



Spotlight

Nature Conference: Viral Infection and Immune Response

The Nature Conference on Viral Infection and Immune Response (VIIR), which will be held on Oct 21-23, 2016 in Wuhan, aims at bringing together leading international scientists to explore emerging themes in viral infections and immune dysregulation, and providing promising venues for immune interventions.

Time and Venue:

October 21-23, 2016; Wuhan, China

Organizers:

Wuhan Institute of Virology, Chinese Academy of Sciences
Nature Microbiology
Chinese Society for Immunology
Committee on Virology, Chinese Society for Microbiology

Scientific Organizing Committee:

Hong Tang Key Laboratory of Infection and Immunity, Chinese Academy of Sciences, China
George Gao Institute of Microbiology, Chinese Academy of Sciences, China
Andrew Jermy Nature Microbiology, UK
Nonia Pariente Nature Microbiology, UK

Local Organizing Committee:

Xin-wen Chen Wuhan Institute of Virology, Chinese Academy of Sciences
Yan-yi Wang Wuhan Institute of Virology, Chinese Academy of Sciences
Bin Wei Wuhan Institute of Virology, Chinese Academy of Sciences
Zhong Huang Chinese Society for Immunology, Chinese Academy of Medicine
Ying Wu Chinese Society for Microbiology, Division of Virology

Session Topics

Epidemiology of emerging viral disease	Persistent viral infection and immune dysregulation
Viral pathogenesis	Immune intervention and prevention of disease
Innate antiviral immunity	Induction of systemic adaptive immunity



Spotlight

Speakers List

•KEYNOTE SPEAKERS

Thirumala-Devi Kanneganti St Jude Children's Research Hospital, USA
Hong-bing Shu Wuhan University, China

•PLENARY SPEAKERS

George Gao Institute of Microbiology, Chinese Academy of Sciences, China
Elodie Ghedin New York University, USA
Malik Peiris The University of Hong Kong, China
Hualan Chen Harbin Veterinary Research Institute, Chinese Academy Agricultural Sciences, China
Fusheng Wang Beijing Institute of Infectious Diseases, China
Sharon Lewin University of Melbourne, Australia
Andrea L Cox Johns Hopkins University, USA
James Crowe Vanderbilt University, USA
Wendy Barclay Imperial College London, UK
Kwok-Yung Yuen The University of Hong Kong, China
Amadou Sall Institut Pasteur of Dakar, Senegal
Nancy Sullivan National Institute of Allergy and Infectious Diseases, NIH, USA
Dennis Burton The Scripps Research Institute, USA
Rafick-Pierre Sekaly Case Western Reserve University, USA
Paul Klenerman University of Oxford, UK
Kanta Subbarao National Institute of Allergy and Infectious Diseases, NIH, USA
John Schoggins University of Texas Southwestern, USA
James Chen University of Texas Southwestern, USA
Gong Cheng Tsinghua University School of Medicine, China
Ed Mocarski Emory University, USA
Bing Sun Institut Pasteur of Shanghai, CAS, China
Hai Qi Tsinghua University School of Medicine, China
David Masopust University of Minnesota, USA
Jose Villadangos The University of Melbourne, Australia

Contact Us

Registration Websites: <http://www.nature.com/natureconferences/viir2016/index.html>
<http://viir2016.csp.escience.cn>

VIIR Conference Secretariat:

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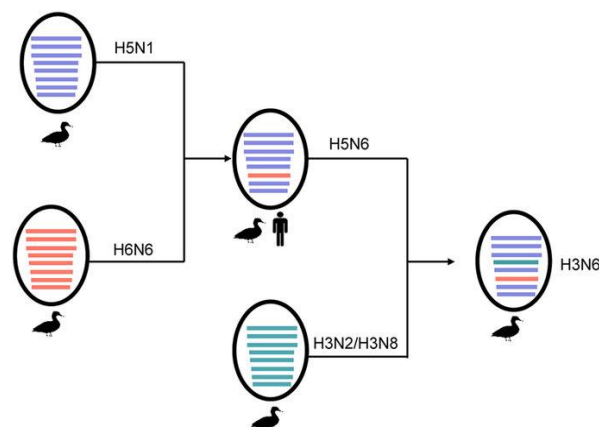
Scientist in WIV achieves a progress in study on reassortment of influenza viruses

