HOW TO FIGHT AGAINST MALARIA?
Incentive programs that support researchers to control, prevent and eradicate the disease

A red blood cell infected with the parasite Plasmodium falciparum forming a rosette with non-infected cells

Incentive Research Programs and Partnerships Department
Department of Development

December 2016
The Department of Development (DD), created at the end of 2014 and headed by Dr Pierre Legrain, aims at implementing key components of the Institut Pasteur’s strategic plan, in particular:

- To develop collaborative research between the Institut Pasteur Paris and the Institut Pasteur International Network (IPIN, see Figure 1), of 33 Institutes in 26 countries & 5 continents and which represents a unique asset in the world for interdisciplinary biomedical research and education;

- To tackle societal challenges by promoting interdisciplinary research through various types of incentive calls.

The SPPI launches 4 annuals calls for research projects, namely PTR, ACIP, PasteurInnov and ValoExpress respectively (calls for projects are detailed in annex). The development of these transversal and incentive research programs is a valuable tool to accentuate collaborative, open research and enhance the international visibility and social impact of the expertise of the Institut Pasteur. PTR and ACIP calls support fundamental research and interdisciplinary collaborations between the Institut Pasteur in Paris and the IPIN, while PasteurInnov and ValoExpress calls help fortify strategic research programs with high potential for industrial transfer and/or with a foresight of a strong social impact.

This booklet aims to illustrate the incentive research programs within the Institut Pasteur Paris and international network in the field of the fight against malaria.
Malaria is a major issue of public health in the world.

Malaria is a disease caused by a parasite that affects one hundred countries in the world, particularly in developing countries. About 40% of the global population is exposed to this disease that has important health and economic implications.

For many decades, teams at the Pasteur Institute in Paris and within the Institut Pasteur International Network have been dedicated to malaria research. Studies range from basic research in humans, on the parasite and its mosquito, to the vaccine development. This research is essential to the fight against malaria and eliminate the disease.

The SPPI funds through its incentive programs, the development projects on three key aspects of the fight against malaria:

**VECTOR OF TRANSMISSION**

*Better understand the mosquito vector to improve its surveillance and anticipate epidemic outbreaks*

**PARASITE RESISTANCE TO ANTI-MALARIALS**

*Understand the mechanisms of Plasmodium falciparum drug resistance to identify new therapeutic targets and develop new treatments*

**DEVELOP A VACCINE THAT CONFFRS A SUFFICIENT LEVEL OF PROTECTION**

*Identify a combination of protective antigens to develop new vaccine*
THE FIGHT AGAINST MALARIA

What is malaria?

Malaria is a potentially fatal parasitic disease caused by several species of parasites of the genus *Plasmodium* of which *Plasmodium falciparum* and *Plasmodium vivax* are the most dangerous. According to WHO (2015), this disease causes around 500,000 deaths per year worldwide.

*Plasmodium falciparum* (*P. falciparum*) affects developing resource-poor countries, mostly in sub-Saharan Africa. It is responsible for most of the mortality associated with malaria. *Plasmodium vivax* (*P. vivax*) is the second agent responsible for malaria, mainly present in Asia and Latin America.

*P. falciparum* is transmitted to humans by bites of infected female *Anopheles* mosquitoes. After the bite, the parasite infects liver cells where it multiplies. These new parasites are released into the blood, infect more red blood cells and multiply to be released again by bursting of red blood cells followed by infection of new red blood cells. The *Plasmodium* life cycle is very complex with several forms: *sporozoite*, the infectious form injected by mosquitoes and the *merozoite*, the form that infects red blood cells.

The symptoms of malaria, including fever and cerebral malaria, are related to the blood stage of infection by the parasite.

The main way to prevent and reduce the transmission of malaria is vector control (spraying insecticides inside houses, insecticide treated bed nets). In addition, the control of the vector is hampered by the emergence of mosquito resistance to insecticides.

At present, several antimalarial drugs can be used (1) for prophylaxis but do not guarantee absolute protection against infection or (2) for therapeutics decreasing only the duration and severity of the disease. One of the obstacles in the fight against malaria is the resistance of the parasite to current drugs. It has been observed in some countries that *P. falciparum* is increasingly difficult to treat due to the emergence of multidrug resistance to antimalarial drugs, which could spread to other regions.

