

## **APARNA MUKHOPADHYAY, PhD**

(aka Aparna Mukherjee)

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### **APPOINTMENTS:**

**March 2013- Present**

**Assistant Professor**

Department of Physiology, Presidency University, Kolkata, India.

**August 2012-December 2012**

**Adjunct Assistant Professor**

Department of Biology, School of Science, Health and Technology, Medgar Evers College, The City University of New York, Brooklyn, NY, USA.

**October 2007-November 2012**

**Research Associate**

Department of Anatomy and Structural Biology and Marion Bessin Liver Research Center, Albert Einstein College of Medicine, Bronx, NY, USA.

**May 2002-October 2007**

**Graduate Student**

Department of Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY, USA.

**September 2000-April 2002 Junior Research Fellow**

Division of Molecular and Human Genetics, Indian Institute of Chemical Biology, Kolkata, India.

### **EDUCATION:**

2007 **PhD** in Biomedical Sciences, Albert Einstein College of Medicine, Bronx, NY.

2004 **MS with Distinction** in Biomedical Sciences, Albert Einstein College of Medicine, Bronx, NY

2002 **MSc** in Biotechnology, Banasthali Vidyapith, Banasthali, India.

1998 **BSc** in Physiology, Presidency College, Calcutta University, India

### **TEACHING EXPERIENCE:**

**March 2013-Present: Assistant Professor**

Department of Physiology, Presidency University, Kolkata, India

- Teach undergraduate and postgraduate students basic physiology, cell biology, genetics, molecular biology and microbiology.
- Design and upgrade syllabus.
- Perform related administrative duties.
- Apply for external funding and perform research activities for graduate and postgraduate students.

**August 2012-December 2012: Adjunct Assistant Professor**

Department of Biology, School of Science, Health and Technology, Medgar Evers College, The City University of New York, Brooklyn

- Teach and supervise basic and advanced general biology laboratory courses (3 credit hours each) for students interested in a future in healthcare.
- The courses are designed for science majors and include study of viruses, bacteria, protists, selected forms and functions of flowering plants, animal behavior and environment.

**June 2012-August 2012:** Mentor an undergraduate student from the University of Arizona as part of NIH funded Minorities Access to Research Careers (MARC) program and the Albert Einstein College of Medicine Summer Undergraduate Research Program (SURP).

- Introduce basic concepts of cell biology and biomedical research as preparation to joining a Ph.D. program.
- Initiated over expression of sfGFP fusion proteins in HEK 293 cells for immunoprecipitation and identification of novel interacting partners for Rab1a.
- Design and monitor progress of project and provide daily assistance and guidance.
- Guide preparation of abstract and poster for presentation.

**2011** Mentored a High school student from Yeshiva University High School for Girls in basic hands-on laboratory techniques.

- Introduce basic concepts in cell biology, biochemistry and molecular biology.
- Teach the basic concepts of biomedical research as an introduction to a career in science.
- Teach basic laboratory techniques such as immunoblotting, immunoprecipitation and column purification

**2009** Responsible Conduct of Research Course, Group Discussion Leader.

- Facilitate discussion of ethic principles in a group of about 10 students.
- Design and prepare questions related to topic.

**RESEARCH EXPERIENCE:**

**2007- 2012: Postdoctoral Researcher**

Department of Anatomy and Structural Biology and Marion Bessin Liver Research Center, Albert Einstein College of Medicine, Bronx, NY

Mentor: Dr. Allan Wolkoff

***Partially Funded by NIH/NIDDK Hepatology Training Grant Fellowship (5T32DK007218-36)***

- Initiated characterization of Rab1a's role in endocytic processing in the liver.
- Created siRNA mediated Rab1a knockdown cell lines to study endocytosis of

fluorescent ligands by live cell imaging, microscopic examination of motility of endocytic vesicles on microtubules and motor recruitment, published in J. Cell Science in 2011.

- Presented data in journal clubs, departmental meetings, domestic and international meetings.
- Supervised two graduate, an undergraduate and a high school student in basic laboratory techniques and basic cell biology.
- Generated data and wrote annual progress reports for NIH funded Training grant and program project.

### **2002-2007: Doctoral training**

Department of Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY

Mentor: Dr. Duncan Wilson

- Initiated investigation of membrane recruitment of Herpes Simplex Virus tegument protein Vhs (Virion host shutoff).
- Generated a series of deletion mutants to discover a 42aa minimal region sufficient for targeting GFP into the virus particle, published in J. Virol, 2006.
- Presented data at international, domestic and departmental meetings.
- Trained and assisted three graduate students with their projects.

### **2000-2002: Junior Research Fellow**

Division of Molecular and Human Genetics, Indian Institute of Chemical Biology, Kolkata, India.

