The human spleen is a major reservoir for long-lived vaccinia virus-specific memory B cells.

The fact that you can vaccinate a child at 5 years of age and find lymphoid B cells and antibodies specific for this vaccination 70 years later remains an immunologic enigma. It has never been determined how these long-lived memory B cells are maintained and whether they are protected by storage in a special niche. We report that, whereas blood and spleen compartments present similar frequencies of IgG(+) cells, antismallpox memory B cells are specifically enriched in the spleen where they account for 0.24% of all IgG(+) cells (ie, 10-20 million cells) more than 30 years after vaccination. They represent, in contrast, only 0.07% of circulating IgG(+) B cells in blood (ie, 50-100,000 cells). An analysis of patients either splenectomized or rituximab-treated confirmed that the spleen is a major reservoir for long-lived memory B cells. No significant correlation was observed between the abundance of these cells in blood and serum titers of antivaccinia virus antibodies in this study, including in the contrasted cases of B cell-depleting treatments. Altogether, these data provide evidence that in humans, the two arms of B-cell memory--long-lived memory B cells and plasma cells--have specific anatomic distributions--spleen and bone.
marrow--and homeostatic regulation.