Curriculum Vitae

1. **Name: Dr.Biplab Sarkar**

2. **Designation**:**Senior Scientist(Nanobiotechnology)**

3. **Correspondence Address:**

Indian Institute of Agricultural Biotechnology (Deemed to be University)
(Indian Council of Agricultural Research)
PDU Campus,IINRG(Lac Research Institute),Namkum,Ranchi-834010,Jharkhand, India;Mobile:+91-9730661230,
Email-biplab_puru@yahoo.co.in

4. **Research Area-Nanotechnology and nanobiotechnology, Green Nanoformulations, Aquaculture,Nano-Delivery systems, Nanoremediation**

5. **Research Project (Institutional Project)**

Duration	Funding Agency	Title of the project
2012-2015	ICAR Institutional Fund	Brood stock management,breeding and seed production of important freshwater fishes in abiotic stressed farms
2012-2015	ICAR Institutional Fund	Nano-bioremediation of nitrogenous contaminants using silver-ion exchanged zeolites
2012-2015	ICAR Institutional Fund	Design and development of livestock and fishery structures for heat stress management
2016(july) - till date	ICAR Institutional Fund	Development and evaluation of the efficacy of novel nanoparticles for enhancing yield in rice and Indian major carp
2016(july)-till date	ICAR Institutional Fund	Identification and characterization of gene responsible for immune response in *Labeo rohita* fingerlings
2017(May)-2020(January)	ICAR Institutional Fund	Synthesis and application of nano-composite hydrogel in wound healing and water treatment

6. **Research Project (External funding)**

Duration	Funding Agency	Title of the project	Position
2008-2012	DST,Govt. of India	Impact of silver nanoparticle on a vertebrate model of zebrafish (*Danio rerio*) with special reference to reproductive proteomics	Principal Investigator
2012-2015	Nano Mission, DST	Green-synthesis of bioactive nanoparticles using bacterial biomass and latex producing plants and targeted delivery of drug-encapsulating nanobeads to macrophages for the treatment of tuberculosis	Co-Principal Investigator

2015-2016	National Fishery Development Board, Govt. of India	Establishment of carp hatchery	Co-Principal Investigator
1998-1999	APCess fund Project,ICAR	Sex pheromones and their role in reproduction and breeding in fish model	Senior Research Fellow
1999-2003	APCess fund project, ICAR	Evaluation of the effect of cypermethrin and carbofuran on Indian Major Carp,*Labeorohita (H.)*along with their impact on aquatic environment	Senior Research Fellow

7. Employment

Duration	Institution	Position
2016(March)-till date	ICAR-Indian Institute of Agricultural Biotechnology,Ranchi,Jharkhand	Senior Scientist
2012-2016	ICAR-National Institute of Abiotic stress Management, Baramati, Pune	Senior Scientist
2008-2012	KIIT University, Bhubaneswar	Assistant prof.
2006-2008	AMITY University, Noida,U.P.	Senior Lecturer
2004-2006	IAMR,Ghaziabad,U.P.	Lecturer
1998-2003	ICAR- Central Institute Of freshwater Aquaculture,Bhubaneswar,India	SRF

8. Educational Qualification : (Begin with Bachelor's Degree)

Degree	Institution	Field(s)	Year
B.Sc.	University of Burdwan,West Bengal	Zoology	1993
M.Sc.	University of Burdwan,West Bengal	Zoology	1995
Ph.D.	Worked at,ICAR-Central Institute of Freshwater Aquaculture (CIFA),Bhubaneswar; Degree awarded at Utkal University, Bhubaneswar,Odisha)	Zoology	2004

9. Academic Honours and Awards

2008	Young Scientist, Department of Science and Technology,Govt. of India
2000	Selected in National Eligibility Test (NET) of life Science, Conducted by CSIR and UGC ,Govt. of India
1999 & 1998	Selected for ICAR Project Fellowship
1996	Selected in Graduate Aptitude Test (GATE) of Bioscience

10. Important peer reviewed selected publications

•Verma SK, Nisha K,Panda PK,Patel P, Kumari P,MallickMA,**BiplabSarkar** and Das B(2020) Green synthesized MgO nanoparticles infer biocompatibility by reducing *in vivo* molecular nanotoxicity in embryonic zebrafish through Arginine interaction elicited apoptosis.**Science of the Total Environment**, doi.org/10.1016/j.scitotenv.2020.136521.

