

# A code of silence in acute myeloid leukemia

November 19 2012

---

The development of acute myeloid leukemia (AML) is associated with a variety of genetic changes. Some of these alterations are epigenetic, wherein the sequence of the genes is unchanged, but chemical modifications to the DNA alter gene expression.

In a study published in the [Journal of Clinical Investigation](#), researchers led by Daniel Tenen at Beth Israel Deaconess Medical Center found that a transcriptional regulator known as C/EBPG was highly expressed in a subset of AML samples that had an epigenetically silenced C/EBPA gene.

By blocking the epigenetic modification of C/EBPA, Tenen and colleagues found that they could reduce C/EBPG and restore normal myeloid [blood cells](#).

This study suggests that targeting the balance of C/EBPG and C/EBPA could represent a new therapeutic approach in the treatment of AML.

**More information:** C/EBP $\gamma$  deregulation results in differentiation arrest in acute myeloid leukemia. Published in Volume 122, Issue 12 (December 3, 2012)

J Clin Invest. 2012;122(12):4490–4504. [doi:10.1172/JCI65102](https://doi.org/10.1172/JCI65102)

## Abstract

C/EBPs are a family of transcription factors that regulate growth control and differentiation of various tissues. We found that C/EBP $\gamma$  is highly upregulated in a subset of acute myeloid leukemia (AML) samples

characterized by C/EBP $\alpha$  hypermethylation/silencing. Similarly, C/EBP $\gamma$  was upregulated in murine hematopoietic stem/progenitor cells lacking C/EBP $\alpha$ , as C/EBP $\alpha$  mediates C/EBP $\gamma$  suppression. Studies in myeloid cells demonstrated that CEBPG overexpression blocked neutrophilic differentiation. Further, downregulation of Cebpg in murine Cebpa-deficient stem/progenitor cells or in human CEBPA-silenced AML samples restored granulocytic differentiation. In addition, treatment of these leukemias with demethylating agents restored the C/EBP $\alpha$ -C/EBP $\gamma$  balance and upregulated the expression of myeloid differentiation markers. Our results indicate that C/EBP $\gamma$  mediates the myeloid differentiation arrest induced by C/EBP $\alpha$  deficiency and that targeting the C/EBP $\alpha$ -C/EBP $\gamma$  axis rescues neutrophilic differentiation in this unique subset of AMLs.

Provided by Journal of Clinical Investigation

Citation: A code of silence in acute myeloid leukemia (2012, November 19) retrieved 19 April 2024 from <https://medicalxpress.com/news/2012-11-code-silence-acute-myeloid-leukemia.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.