E-Mail:- sanyalarp21@gmail.com; arpitasvir@gmail.com

Residential address**: -** Gangotri Nagar Colony,
Ramna, Near Garwah Ghat Ashram,
Varanasi, UP-221011, India
Cell Phone: - 91-9304963829/ 9559319926

Office Address:- Ground Floor, Molecular Biology Unit, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005

Education

Ph.D.	Science, Indian Institute of Chemical Biology, University of Jadavpur, Jadavpur, Kolkata, India.	2007
M.Sc.	Botany, Spl : Microbiology, University of Kalyani, Kalyani, West Bengal, India.	1996
B.Sc.	Botany (Honors) Chemistry and Zoology, University of Kalyani, Kalyani, West Bengal, India.	1993

Additional Professional Qualification

M.B.A	Spl: Human Resource Management, Indira Gandhi National Open University, India.	2001

Experience

Jan 2019-present	DST Women Scientist A (WOS A), Principal Investigator, Molecular Biology Unit, Institute of Medical Science, Banaras Hindu University, Varanasi-221005, India.

2015-2017:- Professional Research Staff (Research Associate), University of Virginia, Virginia, US.
Principal Investigator:-Molly A Hughes, *MD, Ph.D*

1. Studied the **antibacterial targets of chemokines in *Bacillus anthracis* and**

2**.** Expression, purification of a human recombinant chemokine and **designing small molecule antibacterial peptides**. Studying the **structure-activity interrelationships of the chemokine derived peptides.**

2011-2014: - Post doctoral visiting fellow, NIAID/NIH, Bethesda, Maryland, US
Principal Investigator: - K. June Kwon-Chung *Ph.D*

1. Studied **the virulence factors in the regulation of pathogenicity of *Cryptococcus neoformans***.
2. Studied the **pathobiological differences in two strains of Cryptococcus species complex viz: - *C. neoformans* and *C. gattii.***

2008-2011: - Post doctoral research scholar, MUSC, Charleston, South Carolina, US
Principal Investigator: -Maurizio Del Poeta *MD*

1. Determined the **mechanism of action of Glucosyl Ceramide in the regulation of pathogenicity of *Cryptococcus neoformans***.
2. Identified the **genes involved in regulation of growth of *Cryptococcus neoformans* at the physiological conditions of the lung i.e neutral/alkaline pH, 37 $^{\circ}$C and 5 % CO_2.**

2002-2007: - Research fellow, IICB, Kolkata, India

Thesis supervisor: -Dr. Debjani Mandal *Ph.D*
Doctoral Thesis titled "**Studies on Sucrose Transport and Metabolism in *Leishmania donovani*, a new target for chemotherapeutic intervention**"

2000-2001:- Microbiologist/Quality control-in charge

Microbiological testing of water and environmental samples. **Detection of pathogens like *E.coli, Salmonella, Shigella, Clostridium, Listeria spp* etc in water samples.**

Awards and Scholarships

1. Recipient of **S**enior **R**esearch **F**ellowship by Council of Scientific and Industrial Research (CSIR) India, 2004-2007.

2. Awarded and Recipient of **J**unior **R**esearch **F**ellowship jointly by Council of Scientific and Industrial Research and University Grants Commission, India based on a National level eligibility test (NET), 2002-2004.

3. Awarded **J**unior **R**esearch **F**ellowship from Indian Council Of Medical Research (ICMR), India in 2002 under the Union Ministry of Health and Family Welfare, Government of India.

4. 1st class and obtained position 3rd in University merit list in B. Sc in 1992

5. University merit scholarship in 1991.

Technical Expertise: -

1. Expertise in using bacteria, yeast and single celled protozoa (both **infectious** and non-infectious) as model system. **Trained and proficient in handling Biosafety level 1, 2 and 3 level** microbes.

2**. Designing and developing small molecule peptides as antimicrobial therapeutics.**
Molecular Biology: -DNA and RNA isolation and analysis, primer design, cloning and sequencing, Agarose Gel Electrophoresis, PCR, RT-PCR, Biolistic delivery, creation of knock-out strains, gene-inactivation, Site-directed Mutagenesis, Electroporation, Transformation, Southern and Northern hybridization, micro-array, RNA-Seq.