There are currently no licensed vaccines against malaria. The most advanced vaccine in clinical trials is RTS, S/AS01.

To date, malaria is a disease preventable, diagnosable and treatable. Unfortunately, the fight against this parasite is difficult because no preventive or therapeutic treatments exists that can protect and treat fully against this disease. This parasite still kills hundreds of thousands persons every years so it is very important to fund Plasmodium projects.

In the world, in 2015, 3.2 billion people were at risk of contracting malaria

In 2015, 214 million cases of malaria were recorded worldwide

In 2015, 90% of *P. falciparum* infected individuals were located in sub-Saharan Africa
Malaria in Maghreb

Major malaria eradication programs were launched in the Maghreb countries in the 60s and 70s.

In recent years, the incidence of malaria has increased in these countries. The resurgence of malaria in Maghreb countries could result from the weakening of control programs, increased migration of human populations and/or mosquitoes behaviour changes resulting from climatic and environmental modifications.

THE PROJECT

The Institut Pasteur teams of Maghreb as well as a team in Paris propose to focus on the main North African vector, the *Anopheles* sergentii mosquito. Specifically, this project will enable researchers to obtain accurate and updated information on the ecology of this vector (in Tunisia, Morocco and Algeria), its role in the spread of the malaria in these countries as well as its susceptibility to insecticides. With this knowledge, an epidemiological surveillance and alternatives in malaria control plans will be organized in order to prevent outbreaks.

Morocco was declared malaria-free in 2010. But lately 100 cases per year have been identified.
FOR MORE INFORMATION:

→ Publications:

→ Completion schedule:
  - Starting date: November 2014
  - Estimated project completion: October 31st, 2016

→ Funding needs:
  - Total costs: 67,000€ (running costs)
  - Listing the budget expenditures for the project:

<table>
<thead>
<tr>
<th>Unit</th>
<th>First year</th>
<th>Second year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DESCRIPTION</td>
<td>AMOUNT (€)</td>
</tr>
<tr>
<td>Unit 1</td>
<td>Missions (coordination meetings, training)</td>
<td>3 000</td>
</tr>
<tr>
<td></td>
<td>Consumables (reagents, kits, CDC traps...)</td>
<td>5 500</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Missions</td>
<td>4 500</td>
</tr>
<tr>
<td></td>
<td>Consumables</td>
<td>3 500</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Missions</td>
<td>3 000</td>
</tr>
<tr>
<td></td>
<td>Consumables</td>
<td>5 500</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Missions</td>
<td>3 000</td>
</tr>
<tr>
<td></td>
<td>Consumables</td>
<td>4 000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32 000</td>
</tr>
</tbody>
</table>
Impact of Plasmodium/Trypanosoma co-infections in Anopheles mosquitoes on their capacity to transmit the malaria parasites

Project PTR n° 542-2015
Coordinator: Dr Christian MITRI, Genetics and Genomics of Insect Vector Unit - Institut Pasteur (Paris)
Institut Pasteur International Network collaborators: Dr Brice ROTUREAU, Institut Pasteur (Paris), and Dr Mawlouth DIALLO, Institut Pasteur in Dakar

→ What is Trypanosoma?

Trypanosoma is a protist parasite transmitted to humans and animals by the bite of a Glossina, more commonly known as the tsetse fly, which was previously infected from humans or from animals carrying the parasites. This parasite is responsible for Human African Trypanosomiasis (HAT), also known as sleeping sickness, and for Animal African Trypanosomiasis (AAT), also known as nagana. These extracellular parasites first proliferate in the blood and can ultimately cross blood-brain barrier to invade the central nervous system leading to wake/sleep disorders, coma and finally death. In absence of treatment, AAT, which are highly prevalent in some African countries, cause serious economic losses in livestock, especially because untreated cases are fatal.

These parasites are present exclusively in sub-Saharan Africa. The populations most vulnerable to the tsetse fly and therefore to the disease, are rural people who depend on agriculture, livestock and hunting.

To date, there is no vaccine, but several efficient drugs exist for humans and animals despite their reduced availability, elevated cost and severe side effects.

