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Web-based cancer platform launched

Our Special Correspondent

New Delhi, Nov. 27: Indian scientists have unveiled a web-based cancer biology platform that they are hoping will be used by other researchers to design new immunotherapy or vaccines against various cancers.

The platform, developed by scientists at the Institute of Microbial Technology (IMTECH), Chandigarh, is intended to find molecular targets associated with various cancer cells that could be fought with the body's own immune system.

The scientists say the platform may in the long run also be used to design personalised therapy for cancer patients.

The researchers have themselves used their platform to propose several molecular targets, or "neoepitopes," found on the proteins associated with 60 cancer-specific genes selected from 905 cancer cell lines, among them cancers of the breast, colon, liver, lung and pancreas.

Cancer immunotherapy is aimed at stimulating the immune system into attacking cancer cells and several candidate therapies against brain tumours and breast, lung and prostate cancers, among others.

"We've combined previously documented information about cancer-specific genetic mutations and their ability to stimulate the immune system to build this platform," said Gajendra Pal Singh Raghava, a senior bioinformatics specialist at IMTECH, a Council of Scientific and Industrial Research laboratory.

Raghava and his colleagues have identified eight targets linked to breast cancer cells, 52 to lung cancer cells, eight to prostate cancer cells, seven to liver cancer cells and 10 to pancreatic cancer cells.

The platform works through a set of software tools that can predict how various arms of the human immune system will respond to a specific protein or a small region of a protein specifically associated with certain cancers.

"The targets we identify are predictions - they will need to be validated through real laboratory experiments through cell cultures and animal models," Raghava said.

Cancer biologists say the IMTECH platform represents an important contribution to the development of computational resources helpful in the search for new cancer immunotherapies.

"The platform is an advance towards designing genome-based personalised immunotherapy or vaccines," said Amit Dutt, a senior scientist at the Advanced Centre for Treatment and Research in Cancer, Navi Mumbai, who was not associated with the IMTECH work. "But it needs improvements to make it robust and reliable."

A personalised medicine module in the platform will allow medical researchers to compare the genomic profile of tumour samples from individual patients and generate sets of molecular targets specific to those patients. This is expected to help doctors tailor therapy for individual patients, based on their specific sets of targets.

However, scientists caution that the current version of the platform can identify only "potential candidate targets for immunotherapy" in an individual patient. "Whether an individual patient's body will actually launch an immune response against specific targets needs to be validated," Dutt said.

Medical researchers view immunotherapy as a promising strategy against several hard-to-treat cancers. Earlier this year, scientists at the Institute of Cancer Research,




London, presented the results of a clinical trial that found that an immunotherapy drug improved survival for patients with relapsed head and neck cancers.

Their trial, published in the *New England Journal of Medicine*, noted that more than double the number of patients who took the immunotherapy drug were alive one year after treatment compared to those who did not opt for it.


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