Mentor: Dr. Keya Choudhury

- Initiated experiments to identify differentially expressed genes in radiation resistant strain M5 derived from the Chinese hamster V79 cell line, published in Radiation Research, 2003.
- Developed and perfected quantitative PCR techniques to study the differential expression of two mitochondrial genes.
- Presented work and recent literature at journal clubs.

### **2000: Graduate Assistant**

Banasthali Vidyapith, Banasthali, India.

Mentor: Dr. Binita Nautiyal

- Studied FSH, LH and PRL titers during puberty in mice by ELISA.
- Maintained mice stock and monitored puberty in mice.
- Drew blood from eye.
- Prepared sections of testis and ovary for histological processing, sectioning and stain with Eosin and Hematoxylin.

### **1999: Summer Graduate Assistant**

Bose Institute, Kolkata, India.

Mentor: Dr. Anuradha Lohia

- Acquired basic laboratory skills to clone, overexpress and purify E. histolytica ferredoxin gene in E. Coli.
- Grew and cultured bacterial stocks
- Prepared plasmid DNA without kits.

## **PUBLICATIONS:**

### **A. Peer Reviewed Research Publications:**

1. Tanowitz HB, **Mukhopadhyay A**, Ashton AW, Lisanti MP, Machado FS, Weiss LM, Mukherjee S. Microarray analysis of the mammalian thromboxane receptor-Trypanosoma cruzi interaction. **Cell Cycle**. 2011 Apr 1;10(7):1132-43. Epub 2011 Apr 1.
2. **Mukhopadhyay A**, Nieves E, Che F, Wang J, Jin L, Murray JW, Gordon K, Angeletti RH, Wolkoff AW. Proteomic Analysis of Endocytic Vesicles: I. Rab1a Regulates Motility of Early Endocytic Vesicles. **J Cell Sci**. 2011 Mar 1;124(Pt 5):765-75. Epub 2011 Feb 8.
3. Mukherjee S, Nagajyothi F, **Mukhopadhyay A**, Machado FS, Belbin TJ, Campos de Carvalho A, Guan F, Albanese C, Jelicks LA, Lisanti MP, Silva JS, Spray DC, Weiss LM, Tanowitz HB. Alterations in myocardial gene expression associated with experimental Trypanosoma cruzi infection. **Genomics**. 2008 May;91(5):423-32. Epub 2008 Mar 17.
4. **Mukhopadhyay A**, Lee GE, Wilson DW. The amino terminus of the herpes simplex virus 1 protein Vhs mediates membrane association and tegument incorporation. **J Virol**. 2006 Oct;80(20):10117-27.
5. Mukherjee S, Belbin TJ, Spray DC, **Mukhopadhyay A**, Nagajyothi F, Weiss LM, Tanowitz HB. Microarray technology in the investigation of diseases of myocardium with special reference to infection. **Front Biosci**. 2006 May 1;11:1802-13. Review.
6. Chi JH, Harley CA, **Mukhopadhyay A**, Wilson DW. The cytoplasmic tail of herpes simplex virus envelope glycoprotein D binds to the tegument protein VP22 and to capsids. **J Gen Virol**. 2005 Feb;86(Pt 2):253-61.
7. Chaudhuri K, Banerjee R, Pandit B, **Mukherjee A**, Das S, Sengupta S, Roychoudury S, Bhattacharyya NP. Identification of two differentially expressed mitochondrial genes in a methotrexate-resistant Chinese hamster cell strain derived from v79 cells using RNA fingerprinting by arbitrary primed polymerase chain reaction. **Radiat Res**. 2003 Jul;160(1):77-85.

### **B. Contributions to International Conferences:**

#### **Oral Presentations:**

1. **Aparna Mukhopadhyay** and Allan W. Wolkoff.  
Rab1a is a master regulator of early endocytic sorting events in hepatocytes. 63rd Annual Meeting of American Association for the Study of Liver Diseases, Nov 9 - 13, 2012; Boston, MA.
2. **Aparna Mukhopadhyay** and Allan W. Wolkoff.  
Rab1a Regulates Minus End Directed Motility of Early Endocytic Vesicles. 61<sup>th</sup> Annual meeting of the American association for the study of liver Diseases, Oct29-Nov2, 2010, Boston, MA.

3. **Aparna Mukhopadhyay**, Ruth H. Angeletti, John W. Murray, and Allan W. Wolkoff. Rab1a Regulates Motility and Trafficking of Early Endocytic Vesicles. 60<sup>th</sup> Annual meeting of the American association for the study of liver Diseases, Oct30-Nov3, 2009, Boston, MA.

