



# BHARGY SHARMA

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## PROFILE

A postdoctoral research fellow with 10 years of laboratory research experience; interested in theranostics, with nearly a decade of hands-on lab expertise in the field of protein-based biomaterials with expertise in protein chromatography, spectrometric and spectroscopic analytical tools including solution NMR and solid-state NMR, preclinical MRI, cryoEM, TEM, SEM, AFM, FPLC, MALDI-TOF, DLS, CD, ITC, molecular biology techniques, protein purification and cell culture assays.

## SKILLS

**Lab expertise:** Biomolecular NMR, EM, MRI, Protein biochemistry and biophysics; Biomaterial characterization.

**Data analysis software:** Bruker Topspin (NMR), Paravision (MRI), TIA (EM), Relion, CryoSPARC, Origin, GraphPad Prism, ImageJ, Pymol, Chimera.

**Software suites:** Adobe Illustrator and Microsoft Office

**Project design and management**

## SCIENTIFIC PROFILE

[ORCID](#)

[GOOGLE SCHOLAR](#)

[Website](#)

[Full CV](#) (updated 2025)

## EDUCATION

### NANYANG TECHNOLOGICAL UNIVERSITY (NTU), SINGAPORE

AUG 2015 – 2020 (School of Biological Sciences)

Ph.D. in Biological Sciences, focus on protein structural biology and biophysics. >416 hours of teaching and mentoring, GPA 4.25/5.

### NATIONAL INSTITUTE OF TECHNOLOGY, CALICUT (NITC), INDIA

JULY 2011 - 2015

Gold Medalist School of Biotechnology, GPA 9.25(10-point grade).

## RESEARCH EXPERIENCE/ EMPLOYMENT

### NTU School of Biological Sciences, RESEARCH FELLOW

AUGUST 2023–PRESENT

Research theme: Therapeutic effect of endogenous chaperone on amyloids; Structural variation and characterization of ion-channels in human coronaviruses.

- Structure prediction, phylogenetic studies, TEM, cryo-EM, NMR, animal studies, recombinant protein purification, amyloid studies.

### NTU Centre for Sustainable Materials, RESEARCH FELLOW

APRIL 2020–AUGUST 2023

Research theme: Molecular study of velvet worm slime to understand molecular basis of natural biopolymers.

- Characterizing velvet worm slime through biophysical techniques and recombinantly purifying the slime proteins for study of liquid-liquid phase separation; involves FPLC, DLS, solid state NMR, TEM, CD, MALDI-TOF.

### NTU School of Materials Science and Engineering, PROJECT OFFICER

AUG 2019–MAR 2020

Research theme: Platform for biopolymers- case study of velvet worm slime.

- Purified proteins of interest from velvet worm slime for recombinant expression in bacteria; predicted biochemical features of IDPs.

### NANYANG TECHNOLOGICAL UNIVERSITY, PHD CANDIDATE

AUG 2015–AUG 2019 (School of Biological Sciences)

Thesis title: "Developing amyloid- $\beta$  chaperone lipocalin-type prostaglandin D synthase protein as a magnetic resonance active early diagnostic tool".

- Developed protein-nanoparticle conjugated theranostics probes; utilized preclinical MRI, microtomy and tissue histology, cellular proliferation assays and in vitro tests for protein enzymatic activity and functionality including FPLC, DLS, ITC, solution NMR, TEM, stopped flow kinetics.

# BHARGY SHARMA (Dr)

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[Linkedin](#) · [Google Scholar](#) · [Researchgate](#) · [ORCID](#) · [Web of Science](#)

## PERSONAL STATEMENT

I have 10 years of hands-on research experience in the field of protein-based biomaterials and bio-inspired solutions for theranostics applications. I completed my PhD at the School of Biological Sciences, NTU. I have hands-on laboratory experience in protein expression and purification, biochemistry and biophysical techniques including isothermal chromatography, dynamic light scattering, circular dichroism, protein interactions and kinetics, structural biology techniques including electron microscopy and nuclear magnetic resonance spectroscopy, and imaging microscopic techniques. I am a magnetic resonance enthusiast with research expertise in solution NMR, solid-state NMR and pre-clinical MRI for small animals.

