Réseau International des Instituts Pasteur

Call for 2018 Dual PhD Degree

by

University of Chinese Academy of Sciences

Paris Descartes University

Paris Diderot University

中国科学院上海巴斯德研究所
INSTITUT PASTEUR OF SHANGHAI
CHINESE ACADEMY OF SCIENCES

UNIVERSITÉ PARIS DESCARTES

université PARIS DIDEROT

Program overview

Réseau International des Instituts Pasteur

A doctoral program designed for young scholars to pursue doctoral degree under supervision of a scientist affiliated with Institut Pasteur of Shanghai (IPS), Chinese Academy of Sciences .

A HDR framework: IPS supervisors will be accorded a HDR qualification from both PDeU and PDiU.
Selected candidates will register at both UCAS and PDeU or PDiU, and conduct research mainly at IPS.

Focus	**Degree**	**Scholarship**
Basic and translational research on infectious diseases (pathogens science, immunology and vaccinology)	Both universities (UCAS and PDeU or PDiU) will award a degree of Philosophy Doctor (PhD) separately to the candidate*	Competitive scholarship through a selective procedure by UCAS, IPS and PDeU/PDiU (Sino-French evaluation committee)

For candidates interested in the fields of Life Sciences:

Microbiology and infectious diseases,
host responses (immunology and inflammation),
prophylaxis (vaccines) and therapeutics

** Subject to satisfactory completion of program requirements*

Research programs offered

Project	Principal Investigator
Analysis of cell-associated sexual transmission and dissemination of HIV-1 and Zika viruses in a human cervical explant model	BENICHOU Serge & JIN Xia
Molecular mechanisms by which fungal pathogen crosses the host defense barriers (e.g. Gastrointestinal epithelial and blood-brain barriers)	CHEN Changbin
Characterisation of respiratory pathogens and lung immunity in children with severe pneumonia and immunosuppression	HAO Pei
Characterization of the tropism and vector competence of understudied african zoonotic alphaviruses	LAVILLETTE Dimitri
Molecular regulation of T cell immunity and cancer immunotherapy	LENG Qibin
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Gammaherpesvirus (EBV)-associated lymphomagenesis	LIANG Xiaozheng
Dissect the homeostasis of intestinal innate immune microenvironment	PAN Lei
Neural regulation on lung infection	SU Xiao
Adaptive immune modulation of the innate inflammation	TANG Hong
Microbiota and immune disregulation	TANG Hong
The structure mechanism of viral transcriptional regulation by viral and host factors	WANG Lanfeng
Mechanisms of selective autophagy in the control of homeostasis and infection in the liver	WEI Yu
Decipher the signaling mechanisms by which innate receptors TLRs and C-type lectin receptors collaboratively regulate innate and adaptive immune responses, particularly the IL-17-producing type 3 immune responses.	XIAO Hui
Human Systemic Immunology in Tumor and Infectious diseases	ZHANG Xiaoming
Epigenetic regulation of normal and malignant hematopoiesis	ZHANG Yan
Interactions between host innate immunity and hepatitis C virus	ZHONG Jin

Admissions

Admission Criteria:

(1) Meet admission criteria set by both UCAS, PDeU and PDiU.
(2) Hold a master degree before the beginning of the program, 1st Sept 2018.

Application Process:

Step 1: Identify & contact an eligible supervisor affiliated with IPS. Send CV, research proposal and other required documents to apply for the program.

Step 2: Application review by the Sino-French evaluation committee.

Step 3: Follow the calls for scholarship application to finish required procedures.

Step 4: Announcement of selected candidates.