→ Trypanosoma/Plasmodium

In parts of sub-Saharan Africa, the parasites responsible for malaria and trypanosomiasis are transmitted sympatrically due to the presence of both insect vectors in the same ecological zones. Therefore, in these areas, the Anopheles mosquitoes, vector of Plasmodium, can bite individuals or animals carrying Plasmodium and/or Trypanosoma causing a co-infection of the vector.

→ THE PROJECT

Teams from the Institut Pasteur in Paris and Dakar will join their expertise in parasitology, immunology and entomology to implement this project. They want to understand how the presence of two parasites (Plasmodium and Trypanosoma) in the Anopheles (malaria vector), resulting from simultaneous or consecutive ingestions, could impact on the development and the natural transmission of Plasmodium. For this, scientists will compare data of mono-infections or co-infections, obtained in the laboratory using a mouse model as well as in the field in remote villages of Senegal. This project will improve scientific knowledge of the vectorial capacity of Anopheles subjected to at least two different parasites. These results may have an impact in terms of public health through mapping the risks of transmission and planning vector control.
FOR MORE INFORMATION:

→ **Publications**:

→ **Completion schedule**:
  - Starting date: July 1st, 2015
  - Estimation project completion: June 30th, 2017

→ **Funding needs**:
  - Total costs: 250 000€ (140 000€ running costs + 110 000€ personnel costs)
  - Listing the budget expenditures for the project:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>AMOUNT (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1 Animals and facilities, mosquitoes and facilities, culture, molecular biology and immunology tools, kits and reagents, travels, congress and publication expenses.</td>
<td>40 000</td>
</tr>
<tr>
<td>Unit 2 Animals and facilities, mosquitoes and facilities, culture, molecular biology and immunology tools, kits and reagents, travels, congress and publication expenses.</td>
<td>25 000</td>
</tr>
<tr>
<td>Unit 3 Molecular biology and immunology tools, kits and reagents, fieds work expenses, travels, congress and publication expenses</td>
<td>60 000</td>
</tr>
<tr>
<td>Subcontracting and small equipment Experiments for the transcriptomic approach, CDC light traps for mosquitoes, Nanoject (1)Drummond</td>
<td>15 000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>140 000</strong></td>
</tr>
</tbody>
</table>
Resistance to treatments

At the end of 2013, most countries, representing 79 of the 88 countries where *Plasmodium falciparum* is endemic, had adopted the Artemisinin based Combination Therapy (ACT) as first-line treatment. Existing treatments consist of combination therapies that include classic antimalarials (chloroquine, pyrimethamine) combined with artemisinin. The resistance of the malaria parasite *Plasmodium falciparum* to existing treatments is a major global public health problem. Resistance to classical antimalarials has developed over the last several decades throughout the world. Unfortunately, a decrease in the efficiency of ACT was observed in South-East Asia, due to the emergence of *Plasmodium falciparum* resistance to artemisinin. Recently, one protein involved in *P. falciparum* resistance has been identified but the properties of this protein remain to be investigated.

THE PROJECT

Teams of the Institut Pasteur International Network, led by Jean-Christophe Barale, have a recognized expertise in the field of *Plasmodium*. In previous studies, they identified the protein involved in *Plasmodium falciparum* resistance to artemisinin. During this project, the scientists will develop tools to characterize the biological function and the properties of this protein, particularly in the context of the resistance to artemisinin. The tools currently developed in this project could have an impact in the field to allow a specific diagnostic of artemisinin-resistant parasites, thus allowing to provide the best treatment to patients, but also to follow the dissemination of resistant *P. falciparum*.
FOR MORE INFORMATION:

→ **Publications:**

→ **Completion schedule:**
  - Starting date: July 1st, 2015
  - Estimated project completion: June 30th, 2017

