PERSONAL DATA

Name: Nischay Mishra

Contact Information:

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Birthplace: Shahjahanpur, India

Citizenship: India (Permanent resident of USA-Green card)

ACADEMIC APPOINTMENTS AND EMPLOYMENT

2015- : Associate Research Scientist, Center for Infection and Immunity, Columbia University, New York, NY
2006-10: Visiting Lecturer, Biotechnology Department, Fergusson College, Pune, India

EDUCATION

2011: University of Pune, National Institute of Virology, Pune, India. PhD earned. Dissertation: "Fulminant hepatitis E: Association with cytokine polymorphisms & viral sequence variations"
2004: Kanpur University, Kanpur, India. MSc earned
2001: Lucknow University, Lucknow, India. BSc earned

TRAINING

2011-15: Postdoctoral Training, Center for Infection and Immunity, Columbia University, New York, NY
2011-18: Bio Safety level 3 (BSL3)- High containment laboratory trained expert at Center for Infection and Immunity, Columbia University, New York, NY
2009-11: Senior Research Fellow, National Institute of Virology, Pune, India
2004-09: Junior Research Fellow, National Institute of Virology, Pune, India
2005-11: Bio Safety level 3 (BSL3)- High containment laboratory trained expert at National Institute of Virology, Pune, India

AWARDS AND HONORS

2018: Featured article in NIH Director's Blog (Dr. Francis Collins), "Precision Diagnosis for Tick-Borne-Diseases?"
2018: Invited speaker, 2nd International Conference on Zika Virus and Aedes Related Infections, Tallinn, Estonia
2018: Invited speaker, American Society of Virology Annual Meeting, Baltimore, MD
2017: Conference presentation (Zika) at Viral Research & Diagnostics Laboratories – ICMR, National Institute of Virology, Pune, India
2016: Invited speaker, TWiV "This Week in Virology" with Vincent Racaniello
2015: Invited speaker, tbs eFM "This Morning, Seoul, South Korea" with Alex Jensen
2006: Poster presentation (Hepatitis E) at 7th Asia Pacific Congress of medical Virology, New Delhi, India

2005: Junior Research Fellowship, Council for Scientific and Industrial Research
2004-05: Lectureship, UGC NET, India

GRANTS AND SUPPORT CONTRACTS

Status: Active	
1U54AI138370-01 NIH/NIAID September 22, 2017 – August 31, 2022 Center for Solutions for ME/CFS PI: W. Ian Lipkin, MD	The Center for Solutions for ME/CFS is a multi-institutional, inter-disciplinary research center dedicated to understanding the biology of ME/CFS and developing diagnostic tests and methods for preventing and treating disease.
HR0011-17-2-0009 Defense Advanced Research Projects Agency November 16, 2016 – November 15, 2018 THUNDER: Tolerant Hosts Using Novel Drug-Enhanced Resilience PI: W. Ian Lipkin, MD	The goal of this project is to discover mechanisms of tolerance and to identify and validate interventions to induce tolerance to infection.
OPP1163230 Bill and Melinda Gates Foundation November 22, 2016 – December 31, 2018 Optimization of Sequence-Based Microbial Surveillance PI: W. Ian Lipkin, MD	The overarching objective of this program is to enable investigators to determine the bacteria and viruses that contribute to morbidity and mortality in the developing world through targeted sequence analysis of samples collected from living as well as deceased subjects.
Subcontract of OPP1163230 Encephalitis outbreak in Gorakhpur Co-PI: Nischay Mishra, PhD	Microbial characterization of an encephalitis outbreak in Gorakhpur, India.
BARD IS-4903-16C Binational Agricultural Research & Development Fund October 1, 2016 – September 30, 2018 Development of Surveillance and Vaccination Means to Combat TiLV-a novel RNA Virus Lethal to Tilapia PI: W. Ian Lipkin, MD	The goal of this project is to develop diagnostics needed to detect and monitor infection, develop vaccines, and test tilapia species for their sensitivity/resistance to disease. Columbia University's portion of the work will include high throughput sequencing of the genome of the pathogen that is isolated from diseased tilapines and tissue culture
U19AI109761 NIH/NIAID March 1, 2014 – February 28, 2019 Center for Research in Diagnostics and Discovery (Center for Excellence in Translational Research) PI: W. Ian Lipkin, MD	This center will advance knowledge and platforms for the detection of agents that are either previously unidentified, known causes of epidemics or select agents by developing and utilizing systems that could be rapidly redirected for pathogens of any type.
Steven & Alexandra Cohen Foundation Cohen Lyme and Tick borne Disease Initiative Co-PI- Nischay Mishra, PI- Rafal Tokarz	Development and validation of a multiplex serologic assay for tick-borne diseases

