most pregnant women nave been previously exposed to the parasite, whereas in the United States, most pregnant women have not and so are at risk.

In an editorial accompanying the French results, Remington and Robert McCabe at the University of California Medical School at Davis urge U.S. health officials to begin prospective trials of the benefits and costs of *T. gondii* screening programs. In Massachusetts, officials have already decided that, at a cost of $5 million per year, they couldn't afford a prenatal screening program. Instead, they have started a pilot program to add *T. gondii* tests to the battery normally given to newborns. New Hampshire and Illinois are the only other states considering such newborn testing.

Remington says he hopes that U.S. health officials will pay more attention to toxoplasmosis, especially now that toxoplasmosis encephalitis (brain inflammation) has become the most common opportunistic infection among AIDS patients, whose immune systems can no longer keep the parasite in line. The disease is predicted to affect up to 30,000 U.S. AIDS patients by 1991. Remington, who is involved in an international study of toxoplasmosis encephalitis, says he has great hopes "not only that we will be able to define better therapies for these patients, but also that there will be some fallout to the woman and the newborn."

*— S. Weisburd*

## Tracking a molecule's progress

Imagine a diver, immersed in a stormy, syrupy liquid, pulling himself along a rope with one hand while hanging on to a load many times his size with his other hand. The enzyme kinesin, found in virtually every plant and animal cell, seems to perform a similar balancing act when it carries material along a microtubule from a cell's interior to its rim. Now researchers have a new tool for unraveling the details of how kinesin and similar enzymes accomplish their prodigious feats. By using an enhanced version of a technique called differential interference contrast microscopy, they can observe molecular-scale movements to a precision of a few nanometers.

"The overall goal is to try to apply this technology to understanding motions in biological systems," says Michael P. Sheetz of the Washington University School of Medicine in St. Louis. Scientists want to know how protein molecules such as kinesin convert chemical energy into mechanical energy for movement. Sheetz and his colleagues present their findings in the Feb. 4 NATURE.

In their experiments, Sheetz and his group mixed kinesin with a suspension of tiny plastic beads, each about 190 nanometers in diameter. They then applied the kinesin-coated beads to a sample of microtubules adhering to a thin glass plate. By using an optical microscope to track bead positions, the researchers could follow their movements along the microtubules and deduce how the kinesin was doing its job.

The key step in getting the technique to work was developing a computer program for analyzing the low-contrast bead images produced by an optical microscope. Washington University's Jeff Gelles worked out a way to maximize the amount of positional information obtainable from such images, as recorded on a video disk.

The researchers were surprised to see how rigidly the kinesin binds beads to microtubules. The attached beads seem to be strongly resistant to the continual molecular battering of brownian motion. In contrast, unattached beads move about randomly. Furthermore, kinesin molecules appear to select and then move along one of the dozen or so filaments that make up a typical microtubule bundle instead of jumping from one filament to another.

"One of the biggest problems we have right now is knowing what to do with these data and how to interpret them," says Sheetz. "People haven't been thinking in terms of measurements on this nanometer scale before because it hasn't been possible."

*— I. Peterson*