

Naqash Masood, PhD

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SCHOLARSHIP PROFILE

I am actively developing my research and scholarship through projects focused on post-pandemic educational strategies and enhancing student belonging, particularly among Foundation Year cohorts. My work integrates student-led research, cross disciplinary collaborations, and evidence-based practice. These initiatives support both pedagogical enhancement and my long-term academic progression.

HIGHER EDUCATION

Oct 2011-Oct 2015

PhD Microbiology

Nottingham Trent University, UK

PhD Research Project:

“Genomic profiling of the neonatal meningitic *Cronobacter sakazakii* Clonal Complex 4”

Brief synopsis of the PhD thesis:

Cronobacter sakazakii Clonal Complex 4 (CC4), is a clonal lineage and an emergent pathogen, known for its survival in the infant formula (PIF), outbreaks in neonatal intensive care unit (NICU) and cases associated with fatal neonatal meningitis. The key objective of my PhD project was to analyse the genome sequenced data for the better understanding of its virulence. A French neonatal intensive care unit outbreak was also investigated using genome sequenced data, now published in BMC Genomics (Masood et al. 2015). Comparative genomic analyses revealed interesting variations in *C. sakazakii* genomes and contributed significantly towards *Cronobacter* research through publications in peer reviewed journals and made its share in Nottingham Trent University, winning **“Queen's Anniversary Prize for Higher and Further Education (2015)” – the highest national honour for a UK university**. The work was also presented in reputed international conferences in the UK, USA, Germany and the Republic of Ireland.

Oct 2008- Oct 2009

MSc Biotechnology – Commendation

Nottingham Trent University, UK

Modules covered included:

Microbial Physiology and Genomics, Molecular Biology and DNA technology, Cell culture and Antibody Technology, Enzyme Technology and Biocatalysis, Practical Techniques in Proteomics and Genomics.

MSc Project: (Distinction)

“Characterization of mutants associated with invasiveness in *Campylobacter jejuni*” (The project involved techniques in Microbiology, Molecular Biology and Bioinformatics). The project identified potential invasion associated genes in *C. jejuni*.

Jan 2002 - May 2006

Bachelor of Biotechnology (BBT) – First Division

University of Peshawar, Pakistan

Major modules included:

Microbiology, Molecular Biology, Bioinformatics Biochemistry, Advances in Molecular Biology, Cell Biology, Medical Biotechnology, Microbial Biotechnology, Genetic Engineering, Gene expression and Regulation, Immunology, Agricultural Biotechnology, Medicinal Phytochemistry, Environmental Biotechnology, Industrial Biotechnology, Biochemical Engineering, Research Methodology.

August 2021

Masters in Higher Education Practice – MA(HEP)

Keele University, UK

July 2019

Fellow of Higher Education Academy (FHEA), UK

Recognition reference PR170203

Academic and Research/Scholarship Experience

August 2019 to present: Lecturer (Grade 8) in Biosciences – Keele university, UK

-The role involves all aspects of a full-time academic role including preparation, design and face to face delivery of the teaching material, assessment design and marking, and project supervision at undergraduate and master's level. I have a command over using virtual learning environment and experience of using technology enhanced learning tools. I tend to make each of teaching session inclusive, engaging and interactive by effectively using technology enhanced learning tools where appropriate. I use blended learning approach and utilise range of different teaching approaches apart from conventional lecture delivery such as problem-based learning, experiential learning, game-based learning.

- Deputy Programme Director for Microbiology and Immunology course
- Foundation Year Link tutor for the School of Life Sciences
- Link tutor for the Keele University International College (KUIC)
- Marketing liaison officer
- Year 2 tutor for Human Biology course
- Member of the School Education Committee, Equality Diversity and Inclusion Committee, and Marketing Operations Group.

Oct 2016 - July 2019: Lecturer/Senior Lecturer in Molecular Biosciences-Nottingham Trent University, UK.

The role involved all aspects of a full-time academic role including preparation, design and face to face delivery of the teaching material and leading practical laboratory sessions for undergraduates and master's classes, in addition to project supervision of master's and undergraduate research students.

