Splenic red pulp macrophages are intrinsically superparamagnetic and contaminate magnetic cell isolates.

A main function of splenic red pulp macrophages is the degradation of damaged or aged erythrocytes. Here we show that these macrophages accumulate ferrimagnetic iron oxides that render them intrinsically superparamagnetic. Consequently, these cells routinely contaminate splenic cell isolates obtained with the use of MCS, a technique that has been widely used in immunological research for decades. These contaminations can profoundly alter experimental results. In mice deficient for the transcription factor SpiC, which lack red pulp macrophages, liver Kupffer cells take over the task of erythrocyte degradation and become superparamagnetic. We describe a simple additional magnetic separation step that avoids this problem and substantially improves purity of magnetic cell isolates from the spleen.
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