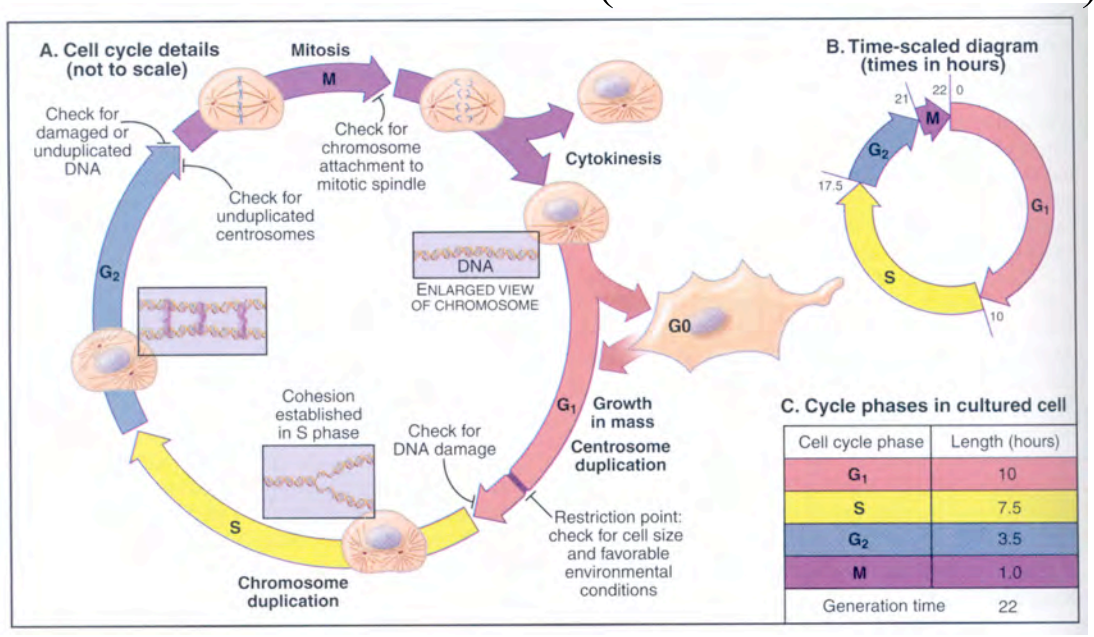
APh161 - Lecture 2: The Rate of Things

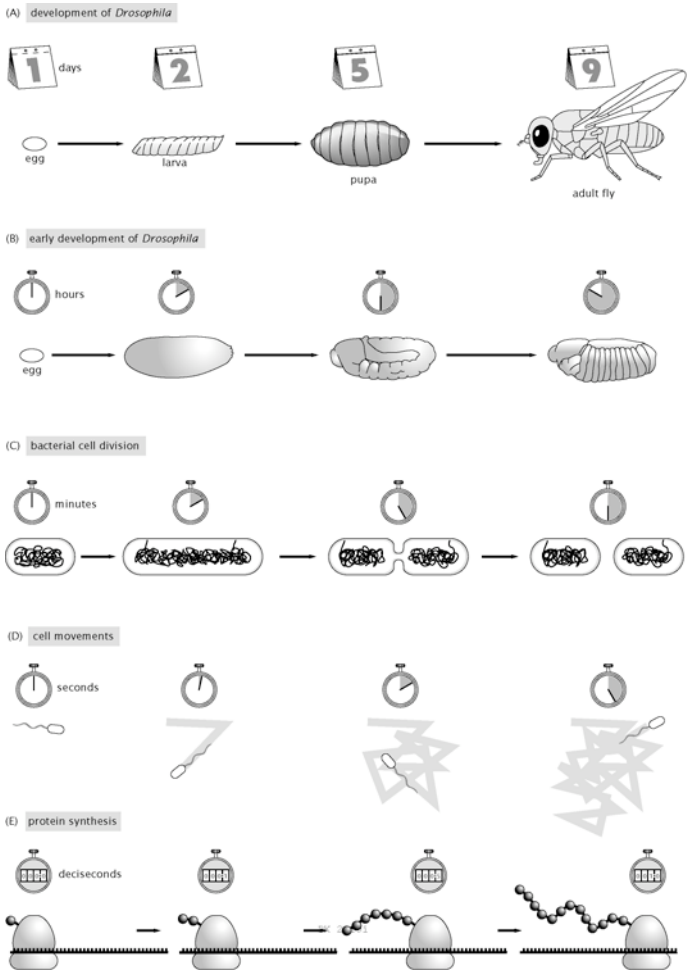
(Pollard and Earnshaw)

