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Research Experience

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| Nov, 2017- till date | Assistant Professor, UGC-FRP, Multidisciplinary center for Advanced Research and Studies, Jamia Millia Islamia University, New Delhi. |
| Apr 2017- Oct 2017 | INSA Post-Doctoral fellow at Jawaharlal Nehru University |
| Apr 2012- Mar 2017 | DST INSPIRE FACULTY Award at School of Life Sciences, Jawaharlal Nehru University, Delhi, India. |
| Nov 2014-April 2016 | JSPS Fellow at National Institute of Infectious Diseases, Tokyo, Japan (attended on leave from DST Inspire Program) |
| June 2011- Feb 2012 | Research Associate in Jawaharlal Nehru University, India. |
| Aug 2005-June 2011 | Completed Ph.D. thesis entitled “Identification and Characterization of EhC2PK: a EhCaBP1 Binding Protein” at School of Life Sciences, Jawaharlal Nehru University, New Delhi, India. |

Academic Qualifications

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| 2003-2005 | Master of Sciences in Biomedical Science from Ambedkar Center for Biomedical Research, University of Delhi, Delhi with 74.3%. |
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2000-2003

Bachelor of Science in Biomedical sciences from Acharya Narendra Dev College, University of Delhi with **80.5%** (1st Division with Distinction).

Publications

1. Azhar Ahmad, Shalini Mishra, **Somlata***, Samudrala Gourinath*. Role of kinases in Virulence and pathogenesis of protozoan Parasite *E. histolytica*. **Frontiers in Bioscience (2019)**.
2. Shalini Sharma, Shalini Agarwal, Ravi Bharadwaj, **Somlata**, Sudha Bhattacharya, Alok Bhattacharya. Novel regulatory roles of PtdIns(4,5)P2 generating enzyme EhPIPKI in actin dynamics and phagocytosis of *Entamoeba histolytica*. **Cellular Microbiology**, doi:10.1111/cmi.13087.
3. **Somlata***, Kumiko Nakada-Tsukui and Tomoyoshi Nozaki*. AGC Family Kinase I Participates in Trophocytosis but not in Phagocytosis in *Entamoeba histolytica*. **Nature Communications**, 2017, 8: 101, doi: 10.1038/s41467-017-00199-y.
4. Kumar N#, **Somlata#**, Mazumder M, Dutta P, Maiti S, et al. EhCoactosin Stabilizes Actin Filaments in the Protist Parasite *Entamoeba histolytica*. **PLoS Pathog.** 2014 Sep 11;10(9):e1004362, doi:10.1371/journal.ppat.1004362. (# both contributed equally to the work)
5. Katherine S. Ralston, Michael D. Solga, Nicole M. Mackey-Lawrence, **Somlata**, Alok Bhattacharya and William A. Petri, Jr. Trophocytosis by *Entamoeba histolytica* contributes to human cell killing and tissue invasion. **Nature.** 2014 Apr 24;508(7497):526-30. doi: 10.1038/nature13242.
6. Ashok K. Rout, Sunita Patel, **Somlata**, Manish Shukla, Deepa Saraswathi, Alok Bhattacharya, and Kandala V. R. Chary. Functional manipulation of a calcium binding protein from *E. histolytica* guided by paramagnetic NMR. **J Biol Chem.** 2013 Aug 9;288(32):23473-87, doi:10.1074/jbc.M112.411058.
7. **Somlata**, Kamanna S, Agrahari M, Babuta M, Bhattacharya S, Bhattacharya A. Autophosphorylation of Ser428 of EhC2PK plays a critical role in regulating erythrophagocytosis in the protozoan parasite *Entamoeba histolytica*. **J Biol Chem.** 2012 Mar 30;287(14):10844-52, doi:10.1074/jbc.M111.308874.
8. **Somlata**, Sudha Bhattacharya and Alok Bhattacharya. A C2 domain protein kinase initiates phagocytosis in the protozoan parasite *Entamoeba histolytica*. **Nat Commun.** 2011;2:230. doi: 10.1038/ncomms1199.
9. Gauri Kapoor, Arindam Maitra, **Somlata** and Vani Brahmachari. Application of SNaPshot for analysis of thiopurine methyltransferase gene polymorphism. **Indian J Med Res** 129, May 2009, pp 500-505.