Key Responsibilities:

1. To teach and provide supervision, utilising appropriate teaching, learning, support and assessment methods. Currently I am involved in teaching following modules at the undergraduate and Master's level (including e-learning).

- **Clinical and Public Health Microbiology**
- **Molecular Microbiology**
- **Forensic Microbiology**
- **Microbial Diagnostics**
- **Advanced Bioinformatics**
- **Molecular Genetics of Human Disease**
- **Biochemistry**
- **Living Systems**
- **Molecular Biology and Protein Structure**
- **Special Topics in Biotechnology**
- **Techniques in Macro-Molecular Analyses**
- **Toxicology**
- **Introduction to Microbiology**
- **Introduction to Biochemistry**

2. Assessment design, marking examination work and provision of timely and constructive feedback to students.

3. Use of technology enhanced learning tools in the class room.

4. To keep timely and accurate records of attendance, and to file electronic copies of students' work and feedback using the systems provided.

5. Represent university on open days.

6. Provide pastoral care to students.

6. To perform any additional administrative tasks, as required.

Associate Lecturer in Natural Sciences (Sep 2016 to March 2017) at University of Derby, UK

In this role, I mainly remained involved in teaching **Food Microbiology and Bioinformatics**.

Other responsibilities:

- To teach programmes and modules within the agreed curricula for the Dept. of Natural Sciences.
- To engage with the development of modules and programmes within the College.
- To participate in developmental activities, including programme review and evaluation as well as increasing subject based knowledge.
- To support the Programme Leaders within the College.
- To carry out duties commensurate with the appointed position as directed.
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Postdoctoral Research Assistant (Jun 2016 –Sep 2016) at Pathogen Research Group and iSMART, Nottingham Trent University, UK

Research Project: “Evaluating the antimicrobial properties of novel biomedical materials (vascular access grafts) intended to be used for the patients with end stage renal failure requiring lifesaving haemodialysis”.

The role involved testing the VAG impregnated with various concentrations of silver citrate and silver chloride, for their antimicrobial efficacy, which involved the use of following techniques:

- Time Kill Assays and Antimicrobial susceptibility testing
- Viable count determination/Miles and Misra
- Scanning Electron Microscopy (SEM)
- Optical Coherence Tomography (OCT)
- Analyses and interpretation of the data
- Supervision of a visiting Scientist
- Record keeping
- Lab management duties
- Writing manuscript for relevant journals

This research project generated interesting data which is being followed up and translated into a manuscript, currently in submission process in **Biomaterials (impact factor 8.38)**.

Demonstrator in Biosciences labs (Oct 2011-Jun 2016) at Nottingham Trent University, UK

Key Responsibilities:

- **Teaching** through demonstrating laboratory techniques for the following modules: Molecular Biology, Biochemistry, Microbiology, Cell Biology, Practical Techniques, Antibody and DNA technology, Genetics and Immunology, Clinical and Public Health Microbiology, Infectious Diseases and their Control, Molecular Biology and Protein structure, Genetics for Identification and Cytogenetics.
- **Teaching** and support through advising, assisting and supporting students during the laboratory sessions.
- **To help further** the understanding of principles being taught in lectures.
- **To increase the skills** of students, through the demonstration of practical equipment, experiments and processes within a laboratory/workshop/classroom setting, usually in the presence of a module leader
- **Dealing with** the student issues

Visiting Scientist (Mar 2010 –May 2010) at John Van Geest Cancer Research, Centre, Nottingham Trent University UK

Research project: “Expression analysis of various tumour associated antigen genes in human head and neck carcinoma and melanoma cell lines using real time PCR”.

The project mainly involved analysing the gene expression of *HAGE* and *CAGE* genes using real time qPCR.

Research Assistant (volunteer) (Oct 2009 – Mar 2010) at Nottingham Trent University, UK

Research project: “*Campylobacter coli* in organic/free-range poultry: number, type and fitness”. The project involved chicken sample collection, Isolation of the chicken caeca through post-mortem, Southern Blotting, Pulsed field Gel Electrophoresis (PFGE), DNA labelling for Microarrays.

