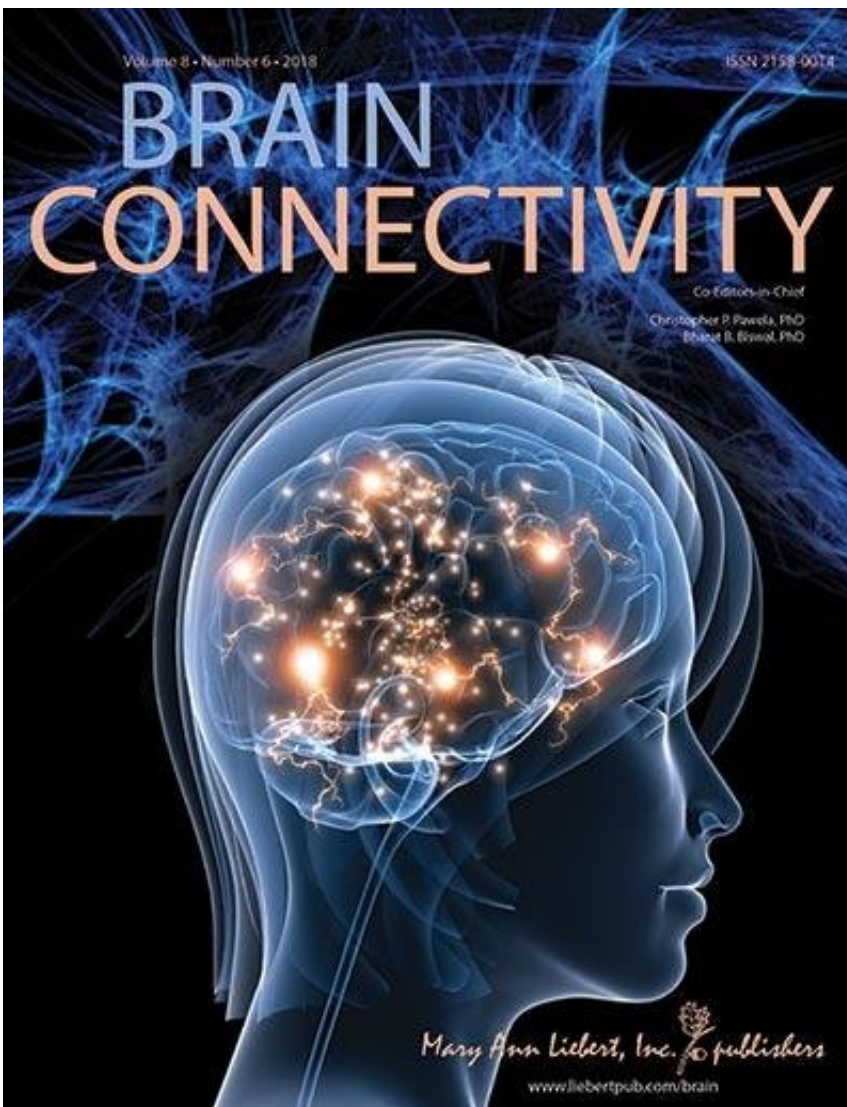


# Connectome organization in childhood ALL and risk of delayed neurodevelopment

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Credit: Mary Ann Liebert, Inc., publishers

A new study provides novel insights into the cognitive effects of childhood acute lymphoblastic leukemia (ALL) and of chemotherapeutic treatment in long-term survivors of ALL. The findings from comparative studies of structural and functional connectome organization, showing that connectome disruption is associated with delayed neurodevelopment, are published in an article in *Brain Connectivity*.

In the article entitled "Brain Network Connectivity and Executive Function in Long-Term Survivors of Childhood Acute Lymphoblastic Leukemia," Kevin Krull, Ph.D., St. Jude Children's Research Hospital, Memphis, TN and a team of researchers from St. Jude's and University of Texas MD Anderson Cancer Center, Houston reported poor global connectivity and lower information exchange and network integration in study participants with executive dysfunction—compared to those without—which is one of the most consistently observed deficits observed in this population. The study included 161 long-term survivors of ALL who were 8-21 years of age.

The younger the age at which the children had been diagnosed with ALL and the more chemotherapy they had received correlated with increased risk for impaired connectome efficiency and poorer global information processing.

"The 10-year cure rate for ALL is approaching over 90% in children," states Christopher Pawela, Ph.D., Co-Editor-in-Chief, *Brain Connectivity*. "Long-term cognitive impairment is a serious issue facing ALL survivors and there has been a lack of understanding of the mechanism of how ALL and chemotherapy affect [brain](#) function. Dr. Krull and his colleagues have designed a very large follow-up study of ALL survivors investigating brain functional changes after a cure is obtained. They establish for the first time using brain imaging that age of diagnosis and the length of chemotherapeutic treatment have

compounding maladaptive effects on the brain networks involved in executive cognitive function."

**More information:** Shelli R. Kesler et al, Brain Network Connectivity and Executive Function in Long-Term Survivors of Childhood Acute Lymphoblastic Leukemia, *Brain Connectivity* (2018). [DOI: 10.1089/brain.2017.0574](https://doi.org/10.1089/brain.2017.0574)

Provided by Mary Ann Liebert, Inc

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