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Potential autoimmunity-inducing cells found in healthy adults

It's not just patients with autoimmune diseases like lupus and rheumatoid arthritis (RA) that have self-attacking immune cells—healthy people have them too, according to a new report in the *Journal of Experimental Medicine*. In healthy adults, however, these cells are maintained in an 'off' state, perhaps explaining their innocuous nature. Whether these cells are the true predecessors of the self-attacking cells prevalent in lupus and RA and, if so, what prevents them from causing disease in everyone is not yet known. The new study will appear online on December 22nd.

As antibody-producing B cells develop in the bone marrow, the body tests them to determine whether their antigen receptors are apt to confuse self tissues for intruders. If so, their receptors are either rearranged to make new, non-autoreactive versions—a process called 'receptor editing'—or the cells are killed off while still in the bone marrow. Yet a minority manages to escape, slipping into the body as mature B cells with a propensity for self-attack.

Using mice, researchers have shown that these self-reactive escapees are arrested in a state of anergy that prevents them from mounting an immune attack. But, until now, a similar population of cells had never been found in humans. In the new study, a team of researchers led by J. Andrew Duty at the Oklahoma Medical Research Foundation have pin-pointed a similar population of anergic B cells in the blood of healthy adults, where they accounted for 2.5% of B cells in the circulating blood.

Although these anergic cells did not appear to cause problems in healthy people, the authors demonstrated their potential to produce self-reactive antibodies by providing the cells with a strong stimulus in cell culture. The potential to produce these trouble-making antibodies lead the authors to suspect that these cells may contain the precursors for the self-attacking B cells in patients with autoimmune diseases. Perhaps anergy somehow breaks down in these patients, allowing self-sabotaging cells to run free.

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