

## Curriculum vitae

**Dr. Sourav Kumar Patra**

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### Education: -

<b>Ph.D. (in science)</b> University of Calcutta, India	<b>2015-2022</b>
<b>M.Sc. in Biochemistry</b> University of Calcutta, India	<b>2012-2014</b>
<b>B.Sc. in Biochemistry (Major), Microbiology &amp; Physics</b> University of Calcutta, India	<b>2009-2012</b>

### Current Affiliation: -

**Post-Doctoral Research Associate** **2022-present**  
School of Medicine, Dept. of Biochemistry and Biophysics, University of North Carolina at Chapel Hill. (Supervisor: Prof. Charles W. Carter Jr.)  
[Profile page: <https://www.med.unc.edu/biochem/directory/sourav-kumar-patra/>]

### Research Experience: -

- Post-Doctoral Research (UNC Chapel Hill, USA)** **2022-present**  
*Research focus:* Elucidation of the emergence and early evolution of the genetic coding table and the evolutionary adaptation of protein translation machinery by Purification & Characterization of Aminoacyl tRNA synthetase (aaRS) “Urzymes” (excerpts containing catalytic domains of aaRS) using TLC based autoradiogram studies, Malachite green assays, Bioinformatics and Biostatistical data analysis.
- Ph.D. Research (University of Calcutta, India)** **2015-2022**  
Dept. of Biochemistry, University of Calcutta. (Supervisor: Prof. Sanjay Ghosh.)  
Thesis title: “**Characterizing the Nitrosative Stress Tolerance Mechanisms in *Vibrio cholerae*.**”
- Study of Growth kinetics, Biofilm & Redox enzymes of *V. cholerae* under different Nitric Oxide donors/RNS
  - Role of GSNOR, Catalase and post translational modifications (Nitration & S-Nitrosylation) in cell survival under Nitrosative stress or anaerobic nutrient deprived conditions, using biochemical and proteomic approaches.

- Secretome analysis of necrotrophic plant fungi *Macrophomina phaseolina*. (Collaborative project: 2016-2021)
- Characterization of the role of Sty1 and Pap1 under nitrosative stress in *Schizosaccharomyces pombe*. (Collaborative project: 2015-2018)

#### M.Sc. Dissertation

2013-2014

- “To detect the changes in phosphorylation status of proteins from *Arachis hypogea* After *Bradyrhizobium* infection” Supervisor: Prof. Maitrayee DasGupta, Dept. of Biochemistry, University of Calcutta
- “The antioxidant potential of pyruvate in microaerophilic protozoan parasite *Giardia lamblia*”. Supervisor: Dr. Sandipan Ganguly, Dept. of Parasitology, NICED, Kolkata.

#### Publications: -

- ❖ <https://scholar.google.com/citations?user=F4xxO7oAAAAJ&hl=en>
- ❖ <https://orcid.org/my-orcid?orcid=0000-0002-9314-5641>
- ❖ <https://pubmed.ncbi.nlm.nih.gov/?term=sourav+kumar+patra&sort=date>
- **Sourav Kumar Patra**, Jordan Douglas, Peter R. Wills, Ramco Bouckeart, Laurie Betts, Guo Qing Tang and Charles W. Carter Jr. “Genomic databases furnish a spontaneous example of a functional Class II Glycyl-tRNA synthetase urzyme”. (**Under Communication**) PMID: 38260702
- Soumyajit Mukherjee<sup>1</sup>, Shubhojit Das<sup>1</sup>, **Sourav Kumar Patra**<sup>2</sup>, Mayukh Das<sup>1</sup>, Sanjay Ghosh<sup>1</sup>, Alok Ghosh<sup>1</sup>. “Mitochondrial CX<sub>9</sub>C-CX<sub>10</sub>C proteins Cox12 and Coa6 detoxify reactive oxygen and nitrogen species in *Saccharomyces cerevisiae*”. (**Under Communication**)
- Ayantika Sengupta, Subhamoy Chakraborty, Sanchita Biswas, **Sourav Kumar Patra** and Sanjay Ghosh “S-nitrosoglutathione (GSNO) induces necroptotic cell death in K562 cells: Involvement of p73, TSC2 and SIRT1” (**Under Communication**)
- **Sourav Kumar Patra** & Charles W. Carter Jr. “A Zymography technique to study amino acid activation by aminoacyl tRNA synthetases (aaRS): A broad spectrum, high-throughput tool to screen activities of aaRS and their “Urzyme” variants”. *bioRxiv*; February 2023. <https://doi.org/10.1101/2023.02.01.526722> (**Under Communication**)
- **Sourav Kumar Patra**, Nilanjan Sinha, Firoz Molla, Ayantika Sengupta, Subhamoy Chakraborty, Souvik Roy<sup>§</sup> and Sanjay Ghosh. “In-vivo protein nitration facilitates *Vibrio cholerae* cell survival under anaerobic, nutrient deprived conditions”. *Archives of Biochemistry and Biophysics*; October 2022, Volume 728, Article 109358. PMID: 35872323