Status: Complete
Calderone Junior Faculty Prize • 2016 – 2017 (PI)

Status: Complete
PI: Nischay Mishra, PhD
R56AI120724 (NIH/NIAID) • August 14, 2015 – July 31, 2017 Microbial Discovery and Immunity in ME/CFS PI: W. Ian Lipkin, MD
Ministry of Agriculture of the Kingdom of Saudi Arabia • February 10, 2015 – February 9, 2017 Technical Services Contract on Technical Cooperation in Diagnosis and Surveillance of Zoonotic Diseases PI: W. Ian Lipkin, MD
U54 AI057158 (NIH/NIAID) • May 1, 2009 – February 28, 2015 Northeast Biodefense Center: Pathogen Discovery in Emerging Infectious Diseases PI: W. Ian Lipkin, MD
GHNA 0009 0001 000 (USAID) • October 1, 2009 – August 31, 2013 Predict Pathogen Discovery: *Subcontract to Columbia* PI: W. Ian Lipkin, MD
Private donor • July 9, 2012 – June 30, 2013 Chronic Fatigue Syndrome - Pathogen Discovery in Cerebral Spinal Fluid
Google.Org Foundation • October 1, 2008 – September 30, 2012 Global Pathogen Surveillance and Discovery PI: W. Ian Lipkin, MD
Google 260489 • 2014-2016 Rapid Differential Diagnosis of Hemorrhagic Fever PI: W. Ian Lipkin, MD

PRACTICAL APPLICATION OF RESEARCH

FDA Approval

FDA EUA approval for the **CII-ArboViroPlex rRT-PCR assay.** Assay was designed as a multiplex assay with TaqMan PCR primers and probes optimized for the detection of Zika virus (ZIKV), dengue virus types 1-4 (DENV), Chikungunya virus (CHIKV), West Nile virus (WNV), and an RNase P internal control RNA (RNase P).

Patents

1. **Pending:** IR # CU17322. Filed: May 4, 2017. Title: Multiplex Sero-diagnostic platform for tick-borne diseases.
2. **U.S. Provisional Patent Application:** Serial No.: 62/428, 845. Title: Serological assay for Zika virus. Filed: December 1, 2016. Ref# 01001/005473-US0.
3. **Approved:** CU15044/Lipkin/JL/WH/RK/TB/NM. Title: Discovery of novel tilapia virus. Filed: April 4, 2014, IR No. CU13285; Our Ref.: 19240.1046US1.
4. **Filed:** Docket # 01001/004723-USO. Compositions and methods for the rapid differential detection of Zika virus.
5. **Filed:** Application # IR CU18200, Title: An improved virome-capture-sequencing (VirCapSeq) method for viral diagnosis and virus discovery.
6. **Filed:** Application # IR CU18221, Title: Bacteria-Capture-Sequencing for Pathogenic Bacteria-Diagnosis and Discovery, Filing Date 2018-05-24.

Educational Contributions:

Direct Teaching/Precepting/Supervising

2005-2011: Teaching Instructor, M.Sc. Virology, National Institute of Virology, Pune ,India
2006-2010: Visiting Lecturer, Biotechnology Department, Fergusson College, Pune, India

Advising and Mentorship

2016: Mentored MS Epidemiology, Columbia University student Ms. Saba Chowdhury for practicum and summer training

2017: provided training to Ms. Greicy Zayas (Research Staff, The New York City Department of Health and Mental Hygiene) on High throughput sequencing, Virus capture sequencing (VirCapSeq-VERT) an d Bacterial Capture Sequencing (BacCapSeq)

