



### **Characteristics of plant cells**

Plant cells have [cell walls](#) composed of [cellulose](#), [hemicelluloses](#), and [pectin](#) and constructed outside the [cell membrane](#). Their composition contrasts with the cell walls of [fungi](#), which are made of [chitin](#), of [bacteria](#), which are made of [peptidoglycan](#) and of [archaea](#), which are made of [pseudopeptidoglycan](#). In many cases [lignin](#) or [suberin](#) are secreted by the [protoplast](#) as secondary wall layers inside the primary cell wall. [Cutin](#) is secreted outside the primary cell wall and into the outer layers of the secondary cell wall of the epidermal cells of leaves, stems and other above-ground organs to form the [plant cuticle](#). Cell walls perform many essential functions. They provide shape to form the tissue and organs of the plant, and play an important role in intercellular communication and plant-microbe interactions.<sup>[1]</sup> The cell wall is flexible during growth and has small pores called plasmodesmata that allow the exchange of nutrients and [hormones](#) between cells.<sup>[2]</sup>