LABORATORY SKILLS

Microbiology: Aseptic and sterile techniques, cultivation of hazard class 1 and 2 organisms, Gram staining, plating methods (streak, spread, pour, replica), liquid and solid culture of bacteria, antibiotic resistance assay (MIC and disc diffusion), viable

count determination through Miles and Misra, Time Kill Assays, optical microscopy, Scanning Electron Microscopy, Optical Coherence Tomography, isolation and transformation of bacterial genomic DNA, use of anaerobic cabinets, enumeration and identification of bacteria, diagnostic biochemical tests for enteric bacteria, use of selective media, agglutination test, phenotypic and genotypic assays of bacteria, preparation and purification of bacterial outer membrane proteins and more.

Molecular Biology/Cell Biology/Biochemistry: DNA extraction and purification, restriction enzyme digests, Pulsed Field Gel Electrophoresis (PFGE), primer designing, PCR, vector cloning, digestions, ligations, transformation, reverse transcription for cDNA synthesis, Real time PCR, mRNA expression analysis, plasmid profiling, Cell and tissue culture, SDS-PAGE, Southern blotting and Hybridisation, ELISA, Immunohistochemistry, MALDI TOF, Scanning Electron Microscopy (SEM), Optical Coherence Tomography.

BIOINFORMATICS/GENOME ANALYSIS SKILLS

- Thorough understanding of the next generation sequencing technologies like **Illumina** and its data output.
- Efficient in genome assembly using **velvet** and **Spades** from the raw reads and assembly improvement using **PAGIT**.
- Efficient in whole genome alignments using **Mugsy**, core genome construction and phylogeny estimation using **RAxML**, **FigTree**.
- Efficient in comparative genomics and manual genome annotation using programs like **ARTEMIS**, **WebACT**.
- Efficient in comparative genomics, core genome, pan-genome construction using **Gegenees**.
- Efficient in algorithm based SNP calls from the WGS data using **SMALT** (SAMtools), manual SNP curation in **ARTEMIS**.
- Efficient in annotating the genomes using **Prokka** and **RAST**.
- Experienced in **Genbank genome submission** process to obtain accession numbers.

IT/COMPUTER SKILLS

- Windows, **LINUX/UNIX**.
- Excellent proficiency in Ms Office (Word, Excel, PowerPoint).
- Learning to program in Perl and Python.

MEMBERSHIPS OF SOCIETIES/GROUPS

- American Society for Microbiology (ASM)
- Royal Society of Biology (LinkedIn)
- Infectious Diseases Society of America (LinkedIn)
- AIM Infectious Diseases Group (LinkedIn)
- Microbiology professionals (LinkedIn)
- NGS (Next Generation Sequencing) (LinkedIn)
- Past member of the Society for General Microbiology (SGM)

PROFESSIONAL DEVELOPMENT TRAINING

Description	Institute	Year
An Introduction to Solving Biological Problems with Python	University of Cambridge, UK	2013
An Introduction to Solving Biological Problems with PERL	University of Cambridge, UK	2013
Supervising Postgraduate Research Students: getting them started and making progress	Nottingham Trent University UK	2018
Introduction to Postgraduate Research Supervision at NTU	Nottingham Trent University UK	2018
Post Graduate Certificate in Academic Practice (PGCAP)	Nottingham Trent University UK	2019
Effective Speaking for Lecture Capture	Nottingham Trent University UK	2018
HEA Writing Workshop for Fellow Applicants	Nottingham Trent University UK	2017
Professional development as a researcher	Nottingham Trent University UK	2012

AWARDS AND PRIZES

- Second best poster prize at the School of Science & Technology annual conference 2013, Nottingham Trent University.
- Recipient of the highly competitive, fully funded “NTU Vice Chancellor’s PhD studentship bursary” for PhD Microbiology at Nottingham Trent University, UK.
- SGM grant to attend the SGM spring conference 2012 in Dublin, Ireland.
- NTU International Development Scholarship for MSc Biotechnology at Nottingham Trent University, UK.
- Awarded with five times merit award during Bachelor of Biotechnology (BBT) at the University of Peshawar, Pakistan.

