



Spotlight

WIV and IPS Signed a Strategic Cooperation Agreement

Wuhan Institute of Virology (WIV) and Institut Pasteur of Shanghai (IPS) signed a Strategic Cooperation Agreement in Wuhan on March 17, 2016. Mr. Hong Tang, the Director General, Mr. Fernando ARENZANA-SEISDEDOS, the Co-Director, Mr. Si Shengli, the CPC Secretary and Mr. Ke Lan, the Deputy Director of IPS, Mr. Philippe Maurin, the Attaché for Science and Technology of French General Consulate in Wuhan, and Mr. Xinwen Chen, the Director General, Mr. Gengfu Xiao, the Deputy Secretary of Party Committee, Mr. Changcai He, the Deputy Director and Mr. Zhiming Yuan, the Director of BSL-4 Laboratory of WIV were present at the signing ceremony. The signing ceremony also gathered researchers and staffs of both sides.

During the ceremony, as the representatives from both sides, Mr. Xinwen Chen and Mr. Hong Tang delivered their addresses with passion. Both of them hoped our two institutes to strengthen cooperation and achieve the advantage compensation around the “CAS Pioneer Initiative”. By utilizing the two institutes’ current international resources jointly, they also wished that WIV and IPS will respond actively to the initiatives of “Go Global” and “One Belt, One Road” proposed by our government, and make a significant contribution to research in life sciences, especially in the prevention and control of infectious diseases. Mr. Philippe Maurin expressed warm congratulations to the signing of strategic cooperation agreement.

He assured that the outcome of this cooperation will benefit the Sino-France collaboration on prevention and control of infectious diseases undoubtedly. As witnesses, the agreement was signed by Mr. Xinwen Chen and Mr. Hong Tang.

As the important carriers in Chinese Academy of Sciences (CAS) under the Sino-France scientific cooperation, WIV and IPS have amazing strengths in virology studies and prevention and control of infectious diseases respectively. WIV and IPS will share their complementary experience and expertise to elaborate cooperation on basic research and applied research on infection and immunity of infectious diseases, biosafety laboratories promotion, education and training programs and the transformation of scientific achievements, so as to respond with synergistic efficiency to public health challenges in our country.



Registration to Nature Conference on Viral Infection and Immune Response is Now Open

The Nature Conference on Viral Infection and Immune Response (VIIR) is jointly hosted by Wuhan Institute of Virology, Chinese Academy of Sciences, Nature Microbiology, Chinese Society for Immunology and Committee on Virology, Chinese Society for Microbiology, which will be held on Oct 21-23, 2016 in Wuhan, China.

The viral diseases have been a threat to human health, and the relevant studies have become one of the hotspots of life science. Infection and immunity are the fundamental to understand both acute and chronic viral diseases. To understand viral immunopathogenesis is the key to counteract viral infection. The conference will bring together leading international scientists to explore emerging themes in

viral infections and immune dysregulation, and provide promising venues for immune interventions. With 500 participants all around the world, this conference will focus on 6 topics: epidemiology of emerging viral disease, persistent viral infection and immune dysregulation, viral pathogenesis, immune intervention and prevention of disease, innate antiviral immunity and induction of systemic adaptive immunity.

As one of the co-organizers, WIV is confident that the conference will contribute greatly to the development of studies on viral infection and immune response, provide guidance on the immune intervention and remove barriers to international research collaboration. We look forward to the engaging discussions, exchanges of ideas, and to the major outcomes of Nature Conference on Viral Infection and Immune Response.

For further details about registration to the conference, please visit the websites below:

- (1) <http://www.nature.com/natureconferences/viir2016/index.html>
- (2) <http://viir2016.csp.escience.cn>



Experts from Ministry of Health (Singapore) Visited WIV

On March 9, 2016, Prof. Raymond Lin, the Head and Senior Consultant of National Public Health Laboratory in Ministry of Health (MOH, Singapore), Dr. Se Thoe Su Yun, the Deputy Director of Biosafety Branch,

Dr. Cui Lin, the Senior Principle Scientific Officer of National Public Health Laboratory, Mr. Roger Chua, the Laboratory Manager of National Public Health Laboratory, and Ms. Anne Lee, the



Cooperation

Public Health Officer of National Public Health Laboratory in MOH paid a visit to WIV.