Book Chapters

- Somlata, Babuta, M., Bhattacharya, S. and Bhattacharya, A. (2013) Protein Kinases of the Parasitic Protist *Entamoeba histolytica*, in Protein Phosphorylation in Parasites Novel Targets for Antiparasitic Intervention (eds C. Doerig, G. Späth and M. Wiese), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany. doi: 10.1002/9783527675401.ch07
- Somlata and Alok Bhattacharya (2014) Phagocytosis in *Entamoeba histolytica* (ch 12), in Amebiasis: Biology and Pathogenesis of Entamoeba. Eds Tomoyoshi Nozaki and Alok Bhattacharya, Springer ebook ISBN 978-4-431-55200-0.

Grants Received

- **DST-Inspire Faculty award of Rs 3500000 (2012-2017)**
- **UGC start-up Grant of Rs 10,00,000(from 2018).**
- **DST-SERB Early Career Research Grant of Rs 50,30,000 approved.**
- **SERB-Women Excellence Award (2020) of Rs 1800000 sanctioned.**

Received Fellowships

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| 2014-2016 | Japanese Society for Promotion of Science Post-Doctoral Fellowship |
| 2007-2010 | Awarded Senior Research Fellowship by the Council for Scientific and Industrial Research (CSIR), Ministry of HRD, Govt. of India. |
| 2005-2007 | Awarded Junior Research Fellowship by the Council for Scientific and Industrial research (CSIR), ministry of HRD, Govt. of India. |
| 2003-2005 | Awarded “ Catch them Young Fellowship ” from Council for Scientific and Industrial Research (CSIR), Ministry of HRD, Govt. of India for 2 years in M.Sc. |

Awards and Honors

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| 2020 | SERB-Women Excellence Award |
| 2016 | INSA Medal for Young Scientist by Indian National Science Academy |
| 2005 | Qualified NET (National Eligibility Test) and Junior Research Fellowship and shortlisted for <i>Shayama Prasad Mukherjee Fellowship</i> examination. |
| 2005 | Qualified Graduate Aptitude Test in Engineering (GATE-2005) with 98 percentile , All India Rank: 168 conducted jointly by Indian Institute of Science, Bangalore and Indian Institute of Technology, Delhi. |
| 2000-2003 | 1st Rank holder in University of Delhi in B.Sc. (H) Biomedical Sciences. |

Poster Presented

- Attended and presented poster at US-India Joint Research Training Program, 21-24 January, 2008.
- Attended and presented poster at 11th Meeting of the European Calcium Society on, “Initiation of phagocytosis in protistan parasite *Entamoeba histolytica* requires participation of EhC2PK and EhCaBP1.” **Somlata**, R. Jain, N. Sahoo, S. Bhattacharya and A. Bhattacharya 6-9 Sept, 2010. *Partial Travel Grant was awarded by SMM/Warsaw Organizers.*
- Attended SBCI 2010 and presented poster on “Initiation of phagocytosis in protozoan parasite *Entamoeba histolytica* involves participation of EhC2PK and EhCaBP1.” **Somlata**, Sudha Bhattacharya, Alok Bhattacharya. School of Life Sciences, JNU. 13th-15th Dec, 2010.
- Attended Amoebiasis 2012, EMBO Global Lecture Course and Symposium on ‘Amoebiasis: Exploring the Biology and the Pathogenesis of *Entamoeba*.’ Poster on “Autophosphorylation of Ser⁴²⁸ of EhC2PK plays a critical role in regulating erythrophagocytosis in the protozoan parasite *Entamoeba histolytica*.” **Somlata**, Kamanna S, Agrahari M, Babuta M, Bhattacharya S, Bhattacharya A. School of Life Sciences, JNU. March4-7th, 2012.
- Attended Amoebiasis 2012, EMBO Global Lecture Course and Symposium on ‘Amoebiasis: Exploring the Biology and the Pathogenesis of *Entamoeba*.’ Poster on “Structural and Functional studies of Coactosin from *Entamoeba histolytica*.” Nitesh Kumar, Sankar Maiti, Saima Aslam, **Somlata** and S. Gaurinath. School of Life Sciences, JNU. March4-7th, 2012.
- Selected for Summer School on Actin Dynamics 2012 organized by German Society for Cell Biology at Regensburg, Germany from 29-9-2012 to 5-10-2012.
- Attended and Presented Poster at Parasitology 2014 on, “*Entamoeba histolytica* novel actin binding protein EhCoactosin stabilizes F-actin” at Jawaharlal Nehru University, New Delhi.
- Attended and presented poster at 1st biannual PARAFRAP conference (From basic research to intervention strategies against parasites) on “EhCoactosin binds and stabilizes actin filaments by unique mechanism in the protist parasite *Entamoeba histolytica*” held at Les Embeinz islands, France from 29-09-2014 to 2-10-2014.
- Attended and presented Poster at XVIII Seminar on Amebiasis 2015 on “Analysing role of BAR Domain proteins in *E. histolytica*” held at Campeche, Mexico from 13th October to 16th October 2015.

