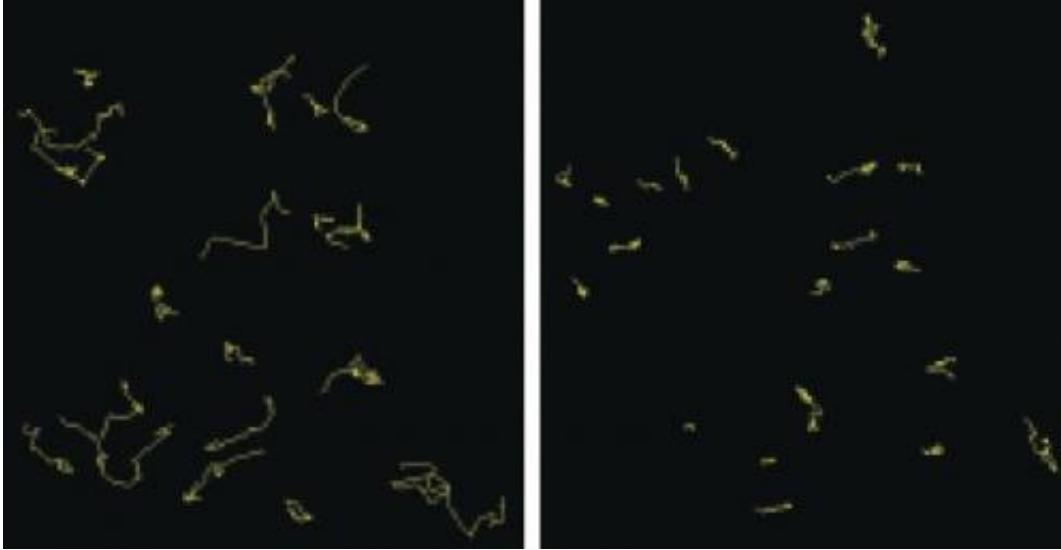


Infection-fighting B cells go with the flow

November 17 2014



B cell migration, tracked in these bone marrow images, was largely blocked after VCAM-1 was inhibited (right). Credit: Beck et al., 2014

Newly formed B cells take the easy way out when it comes to exiting the bone marrow, according to a study published in *The Journal of Experimental Medicine*.

For infection-fighting T and B [cells](#) to defend the body, they must first leave their birthplace—the thymus for T cells and [bone marrow](#) for B cells. T cell migration within and eventual exit from the thymus are active processes governed by expression of specific [cell surface receptors](#) (called GPCRs) that respond to external attractants and cause the cell to crawl toward exit sites. B cells are retained in the bone

marrow by a similar mechanism controlled by a GPCR called CXCR4, which binds to a bone marrow-resident protein and also increases the expression of sticky "integrin" molecules, effectively tethering the cells in place.

But when it comes to leaving the bone marrow, B cells can afford to be lazy. João Pereira and colleagues at Yale University School of Medicine show that B cells actively migrate around the bone marrow with the help of CXCR4 and an integrin called VCAM-1. Without CXCR4, the cells slowed down and many stopped moving entirely, in part due to decreased expression of VCAM-1. For those cells near exit sites, decreased CXCR4 and VCAM-1 allowed them to be passively swept out of the bone marrow with the blood flow.

Why [immune cells](#) use different exit strategies in different organs is not completely clear. But the authors suggest that the go-with-the-flow strategy of the bone marrow may be due to its role in the production of [red blood cells](#), which do not express molecules required for active crawling.

More information: Beck, T.C., et al. 2014. J. Exp. Med. [DOI: 10.1084/jem.20140457](https://doi.org/10.1084/jem.20140457)

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