

## Sujit Kumar Pujhari Ph.D.

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### Education

- **Postgraduate Institute of Medical Education and Research, Chandigarh, India**  
Ph.D. in Virology (Medical) 2006-2011  
Project: Viral load and polymorphism studies on Envelope (E), prM gene, TNF- $\alpha$  promoter and their correlation with clinical severity and outcome of Japanese encephalitis.
- **Jawaharlal Nehru University, New Delhi, India**  
Advance PG Diploma Bio-informatics 2004-2005  
Project: Identification and manipulation of critical residues in phytase to increase its thermos-stability.
- **Sambalpur University, Sambalpur, Odisha, India**  
Master of sciences in Life sciences 2001-2003  
Bachelor of Science (Honors) 1999-2001

### Professional Experience

#### Postdoctoral

- The Pennsylvania State University, University Park, USA, 2015 to present  
Project 1: Underpinning the molecular mechanism of Wolbachia-mediated pathogen inhibition.  
Project 2: ReMOT control delivery of CRISPR/Cas9 to generate transgenic mosquito  
Project 3: Investigation of Zika virus entry process in vertebrate and invertebrate hosts.
- Vaccine and Infectious Disease Organization, University of Saskatchewan Canada, 2012 to 2015  
Project 1: Development of replicon vaccine for Porcine Respiratory and Reproductive Syndrome Virus (PRRSV).  
Project 2: Role of structural proteins of PRRSV (Gp2a and E) in host-pathogen interactions.

#### Postdoctoral Research Associate

- Postgraduate Institute of Medical Education and Research, Chandigarh, India, 2011 to 2012.  
Project 1: Role of innate immunity in Hepatitis E virus pathogenesis.

#### Teaching

- Lecturer in Bio-informatics: GGSDS College, Punjab University, Chandigarh, India 2005-2006.  
Courses taught (Masters and B.Sc.): Sequence Bioinformatics, Drug designing and

Pharmaco- informatics and System biology.

## Grants

### Completed

- Funding agency: International Society of Infectious Disease (ISID), USA, 2010.  
Amount: 6000 USD (Career development grant during Ph.D.)  
Role: Principal Investigator  
Title: Significance of pattern recognition molecules (Toll like Receptors) in the neuro- pathogenesis of Japanese encephalitis.

## Publications

17 International (9 first author), 3 manuscripts under preparation.

## Manuscripts submitted/preparation

- Duverney C, Macias VM, Hughes GL, **Pujhari S**, Suzuki Y, David A and Rasgon JL. Novel peptide based (ReMOT Control: Receptor-Mediated Ovary Transduction) delivering of CRISPR-cas9 to ovary to develop transgenic mosquitoes. (Manuscript under preparation for **Nature Communication**)
- **Pujhari S**, Macias VM and Rasgon JL. Heat shock protein 70 (Hsp70) is involved in the Zika virus infection process. (Manuscript under preparation for **Nature-Emerging Infection and microbe**)
- **Pujhari S**, Hughes GL, Pakpour N, Lazzaro BP, Suzuki Y, Rasgon JL. Wolbachia-induced inhibition of O'nyong nyong virus in Anopheles mosquitoes is mediated by Toll signaling and modulated by cholesterol. (Manuscript under preparation, for **Cell Host and microbes** or alike)

