Micro201
Rudner Class 7: Checkpoints
April 2nd 2019

In this class we will discuss the presence (and absence) of checkpoint pathways in bacteria. "Checkpoint" is one of the most overused (and misused) descriptors in Molecular Biology. And for good reason: it's a cool idea and has been an informative way of envisioning cell cycle regulation.

Bacteria generally don't seem to employ these control mechanisms. However, on Tuesday, we will discuss a few classic examples where they do. If time permits, we will talk about other examples where mechanisms analogous to checkpoints are used (they're just not called checkpoints).

The first paper we'll discuss is *the* classic by **Hartwell and Weinert (1989)** in which the concept of Checkpoint pathways is defined. You can't go through graduate school without having read this paper. Read it first so you can decide for yourself whether the authors of the second paper (**Burkholder et al 2001**) have appropriately used this term. Be prepared to present all 3 Figures in the Hartwell paper.

The second paper will occupy most of our time. It details the discovery and characterization of a protein called Sda that appears to functions in a checkpoint pathway for entry into the developmental pathway of spore-formation in *B. subtilis*. This paper bridges many of my lecture topics: replication, two-component signaling, and development. And the more your think about the results, the more you will appreciate the complexity of biology and the power and limitations of genetics. . .

Enjoy.

David