

DR. ADARSH KUMAR



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EXPERIENCE

MAY 2022 – PRESENT

POSTDOCTORAL RESEARCHER, STRUCTURAL GENOMICS CONSORTIUM AT
GOETHE UNIVERSITY, FRANKFURT AM MAIN, GERMANY

Responsibilities:

- Crystallization and structure determination of protein-ligand complexes
- Protein purification for crystallography and compound libraries screening
- General structural biology support to multiple projects in the lab
- PDB submissions: 8Q53, 7GA8, 7GA9, 7GAA, 7GAB, 7GAC, 7GAD, 7GAE, 7GAF, 7GAG, 7GAH, 7GAI, 7GAJ, 7GAK, 7GAL, 7GAM, 7GAN, 7GAO, 7GAP, 7GAQ, 7GAR, 7GAS, 7GAU, 8QMZ, 8QN0, 8QZD

SEP 2018 – AUG 2021

POSTDOCTORAL RESEARCHER, THE FLORIDIA STATE UNIVERSITY COLLEGE OF
MEDICINE, TALLAHASSEE, FLORIDA, USA

Research:

- hPol β -DNA-ligands time-resolved crystallography; 11 structures solved and deposited in PDB (7RBE, 7RBF, 7RBG, 7RBH, 7RBI, 7RBJ, 7RBK, 7RBL, 7RBM, 7RBN, and 7RBO); manuscript published in PNAS
- Developed biochemical assay to understand the relation between two distinct functions of hPol β
- DPO4-DNA-ligands; 4 structures solved and deposited in PDB (7MGF, 7MGG, 7MGH, 7MGY); manuscript under preparation

Management:

- Inventory and lab management
- Training undergraduates, graduate students, and new postdocs
- Radiation, chemical, and biological safety

AUG 2012 – JAN 2018

RESEARCH FELLOW, CSIR-INSTITUTE OF MICROBIAL TECHNOLOGY,
CHANDIGARH, INDIA

Research:

- Msmeg_4306 (Rv2229c homolog); 2.8 Å data collected at ESRF, Grenoble, France; solved using SAD phasing (PDB ID: 5Y05)
- Msmeg_4306 (Rv2229c homolog); 2.6 Å data collected at home source; solved using molecular replacement (PDB ID: 5Y06)
- Structure solution and refinement of VribB crystals (4P6C, 4P6D, 4P6P, 4P77, 4P8E, and 4P8J)
- Inhibition kinetics for VribB

FEB 2012 – MAY 2012

MARKETING EXECUTIVE, IDEA BRAHMA CONSULTING PVT. LTD., BANGALORE,
INDIA

- B2B Marketing
- Product demonstrations
- Sales pitch

EDUCATION

JAN 2018

PH.D., CSIR-INSTITUTE OF MICROBIAL TECHNOLOGY, CHANDIGARH, INDIA
(DEGREE AWARDED BY JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI)

Thesis title: "Structural and mechanistic insights into Rv2229c, an essential gene from *Mycobacterium tuberculosis*".

MAY 2011

M.SC., SRM UNIVERSITY, CHENNAI, INDIA

Dissertation title: "Drug Designing for Chorismate Mutase in *Mycobacterium tuberculosis*"

MAY 2009

B.SC., GARDEN CITY COLLEGE, BANGALORE, INDIA (BANGALORE UNIVERSITY)

SKILLS

- Time-resolved macromolecular crystallography (diffusion trapping)
- Protein/complex crystallization using automation/robotics
- Crystallographic fragment screening (Xchem)
- Protein-DNA-ligand complexes
- Protein purification and characterization
- Molecular biology and recombinant DNA technology
- Enzymatic assays
- Circular dichroism, Isothermal titration calorimetry, Microscale thermophoresis
- Bioinformatics

