ASSOCIATE RESEARCH SCIENTIST
Professional Summary

Highly motivated, hard-working, skilled multitasker with excellent communication and problem-solving biochemist and structural biologist with 10+ years of extensive experience in protein sciences in support of therapeutics and drug development by performing biochemical, biophysical, enzymatic, and structural analysis for drug candidates. Developed a wide range of quantitative, bio-analytical methods for the understanding and evaluation of proteinâ€“ligand interactions for several therapeutic targets such as epigenetic enzyme PRMT5. Actively involved in early-stage drug discovery from hit identification, target validation, lead optimization to mechanism of action studies. Current research interests include drug discovery through multi-disciplinary techniques especially proteinâ€“ligand binding kinetics/affinity analysis and *in vitro* biological evaluation of drug candidates in the therapeutic product development pipeline and structure-based drug design using cryo-EM and/or X-ray crystallography.

Skills

- Documentation expertise
- Enzyme kinetics/affinity and mechanism of inhibition results analysis
- Laboratory Management.
- Facility management
- Data analysis
- Electron microscopes
- Research grants
- Good Laboratory Practices (GLP)
- Organization and Time management
- Written Communication
- Spectroscopy
- Recombinant protein expression in E. coli, insect cell and mammalian systems,
- Protein purification by FPLC (AKTA/NGC purification system, affinity/IEX/size exclusion chromatography), western blotting, ELISA, immuno-precipitation, etc.
- Surface plasmon resonance (SPR), fluorescence polarization (FP), isothermal titration calorimetry (ITC), differential scanning flourimetry (DSF), dynamic light scattering (DLS), circular dichroism (CD), fluorescence, etc.
- Cryo-EM, X-ray crystallography
- Microsoft office suite, Prism, ImageJ, Pymol, Chimera, Autodock4, Glide, Relion, Coot, etc.
- Research and Data Analysis
- Research protocols
- Lab experiments and research
- Research data management
- Experiment Design
- Office Software

Work History
Associate Research Scientist , 01/2020 to Current
Bio-Rad Laboratories â€“ Parsippany , NJ

- Wrote research papers, reports, reviews and summaries regarding role of chromogranin ion channels in the regulation of pH in the secretory granules.
- Performed cryo-EM data collections using transmission electron microscopes (cryo-TEMs).
- Process cryo-EM data to determine the structures of protein complexes in near native states.
- Conducted protein purification from different over-expression systems such as bacterial, Insect cells (baculovirus), yeast (Pichia and cerevisiae), and mammalian over-expression systems.
- Handled different kind of cells cultures (bacterial, insect cells, yeast cells and mammalian cells).
- Performed biochemical and biophysical assays to characterize proteins functions and conformations.
- Used Microsoft office suite, Prism, ImageJ, Pymol, Chimera, Autodock4, Glide, Relion, Coot, cryoSPARC, cisTEM, ORIGIN, ChemDraw, EPU, Leginon, etc.
- Hands-on experience with Electron Microscopes (Tecnai F20, Titan Krios, Glacios, Tecnai F12, JEOL 2200FS and CM120BT).

Biological Scientist III , 02/2019 to 01/2020
University Of Florida â€“ Gainesville , FL

- Wrote research papers, reports, reviews and summaries regarding role of chromogranin ion channels in the regulation of pH in the secretory granules.
- Performed cryo-EM data collections using transmission electron microscopes (cryo-TEMs).
- Process cryo-EM data to determine the structures of protein complexes in near native states.
- Conducted protein purification from different over-expression systems such as bacterial, Insect cells (baculovirus), yeast (Pichia and cerevisiae), and mammalian over-expression systems.
- Handled different kind of cells cultures (bacterial, insect cells, yeast cells and mammalian cells).
- Performed biochemical and biophysical assays to characterize proteins functions and conformations.
- Used Microsoft office suite, Prism, ImageJ, Pymol, Chimera, Autodock4, Glide, Relion, Coot, cryoSPARC, cisTEM, ORIGIN, ChemDraw, EPU, Leginon, etc.

