in July-August 1984).

# December 1, 1986: inauguration of the Institut Pasteur de Phnom Penh in Toul Kork

This laboratory department owing a lot to Pasteurians sent for training (*Drs. Gilles Marchal and Paul Martin*), was to be inaugurated on December 1, 1986, under the name of the Institut Pasteur de Phnom Penh, in the perimeter of the Toul Kork district and placed under the direction of *Dr. Kruy Sunlay*. The inauguration took place in the presence of *Dr. Yit Kim Seng*, Minister of Health, *Professor Durosoir*, General Delegate of the Pasteur Overseas Institutes and Scientific Cooperation, and *Mr. Jérôme Kanapa*, President of ADRAAC.



Laboratory (1986)

The Institute counted 25 staff members engaged in this new epic. Scientists supervised the staff in biomedical and microbiological analysis and research on intestinal parasites, dengue hemorrhagic fever, and the etiology of childhood diarrhoea. The Institut Pasteur de Phnom Penh trains its staff, Phnom Penh and provincial executives, and students in parasitology, hematology, clinical biochemistry, molecular genetics and medical virology.

From 1987, a cooperation program with the Institut Pasteur de Paris was proposed. First of all, a first mission in March-April 1987 will provide assistance for the start-up and technical establishment of haematology and parasitology laboratories. This start-up is accompanied by a retraining of technical staff in these two disciplines. In December 1987, a second mission concerns the teaching of biochemistry and, at the practical level, the acquisition of techniques for the staff of the Institut Pasteur de Phnom Penh. A third biochemistry mission takes place in December 1988.



Part of the staff of the Institut Pasteur du Cambodge in Toul Kork (1986)


From 1988 several missions organized by the General Delegation to the Pasteur Overseas Institutes, now the International Network of Institut Pasteur and Associated Institutes, are carried out (*Dr. Bernard Ivanhoe, Georges Le Gonidec, Yves Germani ...*), training is provided and assistance in equipment and supplies is provided occasionally or following these missions.

Each mission provided an opportunity to set up programs on the basis of the knowledge acquired but was preceded by the dispatch of a large batch of biological materials and products necessary not only for the smooth running of the mission, but also for the continuation of activities after its ending. A final bacteriology

mission took place in May-June 1989. One of the persons involved in the mission continued their stay until mid-July to evaluate the activity of the various laboratories set up and to promote the Institute's laboratory examinations to hospitals and health centers in Phnom Penh and to see the institute operate at cruising speed. The long-term secondment of a "technical assistant" (pharmacist biologist *Michel Blanchot*) is envisaged.

**The institute was then confronted with water supply problems and power cuts.**





*Institut Pasteur du  
Cambodge, located on  
Monivong Boulevard,  
Phnom Penh (since 1995)*

# THE INSTITUT PASTEUR DU CAMBODGE BOULEVARD MONIVONG

(CURRENT SITE)

## Reflections for an Institut Pasteur on a new site

It soon became clear that the Institute, located in Toul Kork, was too far from the city center and hospitals, greatly reducing the activity of the Institut Pasteur and possibly hindering its future development. It soon became clear that the only premises capable of accommodating this urban sampling center was the laboratory at Calmette Hospital. This laboratory had the advantage of having a rotunda on the main avenue Achar Mean (current Monivong Boulevard) and separated from the main entrance of the Calmette Hospital, which was then called the Hospital of the Revolution. This rotunda could very well house the administration and a sampling room. Moreover, the surroundings of the Calmette Hospital are buildable, and the proximity of the Faculty of Medicine would make it possible to include the institute in a hospital-university complex.

Many missions followed in Phnom Penh, and were directed by *Professor Jean-Luc Durosoir*, General Delegate of the Institut Pasteur International Network. The Institut Pasteur de Phnom Penh in Toul Kork operated according to the agreement of January 1, 1958, between the President of the Council of Ministers of Cambodia and the Chairman of the Institut Pasteur Board of Directors in Paris. It soon became necessary to draft a new agreement that transformed the Institut Pasteur de Phnom Penh into the Institut Pasteur du Cambodge, as the State of Cambodia conferred on it the character of public utility, civil personality and financial autonomy. From a scientific and technical point of view, it became an establishment of the Institut Pasteur de Paris. Its director is appointed by the director of the Institut Pasteur de Paris with the approval of the State of Cambodia.