PUBLICATIONS

- **Adarsh Kumar** and Subramanian Karthikeyan. 2018. Structural characterization of msme_g_4306 from *Mycobacterium smegmatis*, Acta Cryst. F 74, 166-173
- Zeyaul Islam, **Adarsh Kumar**, Suruchi Singh, Laurent Salmon, and Subramanian Karthikeyan. 2015. Structural Basis for Competitive Inhibition of 3,4-Dihydroxy-2-butanone-4-phosphate Synthase from *Vibrio cholerae*, J. Biol. Chem., 290, 11293-11308
- **Adarsh Kumar**, Andrew J. Reed, Walter J. Zahurancik, Sahsha Daskalova, Sidney M. Hecht, and Zucui Suo. 2022. Interlocking activities of DNA polymerase β define the base excision repair pathway, PNAS, 119 (10), e2118940119
- Fang Li, W. Felix Zhu, Claire Empel, Oleksandr Datsenko, **Adarsh Kumar**, Yameng Xu, Johanna H. M. Ehrler, Iuliana Atodiresei, Stefan Knapp, Pavel K. Mykhailiuk, Ewgenij Proschak, Rene M. Koenigs. 2024. Photosensitization Enables Pauson-Khand-type Reactions with Nitrenes, Science, 383, 498-503
- Markus Schweipert, Thomas Nehls, Anton Frühauf, Cecilé Debarnot, **Adarsh Kumar**, Stefan Knapp, Frederik Lermyte, Franz-Josef Meyer-Al. 2024. The catalytic domain of free or ligand bound histone deacetylase 4 occurs in solution predominantly in closed conformation, Prot. Sci. *In press*
- Lara Dötsch, Caitlin Davies, Elisabeth Hennes, Julia Schönfeld, **Adarsh Kumar**, Celine da Cruz Lopes Guita, Sasikala Thavam, Axel Pahl, Petra Janning, Sonja Sievers, Stefan Knapp, Eugen

Proschak, Slava Ziegler, Herbert Waldmann. 2024. Discovery of the sEH Inhibitor Epoxykynin as Potent Kynurenine Pathway Modulator, *J. Med. Chem.* *Under review*

- Martin Schwalm , Johannes Dopfer , **Adarsh Kumar** , Francesco Greco , Nicolas Bauer , Frank Löhr , Jan Heering , Sara Cano Franco , Severin Lechner , Thomas Hanke , Ivana Bekic , Viktoria Morasch , Cristopher Lenz , Daren Fearon , Peter Marples , Charles Tomlinson , Lorene Brunello , Krishna Saxena , Nathan Adams , Frank von Delft, Susanne Muller , Alexandra Stolz , Ewgenij Proschak , Bernhard Kuster , Stefan Knapp, Vladimir Rogov. 2024. Targeting LC3/GABARAP for degrader development and autophagy modulation, *Nat. Comm.* *Under review*
- **Adarsh Kumar**, Jason D. Fowler, Vineet Gaur, Rajan Vyas, Mangesh D. Hade, Jesper Wengel, Zucui Suo. 2024. Overcoming the Sugar Selectivity and Mechanism of DNA movement in Y-family DNA Polymerase (working title; manuscript under preparation)
- Ajay Kumar, Rajender Kumar, Vishant Boradia, Himanshu Malhotra, **Adarsh Kumar**, Gandhari Shankar, Amar Jhadav, Edelli Jhansi, Subramanian Karthikeyan, Prabha Garg, Manoj Raje, Chaaya Iyengar Raje. 2024. The C-terminal lysine modulates enzyme activity, multifunctionality of Mycobacterium tuberculosis and human Glyceraldehyde-3-phosphate dehydrogenase (manuscript under preparation)

MEMBERSHIPS, FELLOWSHIPS, AND AWARDS

- Postdoctoral Research Award for outstanding achievement as a postdoctoral scholar, The Florida State University College of Medicine, Aug 2021.
- Associate Faculty Member, Structural Biology, F1000 Prime, October 2018 to September 2022
- Life member of the Indian Biophysical Society
- CSIR-Shyama Prasad Mukherjee Research Fellowship concurrent with the Ph.D. program, August 2012 to July 2017
- CSIR program on Youth for Leadership in Science in 2003
- Certificate of merit in science in AISSE 2003