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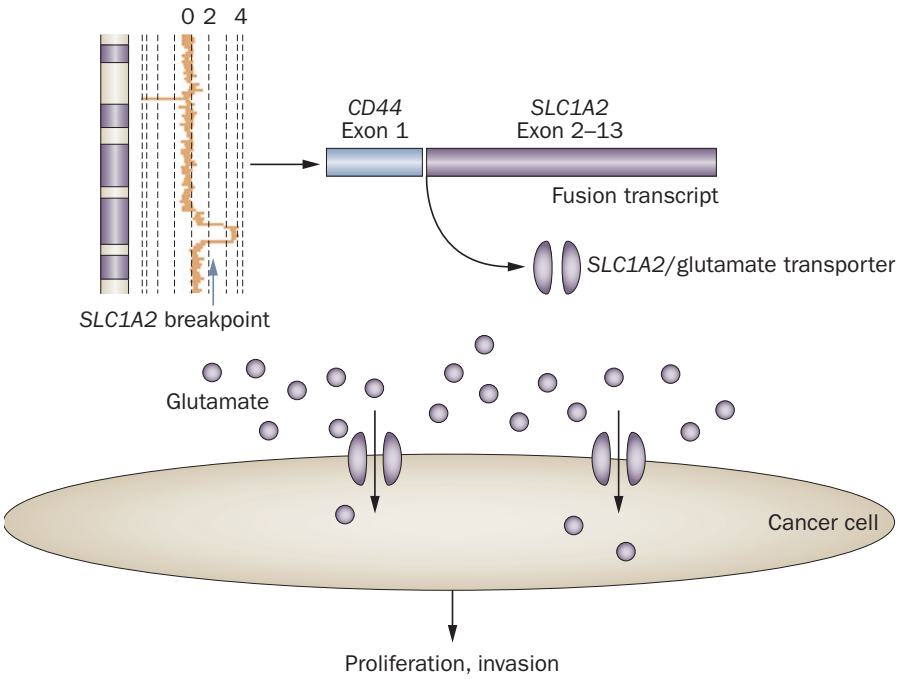
CANCER

Gene fusion identified in gastric cancer



Fusion of *CD44* and *SLC1A2* in a cancer cell. Courtesy of J. Tao.

An international research group has estimated that ~1–2% of gastric cancers contain a *CD44–SLC1A2* gene fusion. Fusion genes are created during cell division as a result of translocations or rearrangements of genetic material. Although these fusion events are rare, 15% of the cancers also had overexpression of *SLC1A2*.

"Fusion genes are of exceptional interest to the cancer biology community ... as they represent ideal drug targets and diagnostic reagents," explains corresponding author Patrick Tan. Fusion genes are being used routinely to diagnose subtypes of blood cancers. Although few recurrent fusion genes have been identified in solid cancers, two recent studies have identified fusion genes in prostate and lung cancer. These findings led Tan and colleagues to attempt to identify fusion genes in gastric cancer.

The researchers used genomic breakpoint analysis to profile the genomic DNA of 106 primary gastric cancers and 27 cell lines derived from gastric cancers. This process involved very high resolution microarrays that were able to identify those genes that contained breakpoints. When multiple samples showed a breakpoint in the same location, the gene was identified as a potential fusion gene.

This method enabled the researchers to identify the *CD44–SLC1A2* gene fusion. The authors note that this is a particularly interesting finding, as *CD44* is a gene that is highly expressed in cancers and SCL1A2 is a glutamate transporter that is involved in an energy-generating cycle in cancers. Thus, "*CD44–SLC1A2* may represent a member of a new class of fusion genes that play a role in cancer metabolism," says Tan.

The researchers are now planning to validate their findings in a larger group of patients, which will enable them to confirm the frequency of the gene fusion and to determine whether this gene fusion has any clinical or pathologic effects. "From a therapeutic perspective, as SLC1A2 is a glutamate transporter, we are intrigued by the possibility it may be targetable by glutamate uptake inhibitors," concludes Tan.

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Original article Tao, J. *et al. CD44–SLC1A2* gene fusions in gastric cancer. *Sci. Transl. Med.* **3**, 77ra30 (2011)