## WORK EXPERIENCE

### AUGUST 2023 - PRESENT

#### RESEARCH FELLOW, NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE

School of Biological Sciences

**Research theme:** Therapeutic effect of brain chaperone on corneal amyloids; Structural variation and inhibition of ORF protein ion-channels in human coronavirus. Recombinant expression and purification of proteins, NMR, EM, biochemistry, biophysics, animal models.

### APRIL 2020 – AUGUST 2023

#### RESEARCH FELLOW, NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE

School of Materials Science and Engineering, Biological and Biomimetic Materials Laboratory, Centre for Sustainable Materials

- ExxonMobil Singapore Energy Centre Fellow 2020, 2021, 2022

**Research theme:** Molecular study of velvet worm slime to understand the molecular basis of natural biopolymers; recombinant expression and purification of proteins, liquid-liquid phase separation, FPLC, DLS, solid-state NMR, solution NMR, TEM, CD, MALDI-TOF, Optical microscopy and UV-vis spectrometry.

### AUGUST 2019 – MARCH 2020

#### PROJECT OFFICER, NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE

School of Materials Science and Engineering, Centre for Biomimetic Sensor Science (CBSS)

- ExxonMobil Singapore Energy Centre Fellow 2019

**Research theme:** Platform for biopolymers- a case study of velvet worm slime; designed peptides and proteins of interest from velvet worm slime for recombinant expression in bacteria; utilized online prediction tools to identify intrinsic disorder within slime proteins.

### AUGUST 2015 – AUGUST 2019

## DOCTORAL RESEARCH CANDIDATE AND TEACHING ASSISTANT, NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE

School of Biological Sciences

**Research theme:** Developed protein-nanoparticle conjugated theranostic probes; studied biological structures using preclinical MRI; conducted biochemical and biophysical research to study the structures and interactions of proteins. Contributed >400 hours to teaching assistant duties – teaching and mentoring undergraduate students for tutorials and research projects.

## EDUCATION

FEBRUARY 2020

### DOCTOR OF PHILOSOPHY, NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

NTU Research Scholarship 2015-19; contributed 416 hours as a Teaching Assistant. CGPA 4.25/5.

**Thesis:** “Developing amyloid- $\beta$  chaperone lipocalin-type prostaglandin D synthase protein as a magnetic resonance active early diagnostic tool”

**Advisor:** Assoc. Prof. Konstantin Pervushin

**Research theme:** Developed protein-nanoparticle conjugated theranostic probes; utilized preclinical MRI, microtomy and tissue histology, cellular proliferation assays and in vitro tests for protein enzymatic activity and functionality including solution NMR, TEM, FPLC, DLS, ITC, stopped-flow kinetics.

MAY 2015

### BACHELOR OF TECHNOLOGY, NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

Gold Medalist- Biotechnology; CGPA 9.25/10.

**Major project:** “A study on CCT mutants and its interactome in the yeast *S. cerevisiae*”

**Advisor:** Prof. M. Anaul Kabir, School of Biotechnology, NITC.

**Research theme:** Phenotype checking, the action of Fluoro orotic acid, Mutagenesis, Synthetic Lethal Screen

## MENTORSHIP AND TRAINING

- Mentored **7** Undergraduate students for their **Final Year Project**, and **1 Graduate** (Masters) student for laboratory research projects (2018 – Present).
- Teaching assistant for BS3335 - **Undergraduate Advanced Experimental Biology Workshop – Protein behavior in health and disease – biophysical tools**, course offered by SBS, NTU; 2016, 2019 (Twice).
- Teaching assistant for BS3019 - **Neuropsychology of Stress and Resilience** course offered by SBS, NTU 2018.
- Teaching assistant for undergraduate course BS3025 – **NMR in Structural Biology** course offered by SBS, NTU 2018.
- Teaching Assistant for UAEB course BS3343- **Genetics of Human Diseases** at Temasek Life Sciences and SBS, NTU, 2017.
- Twice Teaching assistant for BS7005 - **Practical Course in Multidimensional NMR spectroscopy** course offered by SBS, NTU; 2016, 2017 (Twice).

