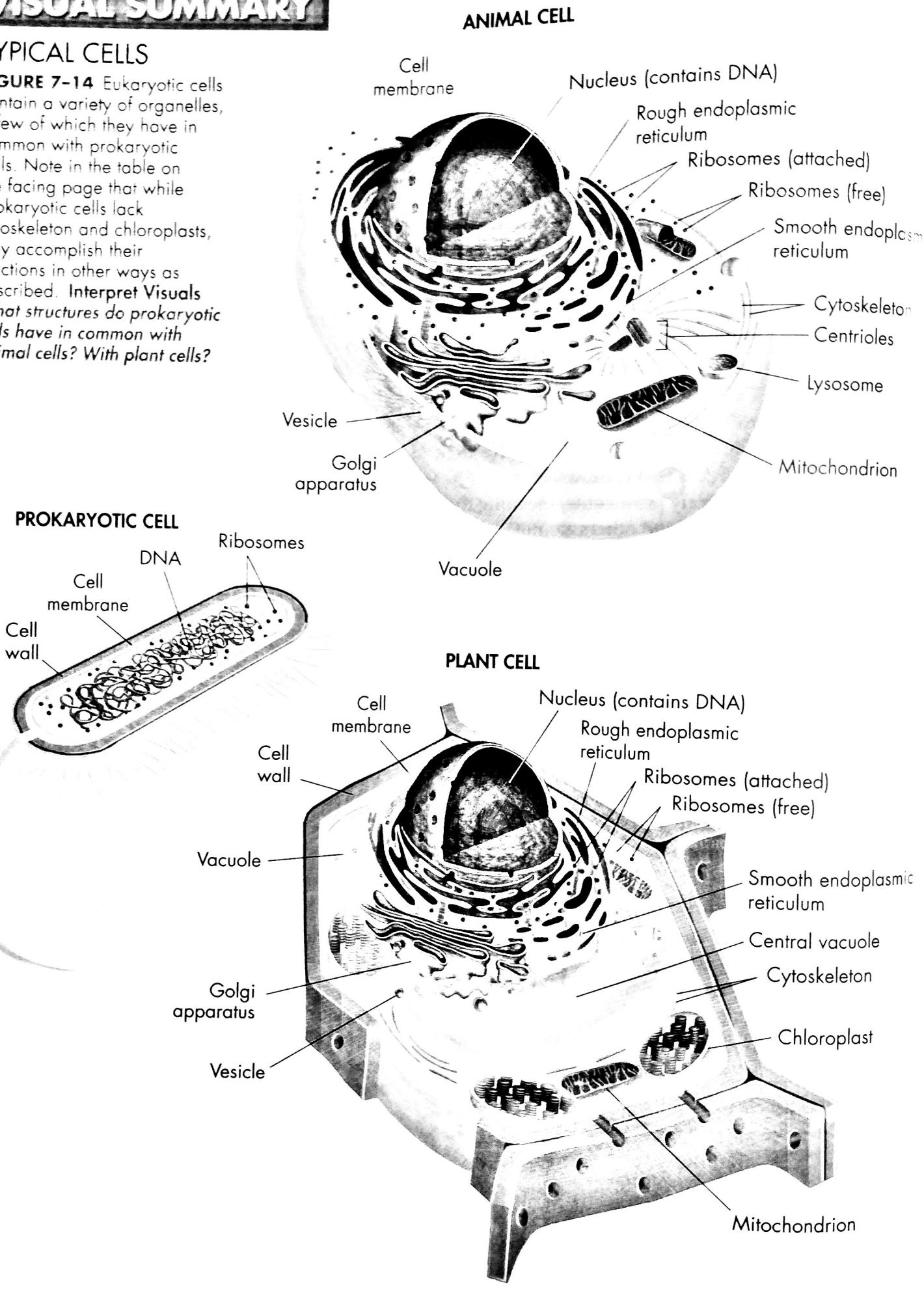
# VISUAL SUMMARY

## TYPICAL CELLS

**FIGURE 7–14** Eukaryotic cells contain a variety of organelles, a few of which they have in common with prokaryotic cells. Note in the table on the facing page that while prokaryotic cells lack cytoskeleton and chloroplasts, they accomplish their functions in other ways as described. **Interpret Visuals** *What structures do prokaryotic cells have in common with animal cells? With plant cells?*



| | Structure | Function | Prokaryote | Eukaryote: Animal | Eukaryote: Plant |
|---|---|---|---|---|---|
| **Cellular Control Center** | Nucleus | Contains DNA | *Prokaryote DNA is found in cytoplasm.* | ✓ | ✓ |
| **Organelles That Store, Clean-Up, and Support** | Vacuoles and vesicles | Store materials | | ✓ | ✓ |
| | Lysosomes | Break down and recycle macromolecules | | ✓ | ✓ (rare) |
| | Cytoskeleton | Maintains cell shape; moves cell parts; helps cells move | *Prokaryotic cells have protein filaments similar to actin and tubulin.* | ✓ | ✓ |
| | Centrioles | Organize cell division | | ✓ | |
| **Organelles That Build Proteins** | Ribosomes | Synthesize proteins | ✓ | ✓ | ✓ |
| | Endoplasmic reticulum | Assembles proteins and lipids | | ✓ | ✓ |
| | Golgi apparatus | Modifies, sorts, and packages proteins and lipids for storage or transport out of the cell | | ✓ | ✓ |
| **Organelles That Capture and Release Energy** | Chloroplasts | Convert solar energy to chemical energy stored in food | *In some prokaryotic cells, photosynthesis occurs in association with internal photosynthetic membranes.* | | ✓ |
| | Mitochondria | Convert chemical energy in food to usable compounds | *Prokaryotes carry out these reactions in the cytoplasm rather than in specialized organelles.* | ✓ | ✓ |
| **Cellular Boundaries** | Cell wall | Shapes, supports, and protects the cell | ✓ | | ✓ |
| | Cell membrane | Regulates materials entering and leaving cell; protects and supports cell | ✓ | ✓ | ✓ |