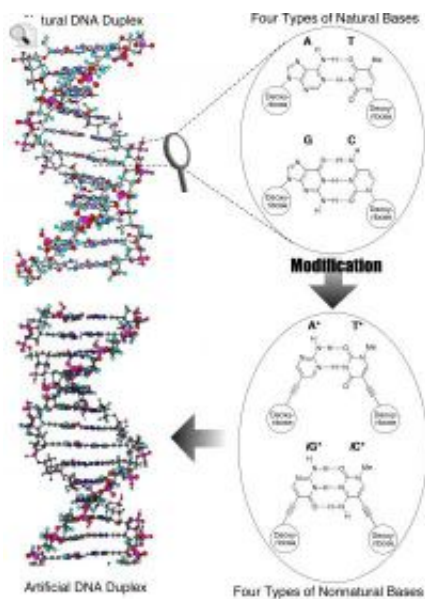


# First DNA molecule made almost entirely of artificial parts

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Scientists are reporting synthesis of the world's first DNA molecule made almost of entirely artificial parts. The discovery could be used in the fields of gene therapy and other futuristic high-tech advances, such as nano-sized computers. Courtesy of Masahiko Inouye

Chemists in Japan report development of the world's first DNA molecule made almost entirely of artificial parts. The finding could lead to improvements in gene therapy, futuristic nano-sized computers, and other high-tech advances, they say. Their study is scheduled for the July 23 issue of the *Journal of the American Chemical Society*.

In the new study, Masahiko Inouye and colleagues point out that scientists have tried for years to develop artificial versions of DNA in order to extend its amazing information storage capabilities.

As the genetic blueprint of all life forms, DNA uses the same set of four basic building blocks, known as bases, to code for a variety of proteins used in cell functioning and development. Until now, scientists have only been able to craft DNA molecules with one or a few artificial parts, including certain bases.

The researchers used high-tech DNA synthesis equipment to stitch together four entirely new, artificial bases inside the sugar-based framework of a DNA molecule. This resulted in unusually stable, double-stranded structures resembling natural DNA.

Like natural DNA, the new structures were right-handed and some easily formed triple-stranded structures. The unique chemistry of these structures and their high stability offer unprecedented possibilities for developing new biotech materials and applications, the researchers say.

Link: [dx.doi.org/10.1021/ja801058h](https://doi.org/10.1021/ja801058h)

Source: American Chemical Society

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