Multiple infections of avian influenza viruses (AIVs) in poultry or wild birds contribute to the continued evolution of H5 subtype viruses in nature and provide potential recombination of AIVs of different origins. In this study, by collaboration with Prof. Qiyun Zhu in Lanzhou Veterinary Research Institute, Chinese Academy of Agricultural Sciences and Prof. Hualan Chen in Harbin Veterinary Research Institute, the Chinese Academy of Agricultural Sciences, Prof. Jie Cui in WIV, carried out surveillance of AIVs in ducks, geese and the environment of a community in Hunan province, China, from 2014–2015.

They isolated multiple co-circulated AIVs including H3N2, H3N8, and H5N6, and, most importantly, a novel reassortant: H3N6. Phylogenetic analyses suggest that H3N6 is highly likely derived from H5N6, which has recently been shown to have zoonotic potential with human infections. Studies with mammalian cell lines and a mouse model indicate that four selected AIVs of duck or goose origin can infect MDCK and A549 cells but have low pathogenicity in mice. They

propose that a potential co-circulation of multiple subtypes including H5N6 in local area may result in the production of novel subtypes such as H3N6 by gene reassortment.

In summary, their study demonstrates that domestic duck and goose farms in southern China provide an ecosystem for co-circulation of multiple AIVs and facilitate the generation of novel reassortants such as H3N6 that could potentially infect mammals. Thus, large-scale surveillance of related AIVs in waterfowl in farms and mammals in surrounding areas are urgently needed in southern China.



Possible genesis of the novel H3N6 reassortant.

A new function of flavivirus NS2B in virion assembly is uncovered

Flavivirus nonstructural protein 2B (NS2B) is a transmembrane protein that functions as a cofactor for viral NS3 protease. The cytoplasmic region (amino acids 51-95) alone of NS2B is sufficient for the NS3 protease activity, whereas the role of transmembrane

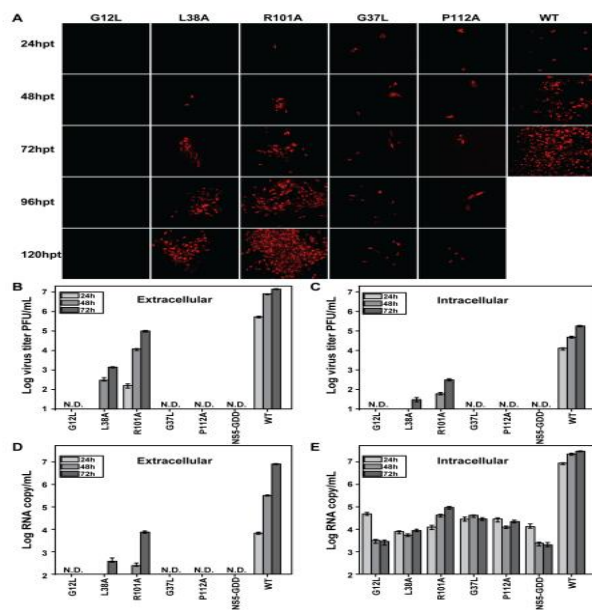
domains (TMDs) remains obscure. The Research Group of Flavivirus Infection, led by Prof. Bo Zhang demonstrates for the first time, that flavivirus NS2B plays a critical role in virion assembly.

Research Progress

Using Japanese encephalitis virus (JEV) as a model, they performed a systematic mutagenesis at the flavivirus-conserved residues within the TMDs of NS2B. As expected, some mutations severely attenuated (L38A and R101A) or completely (G12L) destroyed viral RNA synthesis. Interestingly, two mutations (G37L and P112A) reduced viral RNA synthesis and blocked virion assembly. None of the mutations affected the NS2B-NS3 protease activity. Because mutations G37L and P112A affected virion assembly, they selected revertant viruses for these two mutants. For mutant G37L, a substitution with G37F, G37H, G37T, or G37S restored virion assembly. For

mutant P112A, an insertion of K at position K127 (leading to K127KK) of NS2B rescued virion assembly. A biomolecular fluorescent complementation (BiFC) analysis demonstrated: (i) mutation P112A selectively weakened the NS2B/NS2A interaction; (ii) the adaptive mutation K127KK restored the NS2B/NS2A interaction. Collectively, their results demonstrate that, besides as a cofactor for NS3 protease, flavivirus NS2B also functions in viral RNA replication as well as virion assembly.

