

DBT-InStem scientists get insights into actin filament recognition by actin markers



New Delhi, June 19: Actin filaments are an important cytoskeleton component of cells that are involved in motility and transport of materials inside cells. These are also crucial for the maintenance of shape and therefore integrity of cells. Actin is expressed abundantly and interacts with a wide variety of proteins inside cells. Besides the filamentous form, it can be found in spherical form also. It has long fascinated researchers around the world for the myriad cellular functions that depend on it. To understand its function, the protein has been the subject of biochemical, biophysical analysis as well studied inside cells using microscopy combined with fluorescent probes. Several fluorescent probes have been employed to investigate and understand actin function. However, information on how these ‘actin markers’ interact with actin filaments has been elusive.

Researchers in the laboratory of Dr. Minhaj Sirajuddin under the cardiac theme at the Department of Biotechnology’s Institute for Stem Cell Science & Regenerative Medicine (DBT-inStem), has exploited the power of cryo-EM (Cryogenic Electron Microscopy), to determine the structures of actin filament bound to commonly used actin markers. This work

was performed at the National Electron Cryo-Microscopy Facility (<http://ecryom.instem.res.in/>) located on campus.

The in-depth and much needed carefully conducted analysis of the three probes bound to actin filament will aid researchers in choosing and designing improvements to probes used to label and understand the many roles of cellular actin. This work entitled ‘Structural insights into filament recognition by cellular actin markers’ has been accepted for publication in The EMBO Journal.

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Link: <https://www.biorxiv.org/content/10.1101/846337v1.abstract>

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