•Sanjay K. Gupta, **B. Sarkar**, Manisha Priyam, Neeraj Kumar, S. Naskar, Md JavedFoysal, Shailesh Saurabh, T.R. Sharma(2019) Inflammatory and stress biomarker response of *Aeromonas hydrophila* infected rohu, *Labeo rohita* fingerlings to dietary microbial levan.**Aquaculture**,https://doi.org/10.1016/j.aquaculture.2020.735020

•**Biplab Sarkar**, Suresh K.Verma, Javed Akhtar, Surya Prakash Netam, Sanjay Kr. Gupta, Pritam Kumar Panda, Koel Mukherjee(2018). Molecular aspect of Silver nanoparticles regulated embryonic development in Zebrafish (*Danio rerio)* by Oct-4 expression**. Chemosphere**,206 560-567

•Sanjay K. Gupta, **B. Sarkar**, S. Bhattacharjee, Neeraj Kumar, S. Naskar, Kiran Babu Uppuluri(2018).Modulation of cytokine expression by dietary levan in the pathogen aggravated rohu, *Labeo rohita* fingerlings. **Aquaculture**;495, 496-505

•**Ashish Issac**Malay Kishore Dutta and B**iplab Sarkar** (2017).Computer vision based method for quality and freshness check for fish from segmented gills.**Computers and Electronics in Agriculture**.139:10-21

•**B.Sarkar**, A.Daware, P.Gupta, KK Krishnani, S.Barua and S.Bhattacharjee(2017).Nanoscale wide band semiconductor for remediating aquatic pollution.***Environmental science and pollution research,***24(33):25775-25797.

•S. Mohapatra, **B. Sarkar**, D. P. Samantaray, A. Daware, S. Maity,S.Pattnaik& S. Bhattacharjee (2017). Bioconversion of fish solid waste into PHB using *Bacillus subtilis* based submerged fermentation process, ***Environmental Technology***, DOI:10.1080/09593330.2017.1291759.

•S. Mohapatra,P. R. Mohanta,**B. Sarkar**,A. Daware,C. Kumar,D. P.Samantaray(2017).characterizatio n. Proceedings ***of the National Academy of Sciences, India Section B: India Biological Sciences,*** Volume 87,Issue 2, pp 459–466

•Namita Sengar, Malay Kishore Dutta &**Biplab Sarkar** (2017): Computer vision based technique for identification of fish quality after pesticide exposure, **International Journal of Food Properties**, DOI: 10.1080/10942912.2017.1368553.

•S. Bhattacharjee,,**B. Sarkar**, A. R. Sharma, P.Gupta. G. Sharma, C. Chakraborty, S Lee(2016). Formulation and application of biodegradable nanoparticles based biopharmaceutical delivery- an efficient delivery system. ***Current Pharmaceutical Design***(DOI: 10.2174/1381612822666160307151241

•M.K. Dutta, N. Sengar,N. Kamble,K. Banerjee,N. Minhas, **B. Sarkar(**2016).Image processing based technique for classification of fish quality after cypermethrine exposure.***LWT-Food Science and Technology***, 68, 408-417

•M.K.Dutta,A. Issac, N. Minhas, **B. Sarkar**(2016).Image processing based method to assess fish quality and freshness.***J.of Food engineering***, 177, Pages 50–58.

•**B.Sarkar**,S.Bhattacharjee, A.Daware, P.Tribedi, KK Krishnani, PS Minhas(2015).Selenium nanoparticle for stress-resilient fish and livestock.***Nanoscale research letters***,10:371.

- **Sarkar,B.,**Jaisai,M., Mahanty, A., Panda, P., Sadique, M.,Nayak,B. B., Gallardo,G.,Thakur, D.,Bhattacharjee, S. and Dutta, J.(2015). Optimization of the sub lethal dose of silver nanoparticle through evaluating its effect on intestinal physiology of nile tilapia (*Oreochromis niloticus L*.).***Journal of Environmental science and health, part A,***50,814-823.

- KK. Krishnani, Veera M. Boddu,Deok Hyun Moon,S. V. Ghadge,**B.Sarkar**, M. P. Brahmane, K. Choudhary, V. Kathiravan,Xiaoguang Meng(2015). Metals bioaccumulation mechanism in neem bark. ***Bulletin of Environmental Contamination and Toxicolology*,**95:414–419.

