

Pulsed Phosphorylation Regulates Sporulation Initiation in *Bacillus subtilis*

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In response to various stresses, the bacterium *Bacillus subtilis* can differentiate into a resistant spore. The initiation of sporulation requires the synthesis and phosphorylation of the master regulator Spo0A. Using quantitative single cell time lapse microscopy, we have found that Spo0A is phosphorylated in a highly dynamic, pulsatile, manner. Phosphopulses occur once per cell cycle at a defined phase and propagate to affect a diverse set of target genes. We will present our latest results which shed light on how this highly dynamic form of regulation enables the temporal control of the sporulation initiation decision.