Curriculum Vitae

Niranjan Chatterjee

Student, Doctor of Philosophy (Ph.D.)

BioMeDHs lab (Dr. Santosh K. Misra Laboratory)

Department of Biological Science and Bioengineering (BSBE)

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West Bengal, India, 722208

Research interest

Development of therapeutic strategies for treatment of skeletal muscle damage nanotechnology, biomaterials, and tissue engineering approaches. Design and development of biosensing platforms for the rapid detection of muscle degradation.

Academic qualification

Standard	Board / University	Year	Grade
10th class	West Bengal Board of Secondary Education (WBBSE)	2012	A+
12th class	West Bengal Council for Higher Secondary Education (WBCHSE)	2014	A
B.Sc. Honours in Physiology	Ramananda College under The University of Burdwan	2017	First class (Highest scorer within the college)
M.Sc. in Human Physiology	Vidyasagar University	2019	First class (Ranked within top 5)
Ph.D.	IIT Kanpur	Joined in July 2019 (Ongoing)	Overall CPI 9.36 obtained from coursework

Qualification in other examination

Examination	Year of qualification	Subject
IIT JAM	2017	Biological Science
GATE	2019	Life science (XL)

Academic achievement

Award	Year	Award providing authority or organization
GYAN JYOTI SAMMAN for excellent performance in class X	2012	SIKAR NAGARAKI PARISHAD (KOLKATA)
SWAMI VIVEKANANDA MERIT CUM MEANS SCHOLERSHIP	2012 to 2019	Govt. of West Bengal
Certificate of merit for securing **1st Class** in B.Sc. HONS. examination	2017	RAMANANDA COLLEGE, Bishnupur, Bankura, West Bengal
Award of appreciation for the first authored research article on the nanocarbon based bioimaging probe for two-photon bioimaging application.	2022	Department of Biological Science and Bioengineering (BSBE), IIT Kanpur
Award of appreciation for best oral presentation at 3rd National Biomedical Research Competition	2022	

Awards and Recognitions

Awardee life membership from Society for Biomaterials and Artificial Organs (India) (Regd. No. 110/86) as a recognition of best poser presentation award in an international conference on biomaterials, regenerative medicine, and devices (BIO-Remedi 2022) at IIT Guwahati.

Publications

ORC ID: https://orcid.org/0000-0003-3715-249X

1. **Niranjan Chatterjee** & Santosh K. Misra, Nanocarbon-Enforced Anisotropic MusCAMLR for Rapid Rescue of Mechanically Damaged Skeletal Muscles. **ACS Applied Materials & Interfaces,** 2023. DOI: https://doi.org/10.1021/acsami.3c01889.

2. Aishwarya Naik, Krishan Kumar, **Niranjan Chatterjee,** & Santosh K. Misra, Polyphenol-Based Nanoscale Iron Exchangers for Regulating Anticancer Chemotherapy by Modulating the Activity of Intracellular Glutathione**. ACS Applied Bio Materials,** (2022)**.**
DOI: https://doi.org/10.1021/acsabm.2c00887

3. **Niranjan Chatterjee**, Piyush Kumar, Krishan Kumar, Santosh K. Misra, What makes carbon nanoparticle a potent material for biological application? **Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology** 2022, e1782.
DOI: https://doi.org/10.1002/wnan.1782

4. Sayan Kundu[1], **Niranjan Chatterjee[1]**, Subhajit Chakraborty, Arjit Gupta, Debabrata Goswami, Santosh K. Misra, Poly-Lysinated Nanoscale Carbon Probe for Low Power Two-Photon Bioimaging. **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy,** 2021. DOI: https://doi.org/10.1016/j.saa.2021.120778
[1]Equal contribution

5. Aishwarya Rai[1], Anik Mitra[1], **Niranjan Chatterjee[1]**, Piyush Kumar[1], Sujata Malik[1], Vivek Kumar[1] and Santosh K. Misra, Biomaterials for Advanced Personalized Therapeutic Approaches" in Book entitled **Reference Module in Materials Science and Materials Engineering, Elsevier 2021.** DOI: https://doi.org/10.1016/B978-0-12-820352-1.00096-1
[1]Equal contribution