→ **Funding needs:**
  - Total costs: 239 000€ (119 000€ running costs + 120 000€ personnel costs)
  - Listing the budget expenditures for the project:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>AMOUNT (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit 1</strong> P. falciparum in vitro culture, biochemistry reagents, publication costs, travel/missions</td>
<td>25 000</td>
</tr>
<tr>
<td><strong>Unit 2</strong> P. falciparum in vitro culture, biochemistry reagents, publication costs, travel/missions</td>
<td>25 000</td>
</tr>
<tr>
<td><strong>Unit 3</strong> Sequencing</td>
<td>5 000</td>
</tr>
<tr>
<td><strong>Unit 4</strong> Mice, animal facilities, peptides, reagents</td>
<td>30 000</td>
</tr>
<tr>
<td><strong>Unit 5</strong> Protein purification consumables</td>
<td>8 000</td>
</tr>
<tr>
<td><strong>Unit 6</strong> Reagents and consumables for mass spectrometry analysis</td>
<td>8 000</td>
</tr>
<tr>
<td><strong>Unit 7</strong> P. falciparum and P. vivax sample collection, P. falciparum in vitro culture, biochemistry reagents, travel/missions</td>
<td>8 000</td>
</tr>
<tr>
<td><strong>Unit 8</strong> Crystallisation (kits and plates), part of instruments maintenance constructs, travel expenses to Synchrotron</td>
<td>10 000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>119 000</td>
</tr>
</tbody>
</table>
→ Vaccines

Currently, no efficient commercial vaccine is available to ensure the protection of populations in endemic countries and travelers. However, several vaccine candidates based on individual parasite antigens, which are molecules considered as foreign by the body, triggering an anti-parasite immune response, have shown only a limited level of protection. For example, an experimental vaccine against *P. falciparum*, RT, S/AS01, targeting the sporozoite form, was developed and has now completed a clinical phase III trial. However, this vaccine does not provide total protection against the parasite. It is therefore necessary to develop a vaccine candidate with higher protective efficiency. To this aim, we have decided to fund two projects.

*P. falciparum* is not the only problem; there is also *Plasmodium vivax* (*P. vivax*). This parasite was recently discovered in great apes of Central Africa, raising fears of the existence of a natural reservoir with new transfers from these primates to African populations, pointing to a possible risk of emergence. It is necessary to protect the populations of this parasite. One of our funded projects aims to understand the invasion mechanisms of *P. vivax* to develop a vaccine.

In 2015, 438,000 deaths in the world were recorded of which 90% in Africa

70% of deaths caused by malaria occur in children under the age of 5 years.

More than one billion people are now exposed to *Plasmodium vivax*
Develop a vaccine candidate to protect against malaria caused by *Plasmodium falciparum*

Project PasteurInnov 2014

Coordinator: Dr Chetan CHITNIS, Malaria Parasite Biology and Vaccines Unit – Institut Pasteur (Paris)

Institut Pasteur (Paris) collaborators: Dr Laurence MULARD, Chemistry of Biomolecules Unit, Dr Robert MENARD, Malaria Infection and Immunity Unit and Dr Jacques BELLALOU, Recombinant Proteins in Prokaryotic cells Platform

→ THE PROJECT

Three teams of the Institut Pasteur (Paris), with a strong expertise in different fields (biology of the parasite, vaccine development) propose to develop a vaccine candidate based on previous work in the domain of the malaria vaccines. The aim is to define a combination of antigens that target the *merozoite* form of the parasite and increase the immune response especially antibody production, thereby allowing an effective inhibition of the parasite. This vaccine could be used to protect infants and children in endemic regions as well as individuals of all ages in the regions where malaria transmission is low and the travelers to endemic regions.
FOR MORE INFORMATION :

→ Publications :

→ Completion schedule :
  - Starting date : Octobre 15th, 2014
  - Estimated project completion : Octobre 2016

→ Funding needs :
  - Total costs : 180 000€ (120 000€ running costs + 60 000€ personnel costs)
  - Listing the budget expenditures for the project :

<table>
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<th>First year</th>
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<tbody>
<tr>
<td>DESCRIPTION</td>
<td>AMOUNT (€)</td>
</tr>
<tr>
<td>Unit 1</td>
<td></td>
</tr>
<tr>
<td>Synthesis and cloning of genes</td>
<td>7 500</td>
</tr>
<tr>
<td>Animals</td>
<td>11 000</td>
</tr>
<tr>
<td>Carrier protein</td>
<td>13 500</td>
</tr>
<tr>
<td>Unit 2</td>
<td></td>
</tr>
<tr>
<td>Chemicals and reagents</td>
<td>13 500</td>
</tr>
<tr>
<td>Unit 3</td>
<td></td>
</tr>
<tr>
<td>Animals</td>
<td>2 000</td>
</tr>
<tr>
<td>Reagents</td>
<td>2 000</td>
</tr>
<tr>
<td>Subcontracting</td>
<td>Media and reagents for purification of recombinant proteins</td>
</tr>
<tr>
<td>Total</td>
<td>61 500</td>
</tr>
</tbody>
</table>
Define protective antigens of Plasmodium in order to develop an effective vaccin

