

The shape of molecules is one of the most important considerations in biochemistry. A basic principle is that structure determines function. Enzymes have highly specific shapes, and those characteristic shapes only allow molecules with corresponding shapes to fit into them. Fitting into enzymes in a very specific way is critical because that's where enzymes catalyze reactions. If a molecule can't fit into an enzyme, its reaction will merely grind along at the speed of nonlife.

The vast majority of biomolecules found in a cell get made in reactions catalyzed by enzymes in that cell. Because each enzyme catalyzes reactions quite specifically, on only one or a handful of different molecules, any given cell must make thousands of enzymes to catalyze the thousands of different types of molecules made in that one cell.

Cells as Houses for Reactions

Cells are the fundamental unit of life. Overall, you could think of cells as houses for molecular reactions. Like houses, cells have surrounding walls in the form of a membrane.

Some cellular houses are more like tents, with a simple design, small size, and only a single room for the reactions to live in. Bacteria cells have single rooms. They are also called prokaryotes. With no internal walls, bacterial houses keep all their possessions in the same room.