Postdoctoral Associate , 02/2016 to 01/2019
Duke University â€“ Morrisville , PA

- Wrote research papers, reports, reviews and summaries regarding role of chromogranin ion channels in the regulation of pH in the secretory granules.
- Performed cryo-EM data collections using transmission electron microscopes (cryo-TEMs).
- Process cryo-EM data to determine the structures of protein complexes in near native states.
- Conducted protein purification from different over-expression systems such as bacterial, Insect cells (baculovirus), yeast (Pichia and

cerevisiae), and mammalian over-expression systems.
- Handled different kind of cells cultures (bacterial, insect cells, yeast cells and mammalian cells).
- Performed biochemical and biophysical assays to characterize proteins functions and conformations.
- Used Microsoft office suite, Prism, ImageJ, Pymol, Chimera, Autodock4, Glide, Relion, Coot, cryoSPARC, cisTEM, ORIGIN, ChemDraw, EPU, Leginon, etc.
- Hands-on experience with Electron Microscopes (Tecnai F20, Titan Krios, Glacios, Tecnai F12, JEOL 2200FS and CM120BT).
- Mentored and led many rotation/intern and graduate students in their research and experiment design.

Postdoctoral Researcher , 08/2011 to 01/2016
Colorado State University â€“ Fort Collins , CO

- Wrote research papers, reports, reviews and summaries regarding role of chromogranin ion channels in the regulation of pH in the secretory granules.
- Performed cryo-EM data collections using transmission electron microscopes (cryo-TEMs).
- Process cryo-EM data to determine the structures of protein complexes in near native states.
- Conducted protein purification from different over-expression systems such as bacterial, Insect cells (baculovirus), yeast (Pichia and cerevisiae), and mammalian over-expression systems.
- Handled different kind of cells cultures (bacterial, insect cells, yeast cells and mammalian cells).
- Performed biochemical and biophysical assays to characterize proteins functions and conformations.
- Used Microsoft office suite, Prism, ImageJ, Pymol, Chimera, Autodock4, Glide, Relion, Coot, cryoSPARC, cisTEM, ORIGIN, ChemDraw, EPU, Leginon, etc.

Education
Ph.D. : Biochemistry And Biophysics , 07/2011
Jawaharlal Nehru University - City

1. Tuberculosis (TB), one of the oldest known human diseases, is still one of the major causes of human mortality. Although many medicines are available for TB, its therapy takes prolonged time before complete cure. For this very reason, better inhibitors of the mycobacterium tuberculosis have been persistently pursued. We found that exogenously added mycobacterium phosphoserine phosphatase (MtSerB2) induces microtubule rearrangements in THP-1 cells, which are progenitor cells for macrophage-like cells. My graduate studies demonstrated that the phosphatase activity is tightly correlated to the elicited microtubule rearrangements (https://doi.org/10.1371/journal.pone.0115409).

2. HIV-1 Nef is an important accessory protein contributing to multiple distinct functions of the virus, such as immune evasion, virion infectivity, and support for viral replication and survival. These functions are regulated by the interactions of Nef with more than 30 different partner proteins in membrane-anchored or cytoplasmic state and is puzzling how such a small protein (â^¼27 kDa) can control multiple important functions. We discovered how changes of the oligomeric state of HIV-1 Nef can help it to distinguish between its protein partners by showing the molecular details underlying a novel dimer-tetramer transition of Nef, a critical step for its interaction with its partners (https://doi.org/10.1371/journal.pone.0026629).

Master of Science : Chemistry , 06/2003
University Of Lucknow - City
Websites, Portfolios, Profiles

- linkedin.com/in/gaya-yadav-56085721
- https://www.researchgate.net/profile/Gaya_Yadav
- https://scholar.google.com/citations?hl=en&user=GJ2E2fEAAAAJ

Accomplishments

- Used Microsoft Excel to develop inventory tracking spreadsheets.
- Supervised team of undergraduate students members.
- Streamlined the automatic data collection pipeline for the cryo-EM image acquisition.
- Academic Editor: Journal of Cellular Signaling (https://www.scientificarchives.com/editor/gaya-prasad-yadav).
- Academic Editor: Trends in Clinical Microbiology.
- Editorial board member: Journal of Pharmaceutics and Drug Research. (http://www.scitcentral.com/editorboard.php?journal=17)
- Associate Editor: Endocrinology & Metabolism International Journal (https://medcraveonline.com/EMIJ/editorial-board).
- Reviewer: multiple journals.

