

New DNA technique leads to a breakthrough in child cancer research

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Researchers at the Sahlgrenska Academy at the University of Gothenburg, Sweden and Karolinska Institutet have used novel technology to reveal the different genetic patterns of neuroblastoma, an aggressive form of childhood cancer. This discovery may lead to significant advances in the treatment of this malignant disease, which mainly affects small children.

The article is being published in the respected scientific journal, [Proceedings of the National Academy of Sciences \(PNAS\)](#). The study includes 165 [children](#) with [neuroblastoma](#), most of whom developed the disease before the age of five. These children have been monitored for over 20 years by two research teams led by professors Tommy Martinsson, of the Sahlgrenska Academy, and Per Kogner of Karolinska Institutet.

Neuroblastoma is a nerve cell [cancer](#) that has defects in certain [chromosomes](#). If the [tumour](#) has a characteristic defect on chromosome 11, it is very aggressive and difficult to cure.

"We found that the children who develop this type of neuroblastoma are twice as old at the onset of the disease as children who develop other types of neuroblastoma. This type progresses more slowly and is more difficult to treat," says Helena Carén, a researcher at the Department of Clinical Genetics at the Sahlgrenska Academy.

By using the latest genetic techniques, the researchers have succeeded in analysing the DNA of tumour cells and identifying chromosomal defects, enabling the identification of sub-groups of the most aggressive neuroblastomas. The next step is to identify their weak points genetically in order to develop better treatment.

"We call this personalized medicine, because the treatment is based on the genetic profile of the patient, or in this case, of the tumour cells," says Tommy Martinsson, professor of genetics at the

Department of Clinical Genetics at the Sahlgrenska Academy.

Per Kogner, professor of paediatric oncology at Karolinska Institutet, reiterates that their discovery will now allow a variety of tailor-made treatments to be developed, saving the lives of more children.

"The analytical method we have used in our research is already being used for clinical assessment of every neuroblastoma tumour in the country, which means that we can now make more accurate diagnoses," says Helena Carén.

Provided by University of Gothenburg

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