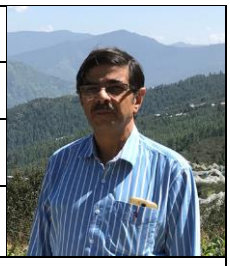
NAME	Dr. Amitabha Mukhopadhyay
DESIGNATION	Professor
EMAIL ID	Amukhopadhyay1@amity.edu
CONTACT NUMBER	9810887164
RESEARCH INTERESTS	Cell Biology and Cellular & Molecular Microbiology



EDUCATIONAL QUALIFICATIONS:

Name of College / University	Degree	Year
Calcutta University	B.Sc. Zoology (Hons)	1979
Calcutta University	M.Sc. Zoology	1982
Institute of Microbial Technology, Chandigarh, Awarded by Jadavpur University.	Ph.D.	1990

Title of Ph.D. thesis: Selective delivery of drug to macrophages.
First demonstration of using receptor-ligand interaction for selective drug. (Published in *Science 1989*.

EXPERIENCE (in chronological order): Total 20 Years Research & Teaching

Designation	Type of post held (teaching/ research)	Name of the Institute	Year (From – To)
Professor	Teaching & Research	Amity University, AIB, Noida	01.07.2024 till date
Professor	Teaching & Research	School of Biological Science, Indian Institute of Technology, Delhi	01.11.2018 to 30.06.2024
Scientist VII	Research & Teaching	National Institute of Immunology, New Delhi	01.04.2011 to 31.10.2018
Scientist VI	Research & Teaching	National Institute of Immunology, New Delhi	01.04.2006 to 31.03.2011
Scientist V	Research & Teaching	National Institute of Immunology, New Delhi	01.10.2001 to 31.03.2006
Scientist IV	Research & Teaching	National Institute of Immunology, New Delhi	01.04.1997 to 01.10.2001
Scientist III	Research & Teaching	National Institute of Immunology, New Delhi	30.03.1992 to 31.03.1997
Scientist B	Research & Teaching	Institute of Microbial Technology, Chandigarh	27.02.1989 to 29.03.1992
Visiting Scientist	Research	Washington University School of Medicine, Department of Cell Biology, St. Louis, USA.	02.02.1994 to 31.01.1997
Visiting Scientist	Research	Cornell Medical School, New York, USA.	01.03.2006 to 30.08.2006

No. of Ph.D. students supervised	Ph.D. Awarded: 25
	Ongoing: 5
No. of Post-Doc	21
No. of M.Tech. Students supervised:	None
No. of B.Tech. Students supervised:	None

PUBLICATIONS
(52)

Selected Publications:

1. C. Sood, J. K. Verma, R. Basak, A. Kapoor, S. Gupta and **A Mukhopadhyay** (2024) Leishmania highjack host lipid body for its proliferation in macrophages by overexpressing host Rab18 and TRAPPC9 by downregulating miR-1914-3p expression. ***Plos Pathogens*** 20, e1012024.
2. K. Kumar, R. Basak, A. Rai and **A. Mukhopadhyay** (2024) GRASP negatively regulates the secretion of the virulence factor gp63 in *Leishmania*. ***Mol. Microbiol.*** 121, 1063-1078.
3. I. Ansari, A. K. Singh, A. Kapoor and **A. Mukhopadhyay** (2024) Unconventional role of Rab4 in the secretory pathway in Leishmania. ***BBA. Mole. Cell Res***. 1871,119687.
4. I. Ansari, R. Basak and **A. Mukhopadhyay** (2022) Hemoglobin Endocytosis and Intracellular Trafficking: A Novel Way of Heme Acquisition by Leishmania. ***Pathogens*** 11, 585.
5. R. Rastogi, A. Kapoor, J. K. Verma, I. Ansari, C. Sood, K. Kumar and **A. Mukhopadhyay** (2021) Rab5b function is essential to acquire heme from hemoglobin endocytosis for survival of Leishmania. ***BBA. Mole. Cell Res***. Volume 1868, 118868.
6. P. K. Singh, A. Kapoor, R. M. Lomash, K. Kumar, S. C. Kamerkar, T. J. Pucadyil and **A. Mukhopadhyay** (2018) Salmonella SipA mimics a cognate SNARE for host Syntaxin8 to promote fusion with early endosomes. ***J. Cell Biol.*** 217, 4199-4214.
7. J. K. Verma, R. Rastogi, **A. Mukhopadhyay** (2017) Leishmania donovani resides in modified early endosomes by upregulating Rab5a expression via the downregulation of miR-494. ***PLoS Pathog*** 13(6): e1006459.
8. S. Parashar, **A. Mukhopadhyay** (2017) GTPase Sar1 regulates the trafficking and secretion of the virulence factor gp63 in Leishmania. ***J Biol Chem.*** 292, 12111–12125.
9. R. Rastogi, J. K. V. Kapoor, G. Langsley and **A. Mukhopadhyay** (2016) Rab5 isoforms Specifically Regulate Different Modes of Endocytosis in Leishmania. ***J. Biol. Chem.*** 291: 14732–14746.
10. S. Bahl, S. Parashar, H. Malhotra, M. Raje, **A. Mukhopadhyay** (2015) Functional characterization of monomeric GTPase Rab1 in the secretory pathway of Leishmania. ***J. Biol. Chem.*** 290:29993–30005.
11. R. Guha, D. Gupta, R. Rastogi, R. Vikram, G. Krishnamurthy, S. Bimal, S. Roy, **A. Mukhopadhyay** (2013) Vaccination with *Leishmania* hemoglobin-receptor-encoding-DNA protects against visceral Leishmaniasis. ***Science Transl. Med.*** 5:202ra121.
12. S. Agarwal, R. Rastogi, D. Gupta, N. Patel, M. Raje, and **A. Mukhopadhyay** (2013) Clathrin-mediated hemoglobin endocytosis is essential for survival of *Leishmania*. ***BBA. Mole. Cell Res***. 1833: 1065-1077.
13. R. Madan, R. Rastogi, S., Parashuraman and **A. Mukhopadhyay** (2012) *Salmonella* acquires lysosome associated membrane protein 1 (lamp1) on phagosomes from golgi via sipc mediated recruitment of host syntaxin6. ***J. Biol. Chem.*** 287***:***5574-5587**.**
14. N. Patel, S. B. Singh, S. K. Basu and **A. Mukhopadhyay** (2008) *Leishmania* requires Rab7-mediated degradation of endocytosed hemoglobin for their growth. ***Proc. Natl. Acad. Sci. USA.***105:3980-3985.

