

Discovery Of Novel Fusion Gene: Hope For Targeted Treatment Of Lung Cancer?

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<http://www.asianscientist.com/health-medicine/fusion-gene-lung-cancer-kif5b-ret-2012/>

AsianScientist (Mar. 13, 2012) - Four research groups, including three based in Asia, have independently identified a novel fusion gene in a subpopulation of lung tumors. This finding may lead to the identification of lung cancer patients with a good chance of responding to highly specific “targeted” drugs already in use for treating other cancers.

Fusion genes are hybrid genes formed from pieces of two genes which are normally found on separate regions of the human genome. Such genetic alterations have been associated with various forms of cancer, [including stomach cancer](#).

The newly-discovered gene fusion is characterized by the fusion of parts of the *KIF5B* and *RET* genes. The resulting fusion gene, labelled *KIF5B-RET*, was discovered by all four research groups working independently and using a variety of different methods to screen separate populations of lung cancer patients in Japan, Korea, the United States, and Europe.

Three of the studies, including two by Japanese researchers and one US-based study, were published in the February 12 issue of *Nature Medicine* while another study, conducted by Korean researchers, appeared in the March issue of *Genome Research*.

Collectively, the studies estimate that about one percent of Caucasians and perhaps more than two percent of Asians with lung cancers carry the KIF5B-RET fusion gene. Despite the relatively small percentages, the finding opens a significant therapeutic opportunity as this translates to approximately 12,000 affected individuals per year worldwide.

Other cancers with similar genetic alterations often respond to “targeted” drugs that block overactive proteins called tyrosine kinase inhibitors. This suggests that the same drugs also may be effective against lung tumors driven by the newly found gene fusions.

Because these drugs have already been approved for cancer treatment, it may be possible to rapidly move the drugs to clinical trials in lung cancer. If the trials are successful, physicians could potentially test patients' tumors for the presence of the gene fusions and prescribe a medication matched to those alterations.

“This is a textbook example of personalized medicine for lung cancer - a genetic alteration found in a subset of patients that we can now look for and use as a means to select particular therapies,” said Pasi A. Jänne, a co-author of the U.S. study.

“In the past, although these targeted drugs were available, they were not chosen for a particular subset, but instead given to everybody,” he explained. “This will increase the likelihood of those

therapies being more successful."

The articles can be found at:

[Kohno T et al. \(2012\) KIF5B-RET Fusions In Lung Adenocarcinoma.](#)

[Takeuchi K et al. \(2012\) RET, ROS1 And ALK Fusions In Lung Cancer.](#)

[Ju YS et al. \(2012\) A Transforming KIF5B And RET Gene Fusion In Lung Adenocarcinoma Revealed From Whole-Genome And Transcriptome Sequencing.](#)

[Lipson D et al. \(2012\) Identification Of New ALK And RET Gene Fusions From Colorectal And Lung Cancer Biopsies.](#)

Source: [Dana-Farber Cancer Institute.](#)

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