

Dr. Agniswar Sarkar (M.Sc., Ph.D.)

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Nationality: Indian

Religion: Hindu

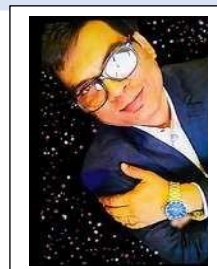
Sex: Male

Hobbies: Gardening, travelling, listening to music and playing tabla.

Address:

Present: 85/1F, Ibrahimpur Road,
Jadavpur, Kolkata- 700 032, West
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741 201, India



Academic

Qualifications:

- Doctor of Philosophy (Ph.D.), Biotechnology (2009- 2014)**
Research Conducted: Department of Biotechnology (*Recognized by DBT-Govt. of India*),
The University of Burdwan, West Bengal, India.
Specialization: Microbial Biotechnology, Molecular Diagnostics and Typing, Sequencing,
Molecular Epidemiology and Bioinformatics.
- Master of Science (M. Sc.), Biotechnology (2006-2008)** Vidyasagar University, India.
- Bachelor of Science (B. Sc. Hons.), Biotechnology (2003- 2006)**, The University of Burdwan, India.
- Diploma in Pharmacy (D. Pharm.) (1997-1999)**, Institute of Pharmacy, Jalpaiguri, West Bengal
Pharmacy Council, India.

Work and Research Experiences:

- Assistant Professor, Microbiology (2018- 2021)**, Institute of Biomedical Sciences, India.
- Postdoctoral Fellow, Clinical Virology (2014- 2018)**
Virus Unit, National Institute of Cholera and Enteric Diseases (ICMR-NICED), India.
- Research Associate, Molecular Biology (2013- 2014)**
Department of Aquatic Animal Health, West Bengal University of Animal and Fishery Sciences, India.

Awards/Recognitions:

- Rajiv Gandhi National Fellowship-2009** (University Grants Commission, Govt. of India).
- Postdoctoral Fellowship-2014** (University Grants Commission, Govt. of India).

Database Developed: (NCBI/EMBL/DDBJ/Phyre2/Swissprot/Viper/Expasy):

- Bacterial Gene sequences submitted:** JN559379; KC793898 - KC793904; KC800783 - KC800796;
KC776586; KC776583 - KC776585; KC776587 - KC776590; KC793894 - KC793897.
- Viral Gene sequences submitted:** KY436004 - KY436020, KT072588 - KT072593.
- 3D structure of protein** (id=440818): Predicted and generated by <http://swissmodel.expasy.org/> & result
interpreted by http://www.predictprotein.org/get_results.php?req_id=440818
- Validation of 3D structure:** Predicted protein structure validated and analyzed by Ramachandran Plot on
the basis of *phi-psi* (ϕ - ψ) theory: <http://mordred.bioc.cam.ac.uk/~rapper/rampage2.php>

Technical Skills:

- ⇒ **Clinical:** Patient samples (Tissue, blood, plasma) handling techniques, Understanding of Clinical patient
Data, Viral titration and electroporation.
- ⇒ Working experiences in BSL-II and BSL-III labs.
- ⇒ **Microbiology:** Bacterial culture and sterile procedure, Isolation of microbial chromosomal and plasmid
DNA, Growth curve analysis, Biochemical analysis and Staining.

Curriculum Vitae

- ⇒ **Molecular Biology:** DNA/RNA extraction, Molecular Cloning, PCR (Qualitative and Quantitative), qRT-PCR, Primer Design and Sequencing, *In-vitro* Transcription, RFLP, tRFLP, ARDRA.
- ⇒ **Cell Biology and Immunology:** In vitro cell culture, Adherent and non-adherent cell culture, Cell growth, invasion, migration and healing assay, Immunofluorescence Staining, ELISA.
- ⇒ **Gene silencing techniques:** siRNA and shRNA mediated knockdown of genes, miRNAs mimics and inhibitors transfection.
- ⇒ **Protein biology:** Protein extraction and purification, SDS-PAGE, Western Blot.
- ⇒ **Imaging:** Trinocular microscope with photographic system (ZEISS and Olympus), Confocal microscopy (Nikon), UV-vis Spectroscopy.
- ⇒ **Statistical analysis and Bioinformatics** (Online and Offline tools handling). UPGMA, SPSS, SAS, Phoretix 1D, Graph pad prism, Perl Package.