15. M. Bhattacharya, N. Ojha, S. Solanki, C. K. Mukhopadhyay, R. Madan, N. Patel, G. Krishnamurthy, S. Kumar, S. K. Basu and **A. Mukhopadhyay** (2006) IL-6 and IL-12 specifically regulate the expression of Rab5 and Rab7 via distinct signaling pathways. ***EMBO J***. 25: 2878-2888.
16. S. Parashuraman and **A. Mukhopadhyay** (2005) Assay and functional properties of SopE in the recruitment of Rab5 on *Salmonella*-containing phagosomes. ***Methods in Enzymol*** .403: 295-309.
17. G. Krishnamurthy, R. Vikram, S. B. Singh, N. Patel, S. Agarwal, G. Mukhopadhyay, S. K. Basu, and A. **Mukhopadhyay** (2005). Hemoglobin receptor in leishmania Is a hexokinase located in the flagellar pocket**.** ***J. Biol. Chem.*** 280:5884-5891.
18. S. B. Singh, R. Tandon, G. Krishnamurthy, R. Vikram, N. Sharma, S. K. Basu and **A. Mukhopadhyay** (2003) Rab5 mediated endosome-endosome fusion regulates hemoglobin endocytosis in *Leishmania donovani*. ***EMBO J.*** 22: 5712-5722.
19. K Mukherjee, S Parashuraman, G Krishnamurthy, J Majumdar, A Yadav, R Kumar, SK Basu and **A Mukhopadhyay** (2002) Diverting intracellular trafficking of Salmonella to the lysosome through activation of the late endocytic Rab7 by intracellular delivery of muramyl dipeptide. ***J Cell Sci*** 115: 3693-3701.
20. K. Mukherjee, S. Parashuraman, M. Raje and **A. Mukhopadhyay** (2001) SopE acts as an Rab5-specific nucleotide exchange factor and recruits non-prenylated Rab5 on *Salmonella*-containing phagosomes to promote fusion with early endosomes. ***J. Biol. Chem*.** 276: 23607-23615.
21. K. Mukherjee, S. Siddiqi, S. Hashim, M. Raje, S.K. Basu and **A. Mukhopadhyay** (2000) Live *Salmonella* recruits NSF on phagosomal membrane and promotes fusion with early endosomes. ***J. Cell Biol***. 148: 741-753.
22. S. Hashim, K. Mukherjee, M. Raje, S.K. Basu and **A. Mukhopadhyay** (2000) Live Salmonella modulate expression of rab proteins to persist in a specialised compartment and escape transport to lysosomes. ***J. Biol. Chem***. 275: 16281-16288.
23. S. Sengupta, J. Tripathi, R. Tandon, M. Raje, R.P.Roy, S.K. Basu and **A. Mukhopadhyay** (1999) Hemoglobin endocytosis in Leishmania is mediated through a 46 kD protein located in the flagelar pocket. ***J. Biol. Chem***. 274: 2758-2765.
24. M. Barbieri, S. Hoffenberg, R. Roberts, **A. Mukhopadhyay**, A. Pomrehn, B.F. Dickey and P.D. Stahl (1998) Evidence for a symmetrical requirement for Rab5-GTP in vitro endosome-endosome fusion. ***J. Biol. Chem***. 273: 25850-25855.
25. **A. Mukhopadhyay**, A. M. Barbieri, K. Funato, R. Roberts and P.D. Stahl (1997) Sequential action of Rab5 and Rab7 regulate endocytosis in the Xenopus oocyte**.** ***J. Cell Biol***. 136: 1227-1237.
26. **A. Mukhopadhyay**, K. Funato and P.D.Stahl (1997) Rab7 regulates transport from early to late endocytic compartments in Xenopus oocytes. ***J. Biol. Chem.*** 272: 13055-13059.
27. K. Funato, W. Beron, C.Z. Yang, **A. Mukhopadhyay**, and P. D. Stahl (1997) Reconstitution of phagosome-lysosome fusion in streptolysin-o- permeabilised cells. ***J. Biol. Chem.*** 272: 16147-16151.
28. R. Abraham, N. Singh, **A. Mukhopadhyay**, S.K. Basu, V. Bal and S. Rath (1995) Modulation of immunogenicity and antigenicity of proteins by maleylation to target scavenger

