

Personal Details

Name: Rukmini Mukherjee

Affiliation: Post-Doctoral Research Fellow

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Research Experience:

September 2017 to present

Rukmini Mukherjee is a postdoctoral research associate in the lab of Prof Ivan Dikic, at the Buchmann Institute for Molecular Life Sciences, Goethe University, Frankfurt am Main. She works on ADP ribosylation of ubiquitin and its importance in the mammalian cell.

March 2017 to June 2017

Rukmini Mukherjee has worked as a postdoctoral research experience in the lab of Prof Tony Hunter at the Salk Institute, San Diego, California, USA. She has worked on calcium dynamics at endoplasmic reticulum mitochondria junctions using high resolution microscopy and biochemical methods. She has also worked on finding evidences of histidine phosphorylation in mammalian cell lysates by biochemical methods.

Research experience as PhD student (August 2011-February 2017)

Rukmini Mukherjee has been a PhD student working in the lab of Professor Oishee Chakrabarti in the Biophysics and Structural Genomics Division of Saha Institute of Nuclear Physics, Kolkata. She has published 5 papers in international peer-reviewed journals and has submitted her PhD thesis on 26 Dec 2016, has completed her thesis requirements required for a PhD degree. Her work includes the following

- (1) Studying the effect of ubiquitination on mitochondrial function.** This work analyses how the protein Mahogunin Ring Finger 1 (MGRN1) affects mitochondrial function in the cell. Both mitochondrial dynamics and quality control are affected by MGRN1. This study is significant because mitochondrial health in the cell is one of the first things that get affected in diseases like aging or neurodegeneration. Therefore, studying regulation of mitochondrial function by MGRN1 will help in better understanding of the mitochondria as a therapeutic target for aging and neurodegeneration.
- (2) Studying the role of MGRN1 on movement of organelles inside the cell.** In this project Rukmini focuses on the movement of mitochondria and endosomes in cells having functional MGRN1 protein or lacking it. High resolution confocal microscopy is the main tool for this study.
- (3) Calcium dependent ubiquitination of GP78 by MGRN1:** This study focuses on calcium dependent interactions between 2 proteins: MGRN1 and GP78. This study uses biochemical techniques and computational docking studies to characterise the interactions between specific domains of MGRN1 and GP78 in varying calcium concentrations.

MSc Research Experience (December 2010- May 2011)

As part of Rukmini's MSc dissertation she has worked in the project entitled 'Cloning expression and purification of two bacterial proteins: FlrB, and FlrC.' under Dr Jhimli Dasgupta at St Xaviers College, Kolkata.

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Academic record:

- **2011- 2012:** Rank 1 in PhD coursework at Saha Institute of Nuclear Physics, Kolkata.
 - **2006-2011:** 5 years Integrated MSc in Biotechnology from St Xaviers College, Kolkata (Aggregate: 79%)
 - **2006:** ISC examination (Aggregate:91%) from Pratt Memorial School, Kolkata
 - **2004:** ICSE Examination (Aggregate 89.8%) from Pratt Memorial School, Kolkata.
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National Level Entrance Examinations and other awards:

- INSPIRE Faculty Award, Govt of India- January 2017
 - CSIR: June 2011 (rank 15)
 - GATE 2011: 93.45 percentile (in life science)
 - DBT-JRF: April 2011(category A, rank 15)
 - ICMR-JRF: July 2011
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Conferences, Workshops and Poster presentations:

- **February 10-12, Kolkata, India:** Best Poster Award at the International conference on "Neurodegenerative disorders: current and future perspective", organized by UGC, India, and University of New Castle, UK
- **June 12-17,2016, Montana, USA:** Best Poster Award at the FASEB conference on ubiquitin and cellular regulation, Montana, USA
- **September 21-28, 2014, Bangalore** Poster presentation and workshop on microscopy (Bangalore Microscopy Course 2014) at the National Center for Biological Sciences, Bangalore, India
- **January 20-24, 2014, Kolkata:** Poster presentation at IUBMB 10th International Symposium on Biochemical Role of Cell Surface Macromolecules, Kolkata, India.
- **July 1-2, 2013, Kolkata, India:** Workshop on cryo-electron microscopy organised by Electron Microscopy Society of India and National Institute of Cholera and Enteric diseases, Kolkata.
- **July 3-5, 2013, Kolkata:** International Conference on Electron Microscopy and XXXIV Annual Meeting of the Electron Microscope Society of India.
- **January 13-26, 2013, Mumbai and Mahabaleshwar:** Poster presentation at the Advanced school and workshop on Axonal Transport in Neurodegenerative Disorders organised by International Centre for Theoretical Sciences, TIFR, Mumbai, India.

- **January 8-9, 2009, Durgapur:** National Conference on “Future of Food Biotechnology in India” held at National institute of technology Durgapur, India. 3
- **August 23, 2008, Kolkata:** Conference on Plant biotechnology and its Relevance to Food Security” organized by the DBT-Programme Support, Department of Biotechnology, Govt of India.
- **September 25-26, 2008, Kolkata:** “Complex Diseases: Approaches to gene identification And Therapeutic Management” (Human Genome Organisation HGM2008 Satellite Symposium held at Saha Institute of Nuclear Physics, Kolkata, India.

Publications:

Mukherjee R, Chakrabarti O. Regulation of Mitofusin1 by Mahogunin Ring Finger-1 and the proteasome modulates mitochondrial fusion. *Biochimica et Biophysica Acta (BBA)-Molecular Cell Research*. 2016 Dec 31;1863(12):3065-83.

Mukherjee R, Chakrabarti O. Ubiquitin-mediated regulation of the E3 ligase GP78 by MGRN1 in trans affects mitochondrial homeostasis. *J Cell Sci*. 2016 Feb 15; 129(4):757-73.

Mukherjee R, Chakrabarti O. Mitochondrial Quality Control: Decommissioning Power Plants in Neurodegenerative Diseases. *The Scientific World Journal*. 2013 Oct 28; 2013.

Srivastava D, **Mukherjee R**, Mookherjee D, Chakrabarti O. MAHOGUNIN MEDIATED REGULATION OF $G\alpha_i$ LOCALISATION DURING MITOSIS AND ITS EFFECT ON SPINDLE POSITIONING. *Biochemistry and Cell Biology*. 2016 Apr 21(ja).

Bera K, Sau A, Mondal P, **Mukherjee R**, Mookherjee D, Metya A, Kundu AK, Mandal D, Satpati B, Chakrabarti O, Basu S. Metamorphosis of Ruthenium-Doped Carbon Dots: In Search of the Origin of Photoluminescence and Beyond. *Chemistry of Materials*. 2016 Oct 4;28(20):7404-13.

Mukherjee R, Majumder P, Chakrabarti O. MGRN1-mediated ubiquitination of α -tubulin regulates microtubule dynamics and intracellular transport. *Traffic*. 2017 Dec 1;18(12):791-807.

Mukherjee R, Das A, Chakrabarti S, Chakrabarti O. Calcium dependent regulation of protein ubiquitination–Interplay between E3 ligases and calcium binding proteins. *Biochimica et Biophysica Acta (BBA)-Molecular Cell Research*. 2017 Jul 1;1864(7):1227-35.

Manuscripts under revision

Mukherjee R, Bhattacharya A, Chakrabarti S and Chakrabarti O. Calmodulin dependent regulation of MGRN1 and GP78 (Manuscript under revision, *Faseb Journal*)

Majumder P, **Mukherjee R**, Chakrabarti S, and Chakrabarti O. Cytosolic aggregates in presence of nontranslocated proteins perturb endoplasmic reticulum dynamics, 4
(Manuscript under revision, BiochemicalJournal)

References:

- (1) Dr Ivan Dikic
Professor,
Goethe University,
Frankfurt Am main,
Germany

 - (2) Dr Oishee Chakrabarti,
Associate Professor,
Biophysics and Structural Genomics Division,
Saha Institute of Nuclear Physics,
Kolkata, India.
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