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RESEARCH PROFILE

Applied Biotechnology MSc (Distinction, Best MSc Thesis 2023) working in **NHS Clinical Blood Sciences**. My MSc research showed **condition-dependent antifungal activity** in marine sediment-derived *Bacillus*, combining microbial cultivation, antifungal and chitinase assays, **genome mining** and cell-viability testing. Research interests: **ecological induction of microbial specialised metabolism**, biosynthetic gene clusters and resistance, antifungal discovery and **antibiotic potentiation**, and **antimicrobial resistance** in environmental systems.

EDUCATION

MSc Applied Biotechnology (Distinction) – University of Westminster, UK (2022–2023)

- Awarded **Best MSc Thesis 2023**; ranked in the top 5% of the cohort; **Westminster Employability Award – Gold** (October 2023).
- Thesis:** *Marine Sediment-Derived Bacillus Strains: Promising Antifungal Agents with Chitinase-Induced Activity*. Supervisor: Dr Linda Percy.
- Screened **more than 35 marine sediment isolates** against *Candida albicans* and *Pseudomonas aeruginosa*.
- Cell-free supernatants of chitin-supplemented *Bacillus altitudinis* and *B. hwajinpoensis* cultures **inhibited** *C. albicans* NCPF 3179; no comparable activity was seen without chitin under the conditions tested.
- Methods:** agar diffusion assays, colorimetric chitinase assay, antiSMASH genome mining, PCR for NRPS-associated sequences, MTT viability assay on VERO cells.

BSc Zoology (First Class with Distinction) – PSMO College, Tirurangadi (University of Calicut), India (2018–2021)

- Top 5% of graduating class; SIB Scholar full scholarship for academic excellence (2019 – 2021).
 - Research project: diversity of butterfly fauna in Malappuram District.
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RESEARCH EXPERIENCE

Biopolymer Scientist Intern – Cavendish Living Lab, University of Westminster, London (May–Oct 2023)

- Bioplastics strand of a cross-disciplinary sustainability project led by Dr Pooja Basnett (2023 Green Gown Awards finalist).
- Produced **bacterial cellulose** from food-waste substrates using *Komagataeibacter xylinus*, increasing yield by 5%.
- Contributed to polyhydroxyalkanoate (PHA) work and cross-disciplinary sustainability projects combining hydroponics and microbial biofilms.
- Co-led project documentation, presented results to internal research committees and exhibited the team's bacterial cellulose materials at the Cavendish Living Lab Symposium 2023.

Research Intern – M. S. Swaminathan Research Foundation, Wayanad, India (Feb–Jul 2021)

- Biodiversity surveys across nine agroforestry sites in rice-based agroecosystems, recording **128 plant and 101 bird species**.
- Took part in interactive sessions on bird survey methods and with tribal communities.
- Statistical analysis in **R** linking biodiversity to pest control; co-author of the resulting *Biodiversity and Conservation* paper.

Independent computational project – Marine *Bacillus* comparative genomics (Ongoing)

- Co-occurrence of NRPS biosynthetic gene clusters, resistance genes and mobile genetic elements, using antiSMASH, CARD/RGI, MobileElementFinder and clinker.
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PUBLICATIONS AND MANUSCRIPTS

- Lopus M, et al., Shafi S (2023). Conservation of native tree species in the agroforest of rice-based agroecosystems will contribute to sustainable agriculture. *Biodiversity and Conservation*. [doi:10.1007/s10531-023-02738-0](https://doi.org/10.1007/s10531-023-02738-0)
- Barker H, et al., Kadakkadan S (2025). CRISPR-based detection of microbial DNA integration in autoimmune inflammation. *SSRN Working Paper Series*. doi:10.2139/ssrn.5249169
- Kadakkadan S, Percy L. Manuscript in preparation on chitin-dependent antifungal activity of marine sediment-derived *Bacillus*.