## 1992 : signature of the convention

Under the sustained and passionate impetus of *Dr. Krui Sunlay* for a renewal of the Institut Pasteur du Cambodge and the relay of *Professor Michel Blanchot*, the idea continues its way. *Dr. Durosoir's* meetings with *Dr. Yim Chhay Ly*, Minister of Health of Cambodia, Vice-Minister

*Chhea Thang*, Director General of Health, *Dr. Mam Bunheng*, and Minister of Foreign Affairs of Cambodia, *Hor Namong*, were held in the last days of July 1992.

A site for the construction of a new Institut Pasteur near the Calmette Hospital was finally identified and

allocated. The draft agreement between the State of Cambodia and the Institut Pasteur prepared in Paris was discussed and agreement reached on the outstanding points on 31 July 1992. The text is presented to the Council of Ministers.

On August 27, 1992, the agreement was signed in Phnom Penh by Professor *Maxime Schwartz*, Director General of the Institut Pasteur and *Dr. Yim Chhay Ly* for the State of Cambodia. A construction schedule for the new Institut Pasteur du

Cambodge is annexed to the agreement. A plot of 7,836 square meters is leased to the Institut Pasteur du Cambodge for the duration of the agreement, for an annual ridiculously cheap rent. The land of Chroy Changvar is handed over to the Cambodian Ministry of Health. *Bernard Darras*, an architect who has already worked for Pasteur institutions, particularly in Africa, is asked to implement the project.

## 1994: Groundbreaking ceremony

After the signing of the agreement, a schedule for the reconstruction was drawn up, along with the appointment of two people to implement the reconstruction: *Mr. Christian Quintin*, administrative officer, and *Dr. Flye Sainte Marie*, future director of the institute. These two people had a key role, along with *Ms. Kruy Sunlay*, in the supervision of the construction site until the inauguration.

On March 29, 1994, the groundbreaking ceremony was celebrated by the French Minister of Health, *Mrs. Simone Veil* and *Dr. Chhea Thang*, Minister of Health of Cambodia in the presence of Professor *Maxime Schwartz*, Director General of the Institut Pasteur. During this stay, the



*Groundbreaking ceremony by the French Minister of Health, Simone Veil and the Cambodian Minister of Health, Chhea Thang (March 29, 1994)*

French delegation met with various personalities: *Dr. Dy Narong Rith* and *Dr. Mam Bunheng*, Secretaries of State, *Dr. Eng Huot*, Head of PMI, *Dr. Oum Sophal*, Director of the Institute of Hygiene, *Dr. Kong Kim San* of the Institute for the Fight against Tuberculosis, *Dr. Khon Noum Heng* of the Leprosy Service, *Mr. Seng Lim Neoy* Deputy Minister. All these personalities welcome

the return of the Institut Pasteur du Cambodge and assure the management of the Institut Pasteur of their future aid. *Mr. François Fillon*, then Minister of Education and Research, on an official visit to Cambodia, was impressed by the scale of the project.

## 1995 : inauguration

**On February 10, 1995**, 100 years after the death of Louis Pasteur, the Institut Pasteur du Cambodge was officially inaugurated by the Co-Prime Minister of the Royal Government of Cambodia, *Prince Norodom Ranariddh*, in the presence of Professor *Bernard Debré*, French Minister of Cooperation. *Dr. François Flye-Sainte Marie* officially takes over the direction of this Institute and *Dr. Kruy Sunlay*, at the origin of the rebirth of the Institut Pasteur du Cambodge, is appointed Deputy Director.

**A new era is dawning for the Institut Pasteur du Cambodge and Franco-Khmer cooperation.**

The new facility was opened to the public on March 27, 1995. The staff counted 59 people, working in the virology unit and epidemiology and public health unit, that included

**The transfer of the Institute's activities from Toul Kork to the present Institute is scheduled for November-December 1994.**



*Intradermal vaccination against rabies*

immunization, rabies management and HIV testing centre. HIV infections concentrated most of the Institute's actions in 1996. This priority among all was imposed by the alarming situation of the HIV/AIDS epidemic in Cambodia.

In the first activity report of this new establishment (1996), the Director, *Dr. François Flye Sainte Marie* concludes: “The challenges are therefore numerous for this young Institute which missions must still be urgent as well as long-term”.