- Teaching assistant for lab practical course BS1100 - **Molecular and Cell Biology techniques** course offered by SBS, NTU 2016.

## PUBLICATIONS

- Pazhanichamy Kalailingam, SoFong Cam Ngan, Ranjith Iyappan, Afra Nehchiri, Khalilatul-Hanisah Mohd-Kahliab, Benjamin Sian Teck Lee, **Bhargy Sharma**, Radek Machan, Sint Thida Bo, Emma S. Chambers, Val A. Fajardo, Rebecca E. K. Macpherson, Jian Liu, Panagiota Klentrou, Evangelia Litsa Tsiani, Kah Leong Lim, I. Hsin Su, Yong-Gui Gao, A. Mark Richar, Raj N. Kalaria, Christopher P. Chen, Cynthia Balion, Dominique de Kleijn, Neil E. McCarthy, Siu Kwan Sze. Immunotherapeutic targeting of aging-associated isoDGR motif in chronic lung inflammation. [Aging Cell](#) (2025); 00, e14425.
- Bandaru, Shamili; George, Nilja; **Sharma, Bhargy**; Palanivel, Mathangi; WU, Wen-Ya; Ghosh, Krishna; Ball, Writoban; Zoltán Gulyás, Balázs; Padmanabhan, Parasuraman\*; Ghosh, Siddhartha; Chakraborty, Sabyasachi\*. Aqueous Based Ultra-Small Diluted Magnetic Semiconductors as a Potential Dual Imaging Probe in Biomedicine. [Biomaterials Science](#) (2024); 12, 6338-6350.
- Rinku Saran, Maciej Klein, **Bhargy Sharma**, Jun Jie Loke, Quentin Moana Perrin, Ali Miserez\*. Proton Conductivity of the Protein-based Velvet Worm Slime. [iScience](#) (2024); 110216.
- Kai Ye<sup>#</sup>, Sze Yuet Chin<sup>#</sup>, **Bhargy Sharma\***, Yunpeng Lu, Nichole Lin Xi, Kai Xue\*. Characterizing the Behaviour of Water Interacting with a Nano-Pore Material: A Structural Investigation in Native Environment Using Magnetic Resonance Approaches. [ChemPhysChem](#) (2024); e202400053. (**\*Co-corresponding**)
- Pazhanichamy Kalailingam, Khalilatul-Hanisah Mohd-Kahliab, SoFong Cam Ngan, Ranjith Iyappan, Evelin Melekh, Tian Lu, Gan Wei Zien, **Bhargy Sharma**, Tiannan Guo, Adam J. MacNeil, Rebecca E. K. Macpherson, Evangelia Litsa Tsiani, Deborah D. O'Leary, Kah Leong Lim, I Hsin Su, Yong-Gui Gao, A Mark Richard, Raj N. Kalaria, Christopher P. Chen, Neil E. McCarthy, Siu Kwan Sze. Immunotherapy targeting isoDGR-protein damage extends lifespan in a mouse model of protein deamidation. [EMBO Molecular Medicine](#), Vol. 15 No. 12, (2023).
- **(Invited Chapter)** Ambrish Kumar, **Bhargy Sharma** and Sierin Lim\*. Protein Cage Relaxivity Measurement for Magnetic Resonance Imaging Contrast Agents. In: Ueno, T., Lim, S., Xia, K. (eds) [Protein Cages. Methods in Molecular Biology](#), vol 2671. Humana, New York, NY (2023).
- Yang Lu<sup>#</sup>, **Bhargy Sharma<sup>#</sup>**, Wei Long Soon, Xiangyan Shi, Tianyun Zhao, Yan Ting Lim, Radoslaw Sobota, Shawn Hoon, Giovanni Pilloni, Adam Usadi, Konstantin Pervushin and Ali Miserez\*. Complete sequences of the velvet worm slime proteins reveal that slime formation is enabled by disulfide bonds and intrinsically disordered regions. [Advanced Science](#) (2022); 9, 2201444. (**#Co-first authors**).
- **Sharma, B.**, Grandjean, J., Phillips, M., Kumar, A., Mandino, F., Yeow, L.Y., Nandwana, V., Dravid, V.P., Bengang, X., Lim, S. and Pervushin, K.\*. Lipocalin-Type Prostaglandin D Synthase conjugates as magnetic resonance imaging contrast agents for detecting Amyloid  $\beta$ -rich regions in the brain of live Alzheimer's Disease mice. [Advanced NanoBiomed Research](#) (2021); 2100019.
- Ambrish Kumar, Vikas Nandwana, Soo-Ryoon Ryoo, Samyukta Ravishankar, **Bhargy Sharma**, Konstantin Pervushin, Vinayak P. Dravid, Sierin Lim\*. Magnetoferitin enhances T2 contrast magnetic resonance imaging of macrophages. [Materials Science and Engineering: C](#) (2021); 112282.
- **(Invited Review)** **Bhargy Sharma\*** & Konstantin Pervushin\*. Magnetic Nanoparticles as In Vivo Tracers for Alzheimer's Disease. [Magnetochemistry](#) (2020); 6(1):13; (**\*Co-corresponding authors**).
- Kannaian B, **Sharma B**, Phillips M, Chowdhury A, Manimekalai MSS, Adav SS, Ng JTY, Kumar A, Lim S, Mu Y, Sze SK, Gerhard Grüber G, and Pervushin K\*. Abundant neuroprotective chaperone Lipocalin-

