MICROBOTS

By Donna Salamey

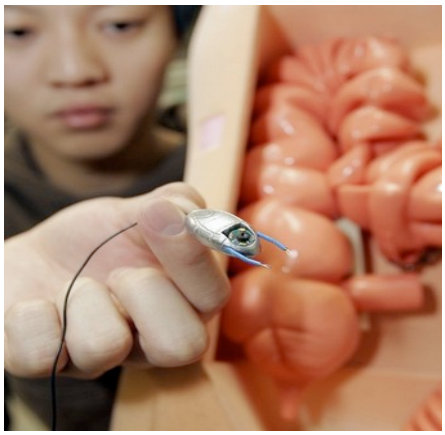
Electrical and Biomedical Engineering

University of Rhode Island

Microbots are a work in progress at this time. It is basically a small robot that would be inserted using a syringe into a human body and it would be able to do a number of things. This includes the diagnosis of ailments, picture taking, minimal repair until proper care can be given, surgeries, drug delivery to infected tissues especially to cancer tumors, surgeries, and finally they can be provided in medical kits for emergencies. Current research is being done by two main universities, with Dr. James Friend at the University of Monash in Australia, and Kazushi Ishiyama at Tohuku University in Japan.

Another possible theory was to insert the Microbots into soldiers before combat. This way they would be able to monitor the body in search of flaws in their cellular integrity. If something was found they would be able to do basic repair, until proper care can be given. It would also help doctors on the field identify the injury, determine the medical status of each soldier and prioritize care, so that the soldiers in need of the most immediate care can be taken care of. The advantages of such a device would be to help lower casualties, and higher the chance of survival because they are receiving medical care while on the field. Also, the soldiers who need the most immediate care would receive it. The disadvantages of such a device come into perspective is if the enemy learns how to stop or interfere with the device. Which can be accomplished by interfering with their coding and instructions, it also can be done with high doses of radiation, magnetism or electricity.

This device has many commercial uses if it is developed. Emergency service personnel like cops and fireman who are in life-threatening situations could have them implanted in them. People who live in areas where medical attention is not readily available, or have dangerous hobbies, for example mountain climbing, could also have these Microbots implanted in them. They can be put into first aid kits for emergency use, whether by the public, cops, or even EMT's.



The problems that researchers have faced so far are the question of how to propel, motor and build a small enough Microbot. Most of these problems have been answered with some theories and prototypes. One solution is to use flagella, or even diode propulsion to propel the microbot. The flagella idea is based on how a bacterium, which is also small, moves. Motors have also been built, however, how to power them is still a problem.