

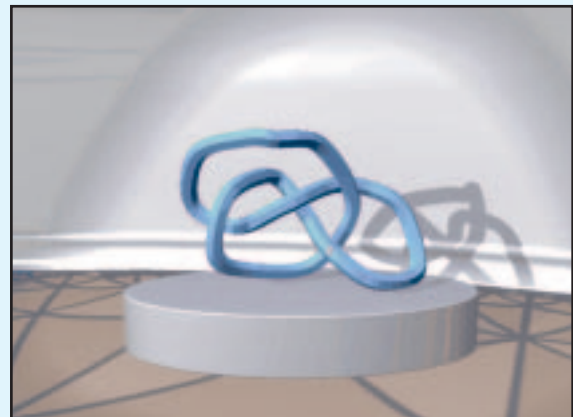
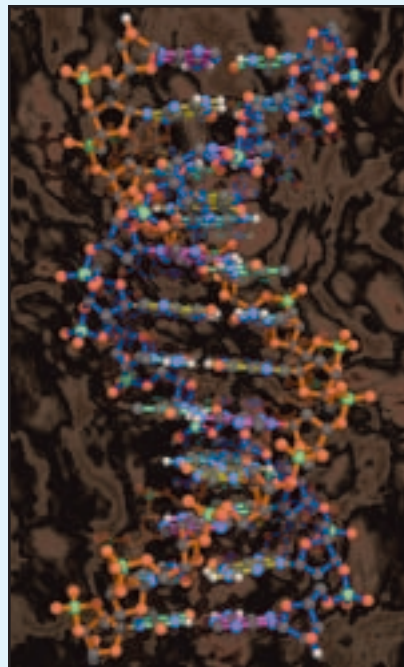
Deciphering DNA

Anyone who has used a garden hose knows that knots appear in strange places. Scientists have found that a branch of mathematics called knot theory appears in many familiar places, including in our DNA. Mathematics plays a key role in understanding how DNA functions and replicates itself.

Certain enzymes cut a strand of DNA at one point, pass another part of the strand through the gap, and then seal the cut. Knot theory gives insight on how frequently an enzyme has to act, from which one can infer how long the enzyme might take to make a product. This kind of complex manipulation is significant in many cellular processes—including DNA repair and gene regulation—and is the type of problem central to the theory of knots.

For More Information:

What's Happening in the Mathematical Sciences, Vol. 2, Barry Cipra.



Left: Photograph courtesy of Paul Thiessen.

Right: Photograph courtesy of the University of Minnesota.



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