

Self-assembling nanostructures of DNA -- a biotechnologist's dream

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Wouldn't it be great if we could get computer chips to grow on trees? Or at least use the specific bonds of DNA molecules to get nanostructures to grow themselves right in the test tube? This technology could be used to build everything from tiny electronics components to machines that sequence DNA. This is shown in a dissertation from Mid Sweden University.

Building structures as tiny as a few nanometers is a major problem with today's technology. This is an important hurdle, because really tiny things can be extremely useful. Good examples are microelectronics, the smaller you can make the components on a chip, the faster you will be able to carry out calculations on it.

"The method we have developed for self-assembling blocks of DNA and gold particles is absolutely unique. The method can be used, for instance, to produce tiny nano carriers for drugs that can be emptied directly in cells on a given chemical signal," says Björn Högberg.

Björn Högberg has also taken a close look at a method for building nanostructures with the help of DNA that was invented by a a US researcher in the spring of 2006. The method is called 'DNA origami' and involves, in brief, folding or splicing together a long string of DNA with the aid of a large number of short strings ('staple DNA').

"In my dissertation I propose just how this technology could be used to construct a facility for extremely rapid DNA sequencing, which is a

biotechnologist's dream," says Björn Högberg.

The title of the dissertation is "DNA-Mediated Self-Assembly of Nanostructures -- Theory and Experiments".

Source: The Swedish Research Council

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