6. Krishan Kumar, **Niranjan Chatterjee**, and Santosh Kumar Misra. "Lipid based self-assembled nanostructures for therapeutic delivery applications." **Chemical Biology Letters** 9, no. 4 (2022): 368-368. https://www.pubs.thesciencein.org/journal/index.php/cbl/article/view/368

7. Sai Kumari Vechalapu, Sikha Gupta, **Niranjan Chatterjee**, Rakesh Kumar, Shweta Khanna, Pooja Yedehalli Thimmappa, Sathyapriya Senthil, Manjunath B. Joshi, Santosh K. Misra, Apparao Draksharapu, Dharmaraja Allimuthua, Heterocyclic nitrogen-based iron-traps induce mitochondrial dysfunction to promote apoptosis, 2023. [Manuscript under revision]

8. Akanksha Dohare[1], **Niranjan Chatterjee[1],** and Santosh K. Misra, *In-situ* Carbonization Metamorphoses Porous Silica Particles to Biodegradable Therapeutic Carriers of Lesser Consequence on *TGF-* $\beta 1$ Mediated Fibrosis, 2023. [Manuscript submitted]
[1]Equal contribution

Patents

1. Indian Patent App. 202111033540, 2021; Santosh Kumar Misra, Appu Singh, Saravanan Matheshwaran, **Niranjan Chatterjee**, Ravi Pandey, Hariharan V. C, Title: A FORMULATION FOR INHIBITION OF SARS-COV-2 INFECTION AND PROCESS FOR PREPARATION THEREOF.

2. Indian Patent App. 202211076408, 2022; Santosh Kumar Misra, **Niranjan Chatterjee**, Title: A MUSCULO-RESPONSIVE POLYMER CARBON COMPOSITE FOR ASSISTING MYOTUBULAR REGENERATION (MusCAMLR) AND PROCESS FOR PREPARING THEREOF.

Scientific Meetings/Conferences attended

- **Chatterjee N**., Mondal A., Ghosh D., Karak P., (2016) Bio Active Derivatives of *Murraya koenigii* are Responsible for its Anti-cancerous Activity, JU IPAST National Seminar on Drug & Diseases: Role of Pharmacists and Doctors, 16th January, Jadavpur University, Kolkata, India, **Received Best Award** in the poster session.

- **Chatterjee N**., Misra D S., Ghosh D., Karak P., (2016) Polyphenols as a Bioactive Derivatives is an Important Source of Anti-Cancerous Agents, 1st Regional Science & Technology Congress-2016, 7th& 8th November, Bankura Christian College, Bankura, West Bengal, India.

- **Chattejee N**., Choudhury M. S., (2018) INFLAMAGING: A Potential Link to Female and Male Infertility, XXXth Annual Conference of the Physiological Society of India (PSI), 22nd – 24th November, Serampore College, Serampore, Hooghly, **Received 3rd position** in the Post Graduate Poster Session.

- **Chatterjee N.,** Misra S K., (2020) COVID-19: a Potential Threat to Human Being, in the "Two Days International Webinar on "COVID-19: PROBLEMS AND CHALLENGES" organized by GOVERNMENT GENERAL DEGREE COLLEGE AT RANIBANDH, Bankura, West Bengal, India on 26th and 27th June 2020, delivered invited talk.

- **Chatterjee N.,** Misra S K., (2021) Development of Nano-Expando- Constrictable Composite (NECC) for The Therapy of Exercise Induced Delayed Onset Muscle Soreness (DOMS), in the 20th years of BSBE day celebration organized by Department of Biological Science and Bioengineering (BSBE) Indian Institute Technology (IIT) Kanpur on 27th - 30th September 2021, delivered as an invited talk by the current student of BSBE. (Website address: https://sites.google.com/view/bsbeat20/home)

- **Chatterjee N.,** Misra S K., (2021) The Development of Nano-Expando- Constrictable Composite (NECC) for The Therapy of Exercise Induced Muscle Damage, in the 3rd National Biomedical Research Competition organized by Society of Young Biomedical Scientists, India on 6th - 10th December 2021, **Received Award of Appreciation for the Best Oral Presentation.**

- **Chatterjee N.,** Misra S K., (2022) Musculo-responsive polymer carbon composite (MusCaCo) for as a potential therapeutic material composite for quick recovery of mechanically damaged skeletal muscles, in the 32nd National Conference of SBOAI and the International Conference on Biomaterials, Regenerative Medicine, and Devices (BIO-Remedi 2022) at IIT Guwahati, India, **received Best Poster Presentation Award**.

