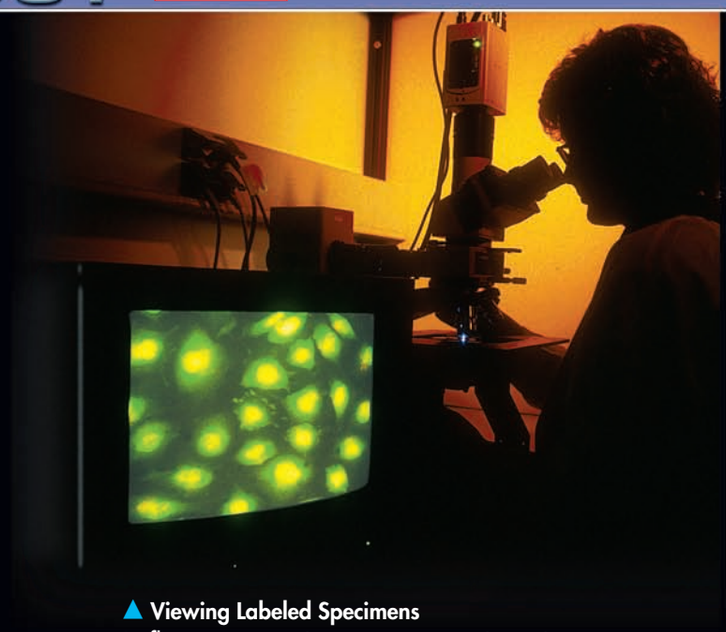
Technology & BIOLOGY

TEKS 3D

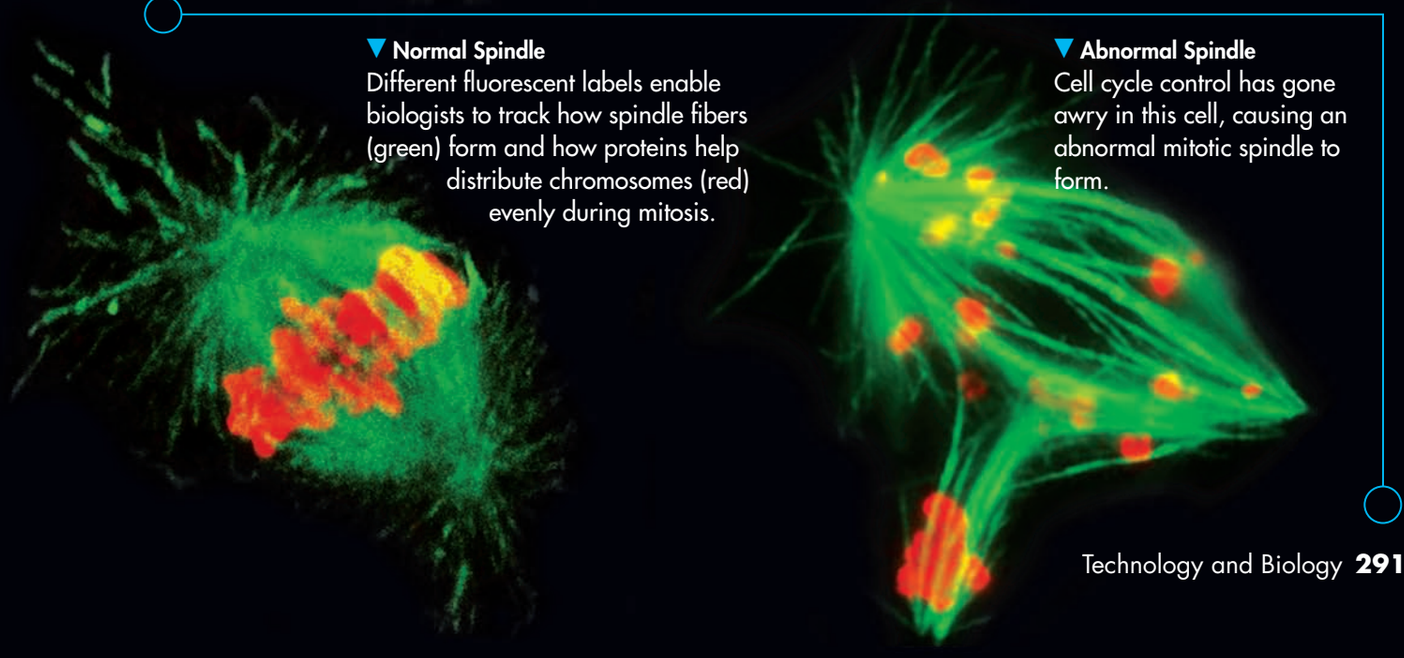
Fluorescence Microscopy

Imagine being able to "see" proteins at work inside a cell, or to track proteins from where they are made to where they go. Scientists can now do all of these things, thanks to advances in fluorescence microscopy. One advance came from the discovery that crystal jellyfish, properly known as *Aequorea victoria*, produce a protein that glows. By fusing the gene for this protein to other genes, scientists can label different parts of the cell with fluorescence. Other advances include the development of additional highly specific fluorescent labels and the invention of powerful laser microscopes. As the images on this page show, the view is clearly amazing.



▲ **Viewing Labeled Specimens**
In fluorescence microscopy, a specimen is labeled with a molecule that glows under a specific wavelength of light. Different fluorescent labels give off different colors. This way, biologists can easily see exactly where a protein is located within a cell or tissue.

WRITING **Suppose you are a cell biologist studying cell division and cancer. What might you use a fluorescence microscope to study? Describe your ideas in a paragraph.**



▼ **Normal Spindle**
Different fluorescent labels enable biologists to track how spindle fibers (green) form and how proteins help distribute chromosomes (red) evenly during mitosis.

▼ **Abnormal Spindle**
Cell cycle control has gone awry in this cell, causing an abnormal mitotic spindle to form.