String Transport

Purpose: to model the following concepts: concentration gradient, diffusion, osmosis, dynamic equilibrium, endocytosis and exocytosis

Materials: Each group needs the following:
- a piece of yarn or string (approximately 2 meters long)
- 4 O_2, 4 CO_2, 4 H_2O, 4 starch, 1 food, and 1 waste molecule cards (index cards)

Crack the Code

Purpose: to model translation

Materials:
For teaching demo: chalk board with nuclear membrane with nuclear pores drawn on and area to left labeled nucleus and area to right labeled cytoplasm, fun foam ribosome with magnetic tape on back (in cytoplasm area), fun foam DNA strip with bases labeled and magnetic tape on back in nucleus area (strip should be too wide to leave the nucleus via the nuclear pores), fun foam m-RNA strip with bases labeled and magnetic tape on back (strip should be narrow enough to leave the nucleus via a nuclear pore), t-RNA index cards labeled with their anticodon sequence on front and the amino acid they transport on back with string tied on so that the card can be worn around the necks of students, plastic cord or a pipe cleaner, 20 containers each with many bead of a single color labeled with an amino acid name.

For student activity each group needs: a unique DNA single-stranded "secret code", a 30 cm pipe cleaner or 30 cm piece of plastic cord, access to the amino acid containers (from the demo).