

Curriculum Vitae

Shine P Varkey, PhD

Assistant Professor & Head

Department of Bioinformatics

St Aloysius (Deemed To Be University)

Beeri, Koteekar, Mangaluru, India – 575022

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Passionate researcher and educator specializing in Hybridoma Technology and Computational Immunology. Strong written and verbal communication skills, demonstrated through presentations, research articles, and collaborations. Strong background in monoclonal antibody production, immune repertoire analysis, and computational vaccine design. Passionate about integrating wet lab and computational approaches to immunology and mentoring students in these areas.

Education

PhD (Biosciences), Mangalore University
Mangalore, India

Feb 2018

Dissertation: 'Study on the Epitopes of White Spot Syndrome Virus for Vaccine Development'

Advisor: Prof (Dr) K M Shankar, Karnataka Veterinary, Animal & Fisheries Sciences University, India

Master of Science (Biotechnology)
Bangalore University, Bangalore, India

2004

Bachelor of Science (Microbiology)
Kannur University, Kannur, India

2002

Research Interests

- Hybridoma Technology & Monoclonal Antibody Production
- Computational Immunology & Epitope Prediction
- Immune Repertoire Analysis
- Systems Immunology & Machine Learning in Immunoinformatics
- Biomarker Discovery & Vaccine Development

Key Skills

Antibody Production: Generation and characterization of hybridoma cell lines, antibody purification techniques & validation and sequencing of MAbs, B-Cell Immortalisation for antibody production.

Flow Cytometry: Proficient in routine operation and maintenance of BD FACS sorter (*BD FACSAria™ Fusion*), Cell Sorting, Immunophenotyping, Panel Design and FlowJo-Software.

Immunoassays: Design and optimization of immunoassays, ELISA, Western blotting, Immunohistochemistry & Immunofluorescence

Cell Culture: Proficient in aseptic cell culture techniques; Primary cell culture, Cell line maintenance and cryopreservation. Stable cell line generation.

Molecular Biology: Realtime PCR, Vector assembly for sequencing. Transfection, Mammalian cell line-based protein expression & Protein Purification system (FPLC-AKTAPURE)

Bioinformatics & Sequence Analysis: Next Gen-Sequence Analysis, RNASeq & ScRNASeq, Molecular Docking, Protein & Antibody Modelling, Custom Peptide Design.

Employment History

Assistant Professor (Stage III & Head)

Nov 2023-Present

Department of Bioinformatics

St Aloysius (Deemed To Be) University

Mangalore, India

Academic lectures & Laboratory Supervisor

Member BOS & BOE and other relevant committees

Research Advisor to various Projects under Lifesciences

Teaching & Mentorship;

Biochemistry, Immunology, Computational Immunology and Immunomics, Therapeutics,

Biologics & Proteomics

Immunophenotyping and Flowcytometry Bioinformatics

Trainee Researcher - Cancer Biology Laboratory

May 2023-Oct 2023

Rajiv Gandhi Centre for Biotechnology (DBT), Trivandrum, India

- Anti-RBD S1 Monoclonal Antibody Development
- Transfection, FACS & Stable Cell line development
- Immunofluorescence & Immunohistochemistry (Diagnostic assay Standardisation)

Senior Scientific Officer
Trophic Biosystems, Kochi, India

Feb 2023-Nov 2023

- Establishment of Cell-Culture facility & Assay system Development
- Maintenance of Cell line (MCF-7) and Molecular facilities
- Project Design for the production of therapeutics & Enzymes

Post-Doctoral Researcher
National Centre for Aquatic Animal Health
Cochin University of Science & Technology,
Kochi, Kerala, India

May 2022- Jan 2023

- Primary Cell Culture for cell line development (Fish Kidney & Liver tissue)
- Skill development program on 'Aquatic Pathogens Molecular Diagnosis' funded by RUSA.
- Faculty- Bioinformatics & Immuno-informatics courses under M. Tech (Marine Biotechnology) program