Skills

- **Culture techniques:** Expertise to work on animal cell culture techniques using different types of invitro cell lines/primary cells like human breast cancer cell line (MCF7), C2C12, Vero and HFDPCs etc.

- **Animal handling:** experienced in handling different types of animals like rats, mice, frogs etc.

- **Material synthesis and characterization:** Experienced in synthesizing polymeric hydrogels, carbon nanoparticle (CNP), gold nanoparticle (AuNPs), liposomes, polymeric nanocarriers etc., and in physicochemical characterization using dynamic light scattering (DLS), X-ray diffraction, (XRD), UV-Vis spectroscopy, FTIR, transmission electron microscopy etc.

- **Perfusion technology in frog's heart:** Expertise to work on perfused heart of frog and to evaluate the effect of various types of drugs on heart.

- **Experienced to work with skeletal and smooth muscle of frog and rat:** Expertise to work with isolated nerve-muscle (Skeletal muscle) preparation of frog and isolated smooth muscle of rat.

- **Histological analysis:** Expertise in histological tissue staining of various types of organs like skeletal muscles, heart, kidney, liver etc.

- **Hematology experiments:** Experienced in working with blood samples and measuring different parameters of blood like total count (TC), differential count (DC), blood group etc.

- **Biochemistry experiments:** Expertise to conduct various biochemical measurement like enzyme activity etc., from cell/tissue sample and blood sample.

- **Molecular biology techniques:** Experienced in working with several molecular biology techniques like gel electrophoresis, western blot, quantitative RT-PCR, immunocytochemistry etc.

- **Microscopy techniques:** Experienced in working with fluorescence, confocal, multi-photon, transmission electron microscope, scanning electron microscope etc. with biological samples.

- **Biosensing platforms:** Experienced in developing different types of biosensing platforms for detection of biomarkers from different body fluids.

M.Sc. dissertation project

Project title: Gold Nanoparticle from Indole-3-carbinol(I3C) Produces Oxidative Stress and Antiproliferation Against Breast Cancer cell.

Project Supervisor: Prof. Sujata Maiti (Choudhury), Department of Human Physiology with Community Health, Vidyasagar University, Midnapore, West Bengal, India, 721102.

Project Findings: A cost-effective procedure was introduced for the synthesis of AuNPs from indole-3-carbinol of 3-7 nm size range. The mechanism by which AuNPs from indole-3-carbinol plays its cytotoxic effects is by the induction of apoptosis which is proved by the study that it alters the mitochondrial membrane potential & cells exhibit typical apoptotic morphology with condensed nuclei in AuNPI3Cs treated MCF-7 cell compared to MCF-7 control.

Ph.D. Project

Ph.D. work is focused to find out novel nano-biomaterial, stem cell therapy, develop a biosensing platform for weakening skeletal muscle undergoing chemotherapy.

Ph.D. thesis supervisor

Dr. Santosh Kumar Misra
Assistant Professor
Department of Biological Science and Bioengineering

Indian Institute Technology Kanpur

Kanpur UP, India, 208016

Other non-academic activities:

Departmental placement coordinator at IIT Kanpur placement team from the Department of Biological Science and Bioengineering (2022-2023).

References

1. Dr. Santosh Kumar Misra, Assistant Professor & Ramalingaswamy Fellow, Department of Biological Science and Bioengineering, Indian Institute Technology (IIT) Kanpur, Kanpur UP, India, 208016**.** Email: skmisra@iitk.ac.in, Phone: 91-512-259-4013(office), Fax: 91-512-259-4010.
   https://scholar.google.com/citations?user=qP9e2NYAAAAJ&hl=en.