PARIS: Scientists announced they had created a molecular robot made out of DNA that walks like a spider along a track made out of the chemical code for life.

The achievement, reported in the British journal Nature, is a further step in nanoscale experiments that, one day, may lead to robot armies to clean arteries and fix damaged tissues.

The robot is just four nanometres - four billionths of a metre - in diameter.

Spider-like nanobot

Milan Stojanovic of New York's Columbia University, who led the venture, likens the nanobot to "a four-legged spider."

The beast moves along a track comprising stitched-together strands of DNA that is essentially a pre-programmed course, in the same way that industrial robots move along an assembly line.

The track exploits one of the basic characteristics of DNA. A double-helix molecule, DNA comprises four chemicals which pair in rungs.

Robot walks on unzipped DNA

By 'unzipping' the DNA, one is left with one side of the strand whose rungs can then be paired up with matching rungs.

In other words, the track can be used rather like the teeth in a clockwork mechanism. A cog can move around the teeth, provided it meshes with them.

By using strands that correspond to sequences in the track, the robot can be made to walk, turn left or right as it is biochemically attracted to the next matching...
Cuts DNA strands as it goes

The spider's 'body' is a common protein called streptavidin. Attached to it are three 'legs' of single-strand enzymatic DNA, which binds to, and then cuts, a particular sequence of DNA. The fourth leg is a strand that anchors the spider to the starting point.

"After the robot is released from its start site by a trigger strand, it follows the track by binding to and then cutting the DNA strands," explained Stojanovic.

Once the strand is cut, the leg starts reaching for the next matching stretch of DNA in the track. In this way, the spider is guided down the path set by the researchers.

Readers' comments

DNA 'spiderbot' is on the prowl
Incredible !!!
Submitted by Visitor on 14 May 2010 - 2:28pm.

How do I view other peoples comments?
Pls reply frankboase2@gmail.com
Submitted by Visitor on 14 May 2010 - 2:55pm.

is it possible that virus is

is it possible that virus is actually a malfunctioning nanomachine that for created by some obscured advanced civilisation to do exactly for the dna spiderbot is doing? Are there any stop controls in this bot to prevent it from wrecking havoc in the event that it deviates from it's original therapeutic objectives?

Submitted by Visitor on 14 May 2010 - 9:28pm.

Please

Please tell me you are joking. It clearly says in the article that the DNA strand is preprogrammed to tell the nanobot what to do. So in the event that it "gets out" it would be just another tiny spec of dust floating around in the atmosphere.

Submitted by Visitor on 16 May 2010 - 6:10am.
OMG GREY GOO!
I THINK THIS IS GOING TO END IN GRAY GOO JUST LIKE THAT GAME DEUS EX! THAT WOULD BE SO COOL! SERIOUSLY THROUGH I HOPE THEY DEVELOPE A WAY TO FIGHT CANCER SO I DON'T DIE FROM ALL THE THINGS I SMOKED IN HIGH SCHOOL NOW THAT I HAVE LIMPFOMA. SERIOUSLY THAT WOULD SUCK IF THIS DIDN'T WORK. I WAS WORRIED FOR A WHILE BUT NOW IT LOOKS LIKE I'LL BE OKAY!!! WOOT! I'M GETTING DRUNK TONIGHT!
Submitted by Visitor on 16 May 2010 - 8:04am.

release
Wow, impressive. Now what happens when this gets out of the lab into the environment somehow? It will happen eventually. Do we then get an entire planet of "The Island of Dr. Moreau" creatures? Let's just hope this protein can't find any way to replicate itself, or all life will be doomed.
Submitted by Visitor on 15 May 2010 - 1:07am.

... i don't think you understand what this is actually doing, do you realize that your own cells dna is constantly splitting in the same manner, i think what this could potentially be used for is to track down and not only split but remove parts of dna, things like genetic diseases would become history in a short amount of time. as once cured, the faulty dna sequence could not be passed on.
Submitted by Visitor on 16 May 2010 - 7:58pm.