

Curriculum Vitae of Dr Shanmugasundaram K

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Dr. Shanmugasundaram Karuppusamy joined ICAR as an ARS scientist on January, 2008. He works in NCVTC-NRCE from May 2008. He did his undergraduate studies in Veterinary College and Research Institute, Namakkal (Tamil Nadu Veterinary and Animal Sciences University, Chennai). He completed his Master of Veterinary Science degree program in Veterinary Pathology from the College of Veterinary and Animal Sciences from Mannuthy, Trichur (Kerala Agricultural University). He has completed his Ph.D. program at Ontario Veterinary College, University of Guelph, Canada.

Research interests

He is interested in the identification of proteomics based biomarkers for the disease diagnosis and their role in the molecular pathogenesis. Furthermore, he is interested in the development of repository on Mycobacterial species of animal origins.

Publications

- Singha H, **Shanmugasundaram K**, Saini S, Tripathi BN. 2020. Serological Survey of Humans Exposed to *Burkholderia mallei*-Infected Equids: A Public Health Approach. *Asia-Pacific J Public Health*. 32:274-77
- Singha H, **Shanmugasundaram K**, Tripathi BN, Saini S, Khurana SK, Kanani A, Shah N, Mital A, Kanwar P, Bhatt L, Limaye V, Khasa V, Arora R, Gupta S, Sangha S, Sharma H, Agarwal SK, Tapase J, Parnam S, Dubey P, Baalasundaram SK, Mandal BN, Virmani N, Gulati BR, Malik P. 2020. Serological surveillance and clinical investigation of glanders among indigenous equines in India from 2015 to 2018. *Transbound Emerg Dis*. 67(3):1336-1348.
- **Shanmugasundaram K**, Kirby GM, Mutharia L, Tripathi BN. 2019. An update on *Mycobacterium avium* subspecies *paratuberculosis* antigens and their role in the diagnosis of Johne's disease. *World J Microbiol Biotechnol*. 22; 35 (8):120.
- **Shanmugasundaram K.**, Tripathi BN. 2018. Johne's Disease Vaccines Past, Present and Future. *Adv Biotechnol Microbiol*. 11(2): AIBM.MS.ID.555807.
- **Shanmugasundaram K.**, Mutharia L., Kelton D., Karrow N and Kirby G. 2018. Identification of antigenic proteins from *Mycobacterium avium* subspecies *paratuberculosis* cell envelope by comparative proteomic analysis. *Microbiology*.164:322-337.
- Vaid RK, **Shanmugasundaram K**, Anand T, Bera B C, Tigga M, Dedar R, T Riyesh, N Virmani, B N Tripathi and Singh R K. 2018. Characterization of isolates of *Bordetella bronchiseptica* from horses in India: Antimicrobial, biochemical and molecular characterization. *J. Equine Science* 29(1): 25-31.
- Pavulraj S, Bera BC, Joshi A, Anand T, Virmani M, Vaid RK, **Shanmugasundaram K**, Gulati BR, Rajukumar K, Singh R, Misri J, Singh RK, Tripathi BN and Virmani N. 2015. Pathology of Equine Influenza virus (H3N8) in Murine Model. *PLoS ONE*. 10(11): e0143094.
- Bera BC, Barua S, **Shanmugasundaram K**, Anand T, Riyesh T, Vaid RK, Virmani N, Kundu S, Yadav NK, Shukla BN, Malik P and Singh RK. 2015. Genetic

characterization and phylogenetic analysis of host-range genes of Camelpox virus isolates from India. *Virus Genes*. 26(3):151–162.