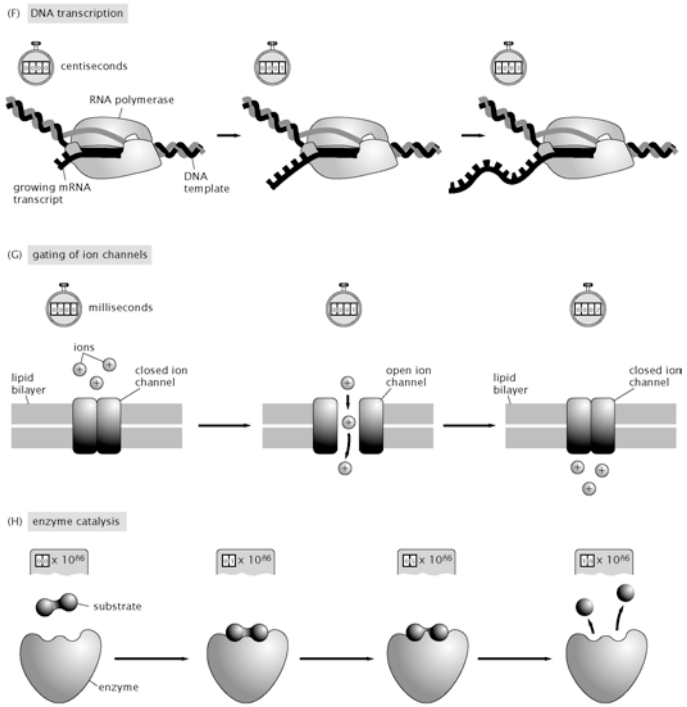


Rob Phillips

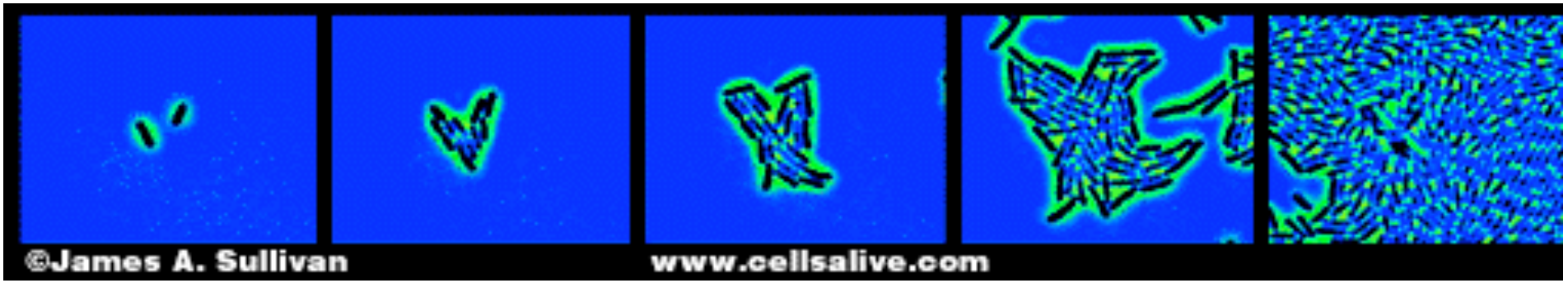
California Institute of Technology

The Hierarchy of Time Scales

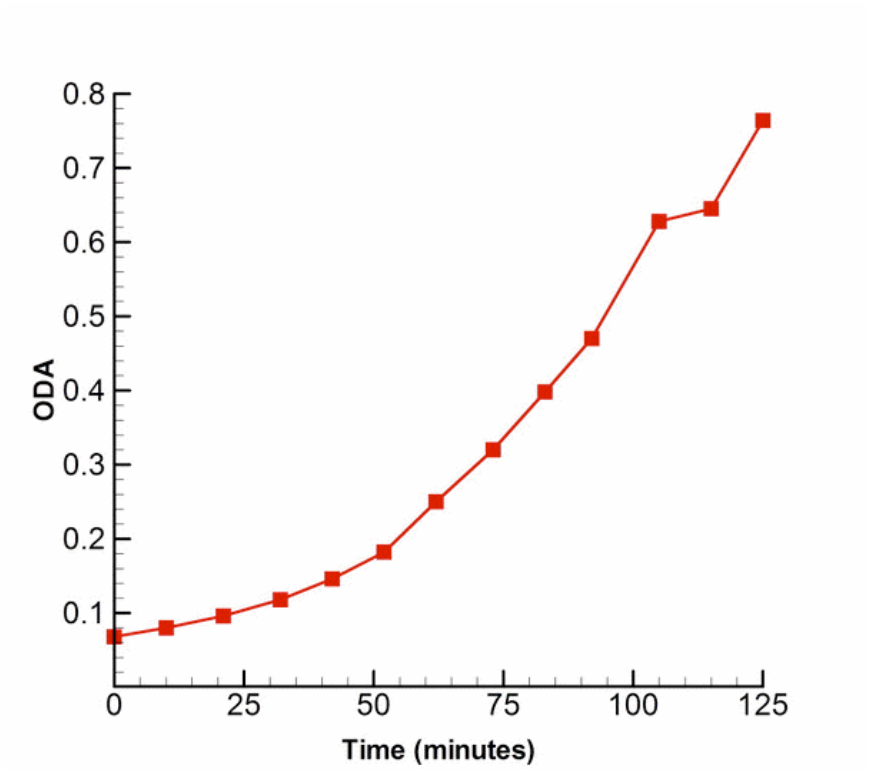


