

Comparison of PROKARYOTIC vs. EUKARYOTIC Cell Component Parts

Component	E. Coli	HeLa Cells
DNA	0.017 pg	15 pg
RNA	0.1 pg	30 pg
Protein	0.2 pg	300 pg
	3×10^6 @ 40K	5×10^9 @ 40K
Ribosomes	30,000	4,000,000
tRNA	400,000	60,000,000
mRNA	4,000	700,000

Comparison of *PROKARYOTE* vs. *EUKARYOTE* @Organelle Systems@

Organelle-Part	Prokaryote	Eukaryote
Genome	has nucleoid (no membrane)	True nucleus (double membrane)
Chromosome	a single circular DNA molecule	Paired Chromosomes (circular DNA in mito/chlp)
	4 x 10 ⁶ np about 1.36 mm	2.9 x 10 ⁹ np about 1 meter
Chromosome Composition	DNA alone (little repetitive DNA)	DNA + histones (repetitive DNA)
Chromosome Division	DNA replication followed by cell fission	Mitosis & Meiosis
Glycolytic Enzymes	in cytoplasmic matrix	in cytoplasmic matrix
Oxidative Enzymes	on cell membranes	on cristae membranes in mito
Hydrolytic Enzymes	on cell membranes	in lysosomes (compartmentalized)
Protein Synthesis	on ribosomes in cell matrix	on polysomes & rough E.R.
Microfilaments Microtubules	Absent	Universal
Ribosomes	Small (70s)	Large (80s)
Vacuoles	absent	animal - small/absent plant - 1 large single
Plastids	absent	present in plants many types
Cell Wall	Glycocalyx present (non-cellulosic)	cellulose based - (only in plants)
Centrioles	Absent	present in animals rare in plants