Many flaviviruses are important human pathogens. Understanding the molecular mechanisms of viral infection cycle is essential for vaccine and antiviral development. In this study, the research group demonstrates that the TMDs of JEV NS2B participate in both viral RNA replication and virion assembly. Viral genetic study and BiFC assay demonstrated that interaction between NS2B and NS2A may participate in modulating viral assembly in flavivirus life cycle. Compensatory mutation analysis confirmed that there was a correlation between viral assembly and NS2B/NS2A interaction. TMDs of NS2B may serve as a novel antiviral target to prevent flavivirus infection and the structure determination of NS2B will help to understand the function mechanism of NS2B in viral RNA replication and assembly. The results have uncovered a new function of flavivirus NS2B in virion assembly, possibly through interaction with the NS2A protein.



Characterizations of the phenotypes of NS2B mutants in the context of 778 JEV infectious clone.

Glycan-deficient PrP stimulates VEGFR2 signaling via glycosaminoglycan

One of the most common protein post-translational modifications is N-linked glycosylation. N-linked glycosylation is

important in proper protein folding, transit to the cell surface and secretion, in a protein, as well as cell context dependent manner. The

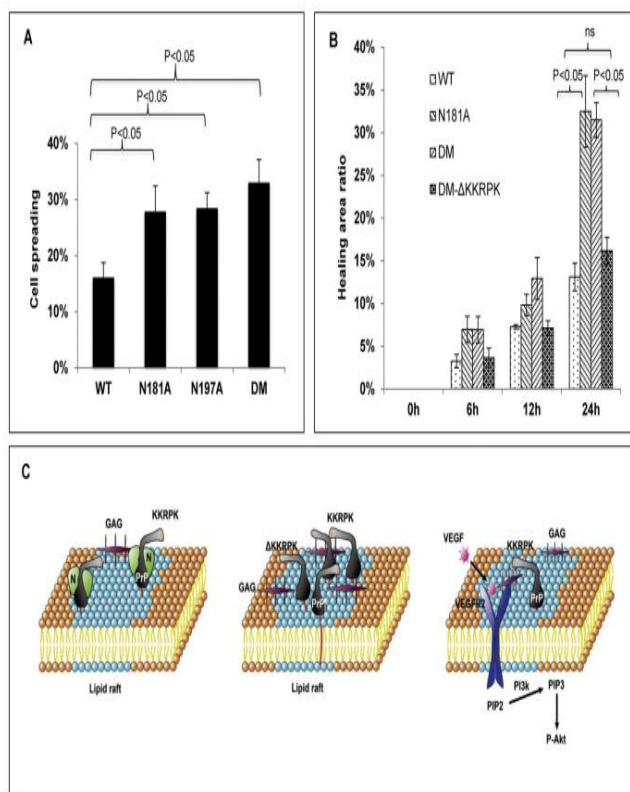


Research Progress

normal cellular prion protein, PrP, is a widely expressed, highly conserved, glycosylphosphatidylinositol (GPI)-anchored cell surface glycoprotein. The two N-linked glycosylation sites on human PrP are located at the C-terminus at residues 181 and 197. A plethora of more than 40 proteins have been reported to bind PrP. In addition, PrP also binds divalent cations, such as copper and zinc, lipids, nucleic acids and GAG. However, other than being essential for the pathogenesis of prion diseases, the normal functions of PrP remain obscure; Prnp^{-/-} mouse is normal without apparent phenotype. Whether the two glycans are important in PrP biology is debated. In some cell models, glycan-deficient PrP is retained in the cytosol, unable to reach the cell surface. On the contrary, other studies find them to be dispensable for cell surface expression. Even though the two N-linked glycans are not essential for the pathogenesis of prion diseases, they do contribute to disease phenotypes as well as strain specificity of some infectious prion. However, the underlying mechanisms by which N-linked glycans modulate disease phenotype or strain specificity are not known.

