

CURRICULUM VITAE

Personal Information:

Name: RATNABALI GHOSH

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Education:

QUALIFICATION	INSTITUTE	DURATION	CLASS/DIVISION
SECONDARY	LORETO DAY SCHOOL BOWBAZAR	2000-2013	1 st (87.7%)
HIGHER SECONDARY (SCIENCE)	BHARATIYA VIDYA BHAVAN	2013-2015	1 st (90%)
BACHELOR OF SCIENCE (B.Sc.) IN MICROBIOLOGY (MAJOR) WITH PHYSICS AND CHEMISTRY (MINORS)	UNIVERSITY OF CALCUTTA	2015-2018	1 st (66.5%)
MASTER OF SCIENCE (M.Sc.) IN CHEMICAL AND MOLECULAR BIOLOGY	INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR	2018-2020	1 st (C.G.P.A. - 9)
M.Sc. DISSERTATION PROJECT	INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE	2019 – 2020	

M.Sc. Thesis Topic: *“Exploration of the Complexity of Mitochondrial Dysfunction in Presence of Reactive Oxygen Species.”*

Under Dr. Benu Brata Das, Laboratory of Molecular Biology, School of Biosciences, Indian Association for the Cultivation of Science (IACS, Kolkata). (July 2019 – 13 March 2020)

Due to close proximity to the electron transport chain, the mtDNA is highly susceptible to damage due to reactive oxygen species. In my experiments, qualitative damage to the mitochondria, in comparison to the nuclear DNA, were observed using confocal microscopy via changes in intensity of Mito-tracker Deep Red, upon treatment with hydrogen peroxide. Confocal microscopy was also used to detect changes in intensity upon treatment of affected cells with N-acetyl cysteine, a ROS inhibitor. Qualitative analysis of mtDNA damage was done using flow cytometry, as well as Real-Time PCR of cDNAs of selected RNA transcripts of both mtDNA and nDNA, upon treatment with H₂O₂.

Other Projects Involved: (July 2019 –13 March 2020)

- 1) Stability of cells by induction of SCAN autophagy in Tdp1 knockout cells upon administration of lethal drugs (under Arijit Ghosh, Dr. Benu Brata Das lab)

- This included ectopical study of autophagy via live-cell LC3-gfp tag tracking, and studying the endogenous pathways by measuring the presence and intensity of LC31 and LC32 by Western Blotting.
- 2) Studying the connection between PRMTs and TFAM proteins, and their effects on the mtDNA (under Sangheeta Bhattacharyya, Dr. Benu Brata Das lab)

Experiences:

Summer Internship (May 2019 – July 2019)

Purification and Isolation of Hox Gene Transcription Factor Extradenticle Homeodomain (Exd-HD) in the laboratory of Dr. Soumya De, School of Biological Sciences, Indian Institute of Technology Kharagpur (IIT Kgp).

Laboratory Skills:

- Basic Microbiology Laboratory Skills such as staining, culture maintenance, single colony isolation, transformation, etc.
- Basic Molecular Laboratory techniques such, amongst others,
 - Polymerase Chain Reaction (including RT-PCR, colony PCR and Real Time-PCR)
 - PCR-based site directed mutagenesis
 - Nucleic acid labelling, hybridization and probing and gel electrophoresis
 - Nucleic acid isolation (both DNA and RNA)
 - Blotting (Western, Southern, Slot Blot)
 - Electrophoretic mobility shift assay (EMSA)
 - DNA relaxation assay
- Protein Expression cloning, Purification, Estimation and Identification (using basic 1D and 2D NMR study)
- Mitochondria isolation and mtDNA isolation
- Chromatography (Size-exclusion and Ion-exchange)
- Flow cytometry
- Immunotechniques such as ChIP, immunocytochemistry,
- Microscopy, including Fluorescence and Confocal Microscopy, FRET.
- Basic mammalian cell culture techniques such as strain maintenance, MTT assay, etc.

Major Academic Honours & Awards:

- 1) Scholarship - Merit based Monthly Stipend awarded by Indian Association of the Cultivation of Science (IACS, Kolkata), funded by the Department of Science and Technology (DST), Government of India.
- 2) Bose Institute – 25th Dipti Memorial Symposium Award (Dec 2017) – 1st Place (Winner)
- 3) Techno India University - Recent Aspects in Microbiological Techniques (RAMT, 2018) – 2nd Place (Runner Up) in overall workshop performance, laboratory skill, and science quiz.

Extracurricular Activities/Hobbies:

Creative Writing, Quiz, Debate, Chess, Photography (Wildlife), Indian Classical Dance.

Other experiences:

- Voluntary tutor at Sukanya Vidyapith (Home) - Spoken English, Grammar and Mathematics.
- Qualified GATE 2021 in both Biotechnology and Life Science.