**Abstracts/Posters at International Conferences:**

1. **Aparna Mukhopadhyay** and Allan W. Wolkoff.  
Rab1a is a global regulator of endocytosis via clathrin coated vesicles. 62<sup>th</sup> Annual meeting of the American Association for the Study of Liver Diseases, Nov 4-8, 2011 San Francisco, CA.
2. **Aparna Mukhopadhyay**, John W Murray and Allan W Wolkoff  
Characterizing the role of Rab1a in Endocytic Trafficking. 48<sup>th</sup> Annual Meeting for the American Society for Cell Biology, Dec 13-17, 2008, San Francisco, CA.
3. DW Wilson and **Mukhopadhyay A.**  
The Amino terminus of the Herpes Simplex Virus protein Vhs mediates Membrane Association and Tegument Incorporation. 31<sup>st</sup> International Herpesvirus Workshop, July 22-28, 2006. University of Washington, Seattle, WA.
4. **Mukhopadhyay, A** and Wilson DW.  
Identification of tegument targeting sequence in HSV-1. 10<sup>th</sup> Annual Julius Marmur Symposium, March 22, 2006. Albert Einstein College of Medicine, Bronx, NY- 10461.

**AWARDS AND HONORS:**

- 2011: Awarded Presidential Poster of Distinction at the 62<sup>th</sup> Annual meeting of the American Association for the Study of Liver Diseases, Nov 4-8, 2011 San Francisco, CA.
- 2004: Passed MS with Distinction at the Albert Einstein College of Medicine, Bronx, New York, USA.
- 2001: Honored for obtaining highest marks in the PhD qualifying Examination organized by Indian Institute of Chemical Biology, Kolkata, India.
- 1999: Awarded Junior Research fellowship (CSIR) through a competitive National Level Eligibility (NET) test conducted jointly by Council of Scientific and Industrial Research (CSIR) and University Grants Commission (UGC) in 1999, Govt. of India.
- 1997: Received first prize for scoring the highest marks in BSc Physiology, Part-1 examination in 1997, University of Calcutta (Kolkata), India.

**PARTICIPATION IN NIH FUNDED RESEARCH:**

2007-2010: Research funded by NIH/NIDDK Hepatology Training Grant (5T32 DK007218-36).

**PROFESSIONAL AFFILIATIONS:**

1. Member of American Society of Cell Biologist (ASCB) from 2008.
2. Member of New York Academy of Sciences (NYAS) from 2006.

**PROFESSIONAL SKILLS:**

- **Animal Manipulations:** Mouse eye bleeding.
- **Cell culture:** Culture of numerous cell lines, generation of stable transfectants.
- **Histology:** Histological and histochemical techniques, paraffin embedded tissue sections. Immunofluorescence labeling.
- **Cellular Sub-fractionation:** Subcellular and suborganellar fractionation using continuous and discontinuous gradients, preparations of cellular membranes and endocytic vesicles.
- **Molecular Biology:** Preparation and purification of genomic and plasmid DNA, extraction of RNA and proteins, cloning in bacteria, *in vitro* transcription and translation, arbitrary primed PCR for Differential Display, Enzyme Linked Immunosorbant Assay (ELISA) and standard techniques.
- **Virology:** Propagation of Viruses in cell culture, preparation of post-nuclear supernatants and infected cell lysates, plaque assay, purification of extracellular virions.
- **siRNA:** design of siRNAs, generation of stable knockdown cells including tet-inducible lines
- **Microscopy:** Preparation of fluorescent microtubules, generation of polarity marked microtubules, vesicle motility assays, staining of cell and vesicles by immunofluorescence, live cell imaging.  
Familiar with use and image acquisition in spinning disc confocal and Olympus 1x71 inverted microscopes for fixed and live cell imaging, transmission electron microscopy including use of Qdots and immunogold labeling.
- **Protein Analysis:** Mass spectrometric analysis, Preparation of soluble S-100 extract, purification, concentration and dialysis of proteins, *in vitro* translation, immunoprecipitation with protein A/G agarose beads, binding assays using GST fusions. fluorographic and electro chemiluminescent (ECL) detection of proteins.
- **Computer proficiency:** Image analysis and processing using Metamorph, Adobe Photoshop and Image J, creation of reference databases with Endnote, preparation and presentation of data using scientific slides and working with Internet and Databases.

**CITIZENSHIP:** Indian

**US IMMIGRATION STATUS:** Permanent Resident

**REFERENCES:**

**Dr. Allan W. Wolkoff**

Director, Marion Bessin Liver research Center and Professor, Department of Anatomy and Structural Biology

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**Dr. Duncan Wilson**

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**Dr. Anthony Udeogalanya**

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