Because of these ambiguities, the Research Group of Prion Cell Biology led by Prof. Chaoyang Li investigated whether the two N-linked glycans were important in PrP biology using CHO cell, which lacked detectable endogenous hamster PrP. They transfected a wild type (WT) human PrP; a single glycan site mutant (SM) PrP, in which one of the glycosylation sites, asparagine (N) 181, was altered to an alanine (A) (N181A); another SM PrP, in which the other site, N197, was mutated to an A (N197A); a double mutant (DM) PrP, in which both sites were replaced

with A individually into CHO cells. These mutated PrP are collectively referred to as glycan-deficient PrP. They find that all glycan-deficient PrP are expressed on the cell surface in levels comparable to WT PrP. However, glycan-deficient PrP appears to partition more in lipid raft than wild-type PrP. Furthermore, glycan-deficient PrP forms complex with VEGFR2 and GAG resulting in the activation of VEGFR2 and the PI3K-Akt signaling pathway. These biochemical alterations also resulted in changes in cellular behavior; compared to cells with wild type PrP, cells with glycan-deficient PrP are more adhesive and more mobile. Collectively, these results suggest that in CHO cells, one of the functions of N-linked glycans on PrP is to negatively regulate PrP functions.



MG and UG PrP cells tend to spread and migrate faster than WT PrP cells.

The 7th International Symposium on Emerging Viral Diseases

Emerging viral diseases have posed a significant global threat to public health in recent times and there is a great need to build international capacity to better respond and counteract against future emerging viral disease events. In this context, Wuhan Institute of Virology, Chinese Academy of Sciences launched the International Symposium on Emerging Viral Diseases (ISEVD) in 2004. Up to now, 6 International Symposia on Emerging Viral Diseases Control have been held, all of which provides face-to-face communication opportunities for experts and scholars in the

field of emerging viral diseases at home and abroad and facilitates the development of emerging viral diseases control.

The 7th ISEVD will be held on October 19 to 21 in 2016. This year, the symposium aims at sharing latest findings, engaging in stimulating discussions and establishing collaborations with leading fellow scientists on emerging viral diseases all over the world. The conference will focus on four topics: (1) virus discovery, epidemiology and evolution; (2) antiviral and vaccine; (3) virus-host interaction, and (4) viral replication. As the hosting organization, WIV is pleased to welcome you to join us in Wuhan, China's historic and energetic city. We look forward to the engaging discussions, exchanges of ideas, and to the major outcomes of the 7th International Symposium on Emerging Viral Diseases.

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The 4th International Symposium for Herpes Virus, Associated Diseases and Antiviral Development

With the rapid development of economic globalization, the amount of cases of infectious diseases caused by herpes virus is increasing gradually, which menaces the public health security heavily. Some serious infections, neoplastic disease and developmental malformation related to herpes virus, such as encephalitis, nasopharyngeal carcinoma and hearing loss in neonates, pose deadly threats to human

life. Therefore, studying the pathogenesis of herpes virus, the associated diseases, and developing the countermeasures to them play significant roles in maintaining the economy development and society stability.

Under the circumstance, the 4th International Symposium for Herpes Virus, Associated Diseases and Antiviral Development will be held on November 5 to 7, 2016 in Wuhan, China. The symposium will focus on the following themes:



Upcoming Events

1.the pathogenesis of herpes virus associated diseases; 2.the antiviral strategies in herpes virus associated diseases; 3.the function of herpes virus genes; 4.mechanisms of herpes virus persistence infection, latency, and reactivation; 5.immune escape and host antiviral immune response during herpes virus infection; 6.screening, development and application of antiviral drugs.

We are confident that the symposium will contribute greatly to the development of studies on herpes virus, provide guidance on its countermeasures and remove barriers to international research

collaboration. We are looking forward to seeing you in Wuhan!

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Science Tips

Glorious History, Brilliant Future

—— A review and an outlook of *Virologica Sinica*

In 2016, *Virologica Sinica* will be 30 years old! The editorial staff presents herein the milestones and great achievements of the journal in the previous decades, hoping that their publication efforts will make more contributions for the world virology community.

