

ANJANI KUMARI, PhD

LIFE SCIENCES SCIENTIST | ADVANCED MICROSCOPY | TRANSLATIONAL R&D

Bethesda, Maryland | Relocating to Europe | Spouse of an EU (Bulgarian) citizen | Available for extensive travel
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PROFESSIONAL PROFILE

Life sciences scientist with 8 years of doctoral and postdoctoral research experience across advanced microscopy, quantitative image analysis and translational cell biology. Currently a Visiting Research Fellow at the National Eye Institute, NIH, with hands-on experience developing and optimising imaging and screening workflows, including super-resolution and high-content microscopy. Experienced in working with microscopy vendors, training researchers and translating complex experimental requirements into robust, reproducible workflows.

OPPORTUNITIES OF INTEREST

Microscopy Applications / Product Specialist • Project Scientist / Research Programme Coordinator • R&D Scientist – Imaging, Cell Biology or Assay Development • Scientific Sales / Technical Commercial

CORE SKILLS AND EXPERTISE

Advanced microscopy: Independent operation of Leica TCS SP8 with LIGHTNING and a Leica STED system, ZEISS LSM 880, ELYRA and Celldiscoverer 7; confocal, widefield, STED, STORM/SMLM and high-content imaging; Abberior MINFLUX demonstration support.

Image and data analysis: Aivia, Imaris, arivis, ImageJ/Fiji, CellProfiler, MetaXpress, ZEN Blue, LAS X and GraphPad Prism; classifier training, segmentation, batch analysis and morphological quantification.

Assay development and translational research: Molecular Devices ImageXpress and SpectraMax; 96-well dose-response screening; fluorescence/luminescence and viability assays; FISH/in situ hybridisation; mammalian cell culture; CRISPR-Cas9 RNP; mouse retinal dissection and rod photoreceptor isolation.

Programme and stakeholder delivery: Research workstream coordination, protocol optimisation and documentation, electronic laboratory notebooks, grant development, cross-functional communication and patient/public engagement.

PROFESSIONAL EXPERIENCE

National Eye Institute, National Institutes of Health | Bethesda, Maryland

Visiting Research Fellow (postdoctoral appointment), Retinal Development, Genetics and Therapy Section, Neurobiology, Neurodegeneration and Repair Laboratory (NNRL) | May 2024 – Present

- Optimised Leica STED sample preparation and imaging conditions to improve resolution, signal reproducibility and cross-user transferability; supported an Abberior MINFLUX demonstration and worked with vendor applications specialists to adapt acquisition workflows to biological questions.
- Built quantitative image-analysis workflows in Aivia and Imaris, with further analysis in arivis and ImageJ/Fiji, including a machine-learning classifier trained by manual annotation in Aivia to separate nuclear from non-nuclear objects, and applied them to segmentation, batch analysis and cell-circularity comparison between young and ageing models.
- Established the laboratory's first successful ACC-seq libraries from mouse retina by extensively adapting an ATAC-seq-derived workflow; ran three biological replicates across five time points to probe chromatin-bound condensates in NRL-regulated rod photoreceptors; sequencing data in analysis.
- Generated super-resolution microscopy data and publication figures, addressed figure-focused reviewer requests contributing to two 2026 retinal-biology papers, documented reproducible methods in an electronic laboratory notebook and mentored a research intern.

University of Nottingham | Nottingham, United Kingdom

Research Fellow | March 2023 – May 2024

PhD Researcher | October 2018 – October 2023 (thesis submitted March 2023; degree awarded 2023)

- Designed and executed a high-content screen of 30 compounds across ten-point dose-response curves in triplicate using 96-well myotonic-dystrophy patient fibroblasts (900 treatment measurements); quantified nuclear RNA-foci number, intensity and area on a Molecular Devices ImageXpress platform.
- Co-identified azithromycin as a dose-responsive candidate that reduced toxic RNA foci, a key thesis result that underpinned the funded Muscular Dystrophy UK follow-on project.
- Optimised cell-viability, RNA-FISH and imaging assays, presented progress at MRC Developmental Pathway Funding Scheme meetings and maintained detailed experimental documentation.
- Explored transfer of the established screening methods to iPSC models and contributed to a separate C9orf72 iPSC project through cross-departmental workflow troubleshooting.