receptors on macrophages. ***J. Immunol***. 154: 1-8.

29. B. Mukhopadhyay, **A. Mukhopadhyay**, and S. K. Basu (1993) Enhancement of tumouricidal activity of daunomycin by receptor mediated delivery: *in vivo* studies. ***Biochem. Pharmacol***. 46: 919-924.
30. **A. Mukhopadhyay**, B. Mukhopadhyay, R. K. Srivastava and S. K. Basu (1992) Scavenger receptor mediated delivery of daunomycin elicits selective toxicity towards neoplastic cells of macrophage lineage. ***Biochem. J.*** 284: 237-241.
31. G. Chaudhuri, **A. Mukhopadhyay** and S. K. Basu (1989) Selective delivery of drugs to macrophages through a highly specific receptor: An efficient chemotherapeutic approach against Leishmaniasis. ***Biochem. Pharmacol***. 38: 2995-3002.
32. **A. Mukhopadhyay**, G. Chaudhuri, S.K. Arora, S. Sehgal and S.K. Basu (1989) Receptor-mediated drug delivery to macrophages in chemotherapy of leishmaniasis. ***Science***. 244: 705-707.

PATENTS ***(5)***

1. **A. Mukhopadhyay**, G. Chaudhuri, S. K. Arora, S. Sehgal and S.K. Basu (1988) Process for the preparation of compounds useful for the treatment of diseases effecting macrophages. ***Patent No. 368/Del/90***.
2. **A. Mukhopadhyay**, G. Chaudhuri, S. K. Arora, S. Sehgal and S.K. Basu (1990) Process for the preparation of compounds useful for the treatment of diseases affecting macrophages. ***Patent No. 499/Del/90.***
3. S. Rath, R. Abraham, N. Singh, V. Bal, S.K. Basu and **A. Mukhopadhyay** (1995) Method to increase and modify immune responses. ***Commonwealth of Australia Patent No. 698380.***
4. **Mukhopadhyay A**, Roy S, Gupta D, Guha R and Rastogi R (2015) Hemoglobin receptor as novel vaccine for leishmaniasis. ***USA. Patent No. 14/648,538***
5. **A. Mukhopadhyay,** S. Roy, D. Gupta, R. Guha, R. Rastogi, (2013) Hemoglobin receptor as novel vaccine for leishmaniasis. ***Patent No. 1449/DEL/2013.***

RESEARCH PROJECTS
Completed: ***(13)***
Ongoing: ***(4)***

	Ongoing	
Sl No.	Title of Project	Funding Agency
1.	Development of Hemoglobin receptor of Leishmania as diagnostic marker for Visceral Leishmaniasis.	Indian Council of Medical Research Rs. 70.54 Lakhs 3 Years Completion date: 19.12.2024
2.	Understanding the mechanism of hemoglobin receptor recycling by Rab GTPases in Leishmania donovani.	SERB Rs. 60.35 Lakhs. 3 Years Completion date 01.02.2025
3.	Understanding the role of microRNA-mediated regulation of Rab GTPases expression and modulation of phagosome maturation.	Dept. of Biotechnology Rs. 111.70 Lakhs 3 Years Completion date 04.12.2025.

