

Cancer gene code cracked

London: Two common forms of cancer have been genetically mapped for the first time, British scientists said Wednesday, in a major breakthrough in understanding the diseases.

The maps have exposed the DNA mutations that lead to skin and lung cancers, in a discovery scientists said could transform the way these diseases are diagnosed and treated in coming years.

All cancers are caused by damage to genes—mutations in DNA—that can be triggered by environmental factors such as tobacco smoke, harmful chemicals or ultraviolet radiation, and causes cells to grow out of control.

Scientists from Britain's Wellcome Trust Sanger Institute and their collaborators have mapped this genetic damage from the tumours of two patients suffering from lung cancer and malignant melanoma, a deadly skin cancer.

"This is a fundamental moment in cancer research. From here on we will think about cancers in a very different way," said Professor Mike Stratton who led the institute's cancer genome project. "Today for the first time, in two individual cancers—a melanoma and a lung cancer—we have provided the complete list of abnormalities in DNA in each of them," he told the BBC.

"We now see uncovered all the forces that have generated that cancer and we now see all the genes that are responsible for driving those two cancers," he said.

The scientists' research, published in the journal *Nature*, also gained deeper insights into the way the body tries to repair the damage caused by the cancers and stop the disease spreading.

Stratton said the research could in future change the way cancers are treated—by using genetic maps to find the defects that caused them. "We will be able to see how each cancer developed, what were the exposures, what were the environmental factors and that's going to be key for our understanding of how cancers develop," he said. "And for our individual patients, we will see all the genes that are abnormal and are driving each cancer and that's really critical, because that will tell us which drugs are likely to have an effect on that particular cancer and which are not."

Peter Campbell, a cancer-genomics expert involved in the research, said the number of mutations discovered—33,345 for melanoma and 22,910 for lung cancer—was remarkable. "It is amazing what you can see in these genomes," he said. AGENCIES

MAPPING MUTATIONS

WHAT SCIENTISTS DID

They compared the DNA sequence of tumour tissues with healthy ones to identify all changes (mutations) that occur in the cells of two deadly cancers—melanoma skin and lung

WHAT THEY FOUND

The lung tumour carried more than 23,000 mutations and the melanoma had more than 33,000

A smoker develops one mutation for every 15 cigarettes smoked

NEXT STEP

Scientists now have to track specific mutations that lead to cancer. This would help in producing drugs to suppress these mutations

By about 2020, cancer patients could have their tumours analysed to find

the genetic defects that drive them **BIG C IN INDIA**

Lung cancer is set to top cancer list with 51,194 new cases annually by 2020 Fresh cases of cancer annually among men will increase from 4.47L in 2008 to 5.34 lakh by 2020



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