## Published in peer reviewed Journals

### First author

- **Pujhari S**, Rasgon JL, Zakhartchouk AN. Antiapoptosis in Porcine reproductive and respiratory syndrome virus. *Virulence*. 2016 23:1-2. (Corresponding author)
- **Pujhari S**, Zakhartchouk AN. Mitochondrial localization and pro-apoptotic nature of porcine reproductive and respiratory syndrome virus (PRRSV) E protein. *Archives of Virology*. 2016;161(7):1821-30
- **Pujhari S**, Kryworuchko M, Zakhartchouk AN. Role of phosphatidylinositol-3-kinase (PI3K) and the mammalian target of rapamycin (mTOR) signalling pathways in porcine reproductive and respiratory syndrome virus (PRRSV) replication. *Virus Res*. 2014 19; 194:138-44.
- **Pujhari S**, Baig TT, Zakhartchouk AN. Potential role of porcine reproductive and respiratory syndrome virus structural protein GP2 in apoptosis inhibition. *Biomed Res Int*. 2014: 160505.
- **Pujhari SK**, Prabhakar S, Ratho R, Mishra B, Modi M, Sharma S, Singh P. Th1 immune response takeover among patients with severe Japanese encephalitis infection. *J Neuroimmunol*. 2013; 263(1-2):133-8.

- **Pujhari S**, Baig TT, Hansra S, Zakhartchouk AN. Development of a DNA-launched replicon as a vaccine for porcine reproductive and respiratory syndrome virus. *Virus Res.* 2013; 173(2):321-6.
- **Pujhari SK**, Ratho RK, Prabhakar S, Mishra B, Modi M. TNF- $\alpha$  promoter polymorphism: a factor contributing to the different immunological and clinical phenotypes in Japanese encephalitis. *BMC Infect Dis.* 2012; 12:23.
- **Pujhari SK**, Prabhakar S, Ratho RK, Modi M, Sharma M, Mishra B. A novel mutation (S227T) in domain II of the envelope gene of Japanese encephalitis virus circulating in North India. *Epidemiol Infect.* 2011; 139(6):849-56.
- **Pujhari S K**, Kumar S, Ratho R K, Chawala YK, Chakorborty A. Phylogenetic analysis and subtyping of Acute and fulminant strains of Hepatitis E Virus Isolates of North India with reference to disease severity *Archives of Virology* 2010;155(9):1483-6.

#### Co-author

- Dodson BL, Pujhari S, Rasgon JL. Vector competence of selected North American *Anopheles* and *Culex* mosquitoes for Zika virus. *PeerJ.* 2018 Feb 15;6:e4324.
- Hansra S, **Pujhari S**, Zakhartchouk AN. Exploration of New Sites in Adenovirus Hexon for Foreign Peptides Insertion. *Open Virol J.* 2015; 9:1-6.
- Mishra B, Gupta PK, Dhiman V, **Pujhari SK**, Sharma M, Ratho RK. Clinical applicability of various dengue diagnostic tests in resource-limited endemic settings. *J Glob Infect Dis.* 2014;6(3):109-13.
- Majumdar M, Singh MP, **Pujhari SK**, Bhatia D, Chawla Y, Ratho RK. Hepatitis E virus antigen detection as an early diagnostic marker: Report from India. *Journal of Medical Virology.* 2013; 85(5):823-7.
- Mishra B, **Pujhari SK**, Dhiman V, Mahalakshmi P, Bharadwaj A, Pokhrel S, Sharma D, Sharma M, Bhatia D, Ratho RK. Genotyping and subtyping of mumps virus isolates from the Indian subcontinent. *Arch Virol.* 2013; 158(11):2359-63.
- Mishra B, Sharma M, **Pujhari SK**, Appannanavar SB, Ratho RK. Clinical applicability of single-tube multiplex reverse-transcriptase PCR in dengue virus diagnosis and serotyping. *J Clin Lab Anal.* 2011; 25(2):76-8.
- Parida M, Shukla J, Sharma S, Ranghia Santhosh S, Ravi V, Mani R, Thomas M, Khare S, Rai A, Kant Ratho R, **Pujari S**, Mishra B, Lakshmana Rao PV, Vijayaraghavan R. Development and evaluation of reverse transcription loop-mediated isothermal amplification assay for rapid and real-time detection of the swine-origin influenza A H1N1 virus. *J Mol Diagn.* 2011;13(1):100-7.
- Mishra B, Sharma M, **Pujhari SK**, Ratho RK, Gopal DS, Kumar CN, Sarangi G, Chayani N, Varma SC. Utility of multiplex reverse transcriptase-polymerase chain reaction for diagnosis and serotypic characterization of dengue and chikungunya viruses in clinical samples. *Diagn Microbiol Infect Dis.* 2011; 71(2):118-25.
- Kumar S, **Pujhari SK**, Chawla YK, Chakraborti A, Ratho RK. Molecular detection and sequence analysis of hepatitis E virus in patients with viral hepatitis from North India. *Diagn Microbiol Infect Dis.* 2011; 71(2):110-7.