Senior Scientific Officer
(Spice HealthCare Pvt Ltd, Kerala, India)

Jan 2022– March 2022

- Supervision of routine RT-PCR testing for COVID-19 & results validation
- Internal Laboratory Quality Control as per ICMR guidelines
- Supervision of the Scientific Officers and Molecular Technicians.
- Supervision of protocols of Infection control & Biomedical Waste Management

Research Officer
(COVID Lab, Centre for Biochemistry & Molecular Biology
Central University of Kerala, India)

Oct 2021 - Jan 2022

- Laboratory Operations-sample sorting and aseptic handling of viral samples
- Maintenance of facility for Mag-Max work station (Thermo-Scientific) for RNA isolation
- Routine RT-PCR and validation of results

Post-Doctoral Researcher
(NCAAH, Kochi, India)

July 2019- Oct 2021

- Collection of marine pathogenic proteins for antigen & peptide design.
- Development and optimization of synthetic peptide-based invitro & invivo assays
- Develop plan & proposal for the application of findings in further research.

Assistant Professor
DBT-Centre for Bioinformatics
AIMT, St. Aloysius College, Mangalore, India

May 2015- July 2019

- Regular theoretical and practical sessions on Biochemistry, Immunology and Bio-informatics areas
- Guidance of post-graduate dissertation on Biotechnology & Bioinformatics areas
- Member of Board of studies

Senior Research Fellow

Feb 2013-Mar 2014

(Karnataka Veterinary, Animal & Fisheries Sciences
University, Mangalore, India)

Project: *Expression study of Noda virus gene for diagnostic development*- National Agriculture Innovation Project-ICAR (Indian Council for Agriculture Research)

- Basic molecular and sequence analysis of Noda virus gene insert
- Revival & Purification of plasmids for Noda viral protein extraction.

Senior Research Fellow

July 2009-July 2012

(Karnataka Veterinary, Animal & Fisheries Sciences
University, Mangalore, India)

Project: *Cell culture and related works for Vibrio monoclonal antibodies production and characterization*- by RKVY (Rashtriya Krishi Vikas Yojana) Project of Government of India

- Monoclonal Antibody Development against vibrio
- Cell culture, MAb characterisation & Validation

Post-Graduate Lecturer

July 2005- May 2009

St Aloysius College, Mangalore, India

Regular theoretical & practical sessions of Bioinformatics and Biotechnology

Awards & Recognitions

Selected for the **DST-SERB Postdoctoral Research Associateship (2023-26)** at the *Institute of Advanced Virology, Kerala*, for the project "*Identification and Characterization of a Functional Cellular Receptor for Kyasanur Forest Disease Virus Entry.*"

Invited Lectures /Presentation

- *An Analysis on the epitope-paratope relationship of anti-VP28 antibodies: Implications in therapeutic development against the White Spot Syndrome Virus*, Conference-Monoclonal Antibodies, an emerging era in biologicals, December 2022, Institute of Advance Virology, Trivandrum.
- *Academic lectures on Bioinformatics* for MSc Program in Mangalore University April-May 2017
- *Epitope-CDR H3 loop relationship of antibodies interacting with VP28 protein of White Spot Syndrome Virus*- Invited lecture on Structural Bioinformatics
'New Horizons and Challenges in Biotechnology and Bioinformatics', CPCRI, Kasargod, Jan 2014.
- *Computational Mapping of Interaction Sites of Synthetic Antibody Clone P109D9 on VP28 Protein*-Paper Presentation
- Conference on 'Innovative Research in Computations, St Aloysius College-March 2014.

- Resource Person on *Structural Databases and Analysis*. National Workshop on Bioinformatics (DBT-Bioinformatics Centre). Nov, 2008.