- Bandyopadhyay,P. ,Mishra, S.,**Sarkar, B.,**Swain,S. K., Pal A., Tripathy, P. P. and Ojha, S. K. (2015). Dietary *Saccharomyces cerevisiae* boosts growth and immunity of IMC *Labeorohita* (Ham.) juveniles.***Indian Journal of Microbiology*,**55(1):81-87**.**

- Ojha, S. K., Mishra, S., Mohanty, S. S.,**Sarkar, B.,** Singh, M., Kumar, S. and Chaudhury, G. R.(2015). Performance evaluation of vinasse treatment plant integrated with physicochemical methods. ***Journal of Environmental Biology,***36,1269-1275**.**

- Saha, M., Sarkar, S.,**Sarkar,B**. Bhattacharjee, S. and Tribedi, P.(2015). Microbial siderophores and their potential applications: a review.***Environmental science and pollution research,*** DOI 10.1007/s11356-015-4294-0.

- K.K. Meena, S. Mishra,M.kumar,Sanjoy k. Ojha, G.C. Wachure and **B.Sarkar**(2015)**.**Phylogenetic study of methanol oxidizers from Chilika lake sediments through genomic and metagenomic approach.***Indian Journal of Microbiology*,**55:151-162.

- **Sarkar B**, Kumar M, Verma S, Rathore RM (2015) Effect of dietary nanosilver on gut proteases and general performance in Zebrafish (*Danio rerio*). ***International Journal of Aquatic Biology* 3**(2)**:** 60-67

- **B.Sarkar**,A.Mahanty,A. saha, A.R. pal,P. Bandyopadhya,S.K.Sarkar, S adhikari and S Ayyappan(2013).Impact of cypermethrin and carbofuran on the ovarian cycle of the Indian major carp,*Labeorohita* (Hamilton).***Proceedings of national Academy of science,B.Biological Science*,**DOI 10.1007/s40011-013-0265-8.

- **B. Sarkar**, SP Netam, A Mahanty, A Saha ,R Bosu and K. K. Krishnani(2014). Toxicity evaluation of chemically and plant derived silver nanoparticles on zebrafish (*Danio rerio*).***Proceedings of national Academy of science B.Biological Science*** , 84,(4): 885-892.

- SR Satapathy, P Mohapatra, R Preet, D Das, **B Sarkar,**T Choudhuri, MD Wyatt, C N Kundu (2013).Silver-based nanoparticles induce apoptosis in human colon cancer cells mediated through p53.***Nanomedicine*,** 8: 8,1307-1322.

- A Mahanty,RBosu, P Panda, S P Netam and **B Sarkar**(2013).Microwave assisted rapid combinatorial synthesis of silver nanoparticles using *E.coli* culture supernatant. ***International journal of Pharma and Biosciences*,**4(2):1030 - 1035.

- A Mahanty, S Mishra, R Bosu, UK Maurya, S P Netam and **B Sarkar**(2013).Phytoextracts-synthesized silver nanoparticles inhibit bacterial fish pathogen *Aeromonas hydrophila.****Indian Journal of Microbiology,***53(4):438–446.

- **B Sarkar**, A Mahanty, SP Netam, S Mishra, N Pradhan and M Samanta(2012). Inhibitory role of silver nanoparticles against important fish pathogen,*Aeromonas hydrophila.****International Journal of Nanomaterials and Biostructures,*** 2(4):70-74.

- S Mohanty,SMishra, P Jena, B Jacob, **B Sarkar** and A Sonawane(2012).Investigation on antibacterial,cytotoxic and anti-biofilm efficacy of star stabilized silver nanoparticle.***Nanomedicine:Nanotechnology,Biology and medicine***8(6):916-24.

- Sunil Chandra Pradhan, Ajya Ku Patra, **B Sarkar** and Arttatrana Pal (2011). Seasonal changes in haematological parameters of *Catlacatla* (Hamilton).***Comparative Clinical Pathology*.**DOI 10.1007/s00580-011-1316-2.

- C.Chakraborty,**B.Sarkar**,CHHsu,ZHwen,CSLin,PC Shieh(2009).Future prospects of nanoparticles on brain targeted drug delivery.***J of Neurooncology***.,DOI 10.10007/s 1060-008-9759-2.