PROFESSIONAL EXPERIENCE

Advanced Biomedical Support Worker, Clinical Blood Sciences – *South West London Pathology, St George's University Hospitals NHS Foundation Trust* (Apr 2024–Present)

- Analytical and pre-analytical support in a UKAS ISO 15189-accredited laboratory handling over 9,000 samples a day.
- **HPLC and LC-MS/MS** work in clinical biochemistry, including assays for steroids, aldosterone and renin, and HVA.
- **QC, calibration and maintenance** on Cobas 8000, Sebia CAPILLARYS, Beckman DxI, DxA and DxH, and Tosoh analysers.
- Sample processing for **NIHR studies** and clinical-trial assays with Analytical Services International; assay troubleshooting, data recording and clinical audit with Clinical Scientists.
- Compliance checks against ISO 15189 and MHRA standards; contributes to staff training.

Healthcare Support Worker – *Mildmay Mission Hospital, London* (Nov 2022–Mar 2024)

- Patient care, specimen handling and point-of-care testing (capillary blood glucose, urinalysis, urine hCG); records in EMIS.

Assistant Business Analyst (remote) – *National Hatcheries Pvt. Ltd., Kerala, India* (Mar 2021–Aug 2023)

- Supply-chain data analysis and Excel/Power BI dashboards; FSSAI compliance documentation; ERP digitisation for traceability.

TECHNICAL COMPETENCIES

- **Microbiology:** isolation and cultivation of environmental bacteria; antimicrobial activity and susceptibility testing; fermentation and bioprocess optimisation.
- **Molecular and cell biology:** PCR (MSc project); qPCR, electrophoresis, cloning, Western blotting and CRISPR-Cas9 (training through Gene Editors of the Future and 2.0); enzyme assays; VERO cell culture and MTT viability assay.
- **Analytical:** HPLC and LC-MS/MS in clinical biochemistry (steroids, aldosterone and renin, HVA).
- **Computational:** antiSMASH, BLAST, CARD/RGI, MobileElementFinder, clinker; AlphaFold, PyRosetta; R, Python, SPSS; Power BI, Tableau; Benchling.
- **Clinical and quality:** ISO 15189 and MHRA standards, SOP compliance, audit; clinical trial management (University of Oxford course); WinPath, Horizon, iClip, Apex, EMIS.

TRAINING AND CERTIFICATION

- Clinical Trial Management Crash Course, Primary Care Clinical Trials Unit, University of Oxford (14–16 October 2025)
- Cambridge Head and Neck Cancer Symposium, CRUK Cambridge Centre Thoracic Cancer Programme with the University of Cambridge (25 September 2025; 5 RCP category 1 CPD credits)
- Natural Language Processing with R, NIHR-funded online course, NHS-R Community and University of Edinburgh (2025)
- LifeLab and OpenPETase protein engineering, London (2025)
- Gene Editors of the Future, CRISPR-Cas9 practical programme, University of Westminster (2023)
- Gene Editors of the Future 2.0, online CRISPR/Cas9 genome engineering training, University of Westminster (Oct 2022 – Jan 2023)
- Good Manufacturing Practice (GMP) certificate

TALKS, OUTREACH AND VOLUNTEERING

- Invited lecture, *International career opportunities for Zoology graduates*, with interactive session, Department of Zoology, PSMO College, Tirurangadi, India (March 2024).
- Poster presentation and public engagement for the Genetics Society outreach programme at the Royal Institution, London, representing Gene Editors of the Future (2023).
- Unit Secretary (one of four), National Service Scheme Units 26 and 74, PSMO College, Tirurangadi (2020–2021).
- Volunteer researcher, Zoological Society of London and Zooniverse (Emergent Insect Explorer): ecological data logging and species identification.
- Mentoring rural students in India towards research careers in biotechnology and ecology; literacy and outreach programmes (Aksharasamudram, e-Nilambur).

Referees available on request.