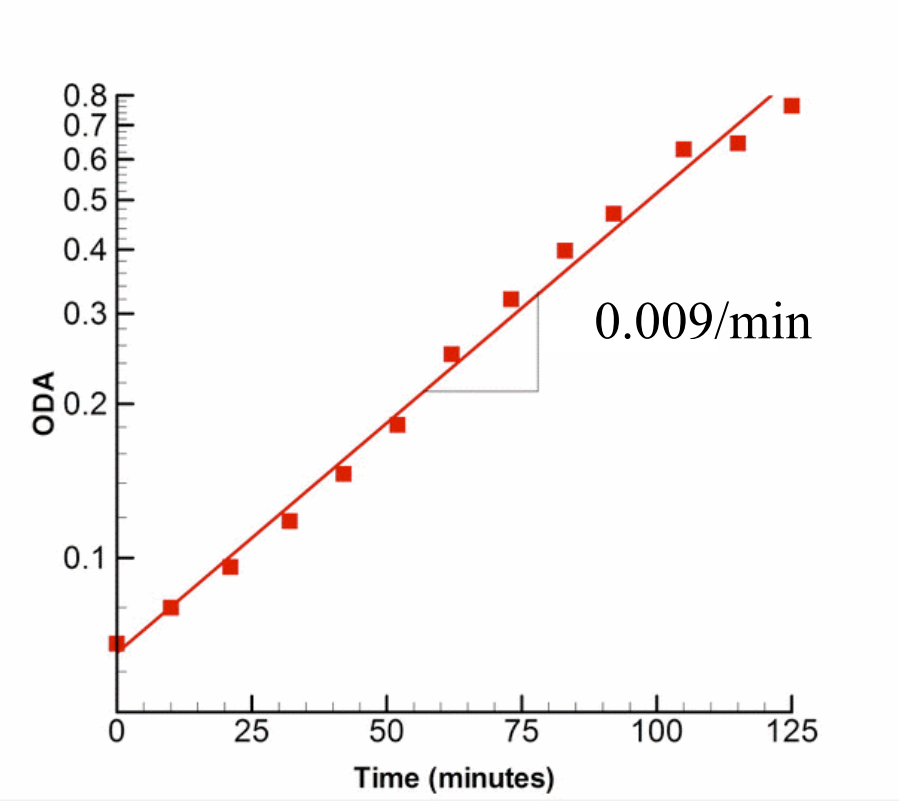


E. Coli Cell Division: The Standard Stopwatch

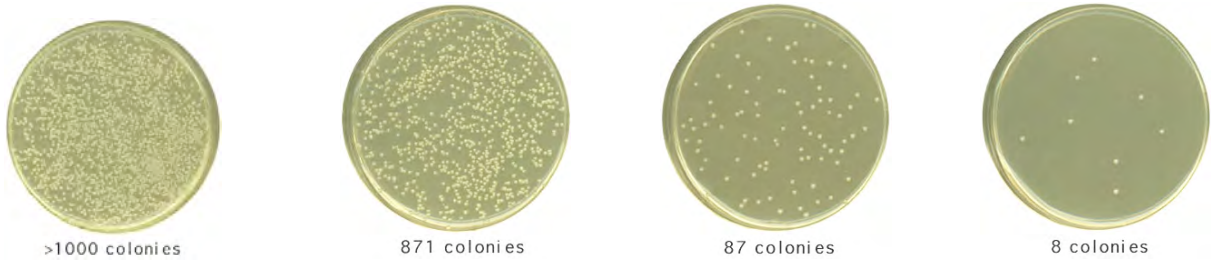


E. Coli Cell Division: The Bacterial Growth Curve