Application Deadline: June 15, 2018

UCAS scholarship support:

CAS-TWAS President's Fellowship Program for Doctoral Candidates
http://www.fellowship.cas.cn/dms/ProgrammeOverview/1939.jhtml
http://english.ucas.ac.cn/index.php/announcements/4683-2018-cas-twas-president-s-fellowship-programme-for-doctoral-candidates

Useful links:

Institut Pasteur de Shanghai: http://english.ucas.ac.cn/
University of Chinese Academy of Sciences: http://english.ucas.ac.cn/

Contact:

(*IPS) Fernando Arenzana: farenzan@ips.ac.cn; Bo Yu: byu@ips.ac.cn*

(PDeU) *Marc DELPECH: marc.delpech@inserm.fr;*
Mawussi Adalbert: mawussi.adalbert@parisdescartes.fr

(PDiU) Vincent Brunie: Vincent.brunie@univ-paris-diderot.fr

Project title	Interactions between host innate immunity and hepatitis C virus
Brief description	Interactions between host innate immunity and HCV contributes to the outcome of the infection. We will study how HCV induces the interferon signaling, how antiviral innate immune responses suppress HCV and how HCV evades host innate immunity.
Professor	Jin Zhong
Unit of IPS	Unit of Viral Hepatitis
email	jzhong@ips.ac.cn

Project title	Microbiota and immune disregulation
Brief description	Interplay and mutual modeling/remodeling between mucosal immunity and microbiota; dysbiosis and immune disorder in autism and other inflammatory diseases.
Professor	Hong Tang
Unit of IPS	Unit of inflammation and immunopathology
email	htang@ips.ac.cn

Project title	Adaptive immune modulation of the innate inflammation
Brief description	The signaling cascades and molecular mechanisms of how T cells control innate inflammatory responses; novel interventions of chronic inflammartory diseases/autoimmune disorders.
Professor	Hong Tang
Unit of IPS	Unit of inflammation and immunopathology
email	htang@ips.ac.cn

Project title	Characterisation of respiratory pathogens and lung immunity in children with severe pneumonia and immunosuppression
Brief description	Pneumonia is the leading cause of childhood morbidity and mortality, especially in children with compromised immune systems. Inherited or induced immunosuppression enhances susceptibility to extra-cellular bacterial, fungal, emerging or novel pathogens that may not be threatening to most immunocompetent children. How pathogens and lung immunity differ between immunocompromised and immunocompetent children is largely unknown but is critical for pneumonia prevention and management. We assembled a cohort of hospitalized children with community-acquired pneumonia and analyzed associations of infecting pathogens with systemic and lung immune mediators.
Professor	Pei Hao
Unit of IPS	Unit of Pathogen Big Data
email	phao@ips.ac.cn

Project title	Human Systemic Immunology in Tumor and Infectious diseases
Brief description	We have developed a powerful platform “Immune Cellomics” to map all types of human immune cells and their subsets, which is based on Super-complex Flow

	Cytometry and Multi-Staining Immunohistochemistry. With this platform, we first identify disease-specific immune cells/subsets, followed by in-depth analysis of their functions and molecular signatures. Then we will draw a Precision Immunology Map through advanced computational modeling, with the purpose to identify key pathogenic mechanisms and novel theranostic and prognostic immune biomarkers.
Professor	Xiaoming Zhang
Unit of IPS	Unit of Innate Defense and Immune Modulation
email	xmzhang@ips.ac.cn

Project title	Gammaherpesvirus (EBV)-associated lymphomagenesis
Brief description	EBV is tightly associated with all kinds of lymphomas, including B cell and NK/T cell lymphomas. Our study focuses on the host immune regulation and molecular mechanisms of EBV-associated lymphomagenesis, aiming to define the specific target for the novel T cell immunotherapy.
Professor	Xiaozhen Liang
Unit of IPS	Unit of Virus-associated lymphomas
email	xzliang@ips.ac.cn

