Magnetic particle imaging enables non-radioactive quantitative sentinel lymph node identification: feasibility proof in murine models

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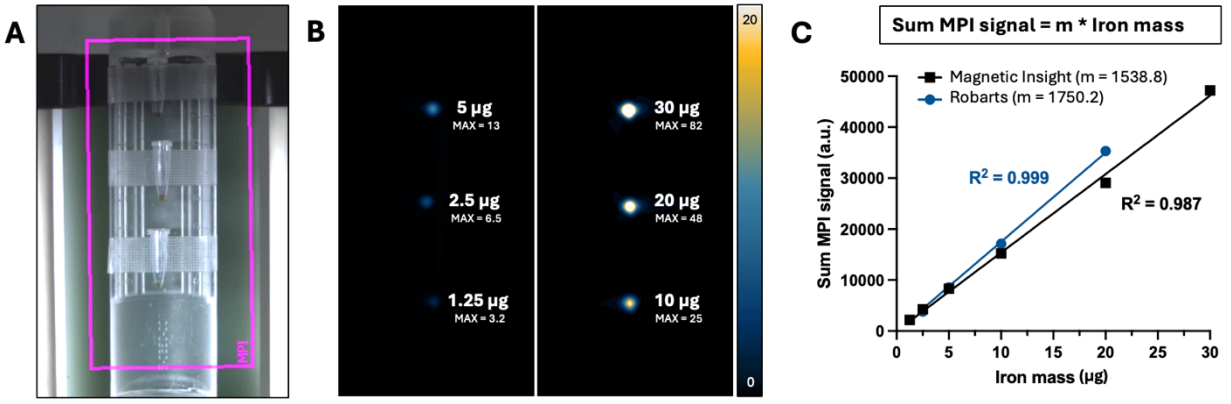
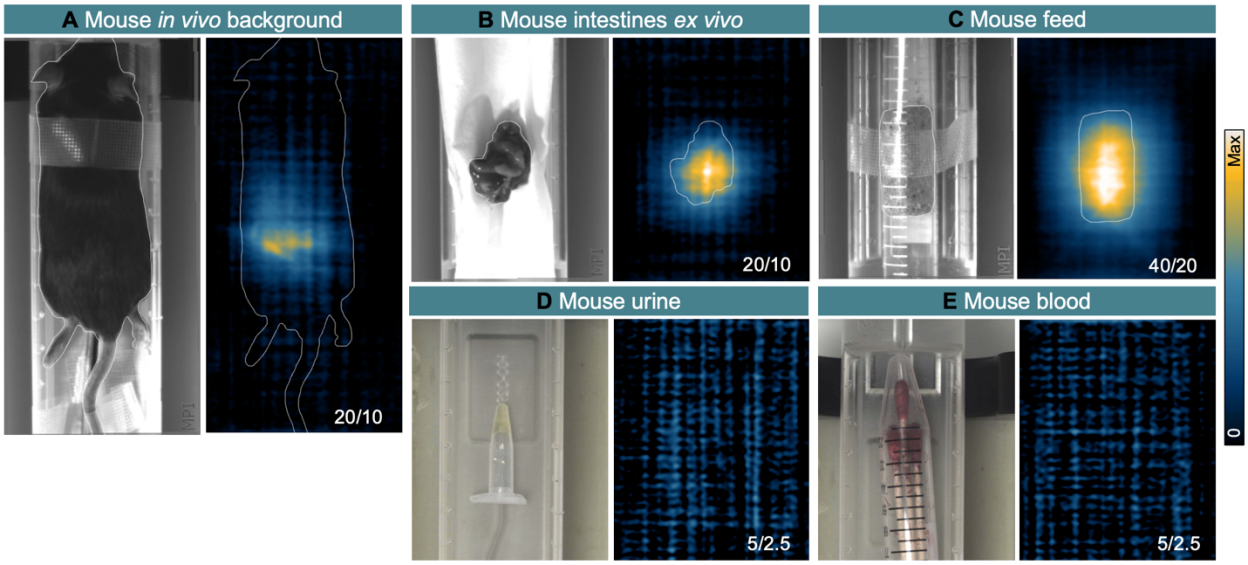
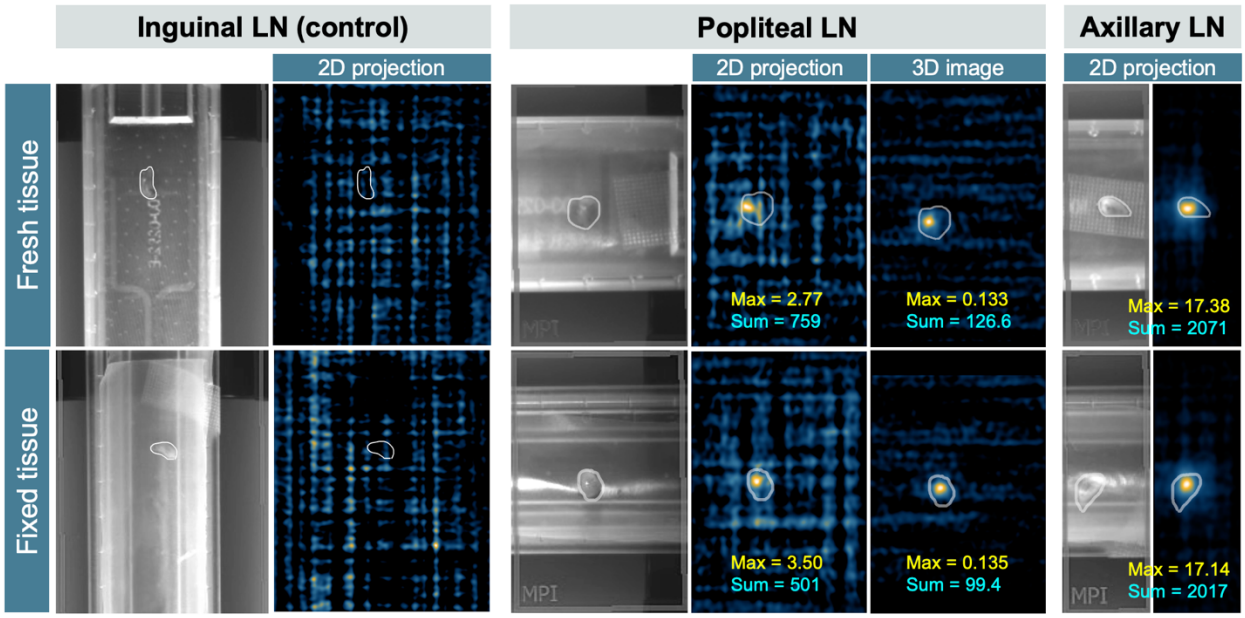
Supplementary Figures:



Supplementary Figure S1. MPI image calibration to determine the relationship between MPI signal and iron mass. A. Three iron samples (VivoTrax) were placed with equal spacing within a 12 x 6 x 6 cm field of view. **B.** Two 3D acquisitions were performed to image six samples of iron, with iron mass ranging from 1.25 – 30 µg Fe (Magnetic Insight) or 2.5 – 20 µg Fe (Robarts). MPI signal maximum intensities are labeled and images are displayed from 0-20 a.u. **C.** The sum MPI signal from each sample was directly linear with the amount of iron ($R^2 > 0.998$). The linear equation for the calibration curve is subsequently used to quantify the amount of iron from *in vivo* images, where m is the slope of the line which is a unique value for each MPI instrument and set of imaging parameters.



Supplementary Figure S2. (A) Mouse with no iron tracer administered shows low intensity background MPI signal. **B.** Excised mouse intestines show MPI signal. **C.** MPI signal is also detected from mouse feed. No MPI signal is detected from mouse **(D)** urine (50 µL) or **(E)** fresh blood. The window/level for each image is indicated (au).



Supplementary Figure S3. Comparison of MPI signals from freshly-excised vs. fixed tissues. A. Control inguinal LN shows no measurable MPI signal in a single projection image, pre- and post-fixation in 4% paraformaldehyde. **B.** Popliteal LN collected from C57 mouse that received VivoTrax intradermally to footpad. MPI signals were similar pre- and post-fixation when imaged in 2D (1 projection) and 3D (35 projections). **C.** Axillary LN collected from C57 mouse that received VivoTrax intradermally to forepaw. MPI signals were similar pre- and post-fixation when imaged by MPI as a 2D projection.