- **Sourav Kumar Patra**, Nilanjan Sinha, Ayantika Sengupta, Subhamoy Chakraborty, Souvik Roy, Sanjay Ghosh. “In-vivo Protein Nitration and De-Nitration Facilitate *Vibrio cholerae* Cell Survival under Anaerobic Nutrient Deprived Condition: Consequences of Nitrite Induced Protein Nitration”. *Free Radical Biology and Medicine*; February 2022, Volume 180, Supplement 1, Page s94 Part of special issue: SfRBM 2021 Conference Abstracts. <https://doi.org/10.1016/j.freeradbiomed.2021.12.219>.
- Nilanjan Sinha, **Sourav Kumar Patra**, Sanjay Ghosh. “Secretome analysis of *Macrophomina phaseolina* identifies an array of putative virulence factors responsible for charcoal rot disease in plants”. *Frontiers in Microbiology*; April 2022, Volume 13, Article 847832. PMID: 35479629
- Nilanjan Sinha, **Sourav Kumar Patra**, Tuhin Subhra Sarkar, Sanjay Ghosh. “Secretome analysis identified extracellular superoxide dismutase and catalase of *Macrophomina phaseolina*”. *Archives of Microbiology*; 23 December 2021, Volume 204, Issue 62. PMID: 34940926
- **Sourav Kumar Patra**, Sourabh Samaddar, Nilanjan Sinha, Sanjay Ghosh. “Reactive nitrogen species induced catalases promote a novel nitrosative stress tolerance mechanism in *Vibrio cholerae*”. *Nitric Oxide*; 1 July 2019, Volume 88, Pages 35-44. PMID: 30981896
- Puranjoy Kar, Pranjal Biswas, **Sourav Kumar Patra**, Sanjay Ghosh. “Transcription factors Atf1 and Sty1 promote stress tolerance under nitrosative stress in *Schizosaccharomyces pombe*”. *Microbiological Research*; January 2018, Volume 206, Pages 82-90. PMID: 29146263
- **Sourav Kumar Patra**, Prasanta Kumar Bag and Sanjay Ghosh. “Nitrosative Stress Response in *Vibrio cholerae*: Role of S-Nitrosoglutathione Reductase”. *Applied Biochemistry and Biotechnology*; July 2017, Volume 182, Issue 3, pages 871–884. PMID: 28000045

#### Conference/Symposia Attended: -

- **Poster presentation** -Department of Biochemistry and Biophysics, UNC Chapel Hill Research Retreat program organized at Durham, North Carolina, USA (19<sup>th</sup> Oct, 2023). Title of the Poster: “*Genomic databases furnish a spontaneous example of a functional Class II Glycyl-tRNA synthetase urzyme, GlyCA*”
- **Poster presentation** -Department of Biochemistry and Biophysics, UNC Chapel Hill Research Retreat program organized at Museum of Life Science of Durham, North Carolina, USA (21<sup>st</sup> Oct, 2022). Title of the Poster: “*A novel Zymography technique to study amino acid activation capacity of Amino acyl tRNA synthetases (aaRS)*”
- **Poster presentation** -28<sup>th</sup> Annual International conference organized by Society for Redox Biology and Medicine (**SfRBM 2021**) at Savannah, Georgia, USA (15<sup>th</sup>-18<sup>th</sup> Nov, 2021). Title of the poster: “*In-vivo Protein Nitration and De-Nitration Facilitate Vibrio cholerae*”

*Cell Survival Under Anaerobic Nutrient Deprived Condition: Consequences of Nitrite Induced Protein Nitration.*”

- **Poster presentation** -Society of Biological Chemists (India), Kolkata Chapter & CSIR-IICB sponsored One-day conference on “Bridging Chemistry and Biology for Human Health and Disease” at CSIR-IICB, Kolkata (21<sup>st</sup> Sep, 2019). Title of the poster: “*Reactive nitrogen species induced catalases promote a novel nitrosative stress tolerance mechanism in Vibrio cholerae.*”
- Participated in “The First Research Scholars’ Meet” conference organized by Department of Biochemistry, University of Calcutta (16<sup>th</sup> Feb, 2019).
- **Poster presentation** -Society of Biological Chemists (India), Kolkata Chapter sponsored One-day conference on “Recent Trends in Biological Research” at Amity University, Kolkata (8<sup>th</sup> Sep, 2018). Title of the poster: “*Nitrosative Stress Response in Vibrio cholerae: Role of S-Nitrosoglutathione Reductase.*”
- Successfully completed the certified workshop/training entitled as, “Training course on Basics of Flow Cytometry” organized by BD (Becton, Dickinson and Company) at CRNN, University of Calcutta; (25<sup>th</sup>-27<sup>th</sup> Jul, 2017).
- **Poster presentation** -CAS-Phase II sponsored One-day symposium on “Emerging Trends in Biology” at Dept. of Biochemistry, University of Calcutta; (17<sup>th</sup> Mar, 2017). Title of the presented poster: “*Nitrosative Stress Response in Vibrio cholerae: Role of S-Nitrosoglutathione Reductase.*”

**Invited Lectures delivered: -**

- Biochemistry seminar organized by Dept. of Biochemistry, Gurudas College in collaboration with IQAC at Kolkata (4<sup>th</sup> May, 2023). Theme of the Presentation: *Nitrosative stress tolerance mechanisms in Vibrio cholerae & role of In-vivo protein tyrosine nitration.*

**Awards and achievements: -**

- Qualified in National Eligibility Test (NET) conducted by CSIR-UGC in June, 2013
- Qualified in Graduate Aptitude Test in Engineering (GATE) in the year 2014– All India Rank (AIR) 304 (Percentile- 96.43)