Prince Tiwari, Ph.D.

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[Contact information]

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[Personal information]

Date of Birth: 2nd April 1985
Place: Padrauna, India
Citizenship: Indian
Marital status: Single
Hobbies: Travel and sports (badminton, Table tennis, volleyball, chess etc.)

[Education]

Ph.D. in Protein biochemistry and biophysics, IISER Mohali, Punjab, India (2012-2018). First Division (Supervisor: Prof. Purnananda Guptasarma)
M.Sc. in Life Sciences, Devi Ahilya University, Indore, India (2008-2010). First Division
B.Sc. in Biology, Deen Dayal Upadhyay University, Gorakhpur, India (2003-2006). First Division

[Research and Professional Experience]

June 2022- present **Assistant Professor**
Department of Biosciences and Bioengineering,
IIT, Roorkee, India

2018 – May 2022 **Postdoctoral Associate**
Mentor – Prof. Roger Craig, University of Massachusetts Medical School, Worcester, MA, USA
Project: Structure-function of smooth and cardiac myosins.

2012 - 2018 **Ph.D. Student**
Supervisor: Prof. Purnananda Guptasarma, Department of Biological Sciences, IISER Mohali, Punjab, India
Project: Human epithelial (E) and neuronal (N) cadherin proteins, domain structural contents and effects of Ca-binding, and domain-domain interactions.

2011 - 2012	**Project Assistant level II** Mentor: Dr. Karthikeyan Subramanian, Senior Principal Scientist, IMTECH, Chandigarh, India Project: CSIR Network Program "Engineering of Peptides and Proteins for New Generation Therapies".
Jan 2010 – July 2010	**M.Sc. dissertation** Mentor: Dr, Praveen Verma, Staff Scientist IV, NIPGR New Delhi, India Project: Cloning, Functional Characterization of a Putative Glutaredoxin gene (*Car 101*) of Chickpea.

[Research expertise]

Muscle protein's structure, function and its relation to cardiomyopathies, molecular biology, biochemistry, protein structural biology, Transmission Electron Microscopy (TEM) and Cryo-Electron Microscopy.

[Awards and Honors]

- Invited speaker in **EMSI-2024** at IIT Bombay, India
- **American Heart Association** (AHA) postdoctoral fellowship - 2022
- Invited speaker at the **6th Cryo-EM symposium (2021), Yale University**, NH, USA
- BPS (USA) travel award (2021)
- EMBO travel grant (2017)
- DBT travel grant (2018)

[Conferences and Symposium]

- Abstract selected for **oral presentation** (Motility subgroup) and as a **poster** for the 65th Annual Biophysical Meeting 2019 in San Diego.
- Presented **poster** in '62nd Annual Meeting BPS 2018" in San Francisco.
- Presented **poster** in "Mechanical Forces in Biology 2017" at EMBL Heidelberg, Germany
- Presented **poster** at "Annual Symposium of the Indian Biophysical Society 2017", IISER Mohali
- Presented **poster** at "11th International Symposium on Cell Surface Macromolecule 2017", IISER Mohali

[Publications]

1. Cryo-EM structure of the inhibited (10S) form of myosin II.
   Shixin Yang*, **Prince Tiwari*,** Kyoung Hwan Lee, Osamu Sato, Mitsuo Ikebe, Raúl Padrón and Roger Craig. ***Nature*** volume 588, pages521–525 (2020) **(IF 69.5)**
   ***Equal contribution**

2. Dilated cardiomyopathy mutation E525K in human beta-cardiac myosin stabilizes the interacting-heads motif and super- relaxed state of myosin
   David V Rasicci, **Prince Tiwari,** Skylar ML Bodt, Rohini Desetty, Fredrik R Sadler, Sivaraj Sivaramakrishnan, Roger Craig, Christopher M Yengo.

eLife 2022;11: e77415. **(IF 8.14)**

3. Understanding anomalous mobility of proteins on SDS-PAGE with special reference to the highly acidic extracellular domains of human E- and N-cadherins.
Prince Tiwari, Pallavi Kaila, and Purnananda Guptasarma.
Electrophoresis 2019, 40,1273–1281 **(IF 3.6)**