Project title	Characterization of the tropism and vector competence of understudied african zoonotic alphaviruses
Brief description	During the last decades, climate change, tropical urbanization, the global trade and transportation increases have been recorded worldwide which facilitated dramatic geographical expansions of arthropod-borne viruses (arboviruses) that became, more than ever, major public health threats. So there is a real urgent need to develop new strategic research plans to better understand, anticipate and counteract the spread of arboviruses. Our preparedness program aims to characterize better understudied pathogens commonly found in the field (mosquito, rodents…) in Africa or China, and for which only a few human cases have been described. This PhD project's objectives are i) to analyze which cells and which tissues from insects and mammals can be infected or not by viruses (in vitro tropism); ii) to evaluate the risk of viruses spreading in different countries by establishing mosquito vector competence studies; iii) to develop an animal model to provide some highlight on in vivo tropism and pathogenesis compare to other well characterized alphaviruses. Our research project will improve our knowledge to evaluate the capacity of these viruses to threaten different countries.
Professor	Dimitri LAVILLETTE
Unit of IPS	Unit of Arbovirus interspecies transmission and antivirals
email	dlaville@ips.ac.cn

Project title	The structure mechanism of viral transcriptional regulation by viral and host factors
Brief description	The long-term stable presence of cccDNA mini-chromosome in the nucleus is recognized as the cause of persistent HBV infection in this field. The HBV genome

	is reconstructed into more stable cccDNA in the nucleus by relaxing circular DNA (rcDNA), forming mini-chromosomes with the histone core with the assistance of host histone modification factors and chaperones. Then, the viral pre-genomic RNA (pgRNA) and mRNA are synthesized by host RNA polymerase II (Pol II) in cooperation with different viral or host ranscriptional regulators. At present, Nucleosides, widely used in the treatment of persistent HBV infection, prevent viral replication mainly by inhibiting the activity of HBV polymerase in the cytoplasm. They can not directly reach the nucleus and effectively silence or clear the cccDNA, resulting in a rebound of viral load in patients after drug withdrawal . In order to control persistent infection, patients need long-term and even lifelong medication. In this study, we hope that using the integrated biochemistry, molecular biology, structural biology and other means of clinical research, we could reveal the molecular mechanisms of cccDNA mini-chromosome-related key processes, such as: 1) how cccDNA mini-chromosome is formed? 2) How cccDNA mini-chromosome is transcriptionally regulated by viral or host factors? 3) How to destablize or metablize cccDNA mini-chomosome? Eventually, we can find new therapeutic targets, which can effectively silence or clear cccDNA to cure Chronic hepatitis B infection.
Professor	Lanfeng Wang
Unit of IPS	Unit of Structural biology of pathogenic mechanism
email	lanfwang@ips.ac.cn

Project title	Molecular mechanisms by which fungal pathogen crosses the host defense barriers (e.g. Gastrointestinal epithelial and blood-brain barriers).
Brief description	Life-threatening fungal infections are an increasing clinical problem because of an increase in patient populations who are immunocompromised secondary to cancer chemotherapy, therapeutic immuno-suppression, and the global AIDS pandemic. In order to establish a successful infection, the fungal pathogen has to evolve strategies to cross the natural defense barriers of host, such as the gastrointestinal and blood-brain barriers. Using the opportunistic human fungal pathogens Candida albicans and Cryptococcus neoformans as model systems , we combined in vitro and in vivo tools to identify key host and pathogen factors contributing to this dynamic activity. We hope our study will shed lights on development of novel fungal vaccines and anti-fungal drugs.
Professor	Changbin Chen
Unit of IPS	Unit of Pathogenic Fungal Infection & Host Immunity
email	cbchen@ips.ac.cn

Project title	Analysis of cell-associated sexual transmission and dissemination of HIV-1 and Zika viruses in a human cervical explant model
Brief description	The goal of our project is to investigate the mucosal transmission of HIV-1 and Zika (ZIKV) viruses throughout the female genital tract, using a cervico-vaginal explant model to analyze the HIV-1 and ZIKV

	cell-free and cell-to-cell transmission to the target cells.
Professor	Serge Benichou and Xia Jin
Unit of IPS	Unit of International Associated Laboratory VirHost Unit of Viral Disease and vaccine Translational Research
email	serge@ips.ac.cn; xjin@ips.ac.cn