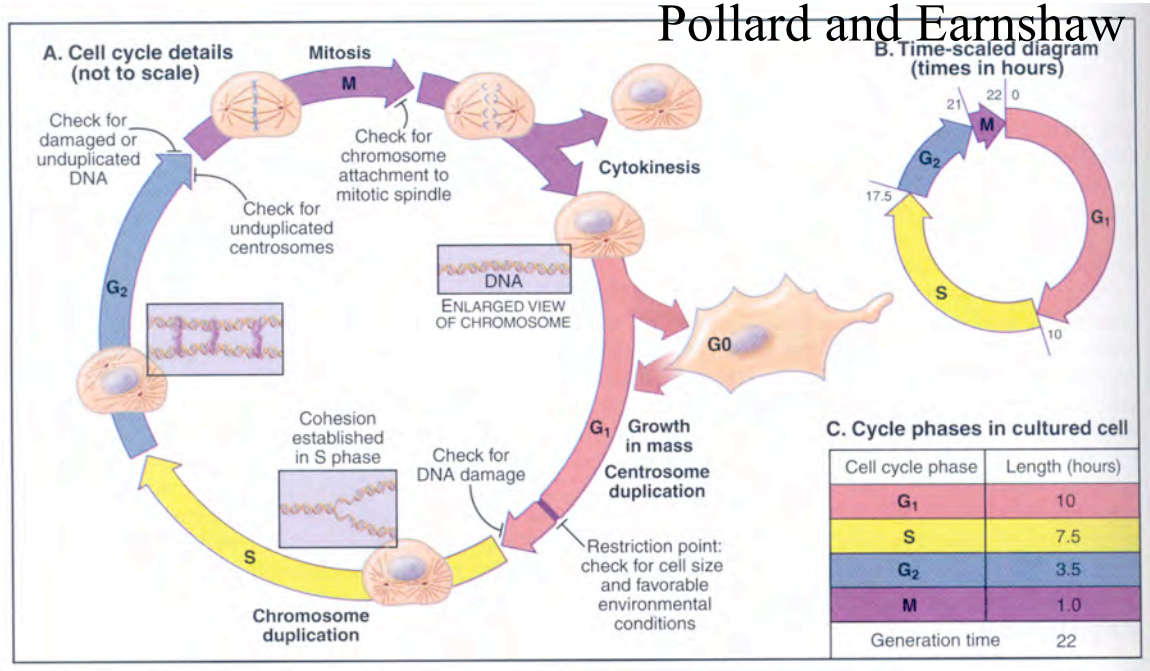
Other ways of counting cells



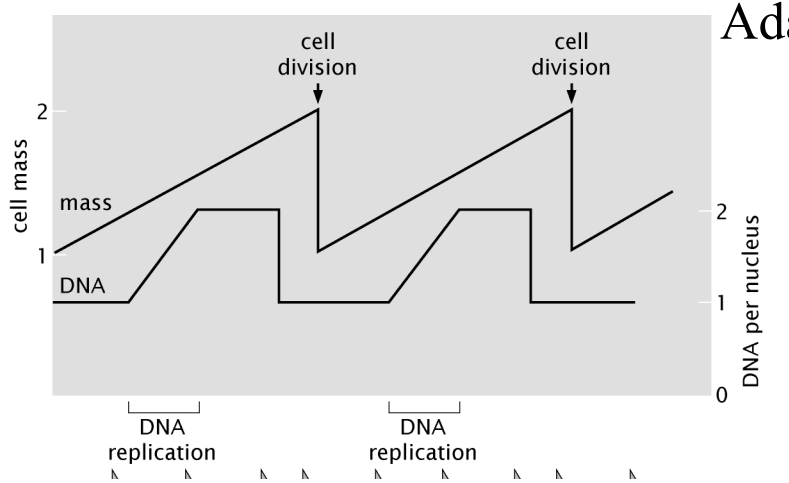
http://www.micro.msb.le.ac.uk/LabWork/bact/_4L.jpg

