

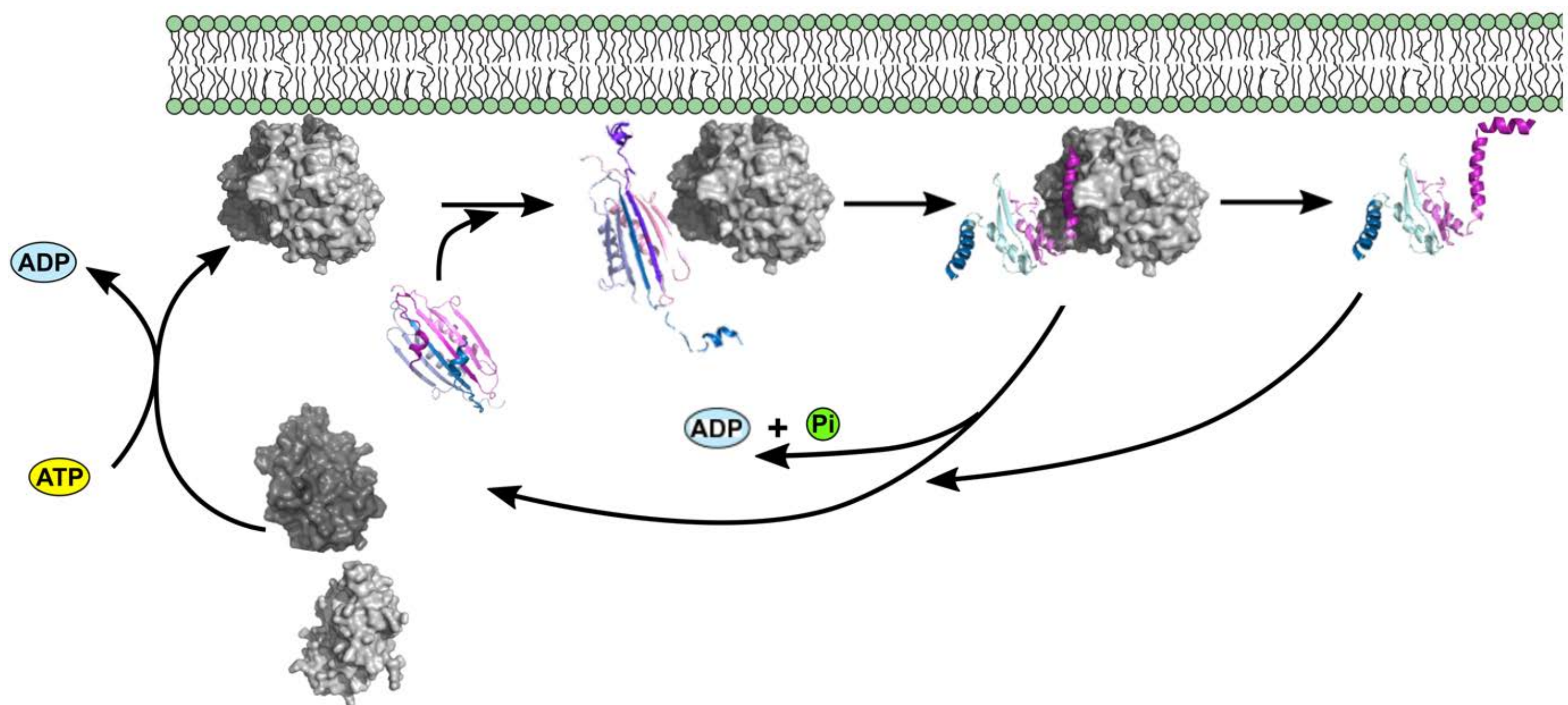
DEPARTMENT OF CHEMICAL & PHYSICAL SCIENCES  
COLLOQUIUM SERIES

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**How do bacteria find the middle? Understanding bacterial cell division regulation by the Min protein system.**



Bacterial cell division by binary fission is a tightly regulated process whereby the machinery responsible for physically dividing the cell is only allowed to form in the cell middle. In gram-negative strains of bacteria, there is a system comprised of three proteins called MinC, MinD and MinE that work together to allow the cell to ‘find the middle’ for this purpose. These proteins form dynamic long-range patterns on the cell membrane, creating waves that oscillate back and forth between the cell poles to sweep out an area that is permissive to division. Underlying these dynamics are protein-protein and protein-membrane interactions that we seek to understand at the molecular level. We have found that the MinE protein undergoes a dramatic conformational transformation that is critical for this function. In this talk I will describe these structural transitions, and how they influence the Min protein function and the pattern formation that is critical for its function to regulate cell division.