Teacher Background Information
The Smallest Factory (SC070112)

This lesson seeks to give students an understanding of the structures in cells and tissues that relate to photosynthesis. It should give students the confidence to interpret what they see under a microscope using logical reasoning. Many students float through life science classes pretending to see or understand microscope observations. With logic and good observational skills, this can be avoided. The sense that structure relates to function in biological organisms can be extended to animal anatomy as well.

Use leaves that are thick and stiff. They cut more easily. Don't use scalpels. If you can't trust the class to use a razor blade safely, make the cuts yourself.

If you use cover slips, make sure there is no air between the slip and the slide.
Remind students never to roll their microscope down while looking through it; only up. These are thick mounts and the lens can break the cover slip and be cracked.

Listed below are the answers to the photographs on next page.

1. Leaves of *Ceratophyllum* are waxy so they float and don't absorb too much water.
2. Leaves of bananas are very big because they grow very quickly and have a lot of competition for light in the jungle. They also shade the ground and keep it moist.
3. Leaves of water lilies are flat so they float and catch a lot of sun.
4. Leaves of cactuses are tiny spines, so they don't lose water and animals can't eat them for their water.

Assessment:

Each of these plants has leaves that are adapted for a particular climate. Can you identify their adaptations? Where would these adaptations be of greatest advantage?