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HDAC3 role in B-cell development

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Histone deacetylases (HDACs) are enzymes that modulate gene expression and have important roles in development and disease. HDAC inhibitors are active against lymphoma, and understanding the roles of specific HDACs is important for further therapeutic development.

Scott Hiebert, Ph.D., and colleagues used a mouse model to explore the role of HDAC3 in the early development of B cells, white blood cells that produce antibodies.

They found that inactivation of HDAC3 impaired B-cell development before the formation of a functional B-cell receptor (a membrane bound antibody). The researchers demonstrated an unexpected role for HDAC3 in "VDJ recombination" – the process that generates antibodies and immune diversity.

Using bone marrow transplantation, they further showed that the deacetylase activity of HDAC3 is required for B-cell receptor production and B-cell maturation.

The findings, reported in the *Proceedings of the National Academy of Sciences*, confirm the importance of HDAC3 deacetylase activity and suggest that HDAC3-specific inhibitors may be therapeutically useful for B-cell cancers.

More information: Kristy R. Stengel et al. Deacetylase activity of histone deacetylase 3 is required for productiveVDJrecombination and B-cell development, *Proceedings of the National Academy of Sciences*

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