Conference/Workshop/Seminar

- International symposium on Multi-Omics Approaches in Understanding Environmental and Lifestyle Influences on Health, 9th October 2024, Nitte University Centre for Science Education & Research, Nitte (Deemed to be University), India.
- **5 days Residential Bio-Entrepreneurship Advanced Certification course** cum Bootcamp by Kerala Biotechnology Commission & BIIC, January 2023, MG University, Kottayam.
- National Conference & Hands on Workshop on '**Knowledge Translation Research**', by The Kerala State Higher Education Council 16th & 17th December 2023, at Cochin University of Science & Technology, Kochi, India.
- Workshop on '**Monoclonal Antibodies, an emerging era in biologicals; Principles of Production, applications in immunodiagnostics & therapeutics**', Institute of Advanced Virology, Trivandrum, India.
- Organized three days national workshop on '**Research to Commercialisation**', 24-26th Nov, 2022, BIIC, MG University, Kottayam, India.
- 8th International Symposium on '**Diseases in Asian Aquaculture**', 21-25 November 2011 by Asian Fisheries Society, Mangalore, India.
- Workshop on '**Bioinformatics Analysis using Accelrys GCG and SeqLab** 3-4 Aug 2007, Chennai, India.

Publication

Shine, P.V., Shankar, K.M., Abhiman, B., Sudheer, N.S. & Patil, R. (2020) 'Epitope mapping of the White Spot Syndrome Virus (WSSV) VP28 monoclonal antibody through combined in silico and in vitro analysis reveals the potential antibody binding site', *Molecular and Cellular Probes*, **50**, 101508.

<https://doi.org/10.1016/j.mcp.2020.101508>.

Varkey, P.S. & Shankar, K.M. (2024) 'Interplay of Epitope Landscapes: Unraveling Molecular Recognition through Mapping, Docking, and Simulation', in *Unravelling Molecular Docking - From Theory to Practice*. IntechOpen. <http://dx.doi.org/10.5772/intechopen.1005565>.

Varkey, P.S., Shankar, K.M. & Sathish, R.P. (2014) 'Computational mapping of interaction sites of synthetic antibody Clone P109d9 on VP28 protein', *International Journal of Innovative Research in Computer and Communication Engineering*, **2**(5), pp. 347-351.

'Molecular Studies and Therapeutic Approaches on BRCA-associated Cancers', *Frontiers in Molecular Biosciences*. (Under Review).

Ashwini, S., Varkey, S.P. & Shantaram, M. (2017) 'In silico docking of polyphenolic compounds against Caspase 3-HeLa cell line protein', *International Journal of Drug Development & Research*, **9**(3), pp. 28-32.

Professional Memberships & Collaborations

Member- The Antibody Society (TABs- Post Doctoral Membership)

Collaborations;

Rajiv Gandhi Centre for Biotechnology Trivandrum, India

Institute of Advanced Virology, Trivandrum and

AJ Institute of Medical Sciences, Mangalore, India.

Professional Training

DBT Skill Vigyan faculty training Program (14 days)- "Phage applications and antimicrobial resistance" at Amrita University, Kerala, India	2024
Industrial Training Program on ‘Advanced Bio-Programing’ Sai’s Bio Science Research Institute, Chennai, India.	2007
Post Graduate Diploma in Bioinformatics Integrated Biotechnology (CRO), Bangalore, India	2004-2005

Reference

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| 1) Prof (Dr) K M Shankar (Thesis Advisor & PI)
ICAR Emeritus Scientist & Former Dean, Veterinary College,
Karnataka Veterinary Animal & Fisheries Sciences University,
Vinoba Nagar, Shivamogga, Karnataka, India. | kalkulishankar@gmail.com
(Mob): (+91) 9480571370 |
| 2) Prof (Dr) I S Bright Singh, FNAAS (Supervisor & PI)
University Emeritus Professor,
National Centre for Aquatic Animal Health,
Cochin University of Science and Technology,
Lakeside Campus, Fine Arts Avenue,
Kochi-682016, Kerala, India. | isbsingh@gmail.com
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