The Eukaryotic Cell Cycle

Pollard and Earnshaw



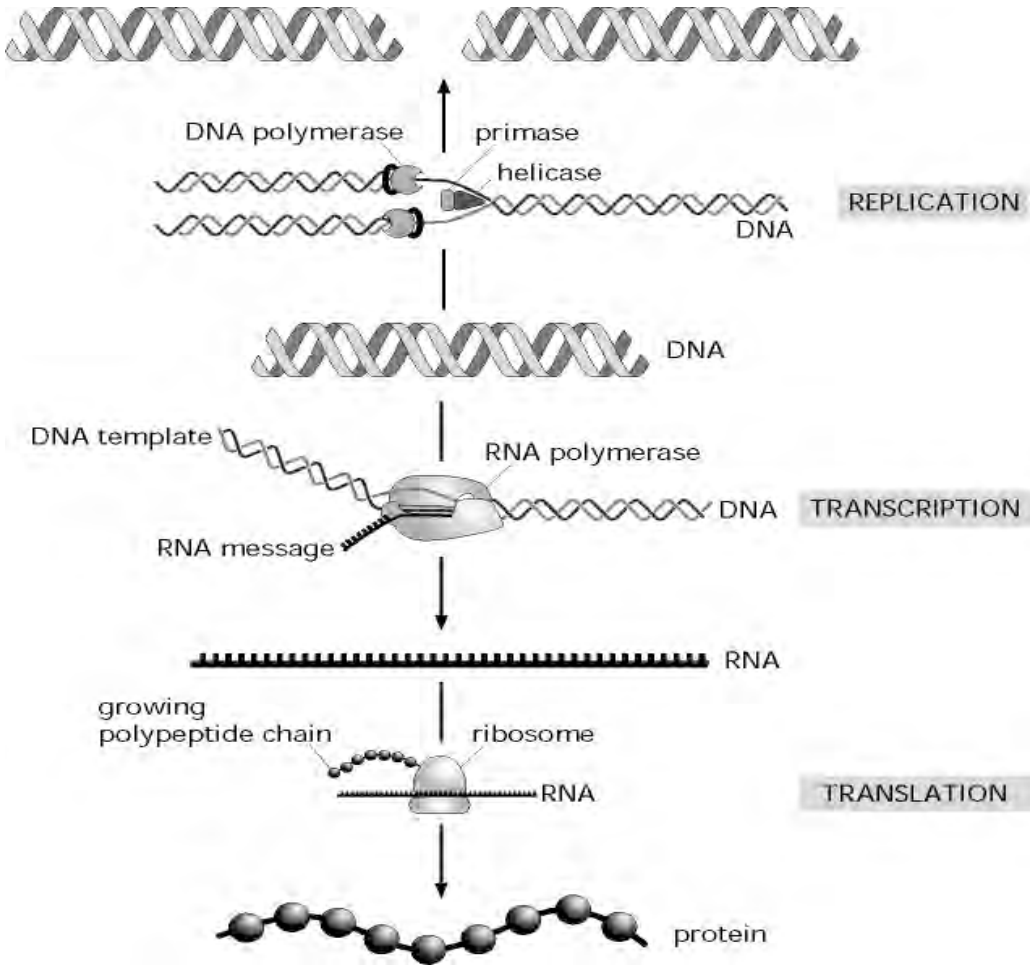
Adapted from Murray and Hunt



Cell Division Movies

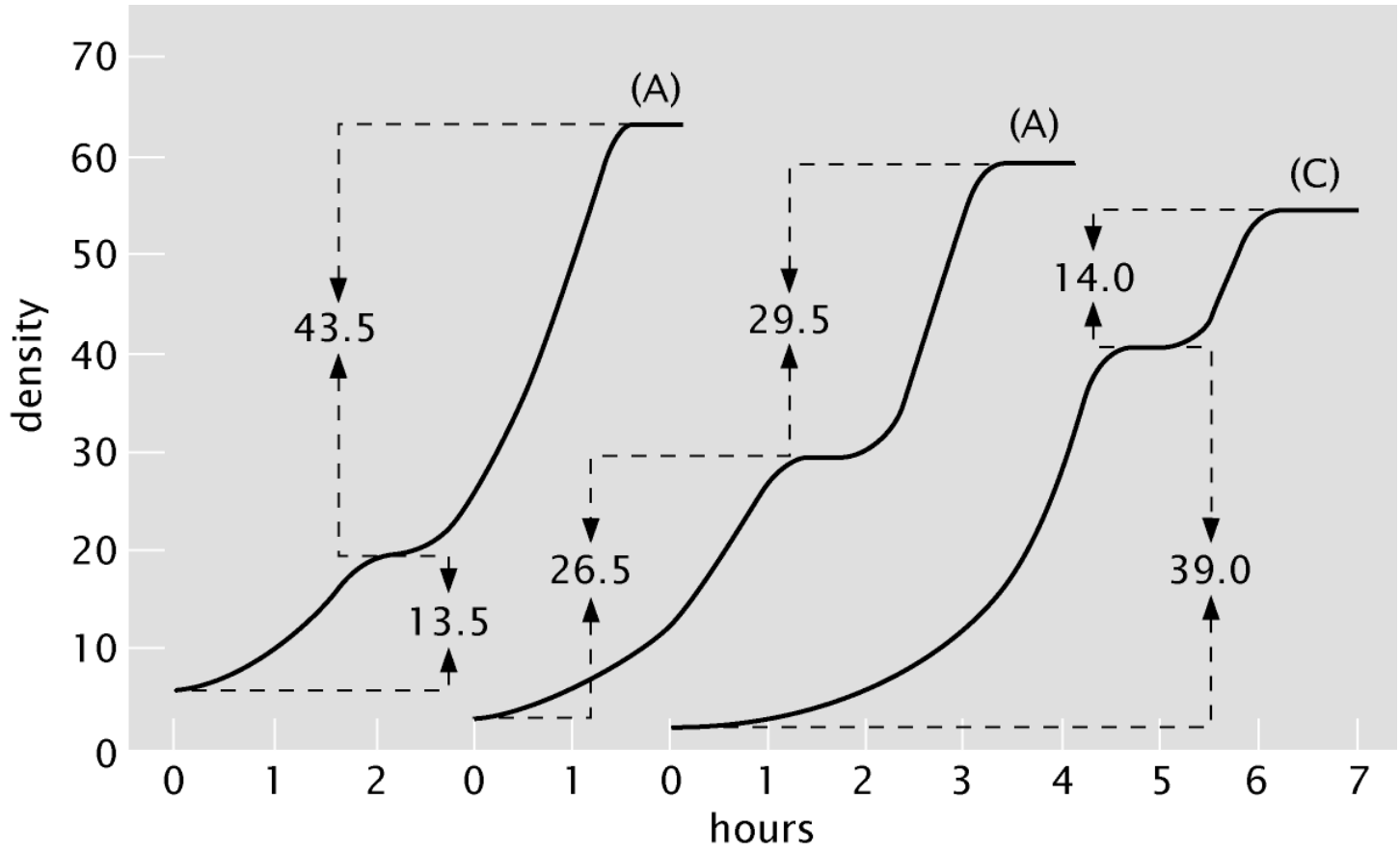