4.	Understanding the mechanism of cytoskeletal reorganization in the host during Salmonella infection.	SERB Rs. 65 Lakhs 3 Years Completion Date 05.02.2027
	Completed projects	
1.	Modulation of intracellular trafficking in macrophages by Leishmania.	SERB Rs. 76.57 Lakhs 3 Years Completion Date Aug, 2019
2.	Role of Rab5 isoforms in the regulation of various types of endocytosis.	Dept. of Biotechnology Rs.87.01 Lakhs 3 Years Sept, 2019
3.	Identification and characteri-zation of Retromer-complex in hemoglobin endocytosis in Leishmania.	Dept. of Biotechnology. Rs. 77 Lakhs 3 Years Completion Date March, 2017
4.	Identification and characterization of dynamin like molecule in hemoglobin endocytosis in Leishmania.	Indian Council of Medical Research Rs. 43.60 Lakhs 3 Years Completion Date June, 2016
5.	Identification and characteri-zation of an adaptor molecule in clathrin-mediated hemo-globin endocytosis in *Leishmania*.	Dept. of Biotechnology. Rs. 80 Lakhs 3 Years Completion Date March, 2015
6.	Mechanism of regulation of rab5 and rab7 expression by different cytokines	Dept. of Biotechnology Rs. 66.86 Lakhs 3 Years Completion Date March, 2013
7.	Regulation of hemoglobin receptor trafficking to the cell surface in *Leishmania*.	Dept. of Biotechnology. Rs.52.70 Lakhs 3 Years Completion Date January, 2012
8.	Mechanism of regulation of intracellular trafficking of hemoglobin to the lysosomes in *Leishmania*.	Dept. of Biotechnology Rs.55.03 Lakhs. 3 Years Completion Date March 2009.
9.	The regulation of nutrient uptake by Rab GTPase in two pathogenic human parasites, *Leishmania* and	Indo-French Center for Promotion of

		Plasmodia.	Advanced Research (IFCPAR). 3 Years Rs.23.6 Lakhs Completion Date February, 2009
		In vitro reconstitution of *Salmonella* phagosome-endosome fusion to understand the mechanism of *Salmonella* trafficking in macrophages.	Dept. of Biotechnology Rs.23,54,395. 3 Years Completion Date June 2003.
		In vitro reconstitution of endosome fusion in *Leishmania* to understand the mechanism of endocytosis.	Dept. of Science & Technology. Rs.21,88,600 3 Years Completion Date August 2003.
		Intracellular trafficking of *Salmonella* in macrophages to understand the mechanism of bacterial survival.	Indian council of Medical Research. Rs.21,87,660 3 Years Completion date February 2004
		Diverting intracellular trafficking of *Salmonella* in macrophages.	Dept. of Biotechnology. Rs.9,00,000 3 Years Completion date January, 2005

AWARDS & HONOURS/ DISTINCTIONS	• Young Scientist Award in Biological Sciences, Council of Scientific & Industrial Research, Govt. of India, 1991. • Shanti Swarup Bhatnagar Award, Council of Scientific & Industrial Research, Govt. of India, 2002. • National Bioscience Award, Dept. of Biotechnology, Govt. of India, 2000-2001. • Ranbaxy Research Award in the field of "Medical Sciences - Basic Research", 2004. • Dr. Narayana Rao Oration Award, Indian Council of Medical Research, Govt. of India, 2002. • J.C. Bose Fellowship, Dept. of Science & Technology, Govt. of India, Aug.2010-July 2020. • Long Term Overseas Research Associateship Award from Dept. of Biotechnology, Govt. of India, 1993. • Short Term Overseas Research Associateship Award from Dept. of Biotechnology, Govt. of India, 2005.
MEMBERSHIP with Professional/ Academic bodies	• Elected Fellow of The National Academy of Sciences (FNASc), India, 2000. • Elected Fellow of Indian National Science Academy (FNA), India, 2007. • Elected Fellow of Indian Academy of Sciences (FASc),

	India, 2010. • Elected Fellow of West Bengal Academy of Science & Technology, India, 2011. • Elected Members of the Guha Research Conference, 2000. • Member: Indian Immunology Society; 2004. • Member: Association of Microbiologists of India, 2001. • Member: Molecular Immunology Forum (MIF); India, 2003. • Member: Indian Society of Cell Biology, India, 2010. • Member: Society of Biological Chemist, 2010.