- S.Adhikari,**B.Sarkar**,A. Chatterjee,D.N.Chattopadhay, S. Sarkar,S. Ayyappan (2008).Carbofuran induced changes in breeding of a freshwater fish, *Labeorohita* (Hamilton).***Toxicology and Environmental Chemistry***, 90:3,457-465**.**

- S.Adhikari,**B. Sarkar**,A.Chatterjee, D.N.Chattopadhay,S. Sarkar,S.Ayyappan(2006).Effect of cypermethrin on breeding performances of a freshwater fish, *Labeorohita* (Hamilton).***Chemistry and Ecology***, 22:3, 181-188.

- **B. Sarkar**, A. Chatterjee, and S. Adhikari, and S. Ayyappan (2005). Carbofuran and cypermethrin induced histopathological alterations in the liver of *Labeorohita* (H.) and its recovery.***J Applied Ichthyology*,** 21:131-135.

- C Chakraborty, S. Nandi, **B. Sarkar** and S. Sinha (2005). Over expression and Purification of eel calcitonin and its phylogenetic analysis.***Protein Peptide Letter***,12(3):263-9.

- S.Adhikari, **B. Sarkar**, Amita Chatterjee and S. Ayyappan (2004). Effect of cypermethrin and carbofuran on certain haematological parameters and prediction of their recovery in a freshwater teleost*,Labeorohita* (Ham.).***Ecotoxicolology and Environmental Safety*** 58(2): 220-6.

11.Book Edited

- Edited a book ,entitled, **'Current trends in Biochemistry and Biotechnology (Volume-II)[2012]**' published by 'Astral International Private Limited', New Delhi.

- **Technical Book-**Edited a book entiled,'Technical Handbook on Intellectual property rights (IPRs) in agricultural biotechnology ,edited by Sarkar et al , 2016; published by ICAR-Indian Institute of Agricultural Biotechnology,ITMUcell,Ranchi; Total page-143.

12.Book Chapter published

- **Sarkar, B.,** Daware, A., Bhattacharya, S., Trivedi P., Krishnani, K.K. and Minhas, P.S. (2019).Nanotechnology heralds a new dawn in stress prone aquaculture.In:B.P.Mahanty (Edited), Advances in fish research, Volume -VI, Narendra Publication House, New Delhi.Vol.-VII, chapter-24;Pages 1–28
- K KKrishnani, V Kathiravan, KK Meena, **B Sarkar**, Satish Kumar, MP Brahmane, Neeraj Kumar, BP Mohanty and KailasamM(2019).Bioremediation of aquatic toxicants: application of multi-omicapproaches,In:B.P.Mahanty (Edited), Advances in fish research, Volume -VI, Narendra Publication House, New Delhi.Vol.-VII,chapter-20; Pages 1–28

- **Biplab Sarkar,** S. K. Gupta, Vinay T.N., T. G. Choudhury and SurajitBhattacharjee(2016).Intellectual property rights in nanotechnology and nanomedicine.*In:* Technical Handbook on intellectual property rights in agricultural biotechnology,edited by Sarkar *et al,*page number32-38*.*

- Surajit Bhattacharjee, N.K. Sinha, Rishikesh kumar and **BiplabSarka**r(2016). Intellectual property rights and agricultural development: A silverline for sustainable growth.*In:* Technical Handbook on intellectual property rights in agricultural biotechnology,edited by Sarkar *et al,*page number39-45*.*

- **B.Sarkar**,U.K.Maurya and S.P.Netam(2014).Synthesis, characterization, application and toxicological aspects of silver nanoparticle.In: Sarkar and Chakraborty(Edited), Advances in Biochemistry and Biotechnology (Vol.II), DAYA publishing House, New Delhi.pp.199-208.
- Gupta,I.,Gupta, M. and**Sarkar,B.**(2014**).**Deciphering nanotoxicity on zebrafish model.In: Sarkar and Chakraborty(Edited), Advances in Biochemistry and Biotechnology (Vol.II), DAYA publishing House, New Delhi.pp. 67-79.
- J. S. Purohit,**B. Sarkar,**M. M.Chaturvedi and P. Panda(2014). Creation of Synthetic Cell: From the Concept of Life to revisiting the origin of life. In: Sarkar and Chakraborty (Edited), Advances in Biochemistry and Biotechnology (Vol.II), DAYA publishing House, New Delhi.pp. 183-197.
- **B.Sarkar**,D.Mukherjee,S.Adhikari and S.Ayyappan (2004).Role of environmental biotechnology in water resource development. Advances in Biochemistry and Biotechnology, Vol 1:195-213,Daya Publications, New Delhi.
- **B. Sarkar**, P. Bandyopadhay,S.Adhikari, S. Ayyappan and B.C.Patra (2004).Pesticide and Fish: A workhouse for detection, evaluation and abatement of water pollution.Water Pollution– Assessment and Management,196-216,Asish Publication, New Delhi.
- S. K. Swain, D. Mallick, S. Mishra, **B. Sarkar** (2006). Ornamental fish can work as a tool in biotechnological research.Published in 'Advances in Environmental Biotechnology' by APH publication.