See CD accompanying Essential Cell Biology.
There are beautiful movies of cell division.

The Processes of the Central Dogma



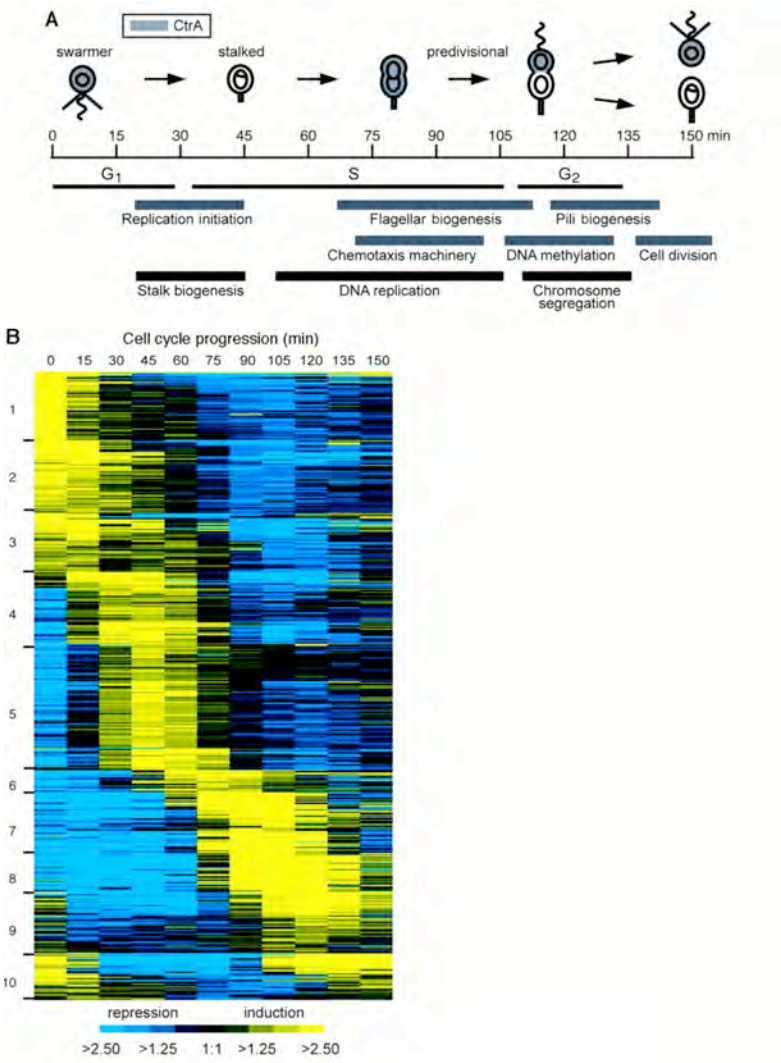
Timing of Gene Expression: How Cells Decide What to Eat