Additional Information

**SELECT PUBLICATIONS**

1. Mohammed E. Sayed, Ao Cheng, **Gaya P. Yadav** , Andrew T. Ludlow, Jerry W. Shay, Woodring E. Wright, and Qiu-Xing Jiang; Catalysis-dependent inactivation of human telomerase and its reactivation by intracellular telomerase-activating factors (iTAFs). J. Biol. Chem. June 11, 2019.

2. **Gaya P. Yadav** , Hui Zheng, Qing Yang, Lauren G Douma, Linda B Bloom, and Qiu-Xing Jiang; Secretory granule protein chromogranin B (CHGB) forms an anion channel in a membrane. ***Life Science Alliance*** , Sept 2018, 1(5) e201800139; DOI:10.26508/lsa.201800139.

3. **Yadav GP, Current Dilemma on Granin Proteins:** Proteins involved in various cellular functions without known mechanisms. **Cell Cellular Life Science J (2017)** , 2(2):000115.

4. Liu H, Liang C, Kollipara RK, Matsui M, Ke X, Jeong BC, Wang Z, Yoo KS, **Yadav GP** , Kinch LN, Grishin NV, Nam Y, Corey DR, Kittler R, Liu Q. **Mol Cell** . ( **2016** ) 4; 63(3):420-32. DOI: 10.1016/j.molcel.2016.06.014. Epub 2016 Jul 14.

5. **Yadav GP** , Shree S, Maurya R, Rai N, Singh DK, et al. Characterization of *M. tuberculosis* SerB2, an Essential HAD-Family Phosphatase, Reveals Novel Properties. ( **2014** ) **PLoS ONE** 9(12): e115409.

6. Singh P*, **Yadav GP** *, Gupta S, Tripathi AK, Ramachandran R, Tripathi RK. A novel dimer-tetramer transition captured by the crystal structure of the HIV-1 Nef. **PLoS One** . **2011** ; 6(11): e26629. (* **Equal author** ).

7. Vijay Singh, Samiran Hutait, **Gaya P. Yadav** , Prakas R. Maulik and Sanjay Batra* Unusual retention of isoxazole ring under the influence of 3-(substituted nitrophenyl)-2-isoxazoline during catalytic-hydrogenation of isoxazoline substituted isoxazole systems. **Journal of Heterocyclic Chemistry** , **2009** , 46,762-769.

8. Uma Sharan Singh, Ravishankar nainavat, **Gaya P. Yadav** , Geetika kharkwal, Anila Dwivedi, Govind Keshri, M.M Singh, P. R Maulik, and K. Hajela. Synthesis and structure-guided evaluation of estrogen agonist and antagonist activities of some new tetrazolyl indole derivatives, **Eur. J. Med. Chem.** , **2008** , 43, 2149-2158.

9. B.K. Singh, Mridul Mishra, Nisha Saxena, **G.P. Yadav** , P.R. Maulik, M.K. Sahoo, R.L. Gaur, P.K.Murthy, R.P.Tripathi, Synthesis of 2-sulfanyl-6-methyl-1, 4-dihydropyrimidines as a new class of antifilarial agents, **Eur. J. Med. Chem.** , **2008,** 43,2717-2723.

10. Virender Singh, **Gaya P. Yadav** , Prakas R. Maulik, Sanjay Batra, Synthesis of substituted 3-methylene-2-pyridones from Baylisâ€“Hillman derivatives and its application for the generation of 2-pyridone substituted spiroisoxazolines. **Tetrahedron, 2008** *, 64, 13* , *2979-2991* .