INTERPERSONAL SKILLS

- Excellent communications skills, verbal and written.
- Ability to network and liaise with external collaborators.
- Ability to work in a team and independently.
- Attention to details, Problem-solving and Decision-making.

LANGUAGES: English (full professional proficiency), Urdu (native), Hindko (native), Punjabi, Arabic (reading, writing).

PUBLICATIONS

Current Publication Standing	Google Scholar
H-index	8
<u>Citations</u>	<u>430</u>

Watford, T. and **Masood, N.**, 2023. Psilocybin, an effective treatment for major depressive disorder in adults-a systematic review. *Clinical Psychopharmacology and Neuroscience*, 22(1), p.2.

Masood, N., and Hibberts, L. 2021 Sudden Transition to Online Learning: an Action Research Study Exploring Foundation Year Students’ Experience at Keele University. *Journal of Academic Development and Education* (13). ISSN 2051-3593

Abedin, N., Alshehri, A.H.A., Almughrbi, A.M., Moore, O., Alyza, S., Rusbridge, E.K., **Masood, N.**, Egbowon, B.F., Hargreaves, A.J., Dafhnis-Calas, F. and Fitzpatrick, A.J. 2020. Expanding the Family of Tetrahalide Iron Complexes: Synthesis, Structure and Biological Applications. *Polyhedron* p.114755.

Rezwan, F., Dafhnis-Calas, F. and **Masood, N.** 2020. Soft Tissue Infection in Intravenous Drug Users-Current Challenges. *SJPM* 05(02), pp.121-128.

Masood, N., Forsythe, S. & Bob, S. (2020). Investigation of the antimicrobial efficacy of the silver citrate impregnated vascular access grafts. *Biomaterials* (In preparation).

Masood, N., Albastaki, A., Almadani, A., Bagherihanaei, S. (2018). Identification of a biomarker trait in neonatal meningitic clonal complex 4 of *Cronobacter sakazakii*. *Systematic and Applied Microbiology* (In preparation).

Masood, N., Moore, K., Farbos, A., Hariri, S., Block, C., Paszkiewicz, K., Dickins, B., McNally, A. & Forsythe, S. (2015). Genomic dissection of the *Cronobacter sakazakii* outbreak in a French neonatal intensive care unit 1994, using Single Nucleotide Polymorphism. *BMC Genomics*, 16:750 doi 10.1186/s12864-015-1961-y.

Jackson, E., **Masood, N.**, Ibrahim, K., Urvoy, N., Hariri, S., & Forsythe, S. (2015). *Siccibacter colletis* sp. nov., a new *Siccibacter* species isolated from plant material. *International Journal of Systematic and Evolutionary Microbiology*, 65:1335-1341.

Alkeskas, A. Odrodzki, P., Saad, M., **Masood, N.**, Rhouma, N., Moore, K., Farbos, A., Paszkiewicz, K. & Forsythe, S. (2015). Colonisation of neonatal nasogastric feeding tubes by *Escherichia coli* K1". *BMC Infectious Diseases*, 15:449.

Jackson, E., Sonbol, H., **Masood, N.**, & Forsythe, S. (2014). Genotypic and phenotypic characteristics of *Cronobacter* species, with particular attention to the newly reclassified species *C. helveticus*, *C. pulveris*, and *C. zurichensis*. ***Food Microbiology***, 44:226-235.

Masood, N., Jackson, E., Moore, K., Farbos, A., Paszkiewicz, K., Dickins, B., McNally, A., & Forsythe, S. (2014). Draft genome sequence of "*Candidatus Cronobacter colletis*" NCTC 14934^T, a new species in the genus *Cronobacter*. ***ASM Genome Announcements***, 2(3) e00585-14.

