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Hari Venugopal is the senior microscopist at the Monash University Ramaciotti Centre for Cryo-Electron Microscopy. He has over 13 years of experience in high-resolution cryo-electron microscopy (cryo-EM) and has contributed to numerous high-impact publications (H-index 28 since 2021). Hari joined Monash University in 2017 to oversee Australia's first high-end cryo-electron microscope, Titan Krios. There, he has played

a pivotal role in establishing and continuously refining high-resolution cryo-EM workflows, achieving some of the highest-resolution novel structures solved to date. He manages high-resolution beam time for both academic researchers and industry partners. A key focus of his research is to develop cryo-EM workflows for challenging structural biology problems. His present research focuses on increasing the accessibility of cryo-EM. Currently, he is exploring methods to democratise cryo-EM through innovative instrumentation.



Presentation: Democratising cryo-EM: Enabling high-resolution cryo-EM using a standard histology-grade transmission electron microscope

Cryo-electron microscopy (cryo-EM) has become a major structural biology technique to determine biomolecular structure. I will briefly discuss our successes with near-atomic-resolution imaging and then focus on our ongoing endeavour to address two principal challenges in cryo-EM: making cryo-EM more accessible and tackling low-molecular-weight (<100-kDa) biomolecules. This seminar will feature our recently published work aimed at democratising the technique. We explored how a standard histology grade 120-kV transmission electron microscope, commonly available at many laboratories worldwide, can be upgraded with a sub-200-kV optimised direct electron detector and its suitability for high-throughput-high-resolution cryo-EM. Building on this, I will present new results using sub-100-kV imaging and its potential for studying smaller protein complexes, pushing the boundaries of current cryo-EM capabilities