

Girish Ram Mali

(He/Him)

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PROFESSIONAL EXPERIENCE

2016-Present **Career Development Postdoctoral Fellow, Structural Studies Division.**

MRC Laboratory of Molecular Biology (Cambridge, UK) – Mentor: **Dr. Andrew Carter**

Structural studies and assembly mechanisms of axonemal dynein motors

- Developed an independent proposal to structurally characterise ciliary dyneins using cryo-EM.
- Discovered and named the novel ciliary outer dynein arm (ODA) inhibitor protein - Shulin.
- Determined the first cryo-EM structure of the ODA-Shulin complex with collaborators.
- Performed biochemical assays, negative stain EM and cellular characterisation of Shulin mutants.
- Reconstituted and extensively optimised the ODA-Shulin complex on cryo-EM grids.
- Processed the highly flexible ODA-Shulin complex using single particle cryo-EM analysis.
- Prepared samples and analysed cross-linking mass spectrometry data for another ODA regulator.

2015-2016 **Postdoctoral Fellow**

MRC Human Genetics Unit (Edinburgh, UK) – Mentor: **Dr. Pleasantine Mill**

Functional characterisation of the dynein assembly factor ZMYND10

- Generated data to secure a grant from the Carnegie Trust for the Universities of Scotland.
- Characterised ZMYND10 CRISPR mutant mice using histology, proteomics and cellular assays.
- Established a motile cilia cell model using an *in-vitro* mouse stem cells differentiation protocol.
- Developed endogenous co-immunoprecipitation strategies to detect interactors of ZMYND10.
- Studied protein sub-cellular localizations using confocal and super-resolution microscopy.

EDUCATION

2011-2015 **PhD Clinical and Molecular Medicine [Conferred: 27th Nov, 2015]**

MRC Human Genetics Unit – Supervisors: **Dr. Pleasantine Mill and Prof. Ian Jackson**

Multisystem functional characterisation of motile ciliopathy genes *Heatr2* and *Zmynd10*

- Established protein interaction studies in the lab
- Functionally characterised HEATR2 and ZMYND10 as novel dynein assembly factors (DNAAFs)

2010-2011 **MSc by Research in Biomedical Sciences.**

University of Edinburgh, UK – Supervisor: **Prof. Andrew Jarman (rotation project)**

- Helped to generate and characterised *Drosophila* mutants for novel cilia related disease genes

2006-2010 **BSc (Hons) Biotechnology, Cardiff University, UK [Conferred: 9th Jul, 2010]**

2008-2009 Undergraduate Research Placement (Sandwich year)

University of Exeter – Supervisors: **Dr. Sarah Flanagan, Prof. Sian Ellard and Prof. Andrew Hattersley**

SCHOLARSHIPS AND GRANTS

2016 Conference travel grants from The Genetics Society (Junior Scientist Award) and the British Society for Developmental Biology (Company of Biologists Award).

2011-2015 Edinburgh Global Research Scholarship for outstanding students (est. £50,000).

2010-2014 Edinburgh CMVM Studentship for outstanding international students (est. £75,000).

PRIZES AND AWARDS

2021	The Brenner Postdoc Prize for outstanding LMB postdoctoral research.
2021	MRC Special Award for outstanding contribution to UKRI science.
2017	Postdoc of the Year poster prize, British Society for Cell Biology.
2016	Proposal shortlisted for a Sir Henry Wellcome Postdoctoral Fellowship.
2014	Young Scientist Award, University of Tsukuba – Global Science Week.
2012	Poster Award, 1st Cilia in Development and Disease Conference.

TEACHING AND ACADEMIC SERVICE

2014-Present	Day to day supervision of 2 PhD students and 3 MSc rotation students on an integrated PhD programme. Pastoral support and scientific skills training of junior lab colleagues.
Since 2016	Co-peer reviewer for the journals <i>Elife</i> and <i>Molecular Biology of the Cell</i> .
2012-2019	Volunteer demonstrator at Royal Society Summer Exhibit (2019), LMB Open Day (2017), Edinburgh and Cambridge Science Festivals (2012-2018).
2012-2013	President of the MRC IGMM postgraduate student's society (POGS). Chaired the organising committee for the annual student's symposium at Newcastle University.
2007-2008	Undergraduate representative of the Academic Standards and Quality Committee, School of Biosciences, Cardiff University.

MEMBERSHIPS AND AFFILIATIONS

2020-Present	UK Cilia Network
2017-Present	Research Associate, Trinity Hall, University of Cambridge, UK
2016-Present	British Society for Cell Biology

CONFERENCES AND INVITED TALKS

Mar, 2021	Wellcome Trust Center for Cell Biology, University of Edinburgh (Host: Prof. David Tollervey, Director)
Feb, 2021	Human Technopole Institute, Milan (Host Dr. Gaia Pigino, Associate Head of Structural Biology, HTI)
Jan, 2021	Cilia (in lockdown) series speaker hosted by Dr. Pleasantine Mill.
Oct, 2020	Selected speaker, MRC Laboratory of Molecular Biology annual symposium.
Jun, 2020	Selected speaker, EMBO Microtubule Meeting, EMBL (virtual talk).
Apr, 2020	Motors in Quarantine series speaker hosted by Dr. Anne Straube.
Dec, 2019	American Society for Cell Biology, annual meeting (poster)
Apr, 2017	British Society for Cell Biology, annual spring meeting (poster – Prize Winner)
Jun, 2016	EMBO Microtubule Meeting, EMBL, Heidelberg (poster)
Nov, 2014	Selected speaker, 2 nd International Cilia Conference, Institut Pasteur, Paris
Sep, 2014	Invited representative of University of Edinburgh – Tsukuba Global Science Week
Sep, 2014	Invited speaker hosted by Prof. Hiroshi Hamada (University of Osaka, Japan)
Apr, 2013	Gordon Research Conference - Cilia, Mucus and Mucociliary Interactions (poster)
May, 2012	1 st International Cilia Conference, London (poster)

