

IN THE NEWS

DNA goes nano nano!

Scientists from Duke University, Durham, USA, have discovered a way to construct nano-scale grids, or tiles, from DNA. The nanostructures can be applied as protein arrays or scaffolds for electric 'nanowires'.

The team led by Thom LaBean used DNA self-assembly to create cross-shaped tiles of oligonucleotides. The four ends of the arms of each cross form molecular bonds and link up into a square grid.

When the tiles are orientated in the same direction, they self-assemble into narrow and long 'nanoribbons'. But when each tile is programmed to point in the opposite direction to its neighbour, wider and broader 'nanogrids' form.

"The tile itself is easy to modify by changing strands, so we can program the tile again and again for other purposes", said Hao Yan, first author on the *Science* paper in which the findings were reported (*ScienceDaily*, 26 September 2003).

The Duke University team created protein nanoarrays by using biotinylated oligonucleotides for the assembly of the nanogrids, such that the biotin groups sit at the tile cavities. Binding of streptavidin to biotin created periodic streptavidin arrays, and complexes of protein molecules can then be assembled on top of these regular cavities.

"To use DNA self-assembly to template protein molecules or other molecules has been sought for years, and this is the first time it has been demonstrated so clearly", according to Yan (*ScienceDaily*, 26 September 2003).

The researchers coated silver onto the DNA nanoribbons to produce highly conductive nanowires.

LaBean added, "The big promise is that if we can increase the size of our lattices we can template nanoelectronics onto them" (*ScienceDaily*, 26 September 2003).

Arianne Heinrichs