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IIT-Kanpur explores use of G-protein coupled receptors for drug discovery

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A group of researchers led by Prof. Arun K Shukla in the Department of Biological Sciences and Bioengineering at the Indian Institute of Technology Kanpur (IIT-K) has unraveled a previously unknown mechanism that regulates an important class of drug targets known as G protein-coupled receptors (GPCRs).

The discovery has important implications for not only understanding the fundamental mechanism of cellular signaling in our body but it also has potential to facilitate novel drug discovery for several human disease conditions. The study has been conducted using a cutting-edge technology known as cryogenic-electron microscopy (cryo-EM).

The function of GPCRs is regulated by another family of proteins in our body known as arrestins, which bind to GPCRs and control their function and physiological responses. However, a complete understanding of GPCR-arrestin interaction has been mostly elusive so far. The researchers have now visualised the cross-talk of GPCRs and arrestins in great detail using the cutting-edge technology, cryogenic-electron microscopy (cryo-EM). The same has allowed the team to discover a novel mechanism that is responsible for regulating the function of GPCRs in our body.

The researchers are now working in the direction of novel drug discovery in collaboration with several international laboratories including studies in animal models.

This study is supported by the DBT Wellcome Trust India Alliance and Science and Engineering Research Board (SERB). Dr Shukla is also spearheading the establishment of a National cryo-EM facility at IIT Kanpur that is supported by SERB, and expected to be functional later this year.