

By: ~~13/07/2007~~ Whitei, Science Editor

Standard Imaging Detecting Mutations

Combining CT scans and DNA microarrays

After getting images of how our memories form, now scientists have discovered how to detect genetic changes (mutations) in the body in standard imaging techniques. The technique could be essential in assessing if a tumor decreases or a drug is active. Researchers likened their device to science fiction movie technologies, where special apparatuses could reveal the genetic secrets locked within the body. "You don't have to invade the body in any way. We can actually obtain this information in a noninvasive manner," said Dr. Howard Chang of Stanford University School of Medicine. Chang's team at the University of California, San Diego, compared pictures from radiology scans like CT scans commonly used to detect cancer with DNA microarrays (gene chips) which can screen thousands of genes at a time. The team came across a method of correlating the image data into a computer model that could forecast the events in the DNA within the tumors. The tumors are the results of mutations occurring in our DNA, when the mutant cells start to divide chaotically. Cancer installs when the immune system does not manage to stop their development. "The main finding was a correspondence between radiographic images and genetic activity. You can think of it like a dictionary that can translate between two different languages," said Chang. The resulting complex computer model is able to deliver a prognosis based on what's taking place within a patient's cells. "The technique may help eliminate the need for a biopsy, a procedure in which a needle is injected into a tumor to determine what type of cancer a patient has. This is a technology that potentially makes it simpler to very cheaply understand the genetic activity of a person's disease," Chang said. By now, the team must check on different cancer types to assess whether the method works for each of them.