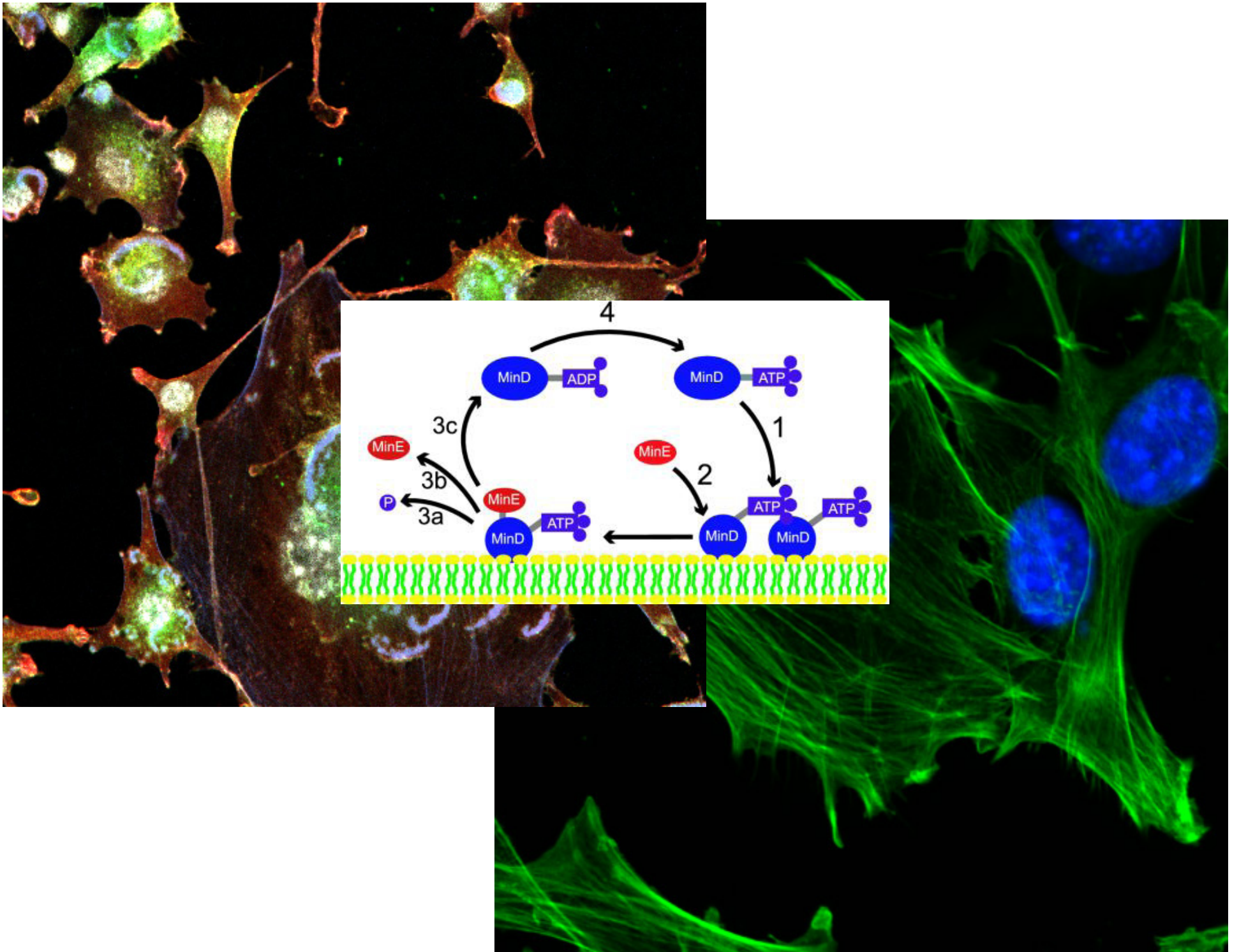


Boston University Physics Colloquium



E. coli's division decision: modeling Min-protein oscillations

E. coli is a rod-shaped bacterium that grows and divides into two equivalent daughter cells. One mechanism that regulates the central placement of the division site is the Min-protein system, which prevents division near the cell ends. A surprising discovery in recent years is that the Min system is an oscillator involving wholesale shifts of proteins from one end of the cell to the other. I will present a model of the Min system, using only known properties of the proteins, which reproduces the formation of a ring of MinE proteins, polar growth of the MinD end caps, dependence of the oscillation period on protein concentrations, and the “zebra stripe” oscillations in filamentous cells. Finally, I will discuss the physiological significance of the Min system in light of these results.

Ned Wingreen
Princeton University

April 22, 2008 (Tuesday) at 3:30pm (Refreshments at 3:15pm)

SCI 107, Metcalf Science Center, Boston University

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