type prostaglandin D synthase (L-PGDS) disassembles the Amyloid- $\beta$  fibrils. [Scientific Reports](#) (2019); 9(1):1-17.

- **(Invited Chapter) Bhargy Sharma** and Konstantin Pervushin\*. Neuroprotective Function of Non-Proteolytic Amyloid- $\beta$  Chaperones in Alzheimer's Disease. [Amyloid Diseases](#), Dmitry Kurouski, IntechOpen (2019).
- Bao Q., Morshedi A, Wang F, **Sharma B**, Pervushin K, Yu W-P, Peter Dröge\*. Ubf1 contributes to intergenerational epigenetic inheritance of pluripotency. [Scientific Reports](#) (2017); 7:14612.
- N. Thushara Vijayakumar, Amit Sangwan, **Bhargy Sharma**, Arshad Majid and Rajanikant G K\*. Cerebral ischemic preconditioning: The road so far... [Molecular Neurobiology](#) (2016); 53:2579–2593.
- Pradeep H., **Bhargy Sharma**, Rajanikant G K\*. Drp1 in ischemic neuronal death: An unusual suspect. [Current Medicinal Chemistry](#) (2014); 21(19):2183-9.

## COMPLETED MANUSCRIPTS

- **Bhargy Sharma**, Anastasia Shebanova, Quentin Perrin, Wei Long Soon, Konstantin Pervushin, Ali Miserez\*. Structural Transitions in the Velvet Worm Slime are Triggered by Protein-Inorganic Ion Interactions. (Completed; To be submitted).

## PATENTS

- A Novel Lipocalin-Type Prostaglandin D Synthase (L-PGDS) Mutant And Uses Thereof.  
US Application No: 18/778,525. Filing Date: 19 July 2024  
Authors: Konstantin Pervushin, Kimberly Low Jia Yi, Jodhbir Mehta, Bhargy Sharma

## PEER-REVIEWER ACTIVITY

- [2023 ASAPBio Fellow](#) (Preprint crowd-review Initiative), **Crowd lead** for Cellular Neurobiology and Computational Neuroscience preprint reviews.
- Peer-reviewer for Communications Biology, Nature Publishing Group. 2023, 2024.

