



## **Indian Institute of Science Education and Research (IISER), Mohali**

(Ministry of Human Resource Development, Govt. of India)

Knowledge City, Sector-81, SAS Nagar (Mohali),

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Dr. Prince's research, published in the prestigious journal Nature during his post-doctoral work, holds significant and importance. Over the last five years, his focus has been on muscle proteins, particularly the structure and function of myosin and its implications for cardiomyopathies. The myosin molecule contains a flat surface between the two heads and the tail, which is a hotspot of genetic mutations that occur in cardiomyopathies. For the last 2 decades, researchers around the globe have been trying their best to solve the full-length atomic structure of myosin. However, due to the asymmetric nature of myosin protein, it was very difficult to crystallize the molecule in its native form. Furthermore, the flexibility of the tail makes it a challenging sample for Cryo-EM, a technique used to determine the structure of biological macromolecules. Dr. Prince's expertise in this area is evident in his ability to navigate these challenges. In December 2020, during the COVID time, Roger Craig's lab at University of Massachusetts Medical School solved the structure of myosin molecule by Cryo-EM. Prince was a lead author, and most of the key work was done by him. Later, he was also awarded the prestigious American Heart Association (AHA) fellowship in early 2022. In 2022, he co-authored a paper in eLife where they discovered the effect of a dilated cardiomyopathy (DCM) mutation. His current interest is in exploring the structure and function of the mutations present in cardiac myosin-binding protein C (cmyBPC). This is also of great importance as several mutations are prevalent in Indian populations.

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