## **Honors and Awards**

- Winner of Lightning talk at Tenth Annual Postdoctoral Exhibition Office of Postdoctoral Affairs, Penn State University 2017.
- Office of Postdoctoral Affairs, Penn State University Travel Award. (2016)
- Young scientist award by Indian Virological Society at XX National Conference of Indian Virological Society (IVS) for poster presentation. (2011)
- Received gold medal from Defense Research & Development Establishment (DRDE), Gwalior, Govt. of India for the outstanding research work published in Journal of Molecular Diagnosis. 2011 Jan; 13(1): 100-107.
- Thesis work selected for ORAL presentation at 14th International Congress of Infectious Disease, Miami, USA. (2010)
- Indian Council of Medical Research, New Delhi Travel Award to present PhD thesis work at Maimi, USA.(2010)(Not availed)
- Registration Bursary Award for Young Investigators from European Association of Study of Liver (EASL). (2010)

## **Scholarships**

- Council of Scientific and Industrial Research junior research fellowship (CSIR-JRF), 2007 to 2009.
- Council of Scientific and Industrial Research senior research fellowship (CSIR-SRF), 2009 to 2011.
- Postgraduate Institute of Medical Education and Research (PGIMER) Ph.D. fellowship, 2006 to 2007.
- Department of Biotechnology (DBT) merit scholarship for Adv PG Diploma in bioinformatics 2005.

## **Talks and Poster presentations**

- The 35th Annual Meeting for the American Society of Virology, June 2016, Blacksburg, Virginia, USA.  
Presentation: Talk  
Title: Role of Heat Shock Protein 70 (Hsp70) in Zika virus infection.
- 35th Summer Symposium in Molecular virology, Living with our Viromes, The Pennsylvania State University, Pennsylvania, USA, May 2016.  
Presentation: Poster  
Title: Cholesterol modulated immune signaling influences Wolbachia-mediated inhibition of O'nyong nyong virus (ONNV) in Anopheles mosquitoes
- PRRS North American Symposium 2013, December 2013 Chicago, USA.  
Presentation: Poster  
Title: Porcine Respiratory and Reproductive Syndrome Virus structural proteins GP2a and N activates transcription factor AP1 and NF-kB.
- 5th Annual Prairie Infectious Immunology Network Conference (PIIN 2012), organized by Immunology Research Group University of Saskatchewan and Manitoba. Moose Jaw, Canada September 2012.

Presentation: Poster

Title: Propagation-defective PRRSV replicon partially protects pigs from the homologous virus challenge.

- XX National Conference of Indian Virological Society “Managing Emerging and Re-emerging Plant, Animal, Human and Aquatic Viral Diseases: One Health Perspective” Hisar, India December 2011.

Presentation: Poster

Title: Cytokine storm, TNF- $\alpha$  and Viral load are possible contributors of disease progression in Japanese encephalitis patients.

- XIX national conference of Indian Virological Society “Recent trends in viral disease problems and managements” Tirupati, India, March 2010.

Presentation: Poster

Title: Molecular epidemiology of Dengue virus in North India.

- XVIII national conference of Indian Virological Society “Molecular techniques for the diagnosis of Viral Infections” at PGIMER, Chandigarh. December 2008.

Presentation: Poster

Title: Outbreak investigation of Japanese encephalitis virus infection in North west India.

- 32nd National conference of the Indian Association of Medical Microbiologist “Clinical Microbiology: From detection to clinical application” Pune, India October 2008.

