BIOGRAPHICAL SKETCH

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NAME: Nandaki KESHAVAN

eRA COMMONS USER NAME (credential, e.g., agency login): N/A

POSITION TITLE: Specialty Registrar in Paediatric Metabolic Medicine

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion MM/YYYY	FIELD OF STUDY/TRAINING
University of Cambridge	BA	10/2006	06/2009	Medical Sciences
University of Cambridge	MB BChir	10/2006	06/2012	Medicine
University of Cambridge	MA	N/A	05/2013	Medical Sciences
Foundation Year 1: Luton and Dunstable Hospital		09/2012	09/2013	Gastroenterology, Surgery
Foundation Year 2: Royal Free Hospital		09/2013	09/2014	General Paediatrics, GP, A&E
Specialty Trainee 1: Barnet Hospital		09/2014	09/2015	General Paediatrics and NICU
Specialty Trainee 2: University College London Hospital, Royal London Hospital		09/2015	09/2016	NICU and Paediatric allergy
Specialty Trainee 3: Great Ormond Street Hospital, University College London Hospital		09/2016	09/2017	Paediatric Metabolic Medicine Paediatric Oncology/BMT
Specialty Trainee 4: Barnet Hospital		09/2017	09/2018	NICU and General Paediatrics
University College London	PhD	09/2018	09/2022	Genetics and Genomic Medicine
Specialty Trainee 5: Central London Community		09/2022	03/2023	Community Paediatrics
Specialty Trainee 6: Great Ormond Street Hospital		03/2023	to present	Paediatric Metabolic Medicine

A. Personal Statement

I became interested in joining the E-mit board after having attended the fantastic E-mit 2023 meeting which was not only of a remarkably high scientific standard, but also enabled valuable networking opportunities within the global mitochondrial medicine community. E-mit's role in promoting a scientific culture and multidisciplinary collaboration has enabled the coming together of like-minded clinicians and scientists from both academic and industrial backgrounds. This has strengthened research collaborations which will ultimately be crucial to developing much needed disease modifying therapies for patients with primary mitochondrial disorders.

Many of the founding objectives of E-mit align well with my own career aims. As a subspecialty trainee in paediatric metabolic medicine, I am uniquely placed to improve the health of the next generation. Having worked at some of the busiest NHS hospitals in London in both clinical and research capacities, I am motivated to improve the lives of patients by delivering high-quality clinical care. In my present role I take care of inpatients with mitochondrial disorders on a frequent basis having previously seen patients in Great Ormond Street Hospital's specialist mitochondrial disease clinic for several years. I also have a keen interest in mitochondrial biology and am fascinated by the mechanisms through which biochemistry interacts with human physiology and pathology. A better understanding of disease mechanisms is undoubtedly key to developing novel drug targets. This inspired me to develop my mitochondrial research interests including undertaking several natural history studies, submitting successful grants for the creation and characterization of novel transgenic mouse models of two different primary mitochondrial disorders and to also undertake a PhD in genetic and genomic medicine which I recently completed in Jan 2023. During my PhD I employed a gene therapy strategy to ameliorate mitochondrial dysfunction in a murine model of mitochondrial DNA depletion syndrome. In the near future, I hope to refine this work to commence clinical trials and extend this proof-of-principle to other primary mitochondrial disorders.

Another important founding objective of E-mit is to increase public awareness about mitochondrial disorders and engagement with patient organisations. During my PhD, I was fortunate to attend and contribute at events organised by various patient organisations including the Lily foundation, International Mito patients, the Freya Foundation and Action Medical research. I have been inspired by these interactions and have increased my appreciation of the importance of the patient voice in lobbying government to adequately fund and address unmet patient health needs and to invest in rare disease research. These experiences have motivated me to dedicate my career to improving the standard of care for patients with mitochondrial disorders and other inborn errors of metabolism, which is a major reason why I decided to become a paediatrician several years ago.

I possess relevant collaborative skills to bring to the E-mit board, having served on the communications team of the UCL Institute for Women's Health during my PhD where I liaised with the director and senior management of the Institute to provide website and publicity support. I also helped set up an Early Careers Researchers (ECR) group where I helped organise educational events including lectures and masterclasses targeted at ECRs, managed event publicity and elicited

the educational needs of ECRs in the Institute. I am also currently a member of the NIHR GOSH Biomedical Research Centre's junior faculty, where I have represented ECRs on grant panels, advised on ECR interests and promoted access to adequate training opportunities, which aligns well with E-mit's own objectives. As I progress in my clinical and academic career I hope to develop additional management and leadership experience which will be necessary for me to function at a senior level, both as an NHS consultant and an independent academic. Joining the E-mit board will be an excellent opportunity to acquire and further develop these essential complementary skills.

