Jen Johnson BIOL 310 HW1

Nuclear Membranes were an evolutionary advantage.

Similar case: cellular respiration was an advantage, so many organisms all got it at once to remain competitive. However, not all organisms did, since there are niches where it is unnecessary. Likewise, many Euk got a Nuclear membrane as an advantage, but Prokaryotes do not need it because they have other ways to survive.

Membrane Bound organelle. Connect to Endosybiotic Theory. Engulfed another bacteria. Enabled engulfer to obtain new genetic material that was advantageous. (Why did engulfment happen in the first place)

Evidence for Endosybiosis. Organelle has own DNA. Nucleous has genes derived from Bacteria. Double Membrane.

Protection against the outside. Compare to a cell membrane. Selective permeability. Protein Anchoring.

Eukaryotes have many other organelles than Prokaryotes. Prevent excessive contamination. Provide protection from stuff like lysosomes. Breaking down waste is efficient, but would be very inefficient if it impacted the DNA.

Own compartment also allows own functions within. Histone proteins increase the capacity of the genome by condensing, as well as increasing stability by preventing excessive access by DNA degraders.

condensation of genomes into chromosomes for easier/more foolproof replication w/o errors.

Larger genome in Eukaryotes with Nuclear Membranes. Smaller genome in Prokaryotes without Nuclear Membranes. More genes, more functions, regulators, fitness.

SEE PAGE 65 for nucleolus.