

# Researchers discover gene mutations that cause childhood brain cancer

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Researchers funded by the Canadian Cancer Society have discovered eight similar genes that, when mutated, appear to be responsible for medulloblastoma - the most common of childhood brain cancers. The findings are published today in the online edition of the journal *Nature Genetics*.

"This discovery is very promising and may help researchers develop better, more targeted treatments so that more of these children will survive and fewer will suffer debilitating side effects," says Dr. Christine Williams, Director of Research Programs, Canadian Cancer Society Research Institute.

Dr. Michael Taylor, who has a \$600,000 research grant from the Canadian Cancer Society, led the study: "When these eight genes are functioning normally, we believe their role is to make a protein which tells the developing brain when it's time to stop growing. But when the genes are mutated, the brain may continue to grow out of control, leading to cancer.

"Drugs are already being developed that target these types of proteins," he says. "Our hope is that some of these drugs may be adapted and used effectively to treat medulloblastomas." Dr. Taylor is a pediatric brain surgeon at Toronto's Hospital for Sick Children:

In the study, the largest of its kind, researchers looked at more than 200 tumour samples. The samples came from children in countries all over

the world including Canada, the US, England, Poland and Saudi Arabia. Paul Northcott, a PhD student in Dr Taylor's lab, analyzed and interpreted all the data over a period of 3 ½ years. "We've learned more from this study about the genetic basis of this disease than from any other previous study," Northcott says. The gene mutations they found had not been suspected as culprits in cancer formation.

About 250 Canadian children are diagnosed with various types of brain cancer every year. About 70 per cent of these survive. Brain tumours are the leading cause of childhood cancer deaths. The most common childhood brain cancer is medulloblastoma - a tumour that occurs at the back of the brain in the cerebellum. It is primarily a disease of very young children and is particularly deadly among babies under 18 months of age. In Canada, about 40 children are diagnosed with medulloblastoma every year and half of these will survive.

Many survivors experience serious physical and neurological problems from the disease itself and from the effects of very aggressive treatments on the developing brain. Treatments include surgery, radiation and chemotherapy.

Source: Canadian Cancer Society

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