13.Details of student guided

Sl.No	Title of MSc.Thesis	Name of student	Year	Status
1	Biosynthesis of silver nanoparticles and its antimicrobial activity	Arabinda Mahanty	2011	Guide
2	A study on evalution of the impact of silver nanoparticles on zebra fish medel with reference to proteomics assay	Kumari Sarita	2010	Guide
3.	Toxicological assay of chitosan on zebrafish (*Danio rerio*)model with special emphasis on proteomics study.(2010)	Madhu Kumari	2010	Guide
3.	Mutational analysis of PTEN gene in urinary bladder carcinoma	Ravendrapratap Singh Chauhan	2007	Co-Guide
4.	Evaluation of fruit juice processing wastewater bioremediation potential of some bioremediating agents and SCP production possibilities. (2006)	Satish Chandra Gagwar	2006	Co-Guide
6.	Phylogenetic profiling of some ornamental fishes based on molecular biotechnological technique and their comparative intestinal cellulose assay	Divya Mallick	2006	Guide
7.	Preclinical trial of anti-cancerous drug with special reference thymus and spleen	Vikas Dixit	2006	Guide

8.	Preclinical trial of anti-cancerous drug on rat model with special reference to brain and testis	Rahul Anand	2006	Guide
9	Environmental biotechnology approach to evaluate the pollution criteria of an effluent treatment plant.	Monika Tyagi	2005	Guide
10.	An Environmental biotechnology tool to evaluate the purification standard of a packaged drinking water industry.	Parul Varshney	2005	Guide

Sl.No	Title of PhD.Thesis	Name of student	Year	Status
1	Green synthesis of metal and metal oxide nanoparticles for evaluating their impact on fish model	Raske Eram	Undergoing	Co-Guide

14. Abroad experience

Visited Asian institute of Technology(AIT),Bangkok,Thailand on department of nanotechnology, center of excellence for a collaborative research work entitled, 'Impact of silver nanomaterial enriched feed on *Tilapia sp*.' from 1st June to 2nd July,2011.

15.Membership

•Indian Science congress Association
•Association for Zoologists

16.Invited Lectures

●Delivered invited talk on 'Nanotechnology in general with special reference to sugarcane research' on the occasion of 'brainstorming session of nanotechnology' held at Indian Institute of Sugarcane Research', Lucknow on January, 2020.

● Delivered invited lecture in the'Innovations in Nanotechnology' on International Conference on Advances in Environment and agricultural biotechnology (ICAEA- 2018)' held at St. Xavier's College, Ranchi on 22nd to 24th February, 2018.

•Nanotechnology:A harbinger of innovation in science with special reference to agriculture and aquaculture',presented during 62th orientation programme held organized by UGC-Human Resource Development Centre, Jadavpur University, Kolkata during August 29th 2016 to September 27,2016.

•'Prospects of nanotechnology in aquaculture 'presented at National seminar on,'Prospects in inland fishery',New science arts, commerce college at Shevagaon,Ahmadnagar,September,17-18,2012.
• Delivered an invited talk via video to the Environmental nanotechnology students at North Dakota State University, USA AT 10.00 to 11.15PM IST on 25th October,2016.
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17.Patent application

•**Biplab Sarkar**, UK Maurya,MPBrahmane, KK Krishnani and P S Minhas. Process for one step synthesis of bactericidal silver nanoparticles from tissue extracts of *Labeo rohita.*Application number 3255/MUM/2012;Applicant ICAR, New Delhi

• S Srivastava, A Roy Chowdhury, **B Sarkar**, S Bhattacharjee, and KK Sharma on 'Natural gum based nanocomposite hydrogel having antibacterial and wound healing effects and a method of preparation thereof'**.**Application no. 201931008616)