## SEMINAR AND CONFERENCE PRESENTATIONS

- **Seminar** presentation “Therapeutic potential of an extracellular amyloid chaperone protein” in **Y4S Young SBS Scientist Seminar** Series; Sept 2024.
- **Webinar** presentation “Structural MRI to identify disease pathology in biological tissues” in **2<sup>nd</sup> NMRCs Webinar: Magnetic Resonance Applications in Disease Systems**; Dec 2023.
- **Seminar** Talk “Studying the role of extracellular chaperone in disaggregation of corneal amyloid fibrils” at Institute for Digital Molecular Analytics and Science (**IDMxS**) **Postdoc Seminar**, NTU; Nov 2023.
- **Flash talk** “Velvet worm slime: A unique biomaterial with fascinating biochemistry” at **SWE@NTU reSHEarch Showcase** event 2023, selected as winner by judges.
- **Invited talk** titled “NMR as a tool to elucidate Structure and Dynamics of natural biopolymer” at **1<sup>st</sup> NMR Club Singapore Symposium 2023**; March 2023.
- **Oral presentation** titled “Exploring protein dynamics and molecular structure in naturally-derived biopolymers using NMR” at **LLPS Workshop Singapore (Phase Separation Regulated Life, In and Outside of Cells)**; March 2023.

- **Seminar** presentation titled “Developing Nature-inspired Sustainable Biomaterials” to high-school students of Woodgrove Secondary School under **Science with Scientist** series, Aug 2022.
- **e-Poster** titled “Case study of a protein-based biopolymer using solid-state NMR” during **Global NMR Twitter Conference 2022**.
- **Poster** titled “Application of ssNMR to study structure and dynamics in natural biopolymers” at **European Conference on Magnetic Resonance (EUROMAR) 2022**, held at Utrecht, The Netherlands; July, 2022.
- **Oral presentation** titled “Intrinsically disordered proteins and their interactions in slime fibers produced by velvet worms” at **Intrinsically Disordered Proteins Gordon Research Seminar (GRS)** and **poster** at **Gordon Research Conference (GRC)**, July 2022.
- **Poster** titled “Role of intrinsically disordered proteins in velvet worm slime fibers” at **1<sup>st</sup> Singapore Structural Biology Symposium 2022**, held at NTU, May 2022.
- **Flash talk** presentation “Designing Probes for Early Detection of Alzheimer’s Disease” at **SWE@NTU reSHEarch Showcase** event 2022, selected as winner by judges.
- **Attended** 10<sup>th</sup> anniversary of **Global Young Scientists Summit 2022**, organized virtually, January 2022.
- **Attended** 14<sup>th</sup> annual (1<sup>st</sup> Virtual) **NMRFAM Introductory Structure Determination workshop**, conducted online by National Magnetic Resonance Facility at Madison, 2020.
- **Poster** titled “Use of L-PGDS protein as a theranostic agent for early detection of amyloid- $\beta$  aggregation” at **EUROISMAR (21<sup>st</sup> ISMAR – 15<sup>th</sup> EUROMAR)**, held at Berlin, Germany, 2019.
- **Poster** titled “Protein-Based Magnetic Resonance Imaging Probes for Detection of Brain Amyloids” at **ISMARM workshop on Accessible MRI for the World**, held at IIC, New Delhi, India, 2019.
- **Seminar** titled “Study of protein interactions and chemical modifications using magnetic resonance” at **ANU-Nanyang Technological University Workshop**, held at Australian National University, 2018.
- **Seminar** titled “Diagnostic value of the amyloid  $\beta$ -chaperone activity of L-PGDS” in the **Graduate Student Seminar** series, at School of Biological Sciences, NTU, 2018.
- **Poster** titled “Using protein conjugates to detect amyloid load in Alzheimer mice brain” at **2<sup>nd</sup> ARISE Research Symposium**, held at LKC School of Medicine Novena Campus, Singapore, 2018.
- **Poster** titled “Characterization of iron-based biocompatible MR contrast agents for protein interaction studies in mouse brain” in **59<sup>th</sup> Experimental Magnetic Resonance Conference**, held at Orlando, FL, USA, 2018.
- **Attended** **ISMARM 24<sup>th</sup> Annual Meeting and SMRT 25<sup>th</sup> Annual Meeting** held in Singapore, 2016.
- **Poster** titled “Prediction of Drp1 Antagonists: Implications for diseases involving Mitochondrial Dysfunction” at the **7th Annual Convention of ABAP and International Conference on Plant Biotechnology, Molecular Medicine and Human Health** held at Delhi University, India, 2013.
- **Poster** titled “Identification of cryptic binding sites of Drp1 using an integrated computational strategy” at the International Conference on **Recent Advances in Computational Drug Design** held at Indian Institute of Science, Bangalore, India, 2013.