3. Microbiology and Cell Biology:- Handling of human bacterial pathogens and heavy metal resistance bacteria- cell maintenance and culture. Culture and maintenance of various cell lines, including human cell line. Experience in using multidrug resistant bacteria, yeast and single-celled protozoa as model system. Various microscopic staining and imaging techniques with fluorescent dyes, immunofluorescence, histochemistry and confocal microscopy.

4. Protein-protein Interaction: - Yeast Two-Hybrid system, recombinant protein expression and over expression.

5. Membrane and lipid purification, LC-MS and MS-MS analysis of lipids, TLC, Radioactive TLC, labeling studies with ^{3}H and ^{14}C.

6. Protein Biochemistry: - Protein and enzyme purification by different chromatographic techniques like Size-Exclusion, Ion Exchange, Hydrophobic and Affinity-Chromatography. PAGE, Western Blotting, Immunoblot, Mass Spectroscopy, Amino Acid Sequencing. Immunofluorescence and Co-immunoprecipitation.

7. Enzyme assays and kinetics, developing bioassays.

8. Drug Screening, MIC.

9. Radioactive Techniques: -Different filtration techniques, Biochemical Assay, Transport Studies with radioactive molecules like ^{32}P, ^{14}C.

10. Animal Handling: -Handling of rodents, routine infection and maintenance of strains in animals, and transfection studies. Experience in using mice and hamster for *in-vivo* studies.

Teaching, guiding and supervising undergraduates, graduates and summer trainees in various research projects.

Publications:-

Peer review articles and book chapters: -

- **Publication as first author and/or corresponding author in indexed journals: -**

1. **Arpita Singh** and Debjani Mandal (2016) Purification and Characterization of a Novel Intracellular Sucrase Enzyme of *Leishmania donovani* Promastigotes. Biochemistry Research International, Volume 2016 (2016), Article ID 7108261, 8 pages. Indexed in PubMed, Hindawi Publishing Corporation.

2. **Singh A**, Rella A, Schwacke J, Vacchi-Suzzi C, Luberto C, Del Poeta M. (2015) Transmembrane transporter expression regulated by the glucosylceramide pathway in *Cryptococcus neoformans*. BMC Res Notes. 2015 Nov 16; 8:681. Published as **co-corresponding author**. Indexed in PubMed, BioMed Central.

3. **Arpita Singh**, Robert J. Panting, Ashok Varma, Tomomi Saijo, Kevin J. Waldron, Ambrose Jong, Popchai Ngamskulrungroj, Yun C. Chang, Julian C. Rutherford, Kyung J. Kwon-Chung (2013) Factors Required for Activation of Urease as a Virulence Determinant in *Cryptococcus neoformans*. mBIO, May 7, 4(3): pp1-11. **Article selected as an editor's pick of the issue**. Indexed in PubMed, HighWire.

4. **Singh A**, Wang H, Silva LC, Na C, Prieto M, Futerman AH, Luberto C, Del Poeta M. (2012) Methylation of glycosylated sphingolipid modulates membrane lipid topography and

of *Cryptococcus neoformans*. Cell Microbiol, Apr; 14(4): 500-16. **Article selected as an editor's pick of the issue**. Indexed in PubMed, Wiley Online Library.

5. **Singh A**, Mandal D. (2011) A Novel Sucrose /H+ Symport System and intracellular sucrase in *Leishmania donovani*. Int J Parasitol, Jul 4 41(8): pp-817-26. Indexed in PubMed, Elsevier.

Invited Review Article: -

6. **Singh A**, Del Poeta M. (2011) Lipid signaling in pathogenic fungi. Cell Microbiol Feb; 13(2): pp-177-85, Indexed in PubMed, Wiley Online Library.

7. Crawford MA, Margulieux KR, **Singh A**, Nakamoto RK, Hughes MA (2019) Mechanistic Insights and Therapeutic Opportunities of Antimicrobial Chemokines. Semin Cell Dev Biol. 88, pp-119-128

8. **Arpita Singh** (2021) Is *Cryptococcus neoformans* a sleeping giant with deadly intentions?

ProClinS pathology. Feb Vol 4 (1).