The first issue of *Virologica Sinica* was published in 1986. In 2007, the Chinese journal was transformed to a fully English publication, which was then launched worldwide in 2008 and included in PubMed/Medline in 2010. In 2015, the journal was included in SCI, which was a privilege enjoyed by a Chinese virology publication for the first time. Contents of the journal include research papers, reviews and major events in virology, epidemiology, vaccinology and related bio-medicine

fields. The mission of the journal is to promote academic communication and international cooperation. From 2013 to 2015, the journal was rated as “the most influential international journal of China” three years on end. The publication has won widespread recognition in the world academic community.

The journal attaches importance on various fields of virology researches, and constantly keeps pace with the research trend and ongoing events. In 2015, special issues of “Phage and Therapy” and “Oncogenic Viruses and Cancer” were published; in February 2016, a special issue of “Coronaviruses” was published. The issues concerning “Zika Virus” and “Hemorrhagic Fever Virus” specially will come out soon. A monograph marking the 30th anniversary of the journal is also underway.



Science Tips

The journal spares no effort to improve its quality and presence. Renowned scientists at home and abroad have been invited to work as members of the editorial board. There are also over 20,000 reviewing experts. The quantity and quality of papers submitted have been on steady rise over the years. Researchers with over 400 organizations from over 30 countries and regions have submitted researches to our journal. Readers of the journal are widely spread in 116 countries and regions around the globe. The download traffic and citation count have been growing year by year. Most of the papers have quite frequent citations within two years after being published on the journal.

Virologica Sinica has the advantage of fast publication. The web edition is attached with top priority. Papers having passed review will be immediately uploaded online. In 2015, the average period of publication was 54 days. Publication fee is exempted. Free English

polishing service is also offered to attract excellent submittals and help improve the quality thereof. For typesetting, XML format is applied to realize synchronous publication on traditional media, new media and social media.

In the last three decades, *Virologica Sinica* has gone through tough transmission, grabbed opportunities of globalization, and lived up to the high demands of SCI. Now on a higher platform, we will continue to improve the academic level, solicit more high quality papers, compile theme monographs, take part in international symposiums, establish online platform, and bring our journal to more readers and researchers. Looking back, what we've achieved is glorious; looking ahead, we still have missions to accomplish. *Virologica Sinica* (English edition) will strive for the top notch in world virology community, and make contributions for the virology researches of China!



Virologica Sinica

中国病毒学（英文版）



Professors from University Utrecht paid a visit to WIV

On April 8, 2016, Prof. Frank J.M. van Kuppeveld and Prof. Berend Jan Bosch from University Utrecht paid a visit to WIV. By the invitation of Prof. Xinwen Chen, both of them gave excellent oral presentations on “Picornavirus Replication and Antiviral Drug Development” and “Coronavirus Entry into Host Cells” respectively on an academic seminar. On the seminar, Prof. Kuppeveld talked about his work and progress in study on picornaviruses, and Prof. Bosch talked about the entry of coronaviruses into their host cell and cover topics dealing virus-receptor interaction, membrane fusion, structure of the spike protein and its implication for development of intervention

strategies. Scientists in WIV discussed the related areas with them thoroughly and we believe that the ongoing cooperation between University Utrecht and WIV will be further deepened.



Recent job openings

By contributing to the ongoing consolidation of the Center of Biosafety Big Science Facility of CAS, WIV has launched a global recruitment under the talent programs of CAS. There are several position openings: (1) Academic deputy director (virology); (2) Chief scientist (biosafety, virology, immunology, vaccinology and antiviral drug); (3) Technical expert in cryo-EM (instrumentation science and technology); (4) Technical expert on animal models for viral diseases (laboratory animal science); (5) Technical expert on bioprocess (biochemistry and bioengineering); (6) Principle investigators (virology, immunology, nanobiology and vaccinology); (7) Distinguished research fellow (virology, immunology, vaccinology and antiviral drug).

For the further information about the job

responsibilities, relevant requirements and applications, please contact Ms. Dan Gao or Mr. Hongge Xu in Office of Organization and Human Resource in WIV.

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