## GRANTS AND AWARDS

- **Long Service Award** from Nanyang Technological University, Singapore; 2024.
- **Travel Grant Award** from the American Crystallography Association to present research at the 74th Annual Meeting in Denver, Colorado, 2024.



- **NISTH Seed Grant: INnovation and TRansformation for Outstanding Early Career Researchers (INTRO-ECR)** awarded by NISTH, NTU, 2023.
- **Women in Engineering, Science and Technology (WiEST) Development Grant Award** to present research at European Conference on Magnetic Resonance (EUROMAR), by Women@NTU and POWERS in 2022.
- **Travel Support** for **2022 Intrinsically Disordered Proteins GRS**.
- **Travel Stipend Award** to attend EUROISMAR (ISMAR-EUROMAR Joint Conference) in August 2019.
- **WiEST Conference Grant Award** by Julia & Ken Gouw Foundation and Women@NTU in 2019.
- **Trainee Stipend Award** by ISMRM to attend and present research at Accessible MRI for the World workshop in March 2019.
- **Student Travel Stipend** awarded by ENC to present research at 59<sup>th</sup> Experimental Nuclear Magnetic Resonance Conference in April 2018.
- **NTU Research Scholarship** awarded to pursue doctoral studies at the School of Biological Sciences, NTU Singapore (2015 - 2019).

## ACADEMIC ACHIEVEMENTS

- Selected for **oral presentation** titled “Exploring structure of velvet worm-derived natural fibers using ssNMR” at the **13<sup>th</sup> Conference of the Australia & New Zealand Society for Magnetic Resonance (ANZMAG)** to be held in Victoria from 4 to 8 December 2022 (had to decline due to Visa delay).
- **Finalist in Falling Walls Lab Singapore** 2017 organized in Falling Walls Lab in partnership with NTU and A\*STAR.
- **Semi-finalist** at the annual **3 Minute Thesis NTU** organized at NTU in 2017.
- Won the **Oxford Scholarship Online quiz** for NTU organized by Oxford University Press 2015. Won an iPad Mini as the prize.
- All India Rank 40 in Lectureship category, **CSIR-National Eligibility Test** (India, June-2015).
- All India Rank 114 in Biotechnology, **Graduate Aptitude Test in Engineering** (India, GATE- 2015).
- Qualified **All India Engineering Entrance Examination** (AIEEE-2011) for admission to institutes of national importance.
- All India Rank 98 in **National Science Talent Search Examination** (NSTSE) '09 conducted by Unified Council.
- **Kalpna Chawla Memorial Award** '08 for excellent performance in CBSE All India Secondary School Examination.
- All India Rank 944, State Rank 32 in First **Nationwide Biotechnology Olympiad** (NBTO) by EduHeal Foundation.

## POSITIONS OF RESPONSIBILITY

- **Treasurer**, NTU collegiate of the Society of Women Engineers (SWE@NTU) (AY2024-25).
- **Editorial Board Member** for The Open Medicinal Chemistry Journal (2024-present).
- **ASAPBio Fellow** (May 2023- December 2023).
- **Executive member of NMR Club Singapore, NMRCs** (Nov 2022-present).

