The Other Bohr and Biology's Greatest Model

Rob Phillips

Division of Engineering and Applied Physics (CALTECH) (EAS) - Site web
1200 E California Blvd Pasadena, CA 91125 - États-Unis

We have just celebrated the 50th anniversary of a classic paper of Monod, Changeux and Jacob on allostery, a concept that Monod himself christened the second secret of life. That important and highly-cited paper was followed shortly thereafter by a second one that revealed their musings on how simple statistical mechanical models can be used to capture how such allosteric transitions work mechanistically. In this talk, I will review the key features of the famed Monod-Wyman-Changeux (MWC) model and then describe its broad reach across many different domains of biology with special reference to ion channels and other membrane receptors. One of the intriguing outcomes of this class of models is a beautiful scheme for collapsing data from entire libraries of mutants. Once we have considered some of the traditional uses of the MWC model, I will turn to more speculative recent ideas which use the MWC approach to consider DNA accessibility in chromatin.