Dissertation and Relevant Research Experiences:

1. **B.Sc Project Work:** Molecular Characterization of *E. coli* from fish by using RAPD-PCR, from Central Inland Fisheries Research Institute (Indian Council of Agricultural Research), Barrackpore, Kolkata-700120, West Bengal, India.
2. **M.Sc Project Work:** Study and assessment of variation of protein polymorphism within *Cicer arietinum* through Proteomics Analysis, from The University of Kalyani, Nadia, West Bengal, India.

Achievements During Ph. D. Research: My Ph.D. research focused on development of molecular diagnostics and molecular typing of microbes. I have focused on 21 different species of Aeromonads, an enterobacteria. Apart from that, I have also worked with *Vibrio* species and *E. coli*. The objectives of the study were achieved by development of accurate and prompt species-specific molecular diagnostics for various virulent genes through different molecular tools and techniques. Comparative analysis of molecular diagnostics methods was analysed and validated. Different genotyping techniques were developed and validated along with genomic fingerprint database for surveillance and monitoring of genetic variability. Genetic polymorphisms were studied, analysed and submitted to world wide databases. Genomic data sequences were analysed using bioinformatic tools and techniques for functional and structural association of different genes and proteins.

Diagnostics development:

- Molecular Identification through 16S rRNA-PCR analysis and 16S rRNA gene sequences were analysed through Bioinformatic tools and submitted to NCBI Gen Bank.
- Species-specific diagnostics and molecular markers were developed for rapid molecular identification of different virulent gene(s).
- Stress proteins were analysed, Secondary protein structure was predicted, analysed, validated and submitted.
- Different gene sequences and protein structures were submitted in world wide open access database, e.g., NCBI GenBank, Viper, EMBL, Swissprot etc.

Typing and epidemiological correlations:

- Developed specific bacterial typing through ERIC-PCR, REP-PCR and BOX PCR technology.
- Molecular epidemiology, statistical analysis, Phylogenetic position and Binary matrix were addressed for surveillance and monitoring genetic variability.

Achievement During Postdoctoral Research: My postdoctoral research was focused on vertical transmission and infection of Human Cytomegalovirus (HCMV) in neonates. The study has been formulated to investigate genetic relationship between symptomatic and asymptomatic congenital CMV (cCMV) infection. Pregnant women, CMV-coinfected HIV parents and their new born babies (neonates) were included in this study. Different viral-specific glycoprotein genes and their subtypes (gB, gH, gN, gO, gH); immediate early genes (IE1 & 2), and UL83 (pp65) genes were characterized. Gene sequences were analysed to determine the association of genetic variation (repeats, polymorphisms, gap) along with bioinformatics tools. A genetic polymorphism database has been developed and correlated on local and global perspective in symptomatic and asymptomatic cCMV infection.

List of publications:

1. Saha M, **Sarkar A**, Bandhophadhyay B. (2021). Water quality assessment of East Kolkata Wetland with a special focus on bioremediation by nitrifying bacteria. *Water Sci Technol*; 84(10-11): 2718-2736.
2. Saha M, **Sarkar A**, (2021). Review on multiple facets of drug resistance: A Rising Challenge in the 21st Century. *J. Xenobiotics, MDPI*; 11: 197-214.
3. **Sarkar A**, Das D, Ansari S, Chatterjee RP, Mishra L, Basu B, Ghosh SK, Bhattacharyay M, Chakraborty N. (2019). Study on the genotypic prevalence of glycoprotein B (gB) gene among the symptomatic neonates of eastern India with congenital Cytomegalovirus (cCMV) infection. *BMC Pediatrics*; 19:291-302.
4. **Sarkar A**, Chatterjee A, Ansari S, Chakraborty N. (2016). Characterization of Molecular Mimicry between UL18 Glycoprotein of Human Cytomegalovirus (HCMV) and Class-I MHC Molecule through Pattern-based Analysis: An *In-silico* Approach. *J Health Med Informat*; 7: 230.
5. Chatterjee A, Ansari A, **Sarkar A**, Chakraborty N. (2016). Congenital Cytomegaloviral Infection Causing Severe Pulmonary Hypertension in a Newborn with a HIV Seropositive Mother - A Case Report from Eastern India. *J AIDS Clin Res*; 7: 567.
6. Chatterjee A, **Sarkar A**, Ansari S, Siddhanta S, Banerjee S, Sarkar RN, Chakraborty N. (2016). Spread of human immunodeficiency virus 1 among men who have sex with men is emerging as a genuine social concern and affecting the general populace - case reports from Eastern India. *World J Virol*; 5 (4):183-188.
7. Abraham TJ, Banerjee S, Patra A, **Sarkar A**, Adikesavalu H, Dash G. (2015). Molecular phylogeny of *Myxobolus orissae* (Myxosporidia: Myxobolidae) infecting the gill lamellae of mrigal carp *Cirrhinus mrigala* (Actinopterygii: Cyprinidae). *Mol Biol Res Commun*; 4(1): 15-24.
8. Adikesavalu H, Patra A, Banerjee S, **Sarkar A**, Abraham TJ. (2015). Phenotypic and molecular characterization and pathology of *Flectobacillus roseus* causing flectobacillosis in captive held carp *Labeo rohita* (Ham.) fingerlings. *Aquacult*. 439: 60–65.
9. Chatterjee S, Das J, Chatterjee S, Choudhuri P, **Sarkar A**. (2014). Isolation, Characterization and Protein Profiling of Lead Resistant Bacteria. *British Microbiol Res J*; 4(1): 116-131
10. **Sarkar A**, Saha M, Roy P. (2013). Detection of 232bp Virulent Gene of Pathogenic *Aeromonas hydrophila* through PCR Based Technique: (A Rapid Molecular Diagnostic Approach). *Adv Microbiol*; 3 (1): 83-87.
11. Saha M, **Sarkar A**, Bandhophadhyay B. (2013). Development of Molecular Identification of Nitrifying Bacteria in Water Bodies of East Kolkata Wetland, West Bengal. *J Bioremed Biodeg* 4: 211.
12. **Sarkar A**, Saha M, Roy P, Patra A. (2012). RAPD- PCR and SDS-PAGE Analysis of *Aeromonas hydrophila* for defining Molecular Characterization. *J Med Microbiol*; 2 (2): 37-40.
13. **Sarkar A**, Saha M, Roy P. (2012). Identification and Typing of *Aeromonas hydrophila* through 16S rDNA-PCR Fingerprinting. *J Aquacult Res Deve*. 3: 146.
14. Saha M, **Sarkar A**, Bandhophadhyay B. (2012). Study of susceptibility to oral submucous fibrosis (OSF) in the population of West Bengal at XRCC 1 (Arg399Gln) by RFLP. *J Physiol Pathophysiol*; 3(2): 20-24.
15. Chatterjee S, Das J, Chatterjee S, Choudhuri P, **Sarkar A**. (2014). Isolation, Characterization and Protein Profiling of Lead Resistant Bacteria. *British Microbiol Res J*; 4(1): 116-131
16. Chatterjee S, Mukherjee A, **Sarkar A**, Roy P. (2012). Bioremediation of lead by lead-resistant microorganisms, isolated from industrial sample. *Adv Biosci Biotechnol*; 3: 290-295.
17. **Sarkar A**, Saha M, Roy P. (2011). Study of *Vibrio parahaemolyticus* through ERIC- PCR and REP- PCR for Development of Fish and Human Health Management. *Perspectives in Animal Ecology and Reproduction*. 7: 15-31. Daya Publishing House, New Delhi, India.
18. Saha M, **Sarkar A**, Bandopadhyay B, Dhimani M, Mishra SS. (2011). Impact of Phytoremediation by Water Hyacinth (*Eichhharia crassipes*) in East Kolkata Wetland, Emerging Trends in Biomedical and Nanobiotechnology. 22-30.
19. Saha M, **Sarkar A**, Bandopadhyaya B. Study of saltwater Crocodile (*Crocodilus porosus*) in Mangrove forest at Sundarban in West Bengal for Conservation and Management. (2011). *Animal Diversity, natural history and conversation*. 1:227-240. Daya Publishing House, New Delhi, India.
20. **Sarkar A**, Saha M, Roy P, Patra A (2010). Characterization of *Aeromonas* spp. By ERIC-PCR Genomic Fingerprinting Techniques. *J Pl Sc Res*; 26(2): 213-220.
21. Saha M, **Sarkar A**, Bandhophadhyay B, Dhiman M, Das P, Mishra SS. (2010). East Kolkata Wetland- A rich Source of Microbes for Bioremediation and environmental Protection. *J Pl Sc Res*; 26(2): 37-41.
22. Saha M, **Sarkar A**, Saha MN, Bandhophadhyay B, Dhimani M, Mishra SS. (2010). Fish Production Enhancement and Sustainable Development using Fish cum Livestock Farming in Sewage fed bheries in East Kolkata Wetland,

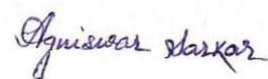
W.B.: An Integrated Farming Approach”, Bioresources for Food Security and Rural Livelihood. 251–258. Copyright © 2010, Narendra Publishing House.