*Environment and Food Safety Laboratory*

His successor, *Professor Yves Buisson* considerably develops the training (1999-2001) thanks to courses organized on site and abroad, and above all allows the recruitment and integration of 9 scientists in the body of scientists of the International Network. In 2001, a Malaria Molecular Epidemiology Unit was created, which enabled IPC to actively collaborate in work on malaria in Cambodia with the National Centre for Malariology and WHO, in particular in the surveillance of antimalarial resistance.

In 2003, the Food Microbiology and Water Analysis Laboratory, which had existed since 1995 but was part of the Medical Biology Laboratory, became autonomous. This laboratory, directed by *Dr. Kruy Sunlay*, later became the Environment and Food Safety Laboratory we know today.

***AIDS research developed in 2001 with the creation of the ANRS Southeast Asia site, which relied on the Institut Pasteur de Ho Chi Minh City, Vietnam and Cambodia.***

In this context, IPC was able to participate in the first clinical research studies in Cambodia on the prevention of mother-to-child transmission, and also on the improvement of the management of pneumonia associated with HIV-AIDS. Studies have also looked at risk factors and resistance to natural infection. In 2006, IPC developed its capacity in

the field of clinical research through a pilot project, the “CAMELIA” project led by ANRS and NIH in patients co-infected with tuberculosis and AIDS. These projects led to the creation of the ‘Clinical Research’ group within the Epidemiology and Public Health Unit.

As early as 2003, the IPC was able to respond to national authorities about its dealing with the SARS epidemic in Asia and then the H5N1 avian influenza epidemic. Thanks to the mobilization of the teams of the Epidemiology Unit and the response capacity of the Virology Unit to perform a reliable biological diagnosis by molecular typing, the IPC has acquired legitimacy thanks to its expertise (reference centers: influenza, respiratory viruses, ...) recognized by national authorities and international organizations (WHO, FAO, ...).

After the wave of emergence of the viruses responsible for severe acute respiratory syndrome (SARS) and H5N1 avian influenza, under its Director *Dr. Jean-Louis Sarthou*, a regional biosafety laboratory level P3 was built and equipped with the help of the French and American governments and a loan from the French Development Agency. The laboratory was inaugurated on April 25, 2008 in the presence of *Dr Mam Bunheng*, Minister of Health and *Ms Rama Yade*, French Secretary of State for Foreign Affairs and Human Rights. On March 11, 2013, while the Institute is directed by *Professor Vincent Deubel*, the day of the ceremony celebrating the 60th anniversary of the Institut Pasteur du Cambodge, the foundation stone of a

regional building for multidisciplinary cross-cutting research on transversal trans-disciplinary diseases and emerging pathogens (PR-ASIA) was laid.



Level 3 Biosafety Laboratory



Toxorynchites: *elephant mosquito*,  
up to 2 cm



Sorting mosquitoes using  
a stereomicroscope



Mosquito Collection

This building, inaugurated by *Professor Mam Bunheng*, Minister of Health, *Professor Alice Dautry*, Director General of the Institut Pasteur, and *Serge Mostura*, Ambassador of France to Cambodia, was funded by the Institut Pasteur, INSERM, ANRS, AIRD/IRD and the Mérieux Foundation.

**As of February 2013, 166 people are working at the Institut Pasteur, including over 140 Cambodian administrative, scientific and technical staff.**

The range of laboratories is still diversifying. Under the mandate of *Dr. Didier Fontenille*, on October 1,

2018, the Immunology Unit (*Dr. Tineke Cantaert*) and Medical and Veterinary Entomology (*Dr. Sébastien Boyer*) were officially created. These units succeed plat-forms working on these themes and carved the scientific successes achieved in recent years in these two fields.

*In July 2018 and March 2019, two decentralized rabies prevention centers were also set up in Battambang and Kampong Cham, allowing better accessibility for people exposed to rabies..*

In 2020 and 2021, the Institute is providing essential support to the public health response to the COVID-19 pandemic in Cambodia and the Greater Mekong sub-region. The Institute was the only laboratory able to perform COVID-19 RT-PCR tests from January to July 2020 (performed in the Virology Unit), until the National Public Health Laboratory (NPHL) of the National Institute for Public Health (NIPH) could implement them. During 2020, these two institutions carried out all the RT-PCR tests for COVID-19 in Cambodia. In 2021, a few more labs

join this effort between NIPH and IPC to expand laboratory capacity across the country. IPC scientists, including *Dr. Laurence Baril*, first director of the Institut Pasteur du Cambodge, have also been deeply involved as technical experts to support the Royal Government of Cambodia (RGC) and health development partners. In April 2020, WHO designated the IPC as the Regional Reference Centre for COVID-19, one of 22 Global Reference Laboratories.





