TO THE TEACHER: BEGINNING ASSUMPTIONS

For success with the DNA laboratory work in The Elephant Project, students need conceptual understanding plus experience with micropipetting and electrophoresis. We've incorporated the SEP micropipetting and introductory electrophoresis labs (Measure for Measure and The Dye Lab) as aids to prepare your student for The Elephant Project.

Before starting the actual RFLP portion of The Elephant Project, it is assumed that:

1. Your students are very familiar with DNA structure, protein synthesis, mutations and the effects of mutations (good, bad and neutral) on cell structure and function.
2. Your students are competent and practiced with the use of a micropipet.
3. Your students have a functional understanding of the principles of electrophoresis, anode and cathode, charge, voltage and amperage, current, and pH.
4. Your students have completed the SEP "Dye Lab" (or similar) and are practiced at making and pouring an agarose gel, loading the electrophoresis chamber with running buffer and loading a sample into the wells.
5. The students have a fundamental understanding that electrophoresis works by separating molecules using their polarity, size and molecular weight. They should know that smaller molecules are able to move faster, and therefore migrate further from the well, while larger molecules will be found close to the wells.
6. Procedural flow charts are a routine part of your preparation for labs, and that your students are competent at taking written procedures and drawing appropriate and accurate flow charts.

To prepare your students for the new Elephant scenario, it is recommended that you review with your students:

1. How to draw a flow chart. (Directions are included in "Basic Skills" section).
2. The "Biotechnology"chart and briefly discuss the "traditional uses" and contrast the "new" forms of biotechnology.
3. "Electrophoresis: What is this Tool?" and briefly discuss, answer questions.

To prepare yourself for these new activities, we recommend that you:

1. Know what is in the "Elephant Trunk". Read, or at least skim, some of the books we've included. Read the background information provided in this packet in order to familiarize yourself with the plight of African elephants and the effort to save them. Conduct your own web-based information search.
2. Be able to describe the goals of Kenine Comstock and Sam Wasser as they tackle both science and socio-political issues. Emphasize to your students that Sam and Kenine ARE real people who have a passion for using DNA science to save these gentle giants.
3. Be reasonably familiar with the history of elephant/ivory hunting, the continental and global economics involved, and how war in these African countries puts all of their animals at risk. Many reference materials are included in this kit.

4. Familiarize yourself with the ethics module that follows the electrophoresis lab.
5. Consider starting your students on internet web searches concerning elephant conservation before actually starting the RFLP activity and electrophoresis lab.
6. Make connections with your social studies and language arts colleagues as to how this might be integrated into their academic disciplines.