Medical Xpress

Discovery of a new tumor cell type in childhood cancer

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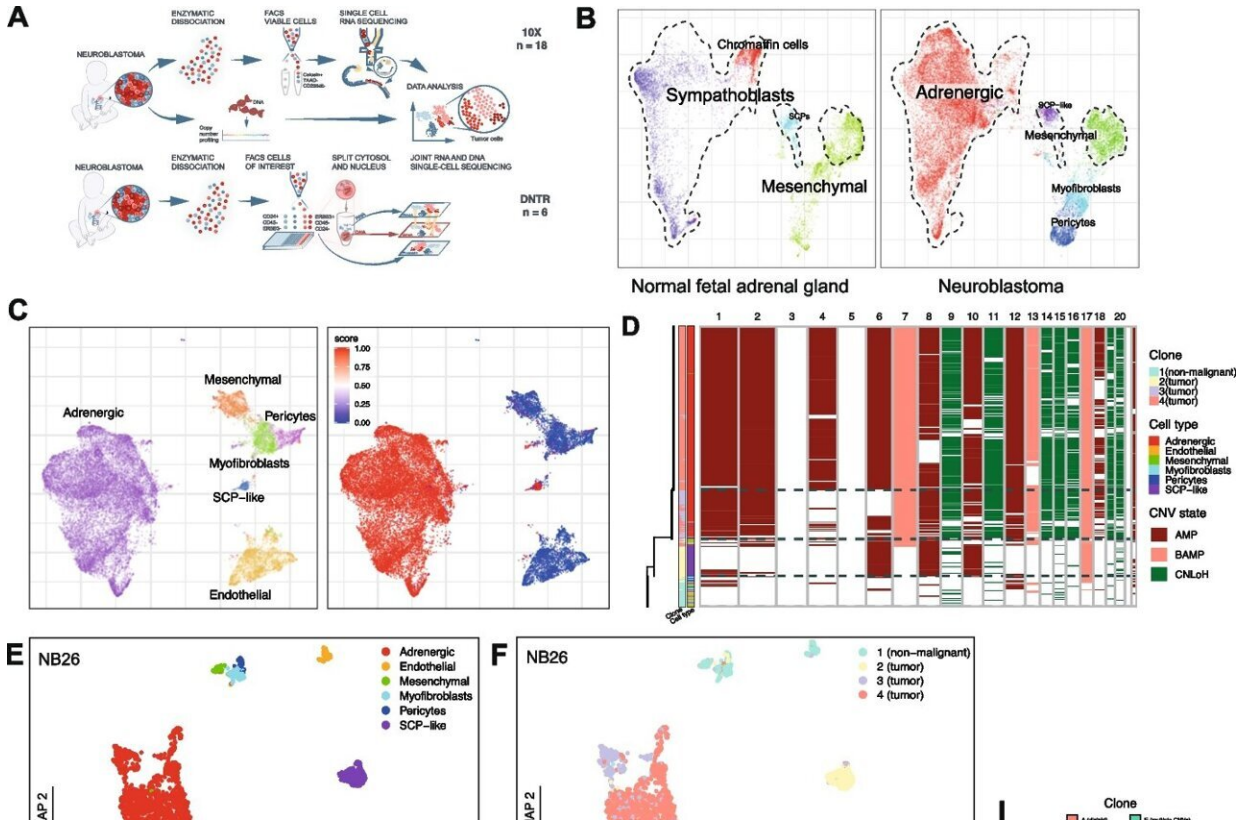

Multi-omic CNV identification in single neuroblastoma cells reveal complex subclonal architectures and identify abnormal SCP-like populations carrying whole-chromosome gains. Credit: *Molecular Cancer* (2024). DOI: 10.1186/s12943-024-02091-y

Researchers from Karolinska Institutet have made a significant

breakthrough in the study of childhood neuroblastoma, a type of cancer that begins before birth during the early stages of adrenal gland development.

By sequencing DNA and RNA in tens of thousands of single cells from human tumors, the group of Associate Professor Ninib Baryawno, Department of Women's and Children's Health, KI, has created genetic maps of tumor development in neuroblastoma.

The article is published in *Molecular Cancer*. A surprising discovery was a new type of tumor cell resembling Schwann cell precursors (SCPs), which are early stem cells in adrenal gland development.

These novel tumor cells were found to be aneuploid, meaning they had extra copies of some chromosomes. They were also characterized by increased proliferation and gene expression that helps them evade the immune system.

The researchers suggest that aneuploidy in SCPs could be a possible initiating event, or first hit, and that SCPs could be the cell-of-origin in some neuroblastomas.

This study sheds light on when and where this cancer starts, suggesting that tumor development may begin earlier than previously thought, with a genetic mechanism called aneuploidy.

Understanding how and why this cancer occurs could lead to new strategies for treating and preventing cancer in children.

The researchers, Dr. Thale Olsen and Dr. Jörg Otte, both at the Department of Women's and Children's Health, plan to continue their work by focusing on genetic tumor heterogeneity and studying how different subclones of tumor cells behave.

More information: Thale K. Olsen et al, Joint single-cell genetic and transcriptomic analysis reveal pre-malignant SCP-like subclones in human neuroblastoma, *Molecular Cancer* (2024). DOI: 10.1186/s12943-024-02091-y

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