On the conference, as the representatives from WIV, Ms. Yanyi Wang, the Deputy Director and Mr. Zhiming Yuan, the Director of BSL-4 Laboratory delivered their welcome addresses to the participants. Both of them wished WIV and MOH can develop the scientific cooperation in more depth. Then the participants from both sides exchanges their experiences and understandings in the conceptual laboratory design and construction and key issues to be addressed,

the development and implementation of China's biosafety regulations, and the possibilities for further collaboration.



WIV Has Joined Pandemic Influenza Preparedness (PIP) Framework

Recently, WIV has joined Pandemic Influenza Preparedness (PIP) Framework. It is believed that this participation will push the current international cooperation level of WIV to a new high under the global context. Pandemic influenza is a rare, unpredictable occurrence. To prepare vaccines, efficient and comprehensive sharing of relevant viruses is essential to carry out the analyses needed to determine

the exact makeup of the pandemic vaccine. Equally important, the benefits derived from sharing these materials must be distributed throughout the world according to need and vulnerability to public health risks. Creating and maintaining a dynamic, equitable balance between sharing influenza viruses that have pandemic potential, and distributing the benefits that result, is the purpose of the WHO PIP Framework.

The PIP Framework was unanimously adopted by the 194 countries of the World Health Assembly on 24 May 2011. PIP establishes many responsibilities among countries, national laboratories, vaccine manufacturers, and WHO. Under the PIP Framework, stakeholders have specific responsibilities for sharing viruses and contributing to a global benefit-sharing system. For instance, Member States should support their national influenza centres and ensure that they share influenza viruses with pandemic potential with WHO. Industry responsibilities include paying annual



Cooperation

donations to the Partnership Contribution mechanism and signing a Standard Material Transfer Agreement-2 (known as "SMTA2").

The global reach of pandemic influenza requires a global response, and a global response requires solidarity among all countries and stakeholders. The development

of a universal and equitable system for sharing influenza viruses and distributing the benefits arising from such sharing, will contribute significantly to improving the global response to pandemic influenza when it strikes.

Link: WHO PIP Framework - <http://www.who.int/influenza/pip/en/>

Research Progress

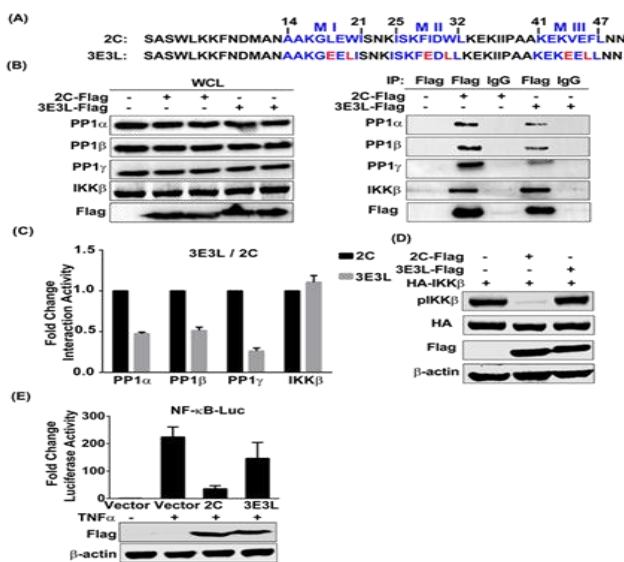
A Novel Mechanism to Inhibit NF- κ B Signaling Pathway Was Revealed

The NF- κ B signaling network, which is an ancient signaling pathway, plays a pivotal role in innate immunity that constitutes a first line of defense against invading pathogens including viruses. However, numerous viruses possess evolved strategies to antagonize the activation of NF- κ B signaling pathway.

In recent study, the research group of zoonotic diseases led by Prof. Hanzhong Wang demonstrated that EV71 2C interacts with all isoforms of protein phosphatase 1 (PP1) catalytic subunit (PP1 α , PP1 β and PP1 γ) through PP1 docking motifs. EV71 2C has no influences on subcellular localization of PP1. In addition, the PP1-binding-deficient EV71 2C mutant 3E3L nearly completely lose the ability to suppress IKK β phosphorylation and markedly restore NF- κ B activation, thereby indicating that PP1-binding is efficient for EV71 2C-mediated inhibition of IKK β phosphorylation and NF- κ B activation.