3. Structural-Mechanical and Biochemical Functions of Classical Cadherins at Cellular Junctions: A Review and Some Hypotheses.
Prince Tiwari, Arpita Mrigwani, Harpreet Kaur, Pallavi Kaila, Rajendra Kumar, Purnananda Guptasarma.
Biochemical and Biophysical Roles of Cell Surface Molecules (2018) pp 107-138, Advances in Experimental Medicine and Biology book series (AEMB, volume 1112) (**IF 3.7)**

4. N-terminal domain replacement changes an archaeal monoacylglycerol lipase into a triacylglycerol lipase.
Surabhi Soni, Sneha S. Sathe, Rutuja R. Sheth, **Prince Tiwari**, Rajesh-Kumar N. Vadgama, Annamma Anil Odaneth, Arvind M. Lali & Sanjeev K. Chandrayan
Biotechnology for Biofuels (2019) 12:110 (**IF 7.8)**

5. Multiple thermostable enzyme hydrolases on magnetic nanoparticles: An immobilized enzyme-mediated approach to saccharification through simultaneous xylanase, cellulase and amylolytic glucanotransferase action.
Arpana Kumari, Pallavi Kaila, **Prince Tiwari**, Vishal Singh, Sunaina Kaul, Nitin Singhal, and Purnananda Guptasarma. ***Int J Biol Macromol*** 2018 :1650-1658. **(IF 8.0)**

PDB entry: **6XE9** (Smooth muscle myosin). **Tiwari P**., Padron R. Craig R. ***Nature*** **(2020)**

[Manuscripts in preparation/ submitted]

1. Flexibility of Myosin II in Solution.
Tiwari, P., K.H. Lee, O. Sato, M. Ikebe, and R. Craig. (In preparation, intent to submit in PNAS).

2. Studies of the Behavior of Individual (and Combined) Domains of Human E- and N-Cadherin.
Tiwari P. and Guptasarma P. (Manuscript in preparation).

[Conference papers]

1. Near-Atomic Structure of the 10S form of Myosin II: Implications for Inhibition, Activation and Disease
Author(s): Prince Tiwari, Shixin Yang, Kyounghwan Lee, Mitsuo, Raul Padron, and Roger Craig,
Conference Details: Biophysical Society (2021) - virtual
2. Flexibility of Myosin II in solution
Author(s): Prince Tiwari, Kyounghwan Lee, Osamu Sato, Mitsuo Ikebe, Roger Craig
Conference Details: Biophysical Society (2020), San Diego
3. Studies of the Behavior of Individual (and Combined) Domains of Human E- and N-Cadherin

Author(s): Prince Tiwari and Purnananda Guptasarma
Conference Details: Biophysical Society (2018), San Francisco
Conference Details: Mechanical Forces in Biology (2017) at EMBL Heidelberg, Germany
Conference Details: 11th International Symposium on Cell Surface Macromolecule (2017), IISER Mohali, India

[Mentoring Experience]

1. Four PhD students are registered and working on various projects.
2. 2 B.tech. and 2 M.Sc. students completed their thesis dissertations.
3. 3 BS-MS students mentored during my PhD tenure at IISER Mohali

[References]

1. **Prof. Roger Craig**
   Rm. S7-210
   Department of Radiology
   University of Massachusetts Medical School
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   roger.craig@umassmed.edu, Mob. +17742861890

2. **Prof. Raul Padron**
   Rm. S7-212
   Department of Radiology
   University of Massachusetts Medical School
   55 Lake Ave. North, Worcester, MA 01655, USA
   raul.padron@umassmed.edu, Mob. +15082830578

3. **Prof. Purnananda Guptasarma**
   Department of Biological Sciences
   Indian Institute of Science Education and Research (IISER) Mohali,
   Knowledge City, Sector 81, SAS Nagar (Mohali),
   Punjab 140306, India
   guptasarma@iisermohali.ac.in, Mob. +919815417265

4. **Dr. Karthikeyan Subramanian**
   Chief Scientist
   CSIR-Institute of Microbial Technology (IMTECH)
   Chandigarh, India
   skarthik@imtech.res.in , Mob. +919417495642