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Overexpression of tyrosine kinase and chromatin remodeling genes in the iAMP21 subtype of pediatric acute lymphoblastic leukemia

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Intrachromosomal amplification of chromosome 21 (iAMP21) is a cytogenetic subtype associated with relapse and poor prognosis in pediatric B-cell precursor acute lymphoblastic leukemia, however, the biological cause of the high relapse risk is still unknown. The only genetic alteration consistently present in all iAMP21 cases is additional copies of the region of amplification, and the minimal region of amplification (MRA) has been determined to a 5,1 Mb region on 21q22.3. The MRA encompasses several protein coding genes, including RUNX1, however, no causative oncogene or tumor suppressor has thus far been identified in the region. In this study, we used massively parallel sequencing in an integrated approach to investigate the structure and transcriptional effects of the iAMP21 rearrangement, with focus on the MRA, and we show that the iAMP21 subtype has several unique and recurrent alterations of genes involved in cell cycle and chromatin remodeling that could possibly explain the relapse tendency for this subtype.

Biography

Ingegerd Ivanov Öfverholm is an MD at the Karolinska University Hospital in Sweden. Her research is focused on novel genetic risk-markers in childhood ALL. She has 6 publications on this subject.

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