23. Dhiman M, Das P, **Sarkar A**, Saha M, Behera BK, Mishra SS. (2010). Molecular Characterization of Salt Tolerance Gene from Aquatic Microbes: Concepts and Application in Transgenic Research”, Bioresources for Food Security and Rural Livelihood. 1: 107-111. Copyright © 2010, Narendra Publishing House.

Declaration: I do hereby declare that all statements made in this application are true and correct to the best of my knowledge and belief. In the event of any information being found false or incorrect or ineligibility being detected before or after the test or interview, my candidature will be cancelled.

Thanking you.

Yours sincerely



Referee (s):

1. **Prof. Pranab Roy**, Head, Molecular Biology Division, Institute of Child Health, 11, Dr Biresh Guha Street, Kolkata-700 017, West Bengal, India. Mobile: +91-9933037099, Email: pranabroy@rediffmail.com
2. **Prof. Bidyut Bandopadhyay**, Head, Department of Biotechnology, Oriental Institute of Science and Technology, Vidyasagar University, Burdwan, West Bengal, India. Mobile: +91-9733306660, Email: bidyut2006@gmail.com
3. **Prof. Dhrubajyoti Chattopadhyay**, Ex Pro-Vice Chancellor, University of Calcutta, Kolkata, West Bengal, India. Mobile: +91-9831083791, Email: dhrubajyoti@gmail.com
4. **Dr. Nilanjan Chakraborty**, Scientist-F, Virus Unit, National Institute of Cholera and Enteric Disease, Indian Council of Medical Research, GB4-ID & BG Hospital, 57, Dr. S. C. Banerjee Road, Kolkata- 700 010, West Bengal, India. Mobile: +91-9163785518, Email: nilanjan_19@yahoo.com

Training/Workshop/Seminar/Conference:

- ⇒ Participated in SINP International Cancer Meeting 2018, Saha Institute of Nuclear Physics, Kolkata, India.
- ⇒ Participated and presented poster in National Virology Conference 2017 on Clinical Virology- A Distinct Entity at the Frontiers of Health Care. Christian Medical College, Vellore, Tamil Nadu, India.
- ⇒ Oral presentation in SERB sponsored National Seminar 2017 on New Horizons in Biotechnology. Department of Biotechnology, Haldia Institute of Technology, Haldia, India.
- ⇒ Oral presentation in SERB sponsored National Seminar 2013 on New Horizons in Biotechnology. Department of Biotechnology, Haldia Institute of Technology, Haldia.
- ⇒ Participated in National Science Day Seminar 2012 on Clean Energy and Nuclear Safety. Department of Biotechnology, The University of Burdwan, India.
- ⇒ Workshop cum Training Programme on Vercomposting 2011. Department of Biotechnology, The University of Burdwan, India.
- ⇒ Oral presentation in 17th West Bengal State Science Congress 2010, India.
- ⇒ Participated and presented poster in National Seminar on Recent Trends in Biotechnology 2010. Department of Biotechnology, The University of Burdwan, India.
- ⇒ Participated in International Symposium on Emerging Trends in Biomedical and Nanobiotechnology: Relevance to Human Health 2009. Department of Biotechnology, Acharya Nagarjuna University, India.
- ⇒ Training experience as Pharmacist in Gandhi Memorial Hospital (Registered by Government of West Bengal), Kalyani, Nadia, West Bengal, India.
- ⇒ Training and workshop on Modern Tools and Techniques in Biotechnology as well as Preparation and Application of Biofertilizers, Biopesticides, Bioherbicides in 2005. ICAR-Central Inland Fisheries Research Institute, Barrackpore, Kolkata-700120, India.
- ⇒ Workshop on Modern Trends in Biotechnology at Dr. B. C. Guha Center of Genetic Engineering and Biotechnology, Ballygunge Science College, University of Calcutta, Kolkata, India.
- ⇒ Workshop on Production and Control Processes at retail and industrial units of Switz Foods Private Ltd. with the Integrated Quality and Food Safety Management System, Kolkata, India.