Joseph, S., Hariri, S., **Masood, N.**, & Forsythe, S. (2013). Sialic acid utilization by *Cronobacter sakazakii*. ***Microbial Informatics and Experimentation***, 3:3.

Masood, N., Moore, K., Farbos, A., Hariri, S., Block, C., Paszkiewicz, K., Dickins, B., McNally, A., & Forsythe, S. (2013). Draft genome sequence of a meningitic isolate of *Cronobacter sakazakii* Clonal Complex 4, strain 8399. ***ASM Genome Announcements***, 1(5) doi:pii: e00833-13. 10.1128/genomeA.00833-13.

Masood, N., Moore, K., Farbos, A., Hariri, S., Paszkiewicz, K., Dickins, B., McNally, A., & Forsythe, S. (2013). Draft genome sequences of *Cronobacter helveticus* LMG23732^T, *Cronobacter pulveris* LMG24059 and *Cronobacter zurichensis* LMG23730^T: three newly identified species in the genus *Cronobacter*. ***ASM Genome Announcements***, 1(5). doi:pii: e00783-13. 10.1128/genomeA.00783-13.

Masood, N., Moore, K., Farbos, A., Hariri, S., Paszkiewicz, K., Dickins, B., McNally, A., & Forsythe, S. (2013). Draft genome sequence of the earliest *Cronobacter sakazakii* sequence type 4 strain NCIMB 8272. ***ASM Genome Announcements***, 1(5). doi:pii: e00782-13. 10.1128/genomeA.00782-13.

Joseph, S., Desai, P., Ji, Y., Hamby, S. E., **Masood, N.**, Hariri, S., Sonbol, H., Cumming, C. A., Rico, A., Shih, S. M., Degoricja, L., Brzoska, P., Chuzhanova, N., McClelland, M., Furtado, M. R., & Forsythe, S. (2012). Comparative analysis of genome sequences covering the seven *Cronobacter* species ***PLOS ONE***, 7: e49455. 10.1128/JCM.00905-12.

CONFERENCE PRESENTATIONS (POSTERS)

Masood, N., Almadani, Albastaki, A. & Forsythe, S. Biomarker Traits Exclusive to Neonatal Meningitic *Cronobacter sakazakii* Clonal complex 4. ASM Microbe Atlanta (2018), USA.

Masood, N., Moore, K., Farbos, A., Hariri, S., Block, C., Paszkiewicz, K., Dickins, B., McNally, A., & Forsythe, S. The genomic analysis of the 1994 FRENCH outbreak of *C. sakazakii* revealed Powdered Infant Formula (PIF) to be the potential source of outbreak. ASM New Orleans (2015), USA.

Jackson, E., Sonbol, H., **Masood, N.**, & Forsythe, S. Genotypic and phenotypic characteristics of *Cronobacter* species, with particular attention to the newly reclassified species *C. helveticus*, *C. pulveris*, and *C. zurichensis*. ASM Boston (2014), USA.

Masood, N., Moore, K., Farbos, A., Hariri, S., Block, C., Paszkiewicz, K., McNally, A., & Forsythe, S. Whole genome comparative analysis revealed clustering of neonatal meningitic *C. sakazakii* ST4 strains. FEMS, Leipzig (2013), Germany.

Masood, N. & Forsythe, S. Single Nucleotide Polymorphism revealed a clonal signature for the neonatal meningitic *Cronobacter sakazakii* ST4. 5th Cold Spring Harbor Laboratory/Wellcome Trust Scientific conference on infectious Disease Genomics and Global Health, Cambridge (2012), UK.

Masood, N. & Forsythe, S. Expanding the multilocus sequence typing of *Cronobacter sakazakii* to include virulence relatedness. ASM, San Francisco (2012), USA.

Masood, N. & Forsythe, S. multilocus sequence typing of *Cronobacter sakazakii*: ST4 and variation in *ompA* and *recN* sequences. SGM, Dublin (2012), Republic of Ireland.

INTERESTS AND HOBBIES:

-Playing cricket, -Travelling, -Watching TV, and -Book reading.

References:

To be given on request