2016: provided training to Mr. Aaron Olsen (Research Staff, The New York City Department of Health and Mental Hygiene) on High throughput sequencing, and automated multiplex BD-Max qPCR on Ebola and other hemorrhagic fever pathogens

2015: provided training to Mr. Dominick Centurioni (MS Research Scientist, Biodefense Laboratory Wadsworth Center, NYSDOH) on High throughput sequencing, Virus capture sequencing, Peptide arrays and automated multiplex ND-Max qPCR on, Arboviruses, Ebola and other hemorrhagic fever pathogens

PUBLISHED MANUSCRIPTS

Cumulative: 16 total manuscripts, 1,253 total citations. h-index: 15 (via Google Scholar)
**Denotes equal contribution*

2019

Mishra, N., Fagbo, S. F., Alagaili, A. N., Nitido, A., Williams, S. H., Ng, J., . . . Lipkin, W. I. (2019). A viral metagenomic survey identifies known and novel mammalian viruses in bats from Saudi Arabia. *PLoS One, 14*(4), e0214227. doi:10.1371/journal.pone.0214227

Souza, T. M. L., Vieira, Y. R., Delatorre, E., Barbosa-Lima, G., Luiz, R. L. F., Vizzoni, A., . . . **Mishra, N.** (2019). Emergence of the East-Central-South-African genotype of Chikungunya virus in Brazil and the city of Rio de Janeiro may have occurred years before surveillance detection. *Sci Rep, 9*(1), 2760. doi:10.1038/s41598-019-39406-9

Gogarten, J. F., Ulrich, M., Bhuva, N., Garcia, J., Jain, K., Lee, B.,**Mishra N.,** . . . Leendertz, F. H. (2019). A Novel Orthohepadnavirus Identified in a Dead Maxwell's Duiker (Philantomba maxwellii) in Tai National Park, Cote d'Ivoire. *Viruses, 11*(3). doi:10.3390/v11030279

2018

Allicock,M.O,* Guo,C, Uhlemann AC, Whittier S, Chauhan LV, Garcia J, Price A, Morse S, **Mishra N,** Briese T, Lipkin, W. I. (2018). BacCapSeq: A platform for diagnosis and characterization of bacterial 1 infections. mBio 10.1128/mBio.02007-18

Arya R., **Mishra N**., Biswas K., Arankalle V.A. (2018). Association of Toll-like receptor 4 Polymorphism with Hepatitis E virus infected Indian patients. *J Virol hep.* doi: 10.1111/jvh.12980.

Mishra, N., Caciula, A., Price, A., Thakkar, R., Ng, J., Chauhan, L. V., . . . Lipkin, W. I. (2018). Diagnosis of Zika Virus Infection by Peptide Array and Enzyme-Linked Immunosorbent Assay. *MBio, 9*(2). doi:10.1128/mBio.00095-18

Tokarz, R.*, **Mishra, N.***, Tagliafierro, T., Sameroff, S., Caciula, A., Chauhan, L., . . . Lipkin, W. I. (2018). A multiplex serologic platform for diagnosis of tick-borne diseases. *Sci Rep, 8*(1), 3158. doi:10.1038/s41598-018-21349-2

2017

Del-Pozo, J.*, **Mishra, N.***, Kabuusu, R., Cheetham, S., Eldar, A., Bacharach, E., . . . Ferguson, H. W. (2017). Syncytial Hepatitis of Tilapia (Oreochromis niloticus L.) is Associated With Orthomyxovirus-Like Virions in Hepatocytes. *Vet Pathol, 54*(1), 164-170. doi:10.1177/0300985816658100

Kembou Tsofack, J. E., Zamostiano, R., Watted, S., Berkowitz, A., Rosenbluth, E., **Mishra, N.**, . . . Bacharach, E. (2017). Detection of Tilapia Lake Virus in Clinical Samples by Culturing and Nested Reverse Transcription-PCR. *J Clin Microbiol, 55*(3), 759-767. doi:10.1128/JCM.01808-16