Monod thesis



Timing of Gene Expression

Lucy Shapiro et al., Stanf



Putting the Stopwatch on Cell Division and Cell Motility

Show movies of cell division - problem often with the movies is no timer showing how long the video lasts in real time units. The concept is to estimate the rate of microtubule polymerization.

http://cmgm.stanford.edu/theriot/movies.htm - the place to be!
These movies allow for an estimate of the rate of actin polymerization.

A reminder on the cytoskeleton

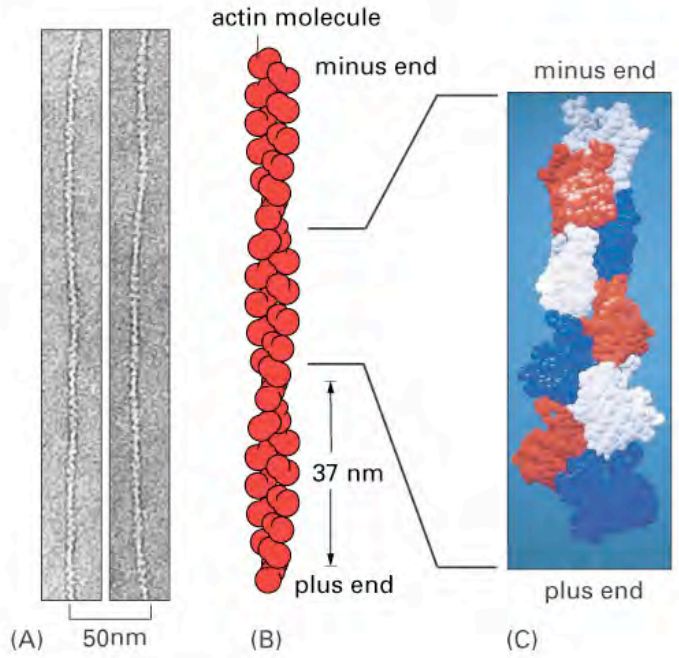


Figure 17-30 Essential Cell Biology, 2/e. (© 2004 Garland Science)

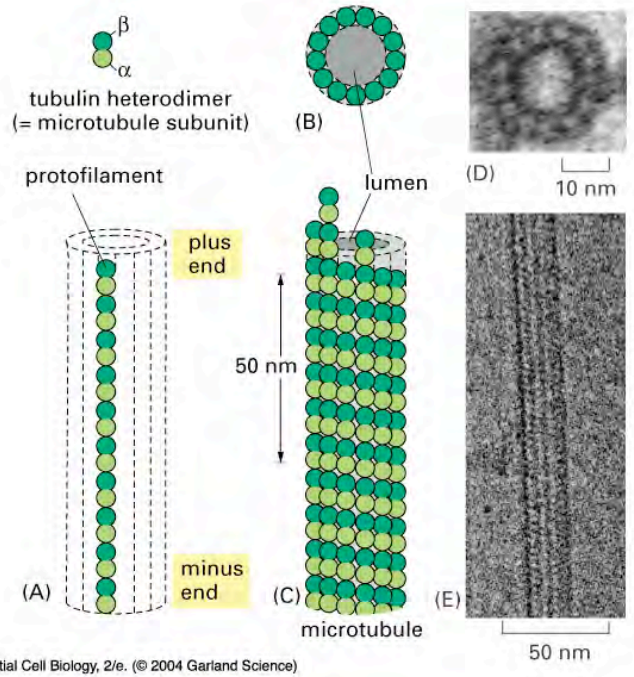


Figure 17-10 Essential Cell Biology, 2/e. (© 2004 Garland Science)

