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FIRST GENE FOR CHILD BRAIN TUMOUR IDENTIFIED

SCIENTISTS have found the first genetic link to a common childhood brain tumour – reveals research published in *Cancer Research* today (Saturday).

The researchers, funded by Cancer Research UK and the Samantha Dickson Brain Tumour Trust, have pinpointed a rearrangement of DNA that causes around two-thirds of all cases of pilocytic astrocytoma – the most common brain tumour in five to 19 year-olds.

Very little is known about the causes and genetics of childhood brain tumours. But this significant discovery could provide leads for creating better treatments and make diagnosis of the disease more accurate.

Brain tumours are the second most common type of childhood cancer. Pilocytic astrocytomas affect around 145 children each year in the UK.

Lead author Professor Peter Collins, based at the University of Cambridge, said: “This is the first time a specific genetic link has been made to the majority of pilocytic astrocytomas.

“We found a specific rearrangement of DNA in around two-thirds of all cases of pilocytic astrocytoma. The resulting DNA sequence includes a portion of a gene called BRAF** that is known to be mutated in a number of other cancers, and which we think may trigger this disease.”

Professor Collins and his team carried out genetic scans on 44 pilocytic astrocytoma samples, searching for common genetic changes. They found a DNA sequence on chromosome 7 which is rearranged in 66 per cent of the samples – enough of a majority for it to be classed as a significant genetic marker for the disease.

This rearrangement creates a fusion gene, whereby part of the BRAF gene is fused to another, previously uncharacterised gene. The fusion leads to activation of the part of BRAF that is involved in stimulating cell growth. This is the first time this type of fusion activity has been associated with a brain tumour.

Around a quarter of children diagnosed with pilocytic astrocytoma cannot be successfully treated. Knowing which genetic sequences to search for will enable doctors to diagnose the disease more accurately.

Professor Collins added: "If we can diagnose exactly which type of brain tumour a child has as early as possible, the tumour is more likely to be treated successfully. We also hope the findings will mean it is possible to create therapies in the future that block the activity of the fusion gene and halt the growth of tumour cells."

Paul Carbury, chief executive of Samantha Dickson Brain Tumour Trust said: "We made a major funding commitment to Professor Peter Collins and his team at Cambridge two years ago. This investment is now starting to pay dividends and this world class piece of research has made a major breakthrough. This is the first stage in improving treatment for children diagnosed with pilocytic astrocytomas."

Dr Lesley Walker, director of cancer information at Cancer Research UK, said: "It's often more difficult to treat brain tumours successfully because of the sensitive position of the tumour. Any discovery that adds to our understanding of the cancer pathways that cause these tumours to form is exciting news, and we think this important finding will be vital in guiding future research."

ENDS

For media enquiries please contact Emma Gilgunn-Jones in the press office on 020 7061 8311 or, out-of-hours, the duty press officer on 07050 264 059.

Notes to editors:

* Tandem duplication producing a novel oncogenic *BRAF* fusion gene defines the majority of pilocytic astrocytomas. Jones et al. *Cancer Research*. 2008.

** A link between the BRAF gene and cancer was discovered by Cancer Research UK scientists in 2002. They discovered that mutations in BRAF contributed to 50 to 70 per cent of cases of melanoma – the most dangerous type of skin cancer.

About astrocytomas

Astrocytomas are believed to develop from cells called astrocytes. The astrocytes are the 'bricks and mortar' of the brain that support the nerve cells (neurones).

About Samantha Dickson Brain Tumour Trust (SDBTT)

Samantha Dickson Brain Tumour Trust funds scientific and clinical research to find a cure for childhood and adult brain tumours. It also offers support, hope and information to patients and their carers.

The charity has been working to find a cure for brain tumours since it was set up in 1996 by Samantha's parents, Neil and Angela Dickson. Since then millions of pounds have been raised for brain tumour research and support services for patients and carers, and the charity has become the largest funder of brain tumour research in the UK.

About Cancer Research UK

- Together with its partners and supporters, Cancer Research UK's vision is to beat cancer.
- Cancer Research UK carries out world-class research to improve understanding of the disease and find out how to prevent, diagnose and treat different kinds of cancer.
- Cancer Research UK ensures that its findings are used to improve the lives of all cancer patients.
- Cancer Research UK helps people to understand cancer, the progress that is being made and the choices each person can make.
- Cancer Research UK works in partnership with others to achieve the greatest impact in the global fight against cancer.
- For further information about Cancer Research UK's work or to find out how to support the charity, please call 020 7121 6699 or visit www.cancerresearchuk.org.