Project title	Dissect the homeostasis of intestinal innate immune microenvironment
Brief description	The goal of our project includes three aims: 1) Innate immune signaling homeostasis: to study the regulatory crosstalk between mucosal innate immune pathway and other biological signaling pathways, and to decipher the inter-organ innate immune communication; 2) Cellular homeostasis: to study how innate immune signaling is involved in the regulation of intestinal stem cell (ISCs) mediated tissue repair during combating pathogens; 3) Commensal flora homeostasis: to learn the relationship among gut commensal microflora, intestinal innate immunity and the fat/energy metabolism.
Professor	Lei Pan
Unit of IPS	Unit of Intestinal microenvironment and health
email	panlei@ips.ac.cn

Project title	Neural regulation on lung infection
Brief description	Interplay between nervous systems, especially pulmonary parasympathetic inflammatory reflex and lung immune systems; focuses on the molecular mechanisms underlying signaling pathways and therapeutic targets for acute lung infection and injury.
Professor	Xiao Su
Unit of IPS	Unit of Respiratory Infection and Immunity
email	xsu@ips.ac.cn

Project title	Epigenetic regulation of normal and malignant hematopoiesis
Brief description	Our laboratory is broadly interested in understanding the mechanisms that regulate the development and differentiation of the hematopoietic and immune cells in both normal and disease (especially in pathogen infections and cancer) states. We study the questions using molecular, cellular and immunological approaches, as well as genetically modified animal models.
Professor	Yan Zhang
Unit of IPS	Unit of Hematopoietic stem cell and transgenic animal model
email	yan_zhang@ips.ac.cn

Project title	Molecular regulation of T cell immunity and cancer immunotherapy
Brief description	The goal of our project is to better understand the molecular regulation of T cell response and immunopathogenesis of Zika virus and enterovirus infections. We

	wish our research results can ultimately be translated to preventive or therapeutic strategies for viral infectious diseases or cancers.
Professor	Qibin Leng
Unit of IPS	Unit of Immune Regulation
email	qbleng@ips.ac.cn

Project title	Mechanisms of selective autophagy in the control of homeostasis and infection in the liver
Brief description	Liver is a major organ of metabolic-stress-induced autophagy of which deregulation is closely associated with diseases, including steatohepatitis, viral hepatitis, cirrhosis and hepatocellular carcinoma (HCC). Selective autophagy involves recognition and delivery of specific substrates by autophagy receptors for degradation, ensuring fundamental hepatic functions. We investigate selective autophagy in degradation of protein aggregates in hepatocytes, as some autophagy receptors are important components of Mallory bodies in hepatocytes of patients suffering from steatohepatitis, alcoholic hepatitis and HCC. For viral infection, we investigate the mechanisms of selective autophagy and autophagy proteins in the control of hepatitis B virus infection. The aim is to provide insight into mechanistic maintenance of homeostasis by selective autophagy in the liver under healthy and disease conditions.
Professor	Yu Wei
Unit of IPS	Unit of Hepatitis B Virus and Liver Disease
email	yuwei@ips.ac.cn

Project title	Decipher the signaling mechanisms by which innate receptors TLRs and C-type lectin receptors collaboratively regulate innate and adaptive immune responses, particularly the IL-17-producing type 3 immune responses.
Brief description	The purpose of this study is to identify molecular components involved in the metabolic reprogramming of dendritic cells, a process we found to be crucial for the induction of IL-23 and therefore the initiation of ILC3 and CD4+ Th17 responses. The outcome of this study will provide novel insights into the understanding of anti-fungal defense and autoimmune pathogenesis, as well as a framework for future development of therapeutic approaches.
Professor	Hui Xiao
Unit of IPS	Unit of Immune Signaling and Regulation
email	huixiao@ips.ac.cn