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Role of microRNA dysregulation in childhood acute leukemias: diagnostics, monitoring and therapeutics: A comprehensive review

Szczepanek J. miRNA as a biomarker in pediatric AL

Joanna Szczepanek

Abstract

MicroRNAs (miRNAs) are short noncoding RNAs that regulate the expression of genes by sequence-specific binding to mRNA to either promote or block its translation; they can also act as tumor suppressors (*e.g.*, let-7b, miR-29a, miR-99, miR-100, miR-155, miR-181) and/or oncogenes (*e.g.*, miR-29a, miR-125b, miR-143-p3, miR-155, miR-181, miR-183, miR-196b, and miR-223) in childhood acute leukemia (AL). Differentially expressed miRNAs are one of the important factors associated with the initiation and progression of AL. As shown in many studies, they can be used as noninvasive diagnostic and prognostic biomarkers, which are useful in monitoring early stages of AL development or during therapy (*e.g.*, miR-125b, miR-146b, miR-181c and miR-4786), accurate classification of different cellular or molecular AL subgroups (*e.g.*, let-7b, miR-98, miR-100, miR-128b, miR-223), and identification and

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However, although significant advances have been made for the future **role** of miRNAs in **diagnostics**, there have been far fewer reported successes in the development of miRNAs therapeutic strategies: the main issues that need to be addressed are certainly the discovery of the microRNAs playing a crucial **role** in the biology of a specific tumour ...

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Sep 14, 2017 · One potential explanation for the context-dependent effects observed for **miRNA dysregulation** in AML is that different levels of **miRNA** expression may have vastly different effects on host-cell phenotypes. miR-125b is one of the more interesting known oncomiRs because it plays a **role** in promoting both myeloid and lymphoid malignancies.

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MiRNA Dysregulation in Childhood Hematological Cancer. ... subtypes seen in children are **acute lymphoblastic leukemia** (ALL), and **acute myeloid leukemia** ... Another **comprehensive** overview of **miRNA** ...

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However, a small number of **leukemias** are difficult to identify as myeloid or lymphoid, thus making treatment decisions challenging. **miRNA** expression profiling can help classify **acute leukemias** of ambiguous lineage as either AML or **acute lymphoblastic leukemia**, 64 with 1 group claiming that as few as 2 miRNAs can be used to discriminate between ...

Cited by: 27 **Author:** Jared A. Wallace, Ryan M. O'Connell**Publish Year:** 2017**MicroRNA therapeutics: towards a new era for the ...**<https://www.nature.com/articles/nrd.2016.246>

Feb 17, 2017 · This **Review** discusses the **role** of different miRNAs in cancer and other diseases, and provides an overview of current **miRNA therapeutics** in the clinic. ... confirmed that **miRNA dysregulation** ...

Cited by: 1147 **Author:** Rajesha Rupaimoole, Frank J. Slack**Publish Year:** 2017**The role of MicroRNAs in human cancer | Signal ...**<https://www.nature.com/articles/sigtrans20154>

Jan 28, 2016 · A recent **review** on microRNAs in cancer highlights their potential as biomarkers for human cancer **diagnosis** and prognosis. MicroRNAs are small noncoding RNAs that regulate gene expression and have ...

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Author: Lorenzo F. Sempere **Publish Year:** 2019