**In 2023, 70 years after its creation, the Institut Pasteur du Cambodge is firmly established in the country.**

It is headed by a director and its operation is monitored by a Liaison Council of 10 members, including the Director General of the Institut Pasteur (Paris). The Council is chaired by the Minister of Health of the State of Cambodia. A Scientific Council supports the Direction in determining the scientific strategy. Its members are appointed by the Institut Pasteur (Paris) and the Ministry of Health of the Kingdom of Cambodia and two are international personalities appointed by the Institut Pasteur.

The Institute is made of a directorate of 3 directors: director, deputy director and administrative and financial director; support services (administrative, financial and logistical); five research units: malaria, epidemiology and public health, immunology, medical and veterinary entomology, and virology . It includes service entities in the field of health: a medical biology laboratory, an environmental and food safety laboratory, a vaccination service with an international vaccination centre and a rabies centre at three sites. Public health activities are organized around (i) 3 references centers hosted by the Virology Unit (national reference center for influenza, WHO Regional H5 Reference Laboratory, WHO Global Reference Lab), (ii) an anonymous and free HIV testing center, and a



rabies centre on 3 sites (Phnom Penh, Battambang and Kampong Cham) providing post-exposure prophylaxis at cost. Finally, 4 technical platforms complete the system: a level 3 biosafety laboratory, a biobank, a sequencing platform, a flow cytometry platform.

As of January 1, 2023, the Institute counted 293 colleagues. Among them are 9 Cambodian statutory scientists (2 Research Directors, 7 Research Fellows). The staff comes from 14 different nationalities; 90% are Cambodian. The IPC gives great importance to gender equality: 54% of staff are women. The development of scientific

leadership and the promotion of national frameworks are priorities. Of the 16 management functions (3 directors, 8 heads of research units or service entities, 5 heads of support services), 12 are men (75%) and 8 are (50%) Cambodian.

The Institute remains dynamic and very attractive. As already noted in 2007 by *Dr. Jean-Louis Sarthou*: “One of the limiting factors to the development of the IPC is the narrowness of the technical rooms and the campus in general. The original foundations of the buildings do not allow to build more floors to the laboratories. It will therefore be necessary to start from the



foundations or to build a new building at the back of the campus, behind the Calmette Hospital.” The same analysis was done by an architectural firm in 2022. A reflection has been undertaken to study a solution that could lead to a major change in the physiognomy of the campus by 2030.

Thus, after 70 years of presence in Cambodia, the Institut Pasteur du Cambodge, member of the Pasteur Network, continues its missions, faithful to the Pasteurian tradition with competence and dedication to the benefit of science and always at the service of the health of the populations of Cambodia and the Region.

**Pr André Spiegel**

Director of the Institut Pasteur du Cambodge

**Pr Jean-Luc Durosoir**

General Delegate of the Institut Pasteur International Network (1984-2001)



*Staff of the Institut Pasteur du Cambodge (2023)*

## Directors of the Institut Pasteur du Cambodge\*

Maurice HUARD	1953 - 1955
René TRIAUD	1955 - 1960
Yves GOUEFFON	1961 - 1975
François FLYE SAINTE MARIE	1994 - 1999
Yves BUISSON	1999 - 2001
Jean-Louis SARTHOU	2001 - 2009
Vincent DEUBEL	2009 - 2014
Didier FONTENILLE	2014 - 2019
Laurence BARIL	2019 - 2021
André SPIEGEL	2021 -

## Deputy Directors of the Institut Pasteur du Cambodge\*

KRUY Sunlay	1994 - 2017
LY Sowath	2017 -

\*Institut Pasteur de Phnom Penh until 1957

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*Conception & layout : Impact.com.kh  
Technical Realisation : Anne-Céline Prigent  
Photo Credit: Jean-François Perigois*

*Phnom Penh | May 2023*