- Conducted six medical-expert interviews, translated user needs into a questionnaire and decision-tree prototype, and presented the concept to hospital stakeholders and an investor/grant panel, securing agreement to distribute the questionnaire to patients.

EDUCATION

- **PhD, Genetics**, University of Nottingham, United Kingdom (2023)
- **M.S., Biochemical Engineering and Biotechnology**, Indian Institute of Technology Delhi, India (2017)
- **B.Tech., Biotechnology**, Amity University, India; University Gold Medal (2015)

ADDITIONAL TECHNICAL SKILLS

Molecular and genomic methods: DNA/RNA/protein extraction, RT-PCR, digital droplet PCR, western blotting, immunohistochemistry, cryostat and vibratome sectioning, transfection and shRNA/siRNA delivery.

Genomics and software: Hands-on RNA-seq, CUT&Tag and ACC-seq experimental workflows; collaborator-led primary processing with contribution to downstream interpretation. Working knowledge of Python (pandas, NumPy and scikit-learn) and Excel.

Experimental systems: Mouse retina and rod photoreceptors, patient-derived fibroblasts and iPSC models. Previous holder of UK Home Office Personal Licence modules A and B, with regulated mouse-procedure experience.

LEADERSHIP, TRAINING AND OUTREACH

- Trained 10 students, interns and researchers one-to-one across microscopy, cell-based screening and CRISPR-Cas9 RNP methods; earlier, as Adjunct Lecturer on an MSc Bioinformatics course at LNjN National Institute of Criminology and Forensic Sciences, New Delhi (2017–2018), delivered classroom teaching and co-supervised three MSc dissertations.
- Supported Retinal Disease Interest Group seminars, NIH-India collaboration activities, ethics-course delivery and early-career development programming at NIH.
- Held additional University of Nottingham roles as Graduate Centre Coordinator, Faculty of Medicine and Health Sciences (2019–2020), and Training and Development Officer, Researcher Academy (2020–2021), helping organise events, classes and researcher-development activities.
- Communicated research through rare-disease patient and family meetings, Pint of Science, two Three Minute Thesis competitions, school outreach, a podcast and a television interview; also contributed to a BBC radio discussion on mental health.

SELECTED FUNDING AND RECOGNITION

- **Muscular Dystrophy UK project grant** – Co-applicant; macrolide therapy for myotonic dystrophy type 1; £149,915 total award (2023).
- **RNA Cluster Mini-Grant, University of Nottingham** – Principal applicant; funded award of £5,000 (2024).
- **Additional recognition** – Vice-Chancellor's International Scholarship for Research Excellence.

SELECTED PUBLICATIONS

12 peer-reviewed articles and book chapters; full list on Google Scholar (link above).

- Preston K Jr, Arya M, **Kumari A**, et al. Stress Responsive bZIP Transcription Factors ATF4 and BACH1 Cooperate With MAF-Family bZIP Protein NRL to Fine-Tune Rod Photoreceptor Gene Expression. *Investigative Ophthalmology & Visual Science*. 2026;67(6):9.
- Gaur M, Brooks MJ, Liang X, Jiang K, **Kumari A**, et al. Lactate and histone H3K18 lactylation are associated with metabolic control of gene expression in the retina. *PLOS Genetics*. 2026;22(4):e1012100.
- **Kumari A**, Sedehizadeh S, Brook JD, et al. Differential fates of introns in gene expression due to global alternative splicing. *Human Genetics*. 2022;141:31–47.
- Xing X*, **Kumari A***, Brown J, Brook JD. Disrupting the Molecular Pathway in Myotonic Dystrophy. *International Journal of Molecular Sciences*. 2021;22:13225.

* Equal contribution (joint first authorship).

LANGUAGES AND MOBILITY

Languages: English (fluent); Hindi (native/bilingual); introductory German, willing to refresh. **Mobility:** Priority interest in Switzerland, Germany and Spain.