Scientists discover new gene responsible for spread of cancer

March 29 2006

Scientists at the University of Liverpool have identified a new gene that causes the spread of cancer. Professor Philip Rudland, Dr Guozheng Wang and Dr Roger Barraclough from the University's Cancer and Polio Research Fund Laboratories have discovered an additional member of the S100 family of protein genes – S100P – that causes the spread of cancerous cells from an original tumour to other parts of the body.

If present in the primary tumour, metastagenes such as S100P trigger the rapid spread of cancerous secondary tumours to other tissues in the body via the bloodstream – a process known as metastasis. Although primary tumours can be removed surgically, secondary tumours are more difficult to control. This research has been funded by the Cancer and Polio Research Fund.

The new discovery builds on several years' work carried out at the University to investigate the genes that cause cancerous tumours to travel to other tissues in the body. To date, three other metastasis-inducing genes have been discovered – S100A4, osteopontin, and more recently, AGR2.

Chemotherapy and radiotherapy are often the only options available to treat secondary tumours but these procedures can be problematic to the patient as they can damage other healthy tissue and do not always succeed in eradicating the cancer.

S100P is commonly found in ten different types of normal tissue

including the placenta, spleen, colon, ovary, prostate, lung and heart. Scientists believe proteins like S100P function in healthy tissue by increasing the movement of white blood cells around the body. If the protein is found in a cancerous tumour however, it causes the tumour to spread to other tissues.

Professor Rudland said: “It is the spread of cancer from the initial tumour that is the key contributor to death of a cancer patient. Metastagenes are fundamental to this process and can be found in most common cancers, including breast, lung and colon. If these genes are over-expressed in the cancerous tumour, early death of the patient is much more likely.

“The next major step is to develop drugs that will switch off the action of these genes. If we can do this, we can stop the spread of the primary tumour and therefore improve the chances of survival for patients.

“We are grateful for the support given by the Cancer and Polio Research Fund.”

The research is published in the current edition of *Cancer Research*.

Source: University of Liverpool