- Riyesh T, **Shanmugasundaram K**, Bera BC, Barua S, Virmani N, Yadav S, Vaid RK, Anand T, Bansal M, Malik P, Pahuja I and Singh RK. 2014. Laboratory-acquired Buffalopox Virus Infection, India. *Emerg Infect Dis*. 2: 325–327.
- Vaid RK, **Shanmugasundaram K**, Boora A, Bera BC, Shukla BN, Anand T, Singha H, Riyesh T, Virmani N, Barua S, Ahir VB, Koringa PG, Sajnani MR, Bhat VD, Rana N, Singh KP, Malik P, Singh RK and Joshi GC. 2014. Draft Genome Sequence of *Pasteurella multocida* subsp. *multocida* B:2 Strain VTCCBAA264 Isolated from *Bubalus bubalis* in North India. *Genome Announc*. 2(4): e00755-14
- Anand T, Bera BC, Vaid RK, **Shanmugasundaram K**, Sharma G, Virmani N, Shukla BN, Barua S, Malik P and Singh RK. 2014. Molecular characterization of virulence-associated protein (Vap) family genes of pathogenic *Rhodococcus equi* isolates from clinical cases of Indian equines. *Ind. J. Biotechnology*. 13:195-202.
- Virmani N, Bera BC, **Shanmugasundaram K**, Singh BK, Gulati BR, Anand T, Barua S, Malik P and Singh RK. 2013. Genetic Analysis of the Neuraminidase (NA) Gene of Equine Influenza Virus (H3N8) from Epizootic of 2008–2009 in India. *Ind. J. Virology*. 24(2):256-264.
- Malik P, Singha H, Goyal SK, Khurana SK, Kumar R, Virmani N, **Shanmugasundaram K**, Pandey SB, Kant R, Singh BK and Singh RK. 2013. Sero-surveillance of equine infectious anemia virus in equines in India during more than a decade (1999–2012). *Ind. J. Virology*. 24(3): 386-390.
- Bera BC, **Shanmugasundaram K**, Barua S, Anand T, Riyesh T, Vaid RK, Virmani N, Bansal M, Shukla BN, Malik P and Singh RK. 2012. Sequence and phylogenetic analysis of host-range (E3L, K3L, and C7L) and structural protein (B5R) genes of buffalopox virus isolates from buffalo, cattle, and human in India. *Virus genes*. 45(3): 488–498.
- Bera, BC, **Shanmugasundaram K**, Barua S, Venkatesan G, Riyesh T, Bhanuprakash V, Gulati BR, Vaid RK, Virmani N, Kakker NK, Malik P, Bansal M, Gadvi S, Singh RV., Yadav V, Sardarilal, Nagarajan G, Balamurugan V, Hosamani M, Pathak KM Page 7 of 9 and Singh RK. 2011. Zoonotic cases of Camelpox infection in India. *Veterinary Microbiology*, 152:29-38.
- Virmani N, Bera BC, **Shanmugasundaram K**, Singh BK, Gulati BR and Singh RK. 2011. Genetic analysis of the matrix and non-structural genes of equine influenza virus (H3N8) from epizootic of 2008-09 in India. *Veterinary Microbiology*. 152:169–175.
- Barua S, Bera BC, **Shanmugasundaram K**, Anand T, Riyesh T, Vaid RK, Virmani N, Bansal M, Shukla BN and Singh RK. 2011. Molecular appraisal of the host range K1L gene of the buffalo pox virus isolates from an outbreak (2010) in Maharashtra. *Journal of Immunology & Immunopathology*. 13(2):102-107.
- Barua S, Bera BC, **Shanmugasundaram K**, Anand T, Riyesh T, Vaid RK, Virmani N, Bansal M, Shukla B N, Singh R K. 2011. Sequence & phylogenetic analysis of the ankyrin gene of the camelpox virus from an outbreak in Rajasthan. *Journal of Immunology & Immunopathology*. 13(2):108-112.
- Virmani N, Bera BC, Gulati BR, **Shanmugasundaram K**, Singh BK, Vaid RK, Kumar S, Kumar R, Malik P, Khurana SK, Singh J, Manuja A, Dedar R, Gupta AK, Yadav SC, Chugh, PK, Narwal PS, Thakur VLN, Kaul R, Kanani A, Rautmare SS and Singh RK. 2010. Descriptive epidemiology of equine influenza in India (2008- 09): temporal and spatial trends. *Veterinaria Italiana*. 46: 449-458.

- Chakravarthi V, **Shanmugasundaram K**, Malmarugan S, Sugumar K, and Aravinthan P. 2010. In-Vitro Assessment of Bacteriostatic Potency of Egg Yolk Immunoglobulin against *Escherichia coli*. *Veterinary World*. 3(10): 460-462.
- Anoop S and **Shanmugasundaram, K**. 2008. Mammary papillary adenocarcinoma in a bitch. *Indian Vet. J*, 86: 510-511.

Number of abstracts in published in the national and international conferences : 29

Technologies Developed

- a. Development and validation of ELISA using *Mycobacterium avium* subspecies *paratuberculosis* cell envelope proteins for the diagnosis of Johne's disease in dairy cows.
- b. Development and validation of ELISA using *Mycobacterium avium* subspecies *paratuberculosis* specific recombinant protein antigens (n=6) for the diagnosis of Johne's disease in dairy cows.
- c. Antibodies mediated capturing of *Mycobacterium avium* subspecies *paratuberculosis* bacteria from feces.

Ongoing research projects

1. Network Programme on Anthrax Diagnosis and Control in India (Funded by DBT) (Co-PI). (2020-2023).
2. Regional Coordination centre under program for Inter-Sectoral Coordination for prevention and control of Zoonotic Diseases (Funded by NCDC, GOI) (Co-PI). (From July 2019)
3. Isolation, characterization and generation of repository on *Mycobacterium* species- ICAR Institutional funded (From Oct. 2017) (PI).
4. Surveillance, Monitoring and Control of Emerging and Existing Diseases of Equines (Co-PI). (Service Project).
5. Isolation, maintenance and characterization of bacterial pathogens of animal origin and their molecular identification (Co-PI) (From June 2017).

Research Projects completed

- Seroproteome analysis of recombinant secretory proteins of *Burkholderia mallei* towards development of multiple antigen immunoassays for improved diagnosis of glanders (DRDO Funded) (Co-PI) (2018-2020)
- Molecular epidemiology and antigenic differentiation of equine influenza virus. ICAR Institutional funded (Sep 2009-Dec 2011) (Co-PI)
- Development diagnostics for equine influenza viruses. ICAR Institutional funded (Sep 2009- Dec 2011) (Co-PI)
- Isolation and their molecular characterization of viral pathogens of animal origin. (Sep 2009- Dec 2011) (Co-PI)
- Isolation, maintenance and characterization of bacterial pathogens of animal origin and their molecular identification. (Sep 2009- Dec 2011) (Co-PI)

Summer school/winter school/ training programs organised

1. Co-Organizer in a three day training program for medical and veterinary professionals on diagnosis and control of Zoonotic diseases in December 10-12, 2019 at ICARNRCE. Training program was funded by National Centre for Disease control, GOI.
2. Co-course coordinator in organization of hands on training on diagnosis of equine glanders to field veterinary officers from different parts of India.

Awards/ recognition's

ICAR International Fellowship to pursue PhD at Ontario Veterinary College, University of Guelph, Ontario, Canada.