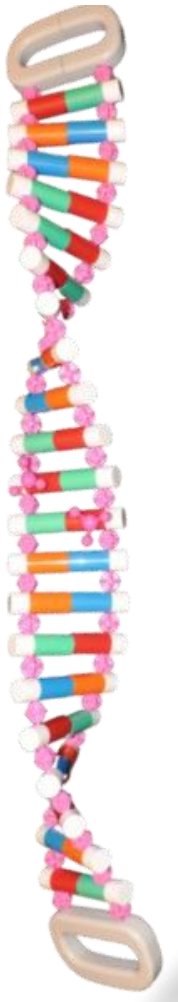


Unique Features of the *Dynamic DNA Model*



To order or see demo, visit: <https://dnaandbeyond.org/our-product/>

- 1. Our DNA model is sturdy and yet flexible.** It's not fragile or stiff as most models are.
- 2. Our model has handles at both ends.** It's easy to manipulate and hold up for display.
- 3. We split open like DNA!** Placed on a flat surface--a table or counter—the model splits apart along the middle of the rungs, and one handle splits open. Embedded magnets enable it to snap back together, showing how DNA unzips to be read, then zips back together!
- 4. Our DNA model clearly shows the outside molecules, the deoxyribose sugar ("D") and the phosphate ("P").** These are easily remembered, as shown by color codes: a sugar-white end of each rung ("D" sugars) and a purple ball for each phosphate, or "P".
- 5. We feature four colors to show the four different nucleic acids.** These are the four letters of DNA's alphabet that are used to write its code. One complementary pair of letters uses the colors of **crimson** for **C**, **green** for **G**; the other complementary pair of letters uses the colors of **azure/azul** (blue) for **A**, and **tiger/tangerine** (orange) for **T**.¹
- 6. Our DNA model displays a key epigenetic code, called the "methyl code."** The term *epigenetic* refers to other DNA-control codes which function above our DNA's double helix. We provide two **methyl tags** which function as on/off switches for genes.²
- 7. Our model can be converted to RNA!** We made it easy to switch any "T" nucleic acid to "U," or "uracil." With this tweak, using **umber** tubes, we show DNA's sister--RNA!³
- 8. We composed three songs to help students learn about the DNA world.** One song is for DNA (see demo link above), one is for RNA, and the third is for the protein alphabet of 20 amino acids. These songs are available in English and in Spanish.
- 9. Our model is the exact length of recently discovered "microRNAs"!** The Nobel Prize in Medicine was awarded in 2024 to two scientists who made this discovery.
- 10. We also are modeling a tiny-length gene** (called a "sORF") for a **microprotein!**
- 11. We have a six lesson online course to teach the wonders of DNA, RNA and proteins.** Cells use the DNA/RNA code to assemble precise chains of amino acids called proteins, and our first five lessons cover all the basic biological mechanics of these three informational molecules. The sixth lesson engages with the issue of origins--how this system arose in the first place. All lessons are available in English and Spanish.
- 12. To learn about tRNAs and amino acids, we offer a Friends of DNA kit with teaching models.** The tRNAs match up with RNA, each with an amino acid. They show how a protein is built step-by-step!
- 13. Tight-twisting DNA!** A set of 21 clear bridging-tubes is included, one for each rung. When slid onto the middle of each rung, one can see *DNA's tight twist*: a 360-degree full twist for each ten rungs.
- 14. Our model teaches the three-letter codon word pattern used by DNA and RNA.** With its 21 rungs, it has exactly 7 codons displayed.
- 15. We even can show DNA point mutations!** A set of colored slide-over "mutant tubes" is available. They show how any rung in the model can be mutated when different nucleic acids are switched in.

¹ C stands for cytosine; G stands for guanine; A stands for adenine; T stands for thymine.

² Two methyl tags are inserted on top and can be removed. Our "Mickey Mouse" methyl molecule has a carbon "head" and three hydrogen "ears." These fit into holes in two C letters in the middle of the model. When attached, the DNA rests. When removed, the gene wakes up and is ready to be copied. We even show the "CpG" pattern of methylation that enables the epigenetic mark to be maintained at replication.

³ To picture RNA, we split open the model down the middle. (RNA molecules normally are structured like a half ladder.) Second, where the DNA has a tiger/tangerine-colored "T" [thymine] nucleic acid, RNA replaces those with "U" [the nucleic acid uracil]. To show this uracil where "T" had been, we slide an umber-brown tube over each T (tiger-color) half rung. Presto: Ts are now Us, and we have an RNA!