

DNA: THE BUILDING BLOCKS

Goal: Visitors will learn about self-assembly by looking at DNA

Materials:

- 1 floor mat
- 3 paddles with Velcro and an A
- 3 paddles with Velcro and a T
- 2 paddles with magnets and a G
- 2 paddles with magnets and a C

Procedure:

Set-up

1. Put mat out on the floor
2. Separate on T, G, C and 2 A paddles

During the demonstration

1. Have visitors guess what the mat represents. Explain that DNA is a very complicated molecule.
2. Then hand out the T, G, C and 2 A paddles to visitors and ask them to stand on the corresponding spot on the mat.
3. Hand out the other paddles and ask the group to “self-assemble”.
4. Once the group has found their partners, ask them how they found each other. Only the C and G (north and south magnets) and the T and A (Velcro) can connect. Explain that the process of making DNA is even more complicated but nature has created a way that scientists hope to take advantage of and even mimic to make things as simple as very small tubes and as complex as storing millions of bits of information like a computer.

Explanation:

DNA, like almost everything in the body builds itself. This is called self-assembly. Rather than using a series of complicated chemical reactions, chemists would like to mimic what happens in nature. They would like complicated molecules to “build themselves”. In fact, scientists are using DNA as a building block for nano-wires. These tiny wires could shrink the size of computers, make extra strong textiles and help transport very precise quantities of materials.