

Microbiology

[Science](#), [Biology](#)



1. A functional cell could be built with a single chromosome, cytoplasm, a cell membrane, and ribosomes. Why are these four components absolutely necessary to the functional cell? If these structures are all a cell needs, why do most cells have many more structures? A chromosome is necessary so that there is a “map” of the cell's function and structure, cytoplasm is necessary as it is where most of the cell's activity occurs, ribosomes are essential as they are the site of protein synthesis, which powers the activities of the cells, and the cell membrane is needed to give the cell structure and protection. Most cells have other structures based upon their function, and these extra structures are necessary in order for that cell to perform its function.

2. Your 6th grader has read an article at school about life on other planets, and your child volunteered you to talk to the class about prokaryotes and your opinion on whether there can be microbial life on other planets. In light of what you have learned from this chapter, develop an intelligent response for your to present to your child's class. (yes, this is an actual question, and base your response on the reading from this chapter and the web site and any other choices you wish to use!) There is most certainly microbial life on other planets.

Life cannot be produced by non-life. When the earth was created, it is incredibly likely that an asteroid, meteor, or cosmic dust had come to the Earth's surface and began to grow, multiply, and evolve. There is evidence of extraterrestrial microfossils dating back millions to billions of years ago; indicating that, at one point, there was microbial life on other planets. Prokaryotes multiply by a means of asexual reproduction called binary

fission. In binary fission, the cell simply needs to grow twice its size, and then it divides into two identical cells. Since prokaryotes are very simple organisms, and there is evidence of ancient extraterrestrial microbial existence through fossils, I feel we can safely say that not only is there microbial life on other planets, but that life on Earth was made possible because of these microbes.

3. Why are bacterial Capsule medically important? Do you find capsules in eucaryotic cells? Why or why not? The bacterial capsule is medically important, because distinguishing whether there is a capsule and what the capsule contains can help determine what type of bacteria it is, how it is transferred, where it tends to colonize, and how to treat it. Eukaryotic cells do not contain capsules, as they are more complex and tend to contain other internal structures to lend towards the cells function, whereas prokaryotic cells use the capsule to assist in it's function.