Embryonic Development: Telescoping up in Time

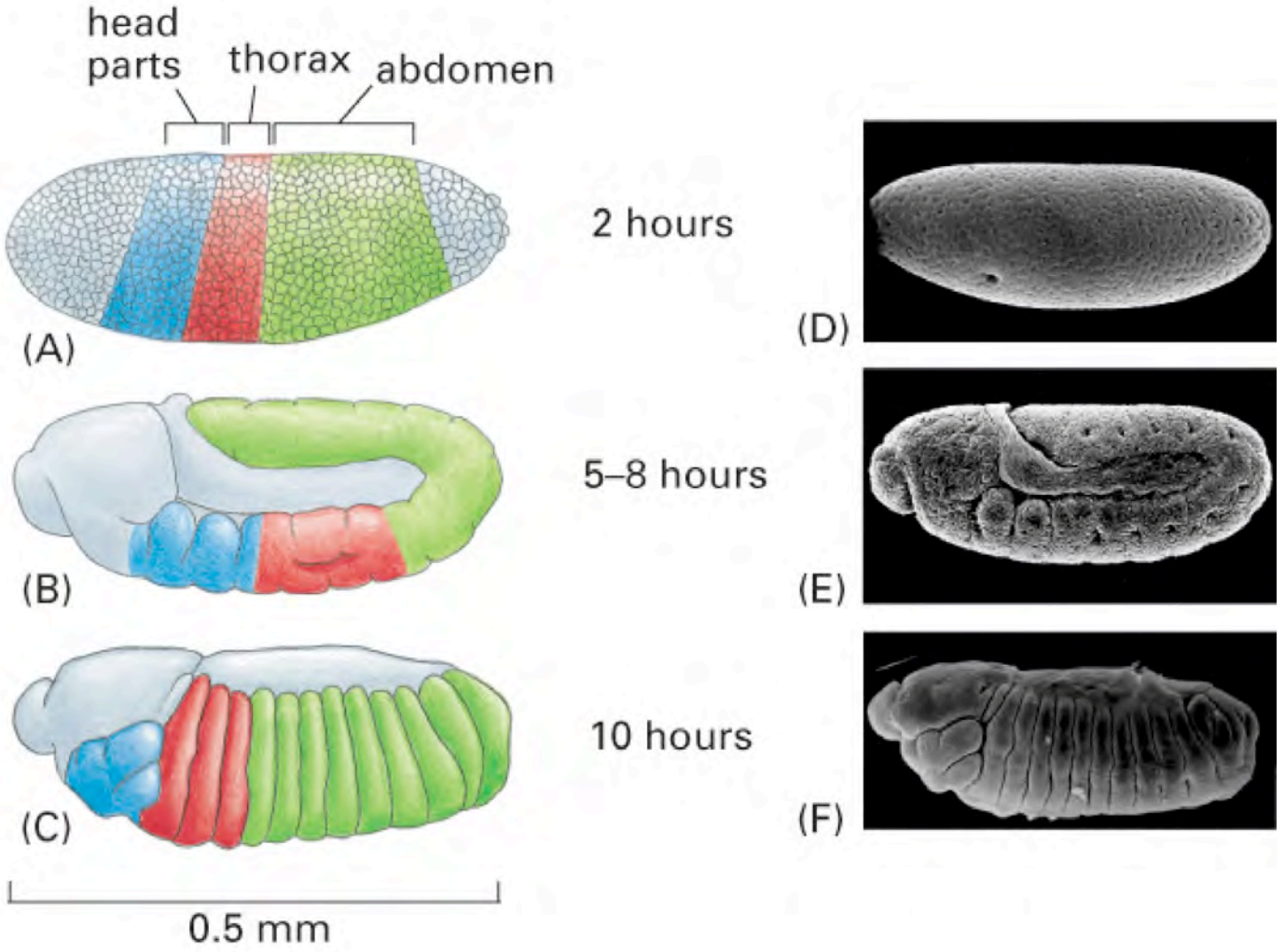


Figure 21-25 Molecular Biology of the Cell, 4th Edition