Notably, they revealed that other human enteroviruses including poliovirus (PV), Coxsackie A virus 16 (CVA16), and Coxsackie B virus 3 (CVB3), use 2C proteins to recruit PP1, leading to the inhibition of IKK β phosphorylation. Their findings indicate that enteroviruses exploit a novel mechanism to inhibit IKK β phosphorylation by recruiting PP1

and IKK β to form a complex through 2C proteins, which ultimately results in the inhibition of NF- κ B signaling pathway. These findings may be particularly important for understanding the pathogenicity of enteroviruses.



PP1 binding is crucial for EV71 2C-mediated inhibition of IKK β phosphorylation and NF- κ B activation



Scientists from WIV have Isolated One Zika Virus Strain

By cooperation with Shenzhen Entry-Exit Inspection and Quarantine Bureau, scientists from WIV have isolated one Zika virus strain, which will assist scientists study the transmission pattern of the virus while provide a foundation for the invention of reagent and vaccine.

The strain was isolated from blood and urine samples from patients by the research group of flavivirus infection and prevention led by Prof. Bo Zhang. Through

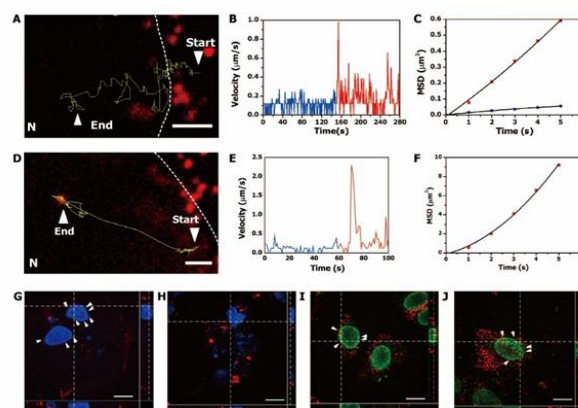
the communications by Mr. Gengfu Xiao, the Deputy Secretary of Party Committee in WIV, the research group obtained the last blood and urine samples (50 microliters) from Shenzhen Entry-Exit Inspection and Quarantine Bureau. By countering the limited blood and urine samples, the research group isolated the virus successfully through the inoculation of mosquito cells and repeated passage for 3 times.

With the confirmed imported Zika virus cases and the weather beginning to warm up across the country, China is on high alert. Zika virus disease is caused by Zika virus that is spread to people primarily through the bite of an infected *Aedes* species mosquito. The most common symptoms of Zika are fever, rash, joint pain, and conjunctivitis (red eyes). The illness is usually mild with symptoms lasting for several days to a week after being bitten by an infected mosquito.



A New Strategy to Reveal the Mechanisms and Dynamic Global Picture of the Life Cycle of a Virus

Real-time, long-term, single-particle tracking (SPT) provides us an opportunity to explore the fate of individual viruses toward understanding the mechanisms underlying virus infection, which in turn could lead to the development of therapeutics against viral diseases. However, the research focusing on the virus assembly and egress by SPT remains a challenge because established labeling strategies could neither specifically label progeny viruses nor make them distinguishable from the parental viruses.



Visualization of virus entry and transport in the cytoplasm by parental rPrV-HT

Research Progress

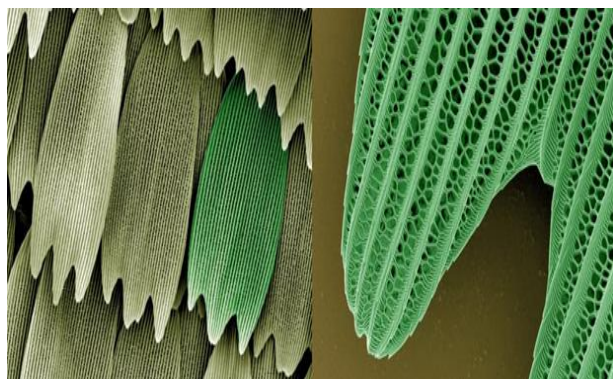
Recently, by cooperation with Prof. Daiwen Pang from Wuhan University, the research group of zoonotic diseases led by Prof. Hanzhong Wang has established a temporally controllable capsid-specific HaloTag labeling strategy based on reverse genetic technology. VP26, the smallest pseudorabies virus (PrV) capsid protein, was fused with HaloTag protein and labeled with the HaloTag ligand during virus replication. The labeled replication-competent recombinant PrV harvested from medium can be applied directly in SPT experiments without further modification.

