

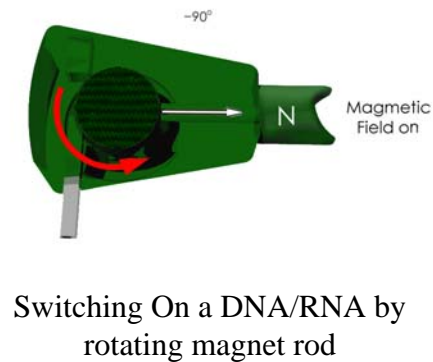
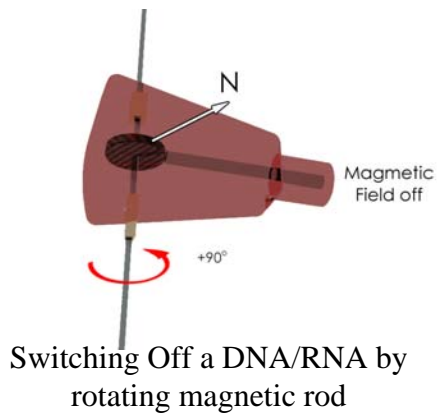
DNA and RNA Demonstration Materials

This project was presented in April 2005 as the results from a senior design project for an industrial design student here at Western Michigan University.

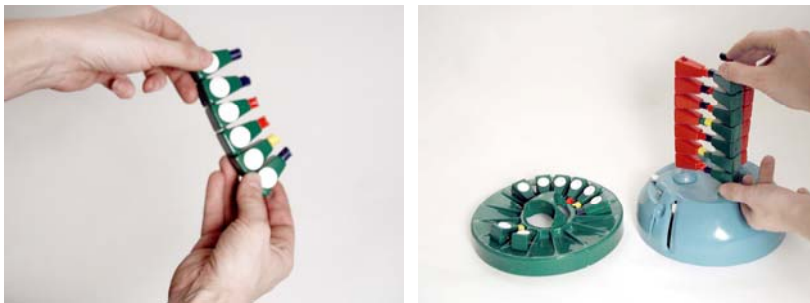
The technology produces a three dimension DNA/RNA model for use as an educational aid for Biological Science teachers and students for Grades 9-to-12 to:

- Show translation and transcription of DNA/RNA
- Code for more than one amino acid
- Show the twisting aspect of the double helix while staying intact

The model uses magnetic field to “switch on” and “switch off” DNA and RNA molecules as shown by the following diagram



Building of DNA or RNA molecules are made by joining each unit via magnetic attraction as shown below:



Coding for more than one amino acid is accomplished by using different color units each of which are contained in individual compartments of the model as show below:



Creating and coding of more than one amino acid is accomplished by various color-coded units

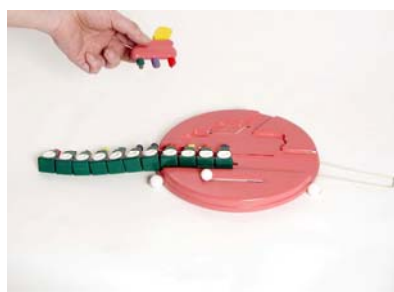


Each unit of the building blocks are contained in three separate compartments of the model

Translation and transcription of DNA/RNA can be demonstrated using a sliding mechanism located at the bottom of the compartment through the following series of steps 1 through 8:



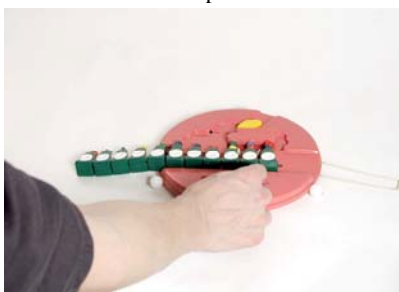
Step #1



Step #2



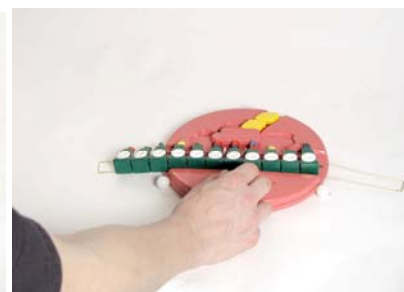
Step #3



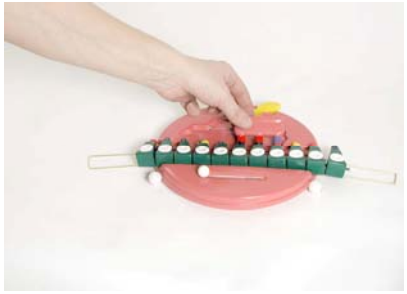
Step #4



Step #5



Step #6



Step #7



Step #8

The twisting aspect of the double-helix is accomplished by a combination of magnetic force between the DNA/RNA units and a steel cable activated by a lever located on the side of the model as shown below. The double-helix can be untwisted and separated by reversing the steps.