- **Executive member of Early-career researchers (ECR) organizing committee** of the International Conference on Magnetic resonance in biological systems (**ICMRBS**) responsible for scheduling and managing scientific presentations and organizing events to encourage ECRs in the field of magnetic resonance for the upcoming year (2022-2023).
- **Emcee** for SWE@NTU reSHEarch showcase and SWE Internship Day events (2022).
- **Social Director and Research Fellow representative**, SWE@NTU (2021-2022).
- **Member**, 500 Women in Science Singapore (500WS Singapore) (2019-2020).
- **Director (Academic)** of the 7<sup>th</sup> Executive Committee, NTU Graduate Student Council (2017/18); Spearheaded the team to organize the first 3MT SG Competition and 6<sup>th</sup> 3MT NTU Competition (2017).
- **Executive Member**, Biology Graduate Student Club, Nanyang Technological University (2016-2018);
- Orientation **executive committee member**, NTU-Graduate Student Council. (2016-17); conducted socializing events for new graduate students on- and off-campus.
- **Treasurer**, Biotech Students' Association, NIT Calicut (2015).
- **Executive**, Indian Society for Technical Education (ISTE), NITC Students' Chapter (2012-2014); organized technical and non-technical events for undergraduate students.
- **Event Manager**, Inquisito Virtuoso, Tathva (Annual Technical fest), NITC (2013).

## RESEARCH PROJECTS

### 2023-PRESENT

NANYANG TECHNOLOGICAL UNIVERSITY

**"Therapeutic effect of brain chaperone on corneal amyloids"** under the supervision of Prof. Konstantin Pervushin, School of Biological Sciences, NTU.

Techniques: Biochemistry, recombinant protein purification, rodent studies.

### 2023-PRESENT

NANYANG TECHNOLOGICAL UNIVERSITY

**"Structural variation and inhibition of protein ion-channel in human coronavirus"** under the supervision of Prof. Konstantin Pervushin, School of Biological Sciences, NTU.

Techniques: AlphaFold, DALI, Solution NMR, Solid-state NMR, TEM, Biophysics, recombinant protein purification.

### 2019-2023

NANYANG TECHNOLOGICAL UNIVERSITY

**"Platform for the characterization and recombinant expression of protein-based based biopolymers: case study of the velvet worm slime"** under the supervision of Prof. Ali Miserez, Centre for Biomimetic Sensor Science, School of Materials Science and Engineering, NTU.

Techniques: Field-work, natural sample collection, Solution NMR, Solid-state NMR, TEM, FESEM, AFM, optical microscopy, CD, FT-IR, Contact angle biophysics, recombinant protein purification.

### 2015-2019

NANYANG TECHNOLOGICAL UNIVERSITY

**"Developing L-PGDS as magnetic resonance-based diagnostic marker for Alzheimer's disease"** under the supervision of Assoc. Prof. Konstantin Pervushin, School of Biological Sciences, NTU.



Techniques: Protein purification, chemical conjugation, biophysical assays, magnetic resonance imaging, microscopy, small animal handling.

Softwares: Paravision, Origin, Graphpad Prism.

#### **2017-2018**

NANYANG TECHNOLOGICAL UNIVERSITY

**“Towards point of care diagnosis and monitoring of trauma-induced coagulopathy using magnetic resonance technology”** under the supervision of Assoc. Prof. Konstantin Pervushin, SBS, NTU. Collaboration with Dr. Russell Gruen, LKC School of Medicine, NTU.

Techniques: Nuclear magnetic resonance spectroscopy, magnetic relaxation

Softwares: Topspin; Bruker Avance III vertical magnet 600MHz.

#### **2016-2017**

NANYANG TECHNOLOGICAL UNIVERSITY

**“Anatomical studies of murine intratesticular vasculature”** under the supervision of Assoc. Prof. Konstantin Pervushin, SBS, NTU.

Techniques: Structural magnetic resonance imaging.

Softwares: Paravision, Slicer 3D, ITK-Snap.

#### **OCTOBER 2016**

RESEARCH VISIT TO PROF. VINAYAK DRAVID, NORTHWESTERN UNIVERSITY, US

**“Learning the practical aspect of preclinical live animal magnetic resonance imaging”** at NUANCE Centre, Northwestern University.

Techniques: Structural magnetic resonance imaging.

Softwares: Paravision

#### **AUGUST 2014 – APRIL 2015**

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT (MAJOR PROJECT/ FINAL YEAR PROJECT)

**“A study on CCT mutants and its interactome in the yeast *Saccharomyces cerevisiae*”** under the guidance of Prof. M. Anaul Kabir, School of Biotechnology, NITC.

