# CURRICULUM VITAE

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## ACADEMICS

- Ph.D. (Molecular Toxicology) in 2016, Visva-Bharati University, Santiniketan, India
- M.S. (Zoology) in 2008 with 1st Class, Visva-Bharati University, Santiniketan, India
- B.S. (Zoology) in 2005 with 2nd Class, University of Burdwan, West Bengal, India

## RESEARCH ACCOMPLISHMENTS

**2010-2015:** PhD thesis entitled **"Fluoride toxicity in zebrafish (*Danio rerio*): Expression of toxicology biomarker genes"** in Visva-Bharati University, Santiniketan, India under supervision of Prof. Ansuman Chattopadhyay.

**Oxidative Stress Induced Gene Regulation in Zebrafish**: In my pre-doctoral study my professional training has covered primarily focusing on the gene regulation of fluoride induced toxicity in zebrafish. The transcription factor, nuclear factor erythroid 2-related factor 2 (Nrf2) is the master regulator that protects cells from oxidative stress by inducing multiple antioxidant gene responses. Therefore the main target genes of Nrf2/Keap1 signaling pathway like *Ho-1*, *Nqo-1*, *p38*, *Ucp2*, *Sod*, *Gst*, *Cat* and *Gpx* etc have been studied which may be used as effective biomarkers to indicate the generation of oxidative stress due to fluoride exposure.

**Anti-Cancer Activity of Fungal Metabolites & Green Silver Nanoparticle (GSNP)**: I was also appointed as JRF in the DBT sponsored project entitled, "**Isolation, Characterization and Anti-Cancer Property of Endophytic Fungal Metabolites from North Eastern India**". In our continuing study, so far, we have used different cell lines (**Mcf 7, MDA-MB-231, U87, KB, HeLa, MEF, WI-38).** Depending upon cytotoxicity of fungal metabolites and nanoparticle, the mRNA and protein expression studies are ongoing along with the checking of cell cycle pattern and evaluation of apoptotic marker.

## FELLOWSHIPS & AWARDS

- Qualified **CSIR-UGC NET, Govt. of India** (June & December, 2009) in **Life Sciences.**
- Awarded **DBT-Junior Research Fellowship** (2011-'13) &
  **DBT-Senior Research Fellowship** (2013-'14)
- **University Research Fellowship (URF),** Visva-Bharati University, 2014-2015.
- "**NIEHS Student Travel Award**" to attend the 4th Asian Conference on Environmental Mutagens (ACEM 2014) held in Kolkata.

## PEER REVIEWED PUBLICATIONS

1. Sarkar S*, **Mukhopadhyay D***, Chattopadhyay A, Bhattacharya S, 2016. Zebrafish as a model for assessing environmental toxicology: expression of antioxidant biomarker genes. Annals of Aquaculture and Research (*equal contribution; Revised version sent after minor revision).

2. **Mukhopadhyay D**, Priya P, Chattopadhyay A, 2015. Sodium fluoride affects zebrafish behaviour and alters mRNA expression of biomarker genes in the brain: Role of Nrf2/Keap1. Environmental Toxicology and Pharmacology 40:352-359.

3. **Mukhopadhyay D**, Srivastava R, Chattopadhyay A, 2015. Sodium fluoride generates ROS and alters transcription of genes for xenobiotic metabolizing enzymes in adult zebrafish (*Danio rerio*) liver: expression pattern of Nrf2/Keap1 (INrf2). Toxicology Mechanism and Methods 25:364-373.

4. **Mukhopadhyay D**, Chattopadhyay A, 2014. Induction of oxidative stress and related transcriptional effects of sodium fluoride in female zebrafish liver. Bulletin of Environmental Contamination and Toxicology 93:64-70.

## POSTER PRESENTATION IN INTERNATIONAL SYMPOSIUM & CONFERANCE

1. **Mukhopadhyay D** and Chattopadhyay A (2014). Sodium Fluoride affects the Expression of Antioxidant Biomarker Genes in Zebrafish Brain. 4th Asian Conference on Environmental Mutagens (ACEM 2014), 10th – 12th December 2014. CSIR-Indian Institute of Chemical Biology, Kolkata, India.