Presentation: Talk

Title: Study of molecular epidemiology of Japanese Encephalitis virus in North India.

- Eighth, Sir Dorabji Tata symposium on “Arthropod borne viral infections” at Indian Institute of Science, Bangalore, India. March 2007.

Presentation: Poster

Title: Investigation of Dengue virus outbreak in Chandigarh.

### **Paper reviewed**

Infection genetics and evolution: 1, VirusDisease: 4, DNA and Cell Biology: 1, BMC Veterinary Research: 4

### **Students supervised**

Masters: 2, Undergraduate: 3, Sabbatical Associate professor (from Japan):1

### **Technical skills and training**

- CRISPR/Cas9 technology and its application in understanding viral pathogenesis and developing transgenics.
- BSL-3 Laboratory working experience: Pell laboratory, The Pennsylvania State University, USA and High Security Animal Disease Laboratory, Bhopal, India.
- Traditional virology: Virus propagation and purification, Animal inoculation of virus, virus neutralization, plaque forming assay, TCID<sub>50</sub>, PRNT, Egg inoculation, Handling of different laboratory animals i.e. Mice, Rabbit, Guinea pigs, animal bleeding through different routes, virus inoculation via various routes.

- Immunological: Isolation of T cells, B cells and dendritic cells from mouse (bone marrow/spleen) ELISA, ELISPOT, PBMC culture, Cytokine assay by cytokine bead array and ELISA, immunization via different routes.
- Molecular biology techniques: CRISPR Cas9, RNAi, Real Time PCR, LAMP, cloning, In-vitro Transcription (IVT), Western blot, Immuno and co-immuno precipitation assay, pull down assay, Signaling pathway study, Immuno-fluorescence.
- Bio-informatics: Phylogenetic analysis (Phylip, MEGA), BLAST, VMD.
- Entomology: Mosquito embryo injection, developing transgenic mosquitoes, mosquito viral transmission and dissemination assay.

### **Courses**

- Biosafety training course at The Pennsylvania State University, USA 2015.
- Radiation Safety Course: Workplace Safety and Environmental Protection training course at University of Saskatchewan, Canada 2012.
- Biosafety Course: Workplace Safety and Environmental Protection training course at University of Saskatchewan, Canada 2012.
- Research Methodology and Biostatistics course at PGIMER, Chandigarh 2007.

### **Resource person for workshop**

- Workshop on Loop mediated isothermal amplification (LAMP) and Real time PCR: Early and accurate diagnostic tools at PGIMER, Chandigarh. December 2008.

### **Workshops attained**

- WHO, India office sponsored workshop on “Laboratory biosafety and biosecurity” at BSL-3, High Security Animal Disease Laboratory (HSADL), Bhopal, India. August 2011.
- Workshop on “*In silico* approach for designing of bioactive peptides” at Institute of Microbial Technology (IMTECH), Chandigarh, India. October 2011.
- Workshop on “detection of Influenza A (H1N1) of swine lineage” at National Institute of Virology, Pune, India. June 2009.
- Workshop on Drug discovery and development in new millennium (D3NM), Interfacing with predictions, targets, disease models pharmacological experiments and clinical research at National Institute of Pharmacological Education and Research (NIPER), Mohali, India. February 2006.
- Workshop on “Machine learning techniques in functional proteomics” at Institute of Microbial Technology (IMTECH), Chandigarh, India. October 2005.

### **Professional Society Memberships**

- American Society of Virology, USA. 2016 to present
- American Society of Tropical Medicine and Hygiene, USA. 2016 to present
- Association of Basic Medical Science, PGIMER, Chandigarh, India. 2010 to present
- Indian Virological Society, India. 2008 to present

### **Other Professional experiences**

- Writing manuscripts, project reports and presenting research findings at conferences and group meetings.
- Experience of leading projects independently and training junior personnel.
- Organizing and coordinating in conferences and training programs.