Techniques: Phenotype checking, the action of Fluoro orotic acid, Mutagenesis, Synthetic Lethal Screen

Protocols: Plasmid isolation and transformation

Characterization of the synthetic lethal genes to understand the functioning of the CCT complex and its interactions with upstream as well as downstream factors of protein folding pathway in eukaryotes

#### **JANUARY 2014 – APRIL 2014**

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT (MINI PROJECT)

**“Characterisation of CCT mutants in *Saccharomyces cerevisiae* and study of their physiological aspects”** under the guidance of Prof. M. Anaul Kabir, School of Biotechnology, NITC.

Susceptibility of different CCT mutants to temperature and pH changes, osmotic stress, actin depolarization, and F- actin dispersion.

#### **JUNE 2013 – JULY 2013**

BIOINFORMATICS INSTITUTE OF INDIA

***“in-silico generation of 3-Dimensional Structure of Apoptosis-inducing peptidase Caspase-6”*** at Bioinformatics Institute of India (BII), Noida.

Modules: Modeller v9.12, Chimera, Swiss-Model

SAVS server was used for structural analysis of the predicted structure.

DALI server was used to compare the molecular structures online in 3D.

#### **NOVEMBER 2012 – MAY 2013**

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

***“Identification of cryptic binding sites of Drp1 using an integrated computational strategy”*** under the guidance of Prof. Rajanikant G K, School of Biotechnology, NITC.

Module: Schrödinger Maestro

Techniques: in-silico prediction of potential binding sites, docking, the knowledge-based elimination of non-significant binding sites, and molecular dynamics simulation-based selection of the most promising binding site.

## **ACADEMIC CERTIFICATIONS**

- Completed certification for refresher course on **Data or Specimens Only Research** offered by Collaborative Institutional Training Initiative (CITI) Program, valid through April, 2026.
- Completed certification for **Export Compliance** offered by Collaborative Institutional Training Initiative (CITI) Program, valid through April, 2026.
- Completed certification for **Coronavirus Disease 2019** course offered by AACC Learning Lab for Laboratory Medicine on NEJM Knowledge+, valid through March 29<sup>th</sup>, 2021.
- Certified as **Exxonmobil Emerging Energy Research Fellow** 2019, 2020 and 2021.
- Completed certified tests from **MyScope learning** platform developed by Microscope Australia for Transmission Electron Microscopy prior to hands-on training.
- Certified by Teaching, Learning and Pedagogy Division, NTU for successfully completing Eight-module **University Teaching for Teaching Assistants** course with Assessment.
- Completed 2-day course on **Image Integrity- Best Practice** in preparing imagery for publication, organized by the Research Integrity and Ethics Office, NTU.
- Successfully completed **Presentation Skills Workshop** under Unlock Your Potential program by Aureus Consulting.
- Certification for successfully completing **Responsible Care and Use of Laboratory Animals (RCULA)** Course in compliance with National Advisory Committee for Laboratory Animal Research (NACLAR) guidelines.
- Successfully completed a six-session course on **Scientific Thesis Writing** for better research communication and understanding formal documentation standards as learning outcomes.

## EXTRA-CURRICULAR ACTIVITIES

- Participant in NTU Contingent for **The Purple Parade**, an annual event to raise awareness and campaign for inclusion of the disabled in Singapore (2018).
- Visited Graduate Student Unions of 4 institutions in Taiwan as part of **Overseas Exposure Programme** (2018).
- Successfully completed the Grow, Embrace & Learn Programme: **Student Leadership Camp** (2017); 2-days residential Leadership Camp for Student Leaders at Kota Tinggi organized by NTU Student Affairs Office.
- Semi-finalist, **Three Minute Thesis** Competition at NTU Singapore (2017).
- PADI Certification – **Discover Scuba Diving**.
- 'Rajya Puraskar' (Governor's Prize) holder in **The Bharat Scouts and Guides** (2005 - 2010).
- Certificate Adventure Camp by Directorate of **Mountaineering and Allied Sports**.
- Successfully awarded 'Pratham Diksha' in **Sanskrit language** course offered by Rashtriya Samskrit Sansthan.

(Updated 2025)