Project PTR n°429-2012
Coordinator: Dr Rogerio AMINO, Malaria Infection and Immunity Unit – Institut Pasteur (Paris)
Institut Pasteur (Paris) collaborators: Dr Pierre CHARNEAU, Molecular Virology and Vaccinology Unit, and Dr Robert MENARD, Malaria Infection and Immunity Unit

THE PROJECT
Teams from the Institut Pasteur (Paris) will use an innovative strategy to produce and select antigens (foreign molecule to the organism triggering an immune response) of Plasmodium inducing strong protection against the parasite infection using a pre-clinical model of experimental malaria.

The results of this work will lead to the discovery of novel protective antigens, as well as, to the identification of the most protective multi-antigenic formulation. Preliminary data on immune response are very optimistic.

Therefore, this project has the potential to constitute the basis for the rational design of a new multi-antigenic malaria vaccine.

Furthermore, this strategy can be adapted and used to discover protective antigens in other models of infectious diseases.
FOR MORE INFORMATION:

→ Publications:

→ Completion schedule:
  - Starting date: Octobre 1st, 2012
  - Estimated project completion: end 2016

→ Funding needs:
  - Total costs: 120 000€ running costs + personnel costs (recruitment one technician or engineer)
  - Listing the budget expenditures for the project:

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<tr>
<th>DESCRIPTION</th>
<th>AMOUNT (€)</th>
</tr>
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<tbody>
<tr>
<td>Unit 1</td>
<td></td>
</tr>
<tr>
<td>Mosquito and animal work</td>
<td>20 000</td>
</tr>
<tr>
<td>Gene synthesis</td>
<td>80 000</td>
</tr>
<tr>
<td>Unit 2</td>
<td></td>
</tr>
<tr>
<td>Lentiviral production</td>
<td>20 000</td>
</tr>
<tr>
<td>Total</td>
<td>120 000</td>
</tr>
</tbody>
</table>
Understand *Plasmodium vivax* invasion mechanisms
to develop a vaccine

**Project PTR n°490-2014**

**Coordinator:** Dr Malaria Parasite Biology and Vaccines Unit – Institut Pasteur (Paris)

**Institut Pasteur International Network collaborators:** Dr Inès VIGAN-WOMAS, Institut Pasteur in Madagascar

and Dr Didier MENARD, Institut Pasteur in Cambodia

→ THE PROJECT

Teams from Institut Pasteur International Network together with team from Institut Pasteur (Paris) led by Chetan Chitnis will study which key proteins of the parasite are involved in the infection of the reticulocyte (immature red blood cell) at the functional and immunological level. By better understanding the parasite-host cell interactions, the scientists will study the feasibility to develop a vaccine against the *merozoïte* form of the parasite that will block the penetration of *Plasmodium vivax* in red blood cells. This vaccine will be of a great help to control and eliminate malaria in most endemic countries.

About 90 million cases of malaria are caused by *P. vivax* worldwide each year.
FOR MORE INFORMATION:

→ **Publications:**

→ **Completion schedule:**
- Starting date: Octobre 1st, 2014
- Estimated project completion: Decembre 31st, 2016

→ **Funding needs:**
- Total costs: 100 860€ (90 860€ running costs + 4 000€ small equipment (Liquid nitrogen containers and Biorad Criterion cell and blotter) + 6 000€ personnel costs)
- Funding a post-doctorant for 24 months by an external source
- Listing the budget expenditures for the project:

<table>
<thead>
<tr>
<th>First year</th>
<th>Second year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td><strong>AMOUNT (€)</strong></td>
</tr>
<tr>
<td>Unit 1</td>
<td></td>
</tr>
<tr>
<td>Generation of sera in mice and rabbits</td>
<td>10 500</td>
</tr>
<tr>
<td>Synthesis and cloning of synthetic genes</td>
<td>7 000</td>
</tr>
<tr>
<td>Sample shipment and travel for kick-off meeting</td>
<td>3 500</td>
</tr>
<tr>
<td>Unit 2</td>
<td></td>
</tr>
<tr>
<td>Field mission + sample shipment</td>
<td>6 000</td>
</tr>
<tr>
<td>Consumables</td>
<td>4 920</td>
</tr>
<tr>
<td>Travel for review meeting</td>
<td></td>
</tr>
<tr>
<td>Unit 3</td>
<td></td>
</tr>
<tr>
<td>Field mission + sample shipment</td>
<td>5 000</td>
</tr>
<tr>
<td>Consumables</td>
<td>8 650</td>
</tr>
<tr>
<td>Travel for kick-off meeting</td>
<td>1 500</td>
</tr>
<tr>
<td>Unit 4</td>
<td></td>
</tr>
<tr>
<td>Media and reagents for production and purification of recombinant proteins</td>
<td>6 000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53 070</td>
</tr>
</tbody>
</table>
The Institut Pasteur launches concomitantly once a year two international calls of proposals for the following:
- to support interdisciplinary research collaborations between the Institut Pasteur in Paris and the Institut Pasteur International Network (IPIN);
- to promote the participation of young researchers in these collaborative projects;
- to participate, through these programs, for the development of innovative medical solutions responding to major global health issues.

IPIN is composed of Institut Pasteur (Paris) and 32 other institutes located in 26 countries on 5 continents, which are based on long term structures and adhere to common values and a shared scientific base. IPIN provides a single major asset and one of the great strengths of the Institut Pasteur.

The two calls for proposals are the Transversal Research Programs (PTR) and International Pasteur Concerted Actions (ACIP). These calls launched by Institut Pasteur in collaboration with the IPIN, offer various formats to best respond to the major research challenges.

→ Transversal Research Programs (PTR)
This call aims to initiate exploratory research projects which are ambitious, innovative and interdisciplinary by creating new links between at least one partner from the IPIN and the Institut Pasteur in Paris. It also aims to develop synergy of new collaborations with other academic research organizations.

Funding for each of the selected projects amounts to maximum 250,000 euros including running and personnel (non-permanent) costs, for a maximum period of 24 months.

→ International Pasteur Concerted Actions (ACIP)
This incentive program proposes to encourage the development of new scientific collaborations between at least three institutions of the IPIN. The research domain of the projects must be focused on a public health problem.

These projects are for a maximum duration of 18 months with an operating budget of 20,000 to 50,000 euros.

Funded Projects

Influenza
(Hong Kong),
Malaria
(Cambodia, Madagascar),
Chikungunya
(Laos, French Guiana, Cambodia, Brazil)...

Funded Projects
Zika Virus
(Guyane, Dakar, Nouvelle-Calédonie),
Helicobacter pylori
(Iran, Morocco, Paris),
Dengue
(Greece, Korea)...

The Transversal Incentive Programs: the Transversal Research Projects (PTR) and International Pasteur Concerted Actions (ACIP)
The Incentive Research Programs and Partnerships Department (SPPI) at the Institut Pasteur Paris offers two calls for projects, ValoExpress and PasteurInnov, to support and guide strategic research programs with high potential for industrial transfer and/or with a foresight of a strong social impact. From the first stage of selection of the projects, a development plan is formed and then follows the project in its evolution. With these two programs ValoExpress and PasteurInnov, the Institut Pasteur intends to respond through innovation to major public health issues in developed and developing countries.

ValoExpress and PasteurInnov have complementary formats, which have been adapted to every step constituting an applicative research project. They cover all scientific areas of the Institut Pasteur.

→ PasteurInnov Call
Launched annually, the PasteurInnov call for projects supports a research program undertaken by a maximum of 4 research groups, up to an amount of 75,000 euros per year over a period of 12-24 months. The aim of such funding is to reach the effective transfer of the technology with a private, public or philanthropic partner.

→ ValoExpress Call
With its 4 annual sessions, the ValoExpress call for project provides funds for short-term research programs (maximum of 12 months), up to an amount of 30,000 euros. They are intended primarily to finance the «lever» steps allowing a project to significantly increase its potential for technology transfer.
Thank you to the researchers of the Institut Pasteur (Paris) and the Institut Pasteur International Network (IPIN),
the Department of Communication of the Institut Pasteur (Paris).
Epidemiological data of this brochure come from the Institut Pasteur website and the World Health Organization.