Oral Presentation / Invited Talk

- Biosparks, Annual Research Festival, JNU, 2011. Invited talk on “Initiation of phagocytosis in protozoan parasite *Entamoeba histolytica* requires participation of two Ca²⁺ binding proteins EhC2PK and EhCaBP1.” Somlata, Sudha Bhattacharya and Alok Bhattacharya.
- Amoebiasis 2012, EMBO Global Lecture Course and Symposium on ‘Amoebiasis: Exploring the Biology and the Pathogenesis of *Entamoeba*.’ Poster selected for oral presentation on “C2 domain containing protein kinase is involved in initiation of phagocytosis in protozoan parasite *Entamoeba histolytica*. March4-7th, 2012.
- Oral presentation during Summer School on Actin Dynamics 2012 organized by German Society for Cell Biology at Regensburg, Germany from 29-9-2012 to 5-10-2012.
- Selected for Oral Presentation at Gordan Research Seminar and Conferences 2016 organized by GRC Committee at RI, Newport City, USA from 11-12th June 2016.
- Selected for Oral presentation at Awaji Forum of Infection and Immunity 2016, Japan.

Overview of Research Work

After completing my Masters degree in Biomedical Sciences from University of Delhi I joined Prof. Alok Bhattacharya at School of Life Sciences, JNU. I worked on EhCaBP1 (calcium Binding Protein) binding proteins of *Entamoeba histolytica*, which has been shown to be involved in phagocytosis by our group previously. EhC2PK was found to be one of the binding partners of the EhCaBP1 and was shown to be playing role in initiation of phagocytosis in *E. histolytica*. My work involved both *in vivo* and *in vitro* studies. The work published in Nature Communication involves majorly *in vivo* studies in which we have shown the involvement of EhC2PK in phagocytosis in amoebic cells. I have also done the biochemical characterization of this kinase in detail. Also along with biochemical analysis we have also done the analysis of phosphorylation site of EhC2PK and its role in activity of EhC2PK as well as in phagocytosis.

My current interest lies in understanding membrane remodeling and cytoskeletal dynamics using *E. histolytica* as model system. The DST Inspire project aims at understanding the role of phosphoinositides (PI) in actin dynamics. PIs are important secondary messenger in cell signaling. They play important role in various processes like trafficking, motility, endocytosis and cell division. PIs are known to regulate actin dynamics during endocytosis and motility. They are responsible for recruitment of proteins involved in membrane bending, phosphatases and kinases at the site of process. I am keen to understand the role of PIs and membrane composition on actin dynamics. As JSPS fellow I aimed to identify protein which bind specific PI form in *E. histolytica*. This is being approached by using cell free extracts of *E. histolytica* and lipid coupled resin. The identification and partial characterisation of specific proteins revealed the functions in amoebic biology. The results indicated that there are molecules involved in specific endocytic process like trogocytosis while some molecules may be very fundamental for all actin dependent endocytic processes. Differential signalling pathway is elicited by different ligands. And identification of these effectors revealed the importance of PIPs in regulation of all the processes.

