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Genetic Material May Help Make Nano-Devices: Study

Thu Aug 12, 2004 10:18 AM ET

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WASHINGTON (Reuters) - The genetic building blocks that form the basis for life may also be used to build the tiny machines of nanotechnology, U.S. researchers said on Thursday.

A team at Purdue University said they had used ribonucleic acid, or RNA, to build microscopic structures such as spirals, triangles, rods and hairpins, that could serve as components of nanotechnology devices.

Nanotechnology is the science of making devices on the scale of nanometers -- billionths of a meter. Such "nanoscale" devices might be used in medicine, or as computers woven into everyday materials such as clothing.

"Biology builds beautiful nanoscale structures, and we'd like to borrow some of them for nanotechnology," Peixuan Guo, a professor of molecular virology at Purdue, said in a statement.

The work of Guo and colleagues at Purdue's School of Veterinary Medicine was reported in the August issue of the journal Nano Letters.

RNA is the information carrier for genetic material. While DNA contains the instructions for producing proteins, RNA molecules carry the instructions into the cell's machinery.

In their experiment, Guo and his colleagues tried to exploit RNA's ability to assemble itself into shapes.

So far researchers have faced problems trying to manipulate the miniature components needed for nanotechnology, Guo said. "We are short of tiny steam shovels to push them (the components) around. So we need to design and construct materials that can assemble themselves."

Dieter Moll, a researcher in Guo's lab, said the components made with RNA could be useful to industrial and medical specialists, who would appreciate "their ease of engineering and handling."

"Self-assembly means cost-effective," he said.

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