- **Publication as co-authors in indexed journals.**

9 Margulieux KR, Liebov BK, Tirumala VSKKS, **Singh A**, Bushweller JH, Nakamoto RK, Hughes MA. Front Microbiol. 2017 Apr 27; 8:740. doi: 10.3389/fmicb.2017.00740. eCollection 2017. 'Bacillus anthracis Peptidoglycan Remodelling is Disrupted by the Chemokine CXCL10 through FtsE/X', indexed in PubMed.

10. Rhome R, **Singh A**, Kechichian T, Drago M, Morace G, Luberto C, Del Poeta M. (2011) Surface localization of glucosylceramide during *Cryptococcus neoformans* infection allows targeting as a potential antifungal. Plos One Jan 21;6(1). Indexed in Pubmed, Public Library of Sciences.

11. Singh S.K., **Singh A**, Banerjee P.C. (2010) Plasmid encoded AcrAB-TolC tripartite multidrug-efflux system in *Acidiphilium symbioticum* H8. Curr Microbiol. Vol 61(3): pp163-168. Indexed in PubMed, SpringerLink.

- **Papers in Books, Proceedings & non-indexed journals.**

12**. Singh A**, Qureshi A, and Del Poeta M (2011) Quantitation of Cellular Components in Cryptococus neoformans for System Biology Analysis. Methods. Mol. Biol, June, Vol 734: pp-317-33. Indexed in Pubmed, SpringerLink.

13. Singh S.K, **Singh A**, Ghosh A.K, Banerjee P.C. (2007) Plasmid encoded membrane protein TolC responsible for tolerance to toxic hydrophobic agents and organic solvent in *Acidiphilium symbioticum H8*. In: Mineral Biotechnology (Mishra BK, Shukla LB, and Rao KS, Eds) pp. 288-295.

Presentations :-

1. Poster presentation at the Biodefense Infectious Diseases Research Day, April 2016 at Charlottesville, Virginia titled "**Identification of bacterial targets involved in antimicrobial activity of CXCL10 against *Bacillus anthracis*" Arpita Singh** and Molly A Hughes.

2. Poster presentation at the 8th International Conference on Cryptococcus and Cryptococcosis May, 2011 at Charleston titled "**Membrane lipid topography controlled by sphingolipids regulates pathogenicity of *Cryptococcus neoformans*" Arpita Singh,** Liana Silva, Chongzheng Na, Mannuel Prieto, Anthony Futermann, Chiara Luberto and Maurizio Del Poeta.

3. Poster presentation on International Charleston Ceramide Conference January 2009 at Charleston titled "**Identification and Characterization of C9 Methyl Transferase gene in *Cryptococcus neoformans*" Arpita Singh** and Maurizio Del Poeta.

4. **Oral** presentation at Students Research Day, MUSC, Nov 2009. Talk titled "**Identification and Characterization of C9 Methyl Transferase in *Cryptococcus neoformans*" Arpita Singh,** Liana C Silva and Maurizio Del Poeta.

5. **Oral** presentation at South Eastern Regional Lipid Conference (SERLC) Cashier, North Carolina NOV 2008. Talk titled "**Role of C9 Methyl Transferase on pathogenicity of *Cryptococcus neoformans*". Arpita Singh** and Maurizio Del Poeta.

6. Poster presentation at annual Society of Biological Chemistry (SBC) Lucknow, India, 2005 titled "**Purification and Characterization of an unique sucrase in *Leishmania donovanii***". **Arpita Singh**, Tanmoy Mukherjee and Debjani Mandal.

Invited speaker in International and National Conference/Congress:-

1.15 th Annual Congress of International Drug Discovery Science and Technology-Japan 2017.

2. 6th Annual International Congress of Medichem (ICM-2016), Nov. 16-19, 2016 in International Youth Convention Hotel, Nanjing, China.

3. 5 th International Conference on Computational systems Biology" 2016, Philadelphia, USA.

4. 4th International Conference on Integrative Biology" July 18-20, 2016 in Berlin, Germany.

5. 4th International Conference on Tropical Medicine, Infectious Diseases & Public Health, September 7-9, 2017 in Edinburgh, Scotland.

End