Protein predicts which cancers will spread

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All cancer is bad, but tumours prone to forming secondary growths or "metastases" elsewhere in the body are the real killers. In future, levels of a modified protein present in many types of tumour may help predict whether cancer is likely to spread.

The discovery holds promise for singling out people at high risk of metastases for more aggressive treatment.

Researchers led by Peng Loh of the US National Institute of Child Health and Human Development in Bethesda, Maryland, and Ronnie Poon of the University of Hong Kong studied tumours from 99 people with liver cancer. By measuring levels of a modified protein, they could identify those who went on to develop secondary tumours within two years, with more than 90 per cent accuracy.

The results were similar for 14 people with rare adrenal gland cancers. That's encouraging, because the adrenal cancers arise from a completely different class of cell from those that form liver tumours. What's more, high levels of the protein were also found in cultures of metastatic cells from tumours of the colon, breast, head and neck.

"This biomarker may be useful for many types of cancer," says Loh. If so, subjects at high risk could be monitored more closely for signs of spread and treated accordingly. For example, if caught early, secondary growths of some types of cancer can be wiped out using a probe that zaps them with radio waves.

Modified enzyme

The protein being monitored is a modified form of carboxypeptidase E, an enzyme normally involved in processing proteins before they are secreted from the cell. Its altered form moves to the nucleus, where it ramps up the activity of a gene involved in metastasis.

The results now need to be repeated in larger groups of patients, with different types of cancer. This validation will be the crucial step, cautions Amato Giaccia, a specialist in metastasis at Stanford University in California.

Giaccia warns that earlier promising biomarkers for cancer spread have failed to provide reliable predictions in subsequent studies. "That's when you don't hear of these things anymore," he says.