Nagy-Szakal, D., Williams, B. L., **Mishra, N.**, Che, X., Lee, B., Bateman, L., . . . Lipkin, W. I. (2017). Fecal metagenomic profiles in subgroups of patients with myalgic encephalomyelitis/chronic fatigue syndrome. *Microbiome, 5*(1), 44. doi:10.1186/s40168-017-0261-y

Nicholson, P., Fathi, M. A., Fischer, A., Mohan, C., Schieck, E., **Mishra, N.**, . . . Jores, J. (2017). Detection of Tilapia Lake Virus in Egyptian fish farms experiencing high mortalities in 2015. *J Fish Dis, 40*(12), 1925-1928. doi:10.1111/jfd.12650

2016

Bacharach, E.*, **Mishra, N.***, Briese, T., Zody, M. C., Kembou Tsofack, J. E., Zamostiano, R., . . . Lipkin, W. I. (2016). Characterization of a Novel Orthomyxo-like Virus Causing Mass Die-Offs of Tilapia. *MBio, 7*(2), e00431-00416. doi:10.1128/mBio.00431-16

2015

Briese, T., Kapoor, A., **Mishra, N.**, Jain, K., Kumar, A., Jabado, O. J., & Lipkin, W. I. (2015). Virome Capture Sequencing Enables Sensitive Viral Diagnosis and Comprehensive Virome Analysis. *MBio, 6*(5), e01491-01415. doi:10.1128/mBio.01491-15

2014

Alagaili, A. N., Briese, T., **Mishra, N.**, Kapoor, V., Sameroff, S. C., Burbelo, P. D., . . . Lipkin, W. I. (2014). Middle East respiratory syndrome coronavirus infection in dromedary camels in Saudi Arabia. *MBio, 5*(2), e00884-00814. doi:10.1128/mBio.00884-14

Briese, T.*, **Mishra, N.***, Jain, K., Zalmout, I. S., Jabado, O. J., Karesh, W. B., . . . Lipkin, W. I. (2014). Middle East respiratory syndrome coronavirus quasispecies that include homologues of human isolates revealed through whole-genome analysis and virus cultured from dromedary camels in Saudi Arabia. *MBio, 5*(3), e01146-01114. doi:10.1128/mBio.01146-14

Ly, N., Tokarz, R., **Mishra, N.**, Sameroff, S., Jain, K., Rachmat, A., . . . Lipkin, W. I. (2014). Multiplex PCR analysis of clusters of unexplained viral respiratory tract infection in Cambodia. *Virol J, 11*, 224. doi:10.1186/s12985-014-0224-x

Mishra, N., Pereira, M., Rhodes, R. H., An, P., Pipas, J. M., Jain, K., . . . Lipkin, W. I. (2014). Identification of a novel polyomavirus in a pancreatic transplant recipient with retinal blindness and vasculitic myopathy. *J Infect Dis, 210*(10), 1595-1599. doi:10.1093/infdis/jiu250

2013

Memish, Z. A., **Mishra, N.**, Olival, K. J., Fagbo, S. F., Kapoor, V., Epstein, J. H., . . . Lipkin, W. I. (2013). Middle East respiratory syndrome coronavirus in bats, Saudi Arabia. *Emerg Infect Dis, 19*(11), 1819-1823. doi:10.3201/eid1911.131172

Mishra, N., Walimbe, A. M., & Arankalle, V. A. (2013). Hepatitis E virus from India exhibits significant amino acid mutations in fulminant hepatic failure patients. *Virus Genes, 46*(1), 47-53. doi:10.1007/s11262-012-0833-7

2012

Burbelo, P. D., Dubovi, E. J., Simmonds, P., Medina, J. L., Henriquez, J. A., **Mishra, N.**, . . . Kapoor, A. (2012). Serology-enabled discovery of genetically diverse hepaciviruses in a new host. *J Virol, 86*(11), 6171-6178. doi:10.1128/JVI.00250-12

2011

Mishra, N., & Arankalle, V. A. (2011). Association of polymorphisms in the promoter regions of TNF-alpha (-308) with susceptibility to hepatitis E virus and TNF-alpha (-1031) and IFN-gamma (+874) genes with clinical outcome of hepatitis E infection in India. *J Hepatol, 55*(6), 1227-1234. doi:10.1016/j.jhep.2011.03.023