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A DNA Extract from *Grocericus storeii*

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A DNA Extract from *Grocericus storeii*

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A simple, but accurate DNA model can be constructed by students, working in groups of two, from common grocery store materials. The two "sides" of the DNA ladder are formed from Cheerios (deoxyribose sugar molecules) and short lengths of soda straws (phosphate groups) strung on ordinary string. The "rungs" of the ladder are made up of two short lengths of straws (purines and pyrimidines), supported on a toothpick held between the Cheerios. Four colors of straws are used for the organic bases, while white straws are used for the phosphate groups making up the ladder sides.

Plans for Constructing the Model

1. Cut white soda straws into 1" lengths. The number of pieces you need depends on how long you want your finished model to be. A convenient length is 12 to 15 "rungs" tall. For example, if you made a 12-rung model, you would use 24 lengths of 1" pieces.
2. Put two rings on a ring stand and tie two lengths of string to the bottom ring, about 1" apart.
3. Put Cheerios and white straw lengths on each string, alternating the order; Cheerio—straw—Cheerio—straw, etc.
4. When each string is filled, tie the top ends to the top ring on the ring stand.
5. Cut four different colored straws into $\frac{1}{2}$ " lengths. These represent the bases in DNA. Choose your

own colors for adenine, guanine, cytosine, and thymine. Record the colors that you have chosen:

adenine:

guanine:

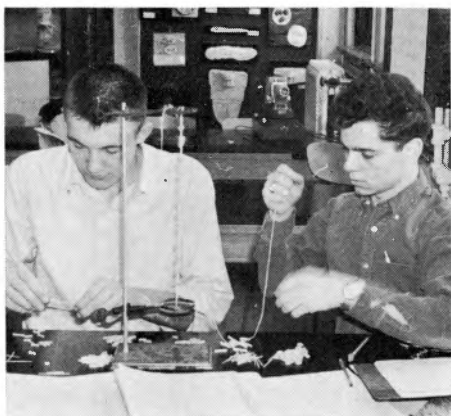
cytosine:

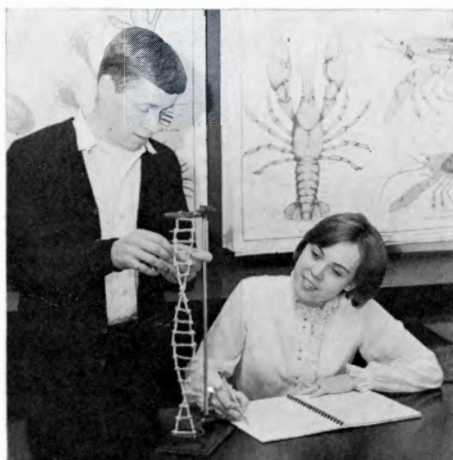
thymine:

6. Put two $\frac{1}{2}$ " lengths on a toothpick. These represent the purine-pyrimidine pairs. (Don't forget to pair *adenine* with *thymine*, and *cytosine* with *guanine*.)
7. Insert the exposed ends of the toothpick, containing the "bases," into Cheerios on the two sides of the model on the ring stand.
8. When the entire assembly is completed, carefully lift the top ring and twist it once. When reattached to the ring stand, the turned top ring will have given the model a helical shape.

Discussion

Even though the double helix of DNA can apparently be easily visual-





chromatids) would be composed of thousands of lateral groups of DNA.

Another fault of a number of mechanical models is that they fail to show the correct orientation of the molecule in space. Some investigators feel that the molecule is not a linear polymer, but that the double helix lays in a pile in the sites where it is found, resembling an intestine-like mass. If the DNA in one cell of a lily were in a single, straight chain, it would be nearly 45' long. The mechanical problems of unwinding a chain 45' long, with over four billion turns around the helical axis, make such a linear molecule seem unlikely.

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ized by students, a number of misconceptions seem to arise. One problem stems from the similarity between the replication of a DNA strand and the division of a chromosome. Students sometimes conclude that a chromosome, composed of two chromatids, is simply a giant strand of DNA, and when the two chromatids separate in mitosis, the single strand of DNA is 'unzipped' into two new strands. Actually, of course each *gene* is thought to be a long polymer of deoxyribonucleic acid. The chromosome (or two

NSTA NATIONAL CONVENTION

The National Science Teachers Association will hold its 1968 national convention in Washington, D.C., March 29-April 2. Headquarters hotels will be the Sheraton-Park and the Shoreham. The theme chosen for the Washington convention is "Science: The New Humanism."

The program, under the chairmanship of Dr. Leo Schubert, will combine sessions on science and on the teaching of science with special cultural and scientific activities in Washington itself.

IOWA SECTION OF AAPT

The Annual Spring Meeting of the Iowa Section of the American Association of Physics Teachers will be held on Saturday, April 20, 1968, at Wartburg College, Waverly, Iowa. This will be an afternoon meeting starting at 1:30. High school, junior college, and college teachers of physics may apply for membership by writing to William Azbell, Secretary-Treasurer, Wartburg College, Waverly, Iowa.