evolution

Chromosome Clues (1 class)
Teacher's Guide Web Resources
Handouts

- "Chromosome Clues"
- "Chromosome Clues Worksheet"

1. Display an overhead copy of the "Chromosome Clues" diagram. Explain that this diagram shows real chromosomes from a comparison study of three different species. In each set the first chromosome is species A, the second is species B, and the third is species C. Point out that only some of the species C chromosomes have been matched.

2. Model how to compare chromosomes with **inversions**. Use an enlarged overhead copy of chromosomes #4AB and #4C (which is the third chromosome from the left, top row of the box). Show how when #4C is inverted, the region just above and below the centromere (constricted region) of #4C matches the same region in #4A.

3. Hand out the "Chromosome Clues" worksheet (one per pair of students) and scissors (one per student). Have students work in pairs to cut apart the 12 chromosomes in the box on the right, then place each in the "C" space where it most closely matches the others.

4. When done, students are to answer the questions on the worksheet. After all teams have completed the discussion questions, reveal the species names on the board or overhead:

   Species A is *Homo sapiens* (modern human)
   Species B is *Pan troglodytes* (common chimpanzee)
   Species C is *Gorilla gorilla* (gorilla)

5. Ask if this new knowledge causes them to reconsider their answers to #6 and #7, and if so, why. Also, ask if anyone correctly predicted the names, and why. Have students discuss their replies to these questions.

6. Explain that analysis of all the chromosomes from these three species reveals that the chromosomes of species A and B are most alike (13 chromosomes are virtually identical); and 9 chromosomes of species A and C are virtually identical. Because of this, scientists recommend that all three species, along with orangutans, be classified in the same family (Hominidae).