Cell Organelles Functions Disease Cells fundamental units life like miniature factories teeming specialized compartments called organelles organelle unique structure function working harmony maintain cellular health perform vital tasks Understanding organelles roles crucial malfunction disruption lead various diseases nucleus `` control center '' cell houses genetic blueprint DNA wrapped chromosomes DNA dictates cell 's structure function Diseases like syndrome arise chromosomal abnormalities Mutations specific genes cause cystic fibrosis faulty protein disrupts mucus production lungs powerhouse cell mitochondrion cellular respiration takes place converting glucose usable energy ATP fuels cellular processes Mitochondrial dysfunction linked several neurodegenerative diseases like Parkinson 's Alzheimer 's energy depletion disrupts nerve cell function endoplasmic reticulum ER network membranes responsible protein synthesis modification rough ER ribosomes attached protein assembly occurs smooth ER focuses lipid fat production detoxification Disruptions protein folding within ER lead disorders like cystic fibrosis Huntington 's disease Golgi apparatus often referred `` packaging shipping department '' modifies sorts packages proteins lipids synthesized ER packaged molecules transported within cell exported various functions Problems Golgi apparatus function lead lysosomal storage diseases malfunctioning enzymes accumulate within cells causing cellular damage Lysosomes cell 's `` waste disposal unit '' membrane-bound sacs containing digestive enzymes break damaged organelles waste products foreign invaders Lysosomal disorders arise enzymes defective leading buildup cellular debris seen Tay-Sachs disease fatal neurological disorder cell membrane phospholipid bilayer acts gatekeeper controlling entry exit molecules also plays role cell communication signaling Disruptions cell membrane structure function contribute various diseases including cystic fibrosis sickle cell anemia Finally organelles unique specific cell types Chloroplasts found plant cells capture sunlight convert energy photosynthesis Dysfunction chloroplasts impair plant 's ability produce food leading stunted growth conclusion cell organelles intricate machinery keeps cells functioning Understanding diverse roles vital comprehending diseases arise cellular level studying malfunctions organelles contribute pathologies researchers develop targeted therapies combat wide range diseases improve human health