

- The cell wall and the cytosol are the two main compartments separated by the plasma membrane.
- In the majority of mature plant cells, the third largest compartment is the central
- A large organelle called a vacuole, which can occupy up to 90% or more of the size of the protoplast.
- The vacuolar membrane, which is a tonoplast, controls
- transport in and out of the vacuole and the cytosol.
- The cell wall and cytosol are continuous from cell to cell in the majority of plant tissues.
- Certain molecules can travel continuously through the cytoplasmic continuum, or "symplast," between cells.
- Channels, or plasmodesmata, connect the cytoplasm of adjacent cells.
- The continuity of cell walls is the apoplast.

Water and Mineral Short Distance Transport

- Water and minerals can move through a plant in three different ways:
 - Transmembrane routes: from one cell to another, across a cell wall.
 - Symplastic route: via the cytosol continuum
 - The apoplastic route involves passing through cell walls and extracellular spaces.