COLLABORATORS

Prof. Susan Dutcher (University of Washington in St. Louis) – *Chlamydomonas* genetics expert
Prof. Hannah Mitchison (University College London) – Access to clinical data of PCD patients
Dr. Gaia Pigino (Associate Head, Structural Biology, Human Technopole) – Cryo-ET of cilia and IFT
Dr. Mark Skehel (Head of Proteomics, LMB) – Cross-linking mass spectrometry expert
Dr. Sudipto Roy (Associate Prof., National University of Singapore) – Loss of function studies in Zebrafish
Dr. Amelia Shoemark (PI, University of Dundee) – Access to human multiciliated airway epithelial cells

PUBLICATIONS

(* These authors made equal contributions; ORCID iD: 0000-0002-5551-7555)

1. **Mali GR***, Abid Ali F*, Lau CK*, Begum F, Boulanger J, Howe J, Chen ZA, Rappsilber J, Skehel M, Carter AP Shulin packages axonemal outer dynein arms for ciliary targeting. *Science*. 2021 Feb; 371 (6532), 910–916. DOI: [10.1126/science.abe0526](https://doi.org/10.1126/science.abe0526)
2. Ford MJ, Yeyati PL, **Mali GR**, Keighren MA, Waddell SH, Mjoseng HK, Douglas AT, Hall EA, Sakaue-Sawano A, Miyawaki A, Meehan RR, Boulter L, Jackson IJ, Mill P, Mort RL. A Cell/Cilia Cycle Biosensor for Single-Cell Kinetics Reveals Persistence of Cilia after G1/S Transition Is a General Property in Cells and Mice. *Dev Cell*. 2018 Nov 19; 47(4): 509-523.e5. DOI: [10.1016/j.devcel.2018.10.027](https://doi.org/10.1016/j.devcel.2018.10.027)
3. **Mali GR***, Yeyati PL*, Mizuno S, Dodd DO, Tennant PA, Keighren MA, Zur Lage P, Shoemark A, Garcia-Munoz A, Shimada A, Takeda H, Edlich F, Takahashi S, von Kriegsheim A, Jarman AP, Mill P. ZMYND10 functions in a chaperone relay during axonemal dynein assembly. *Elife*. 2018 Jun 19; 7:e34389. DOI: [10.7554/eLife.34389](https://doi.org/10.7554/eLife.34389)
4. Zur Lage P, Stefanopoulou P, Styczynska-Soczka K, Quinn N, **Mali G**, von Kriegsheim A, Mill P, Jarman AP. Ciliary dynein motor preassembly is regulated by Wdr92 in association with HSP90 co-chaperone, R2TP. *J Cell Biol*. 2018 Jul 2; 217(7): 2583-2598. DOI: [10.1083/jcb.201709026](https://doi.org/10.1083/jcb.201709026)
5. Hall EA, Nahorski MS, Murray LM, Shaheen R, Perkins E, Dissanayake KN, Kristaryanto Y, Jones RA, Vogt J, Rivagorda M, Handley MT, **Mali GR**, ... Mill P. PLAA Mutations Cause a Lethal Infantile Epileptic Encephalopathy by Disrupting Ubiquitin-Mediated Endolysosomal Degradation of Synaptic Proteins. *Am J Hum Genet*. 2017 May 4; 100(5): 706-724. DOI: [10.1016/j.ajhg.2017.03.008](https://doi.org/10.1016/j.ajhg.2017.03.008)
6. Yeyati PL, Schiller R, **Mali G**, Kasioulis I, Kawamura A, Adams IR, Playfoot C, Gilbert N, van Heyningen V, Wills J, von Kriegsheim A, Finch A, Sakai J, Schofield CJ, Jackson IJ, Mill P. KDM3A coordinates actin dynamics with intraflagellar transport to regulate cilia stability. *J Cell Biol*. 2017 Apr 3; 216(4): 999-1013. DOI: [10.1083/jcb.201607032](https://doi.org/10.1083/jcb.201607032)
7. Handley MT, Carpanini SM, **Mali GR**, Sidjanin DJ, Aligianis IA, Jackson IJ, FitzPatrick DR. Warburg Micro syndrome is caused by RAB18 deficiency or dysregulation. *Open Biol*. 2015 Jun; 5(6): 150047. DOI: [10.1098/rsob.150047](https://doi.org/10.1098/rsob.150047)
8. DiggieCP*, MooreDJ*, **Mali G***...SheridanE, JarmanAP, MillP. HEATR2 plays a conserved role in assembly of the ciliary motile apparatus. *PLoS Genet*. 2014 Sep 18; 10(9): e1004577. DOI: [10.1371/journal.pgen.1004577](https://doi.org/10.1371/journal.pgen.1004577)
9. Flanagan SE, Kapoor RR, **Mali G**, Cody D, Murphy N, Schwahn B, Sihanidou T, Banerjee I, Akcay T, Rubio-Cabezas O, Shield JP, Hussain K, Ellard S. Diazoxide-responsive hyperinsulinemic hypoglycemia caused by HNF4A gene mutations. *Eur J Endocrinol*. 2010 May; 162(5): 987-92. DOI: [10.1530/EJE-09-0861](https://doi.org/10.1530/EJE-09-0861)