B. Positions, Scientific Appointments and Honors

Positions:

1. Member of the Royal College of Paediatrics and Child Health (MRCPCH) 2016
2. Member of the British Inherited Metabolic Disease Group
3. Member of the NIHR GOSH Biomedical Research Centre's junior faculty (gene, stem and cell therapy theme)

Scientific Appointments:

1. Honorary Research Associate 2017-2018
2. Clinical Research Training Fellow 2018-2022
3. Honorary Research Associate 2022-present

Honors/Grants:

1. Gene therapy for Mitochondrial DNA depletion syndrome. **Dr N Keshavan** (PI), Prof S Rahman, Prof S Waddington, Dr R Karda, Action Medical Research, 2018-2022 £229924
2. Natural history Study of Pyruvate Dehydrogenase Deficiency. **Dr N Keshavan** (Co-I), Prof S Rahman (PI), Freya Foundation, 2019-2020 £32541
3. Gene therapy for Mitochondrial DNA depletion syndrome **Dr N Keshavan** (PI), Prof S Rahman, Prof S Waddington, Dr R Karda, NIHR GOSH BRC Doctoral Training Support Award, 2020-2021 £4000
4. Novel models of mitochondrial disease **Dr N Keshavan** (Co-I), Prof J Morgan, Prof S Rahman. MRC Genome Editing Mice for Medicine (GEMM) funding call 2018- two successful bids for novel mitochondrial disease models
5. Gene therapy for Mitochondrial DNA depletion syndrome. **Dr N Keshavan** (Co-I), Prof S Rahman, Prof S Waddington, Dr R Karda, UCL Therapeutic Acceleration Support Fund, 2023-2024 £ 79784

C. Contributions to Science

1. Clinical status, biochemical profile and management of a single cohort of patients with arginase deficiency. JIMD Reports. 2021; 1- 8. **Keshavan N**, et al
2. Expanding the phenotypic spectrum of BCS1L-related mitochondrial disease. Ann Clin Transl Neurol. 2021 Oct 18. Hikmat O, Isohanni P, **Keshavan N**, et al.
3. Moving towards clinical trials for mitochondrial diseases. J Inherit Metab Dis. 2021 Jan;44(1):22-41. Pitceathly RDS, **Keshavan N**, Rahman J, Rahman S.
4. Safety of drug use in patients with a primary mitochondrial disease: An international Delphi-based consensus. J Inherit Metab Dis.2020 Jul;43(4):800-818. De Vries MC, Brown DA, Allen ME, Bindoff L, Gorman GS, Karaa A, **Keshavan N**, et al.
5. Cardiac valve involvement in ADAR-related type I interferonopathy. J Med Genet. 2019 Nov 26 Crow Y, **Keshavan N**, Barbet JP, et al.
6. The natural history of infantile mitochondrial DNA depletion syndrome due to RRM2B deficiency. Genet Med. 2019 **Keshavan N**, Abdenur J, Anderson G, et al.
7. Natural history of mitochondrial disorders: a systematic review. **Keshavan N**, Rahman, S. Essays in Biochemistry 2018,62(3)423-442.
8. A nutrient-sensitive restriction point is active during retinal progenitor cell differentiation. Love NK, **Keshavan N**, Lewis R, et al. Development 2014 141:697-706

D. Scholastic Performance

1. 2006-2009 Cambridge Commonwealth Trust Scholarship
2. 2009-2012 Cambridge Commonwealth Trust Scholarship
3. 2007-2012 Trinidad & Tobago Government National Scholarship
4. Prize for best scored poster at Society for the Study of Inborn Errors of Metabolism conference 2016 in peroxisomal disease category
5. 2nd prize for oral presentation at European Metabolic Group conference 2017 in the clinical trainee category
6. 3rd prize for poster presentation at UCL GOS Institute of Child Health PhD student symposium 2018
7. Prize for best poster at UCL Institute for Women's health early career researcher meeting 2022