



Veerendra Kumar

Associate Professor & Ramalingaswami fellow

Specialization: Single Particle Cryo-EM, macromolecular X-ray Crystallography, Protein expression, Protein purification and biophysical characterization.

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Dr. Veerendra Kumar obtained his PhD from National University of Singapore. He did his Postdoctoral Research from University of Connecticut, USA and Institute of Molecular and Cell Biology, Singapore. He is a structural biologist having expertise in both X-ray crystallography and Single particle CryoEM. Dr. Veerendra has joined the Amity Institute of Molecular Medicine and Stem Cell Research (AIMMSCR) in August, 2019. His research interest is to understand the structure and function of Voltage Gated Calcium Channels (VGCC). VGCCs are found in cell membrane in all excitable and many non-excitable cells. These channels are activated by changes in the electrical membrane potential near the channel. VGCCs are the primary mediators of calcium entry into neurons in response to membrane depolarization. Small changes in the biophysical properties or expression of VGCCs can lead to serious chronic disorders. In Human, mutation in VGCCs genes have been linked to serious neurological, retinal, cardiac, and muscular disorders. His long-term goal is to understand how ion channel works and how their function can be modified through specific interaction with natural peptide or ligands.

He is also interested on tuberculosis (TB). Emergence of multi drug resistant (MDR) and extensively drug-resistant (XDR) strains of *M. tuberculosis* has complicated treatment of tuberculosis. In order to develop an effective drug, detailed understanding of mechanism behind the development of resistance is required. In fact, antibiotic resistance has become one of the greatest threats to public health and food security. The ribosome is one of the richest targets for antibiotics. Several ATP-binding cassette families ((ABC-F) proteins confer resistance to ribosome-targeting antibiotics through a yet unknown mechanism. These proteins are collectively referred to as antibiotic resistance (ARE) ABC-F proteins. His aim is to carry out the structural and functional study of ABC-F family proteins from pathogenic *M. tuberculosis*. The structure and functional information will be used to design the drugs to treat the tuberculosis. He is going to use the biophysical techniques and a combinatorial approach of X-ray crystallography and single particle CryoEM.

Current Research Projects:

DBT-Ramalingaswami fellowship funded project: “**Voltage Gated Ca²⁺ Ion Channels as Therapeutic Drug Targets**”

Fellowships, Honors and Awards:

1. Ramalingaswami Re-entry Fellowship 2019-2024
2. International Union of Crystallography (IUCr), USA Young Scientist Award, 2017.
3. Best Poster award at 2016 Kuo Symposium on 3D cryo-EM molecular imaging, Beijing China, 2016
4. International Union of Crystallography (IUCr), USA travel award to attend the Asian Crystallographic association meeting 2015.
5. NUS Research scholarship and MOE, Singapore scholarship 2006-2011.
6. GATE scholarship, MHRD India 2004-2006

Selected Publications:

1. Su WX*, Kumar V*, Ding Y*, Ero R, Serra A, Lee BST, Wong ASW, Shi J, Sze SK, Yang L, Gao YG (2018) *Proc Natl Acad Sci U S A*, 115(20):5157-5162 (*equal contribution) (IF 9.7) (Recommended as “New Finding” in F1000prime)
2. Kumar V, Ero R, Ahmed T, Goh KJ, Zhan Y, Bhushan S, and Gao YG (2016). *Journal of Biological Chemistry (Cover Story)*. 291(25):12943-50 (IF 4.6)
3. Kumar V, Chen Y, Ero R, Ahmed T, Tan J, Li Z, Wong AS, Bhushan S, Gao YG (2015). *Proc Natl Acad Sci U S A*, 112(35):10944-9. (IF 9.7)
4. Chen Y, Feng S, Kumar V, Ero R, Gao YG (2013). *Nat Struct Mol Biol*. 20(9):1077-84. (IF 13.3)
5. Kumar V, Chichili VP, Zhong L, Tang X, Velazquez-Campoy A, Sheu FS, Seetharaman J, Gerges NZ, Sivaraman J. *Sci Rep*. 2013;3:1392. (IF 5.6)
6. Kumar V, Chichili VP, Tang X, Sivaraman J (2013). *PLoS One*:.8(1):e54834. (IF 3.2)
7. Kumar V and Sivaraman J (2011). *J Struct Biol*. 176(3):409-13. (IF 3.2)

Complete list of publication:

<https://scholar.google.com/citations?user=ymdnsUAAAAAJ&hl=en>