

# DNA-altering enzyme is essential for blood cell development

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The expression of specific genes is partially dictated by the way the DNA is packed into chromatin, a tightly packed combination of DNA and proteins known as histones. HDAC3 is a chromatin-modifying enzyme that regulates gene expression, chromatin structure, and genome instability and it has previously been shown to associate with the oncoproteins that drive leukemia and lymphoma.

In this issue of the *Journal of Clinical Investigation*, Scott Hiebert and colleagues at Vanderbilt University examined the role of HDAC3 in the development of blood cells (hematopoiesis) by disrupting its expression in mice. Loss of *Hdac3* nearly eliminated all blood immune cells and caused mild anemia. Hiebert and colleagues observed that, in the absence of *Hdac3*, stem and [progenitor cells](#), which give rise to blood cells, failed to grow normally.

These studies identify a role for HDAC3 in stem cell functions and possibly [bone marrow failure](#) syndromes, in which the bone marrow fails to produce blood cells.

**More information:** HDAC3 is essential for DNA replication in hematopoietic progenitor cells, *J Clin Invest*. [doi:10.1172/JCI60806](https://doi.org/10.1172/JCI60806)

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