CHAPTER 4 FUNCTIONAL ANATOMY OF PROKARYOTIC AND EUKARYOTIC CELLS

All cells share numerous characteristics, but cells of living things can be divided into 2 basic types. Here is a quick comparison.

CHARACTERISTIC	PROKARYOTIC	EUKARYOTIC
Size	Smaller---typical size is 0.2 - 2 μm in diameter	Larger---typical size is 10 - 100 μm in diameter
Nucleus	No nuclear membrane or nucleoli (nucleoid)	True nucleus with nuclear membrane and nucleoli
Membrane-enclosed organelles	Absent	Many, including lysosomes, Golgi complex, ER, mitochondria & chloroplasts
Flagella	Consist of 2 protein building blocks	Complex; consist of multiple microtubules
Phagocytosis	None	Some can carry on phagocytosis
Glycocalyx	Present as a capsule or slime layer	Present in some cells that lack a cell wall
Cell wall	Usually present, chemically complex (peptidoglycan)	When present, usually simple, NO peptidoglycan
Plasma membrane	No carbohydrates, almost all lack sterols	Sterols and carbohydrates incorporated
Cytoplasm	No cytoskeleton	Cytoskeleton
Ribosomes	Smaller size (70S)	Larger size (80S) except those within organelles
Chromosome (DNA) arrangement	Single circular chromosome, no histones	Multiple linear chromosomes with histones
Cell division	Binary fission	Mitosis
Sexual reproduction	No meiosis; transfer fragments of DNA only	Meiosis

Since bacteria are all prokaryotic, and are the only prokaryocytes, the following terms can be used interchangeably:

Bacteria (both eubacteria and archaea)

Prokaryocytes

Prokaryotes