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Epigenetic regulation of leukemia

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Acute myeloid leukemia (AML) has a poor prognosis in both adults and children, with a long-term survival of only 25% and 60% respectively. No major development has occurred of the treatment since, the last decades and the majority of treatments for AML consist of cytotoxic drugs with low specificity. AML is associated with perturbed epigenetic regulation, with early mutations in and chromosomal translocations of different epigenetic regulators. This indicates that epigenetic mechanisms may play an essential role in the development of AML and are potentially very potent drug targets. A network of epigenetic factors regulates DNA methylation, post-translational histone modifications and chromatin structure and relays information to the transcriptional program that dictates hematopoietic cell fate and differentiation. We have previously demonstrated the importance of epigenetic mechanisms in hematopoietic differentiation and AML development. Especially we have showed that epigenetic regulation of enhancer activity is crucial for normal myelopoiesis and AML. We have recently demonstrated that the generation of leukemic - specific gene expression involves interplay of combinational epigenetic mechanisms at specific enhancer elements with their cognate promoters. Our results suggest that the normal epigenetic remodeling of enhancers is perturbed during the evolution of leukemia and contribute to the leukemic phenotype.

Biography

Andreas Lennartsson has a Master's Degree in Biotechnology from Lund University in Sweden. He did his PhD in Experimental Hematology also at Lund University. After his PhD, he continued at the Omics Science Center at RIKEN in Japan for Post-doc training in Piero Carninci's group. He carried out his second Post-doc in Karl Ekwall's group at Karolinska Institute, where he is now leading a sub-group in Professor Ekwall's laboratory.

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