Thus, virus infectivity, which is critical for the visualization and analysis of viral

motion, is retained to the largest extent. Moreover, progeny viruses can be distinguished from parental viruses using diverse HaloTag ligands. Consequently, the entire course of virus infection and replication can be visualized continuously, including virus attachment and capsid entry, transportation of capsids to the nucleus along microtubules, docking of capsids on the nucleus, endonuclear assembly of progeny capsids, and the egress of progeny viruses. In combination with SPT, the established strategy represents a versatile means to reveal the mechanisms and dynamic global picture of the life cycle of a virus.

Science Tips

The Prize-Winning Work Show of the Second Competition on Popular Science Photography in WIV



1.The Microscopic Structure of Scales on Butterfly Wings (By Ding Gao)

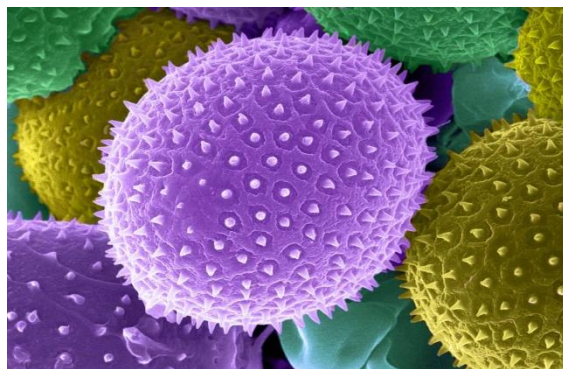


2.Newborns (By Yuzhou Xiao)

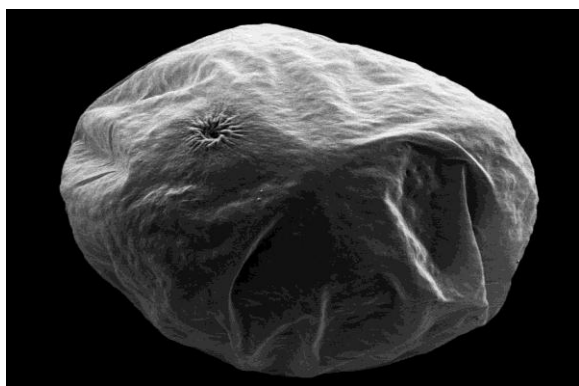
Science Tips



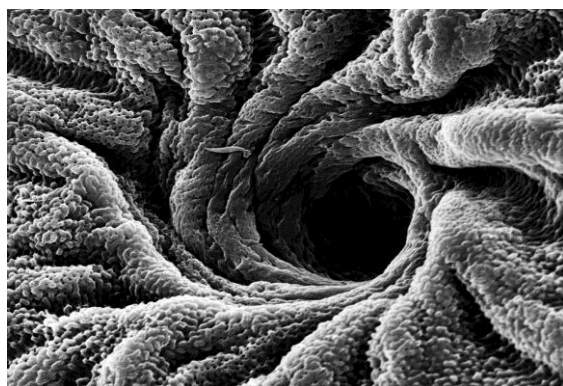
3. Forage (By Yuzhou Xiao)



4. Soybean Rust Spores (By Bichao Xu)



5-1. Fertilized Eggs of Fish (By Bichao Xu)



5-2. "The Black Hole" (By Xuchao Xu)

Express News

Professorship under CAS President's International Fellowship Initiative

Prof. William J Britt from University of Alabama is awarded the Visiting Fellowship under the CAS President's International Fellowship initiative (PIFI) for 2016. This year, he will come to WIV and develop scientific research project on congenital human cytomegalovirus infection and neural development disorders with Prof. Minhua Luo, who is the principle investigator of neurovirology

research group in WIV. The CAS President's International Fellowship for Visiting Scientists supports 200 high-caliber international scientists to carry out cooperative projects at CAS-affiliated institutions for 1-12 months every year. To learn more details about PIFI, please visit the website below:

http://english.bic.cas.cn/AF/Fe/201408/t20140807_125680.html