2. **Mukhopadhyay D** and Chattopadhyay A (2014). **Effects of Sodium Fluoride on Transcription of Genes for Detoxification and Xenobiotic Metabolism in Adult Female Zebrafish (*Danio rerio*) Liver: Expression Pattern of Nrf2/Keap1 (INrf2)**. International Symposium on Genetic Analysis Translational and Developmental (iNSGTD 2014), 21st – 23rd November 2014, The University of Burdwan, West Bengal, India.

3. **Mukhopadhyay D** and Chattopadhyay A (2014). **Effect of sodium fluoride on oxidative stress and mRNA expression pattern of antioxidant genes in Zebrafish (*Danio rerio*).** International Conference on Environmental Biology and Ecological Modelling (ICEBEM 2014). 24$^{th}$ – 26$^{th}$ February 2014, Visva Bharati, Santiniketan, India.

4. **Mukhopadhyay D** and Chattopadhyay A (2013). **Expression of Toxicological Biomarker Genes Related to Oxidative Stress Fluoride Treated Adult Zebrafish (female) Liver.** International Symposium on Molecular Signaling (ISMS 2013), 18$^{th}$ – 21$^{st}$ February 2013, Visva-Bharati, Santiniketan, India.

## PARTICIPATION IN NATIONAL WORKSHOP

1. **National Seminar-cum-Workshop on Molecular Tools for Gene Expression Analysis.** 19$^{th}$-21$^{st}$ January, 2016, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

2. **Lecture Workshop on 'Recent Developments in Chemistry'.** 29$^{th}$ November–1$^{st}$ December, 2012, Visva-Bharati University, Santiniketan, West Bengal, India.

3. **Hands-on Training on Techniques used in Biotechnology Research.** 28$^{th}$ February–12$^{th}$ March, 2011, North Eastern Hill University (NEHU), Shillong, Mehgalya, India.

## INSTRUMENTS AND TECHNIQUES DEALT WITH

- Histological techniques, Histochemistry, Microtomy & Ultra cutter
- Simple, Compound, Fluoroscence, Scanning and Transmission Microscopy (SEM & TEM)
- Colorimeter, Spectrofluorimeter & Spectrophotometer
- Agarose Gel Electrophoresis (DNA & RNA)
- Poly Acrylamide Gel Electrophoresis (PAGE) and Western Blot
- Fluorescence-activated cell sorting or flow cytometry (FACS)
- Isolation of Nucleic acids (DNA & RNA) and Protein
- Polymerase Chain Reaction (Real Time PCR, MS-PCR & Reverse Transcriptase PCR)
- Gel Documentation System (Bio-Rad)
- Restriction Fragment Length Polymorphism(RFLP)
- Rapid Amplified Polymorphic DNA (RAPD)
- Cell Line Maintenance-serial subculture, cryopreservation and reviving
- Cell viability/Cytotoxic assay (MTT, WST, Trypan Blue & Clonogenic assay)
- Biochemical and Toxicology parameter (GSH, GST, CAT, SOD) estimation
- Microbial culture & Transfection
- Mouse and fish handling

## PROFICIENCY IN COMPUTER SKILLS

- Basic Concepts in Computer Fundamentals, MS-DOS, Windows, MS-Word, MS-Excel, MS-PowerPoint, preparation of animated and dynamic slides for presentation.
- Bioinformatics tools like BLAST, ClustalW, Primer-3.
- Image processing and densitometry analysis (Adobe Photoshop7, NIH-Image J).

## ACADEMIC PROJECTS HANDLED AS A TEAM MEMBER

1. Isolation, characterization and anticancer properties of endophytic fungal metabolites from north eastern India (Funding Agency-**Department of Biotechnology, Govt. of India**)
2. Polymer supported green silver nano particles using plants of northeast India; studies on toxicity and anti-cancer property (Funding Agency- **Department of Biotechnology, Govt. of India**)
3. A highly efficient technique for breeding Indian major carps (Funding Agency- **Department of Science and Technology, West Bengal, Govt. of India**)
4. Arsenic induced genotoxicity and modulation of trace elements in mammalian cells (Funding Agency-**University Grants Commission-Department of Atomic Energy**)
5. Genotoxicity and Apoptosis Induction after co exposure to arsenic and fluoride in mammalian cells: effect on radio sensitivity and modulation of trace elements (Funding Agency- **University Grants Commission-Department of Atomic Energy**)

## PROFESSIONAL MEMBERSHIP

- Society for Redox Biology and Medicine **(SFRBM, USA;** since 2014**)**
- Society of Toxicology **(SOT, USA;** since 2014**)**


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