11. Sudharshan Madapa, Divya Sridhar, **Gaya P. Yadav** , Prakas R. Maulik and Sanjay Batra. A General Approach to the Synthesis of Substituted Isoxazolo[4,3- *c* ] quinolines via Chalcones. **Eur. J. Org. Chem** . **2007,** 26, 4343â€“4351.

12. Nag, S. **Yadav, G.P.** Maulik, P.R. Batra, S. Sodium Hydride Mediated Cascade Reaction towards the Synthesis of 1, 5-Disubstituted Uracil from Cyanamides Derived from Baylis-Hillman Adducts. **Synthesis** ; **2007** , 06, 911-917.

13. V.Singh, G **.P.Yadav** , P. R. Maulik, S. Batra, Studies toward the construction of substituted piperidine-2-ones and pyridine-2-ones from Baylisâ€“Hillman adducts: discovery of a facile synthesis of 5-methyl-4-oxo-6-aryl-3-aza-bicyclo[3.1.0]hexane-1-carboxylates, **Tetrahedron, 2006** , 62, 37, 8731-8739.

14. V.Singh, S. Madapa, **G.P.Yadav** , P. R. Maulik, S. Batra, Interesting Results of catalytic hydrogenation of 3-(2-Nitrophenyl) isoxazoles and 3-(Nitrophenyl) 4,5-dihydroisoxazoles; **Synthesis 2006** ,12,1995-2004.

15. Roy, Amrendra K.; Pathak, Richa; **Yadav, Gaya P** .; Maulik, Prakas R., Batra, Sanjay, Neighboring-Group Effect: DBU-Promoted Ring Transformation of Substituted Isoxazoles to Substituted Pyrroles, ***Synthesis*** *06,* **2006** , 1021-1027.

**UNDER PUBLICATION**

1. **Gaya P. Yadav** , Mani Annamalai, Clayton Mathews, and Qiu-Xing Jiang. Chromogranin B channel drives normal granule maturation in (neuro) endocrine cells (under review).

2. **Gaya P. Yadav** , Liang Shi, Hui Zheng and Qiu-Xing Jiang, Cryo-EM structure of a potassium ion channel in the inactivated state ( *Manuscript under review* ).

3. **Gaya P. Yadav,** Mahesh K. Chandak and Qiu-Xing Jiang **,** Competitive reconstitution reveal low-affinity protein-lipid interactions in the membrane. ( *Manuscript under preparation* ).

4. **Gaya P Yadavâ€¡,** Wei Zhou **â€¡** , Xiaojie Zhan, Qiu-Xing Jiang, Chenglong Li, Cryo-EM structure of human PRMT5: MEP50 in complex with novel inhibitor at a resolution of 3.1Ã… ( *under review,* **â€¡ Equal first Author** ).

**Conference publication**

1. Synthesis and Post-Coital Contraceptive of some Tetrazolyl Indole Derivative. Uma Sharan Singh, Ravi Shankar, M.M. Singh, Govind Keshri, **Gaya P. Yadav** , P.R. Moulik and K. Hajela. Med. Chem. Res. 2007, 15, 306-307.

2. Electron Cryo-Microscopic Study of the type 1 IP3R. Hui Zheng, **Gaya P. Yadav** , Brian Borkowski, Qiu-Xing Jiang. Biophysical Journal, Volume 102, Issue 3, Supplement 1, 31 January 2012, P110a.

3. The Ion Channel Function of Mouse Chromogranin B. **Gaya P. Yadav** , Hui Zheng, Qing Yang, Qiu-Xing Jiang. Biophysical journal, 2015, 108, 2, p226a.

4. Chromogranin B serves the long-sought-after anion conductance in regulated secretion. **Gaya P. Yadav** , Qing Yang and Qiu-Xing Jiang. Biophysical Journal, 2017, Vol. 112, Issue 3, p184a.

**Book Chapters**

1. **Gaya P. Yadav** and Qiu-Xing Jiang; Recosntituted Membrane Systems for Assaying Membrane Proteins in Controlled Lipid Environments. (Book Chapter in â€œNew Techniques for Studying Biomembranesâ€, ***Taylor & Francis Group*** , April 7, 2020).