# Supplement

## Supplemental Information Inventory

**Table S1. Murine knockout conditions and mFcγR-mIgG affinities.**

Related to Fig. 4. This table displays the individual affinity and output effectiveness values used in regression and principal components analysis.

**fig. S1. Parameter autocorrelation for each parameter and each walker.**

Related to Fig. 2. This plot shows the autocorrelation of each variable within the MCMC trace as an additional check that the sampling has converged.

**fig. S2. Supplementary results to *in vivo* predictions.**

Related to Fig. 4. These data provide the receptor expression measurements used to calculate the response of each cell population. Crossvalidation for varying valency and IC concentration is presented to ensure robustness of the regression model.

| Condition | mFcγRI | mFcγRIIB | mFcγRIII | mFcγRIV | Effectiveness |
|---|---|---|---|---|---|
| **mIgG1** | 0 | $3 \times 10^6$ | $3 \times 10^5$ | 0 | 0.00 |
| **mIgG2a** | $1 \times 10^8$ | $4 \times 10^5$ | $7 \times 10^5$ | $3 \times 10^7$ | 0.95 |
| **mIgG2b** | $1 \times 10^5$ | $2 \times 10^6$ | $6 \times 10^5$ | $2 \times 10^7$ | 0.20 |
| **mIgG3** | $2 \times 10^7$ | 0 | 0 | 0 | 0.00 |
| **mIgG1-FcγRIIB-/-** | 0 | 0 | $3 \times 10^5$ | 0 | 0.70 |
| **mIgG2a-FcγRIIB-/-** | $1 \times 10^8$ | 0 | $7 \times 10^5$ | $3 \times 10^7$ | 1.00 |
| **mIgG2b-FcγRIIB-/-** | $1 \times 10^5$ | 0 | $6 \times 10^5$ | $2 \times 10^7$ | 0.75 |
| **mIgG3-FcγRIIB-/-** | $2 \times 10^7$ | 0 | 0 | 0 | 0.00 |
| **mIgG2a-FcγRI-/-** | 0 | $4 \times 10^5$ | $7 \times 10^5$ | $3 \times 10^7$ | 0.80 |
| **mIgG2a-FcγRIII-/-** | $1 \times 10^8$ | $4 \times 10^5$ | 0 | $3 \times 10^7$ | 0.93 |
| **mIgG2a-FcγRI,IV-/-** | 0 | $4 \times 10^5$ | $7 \times 10^5$ | 0 | 0.35 |
| **mIgG2b-Fucose-/-** | $1 \times 10^5$ | $1 \times 10^7$ | $1.1 \times 10^6$ | $2 \times 10^8$ | 0.70 |

Table S1. **Murine knockout conditions and mFcγR-mIgG affinities. Related to Fig. 4.** Murine knockout conditions and mFcγR-mIgG affinities used in principal component analysis shown in Fig. 4. Values in columns labeled with mFcγRs are affinities with $M^{-1}$ units (Gavin et al., 1998; Guilliams et al., 2014). Values in the effectiveness column represent proportional reduction in lung metastases observed with treatment (Nimmerjahn and Ravetch, 2005). (E.g. A value of 0.0 means the number of lung metastases was unaffected, while 1.0 means they were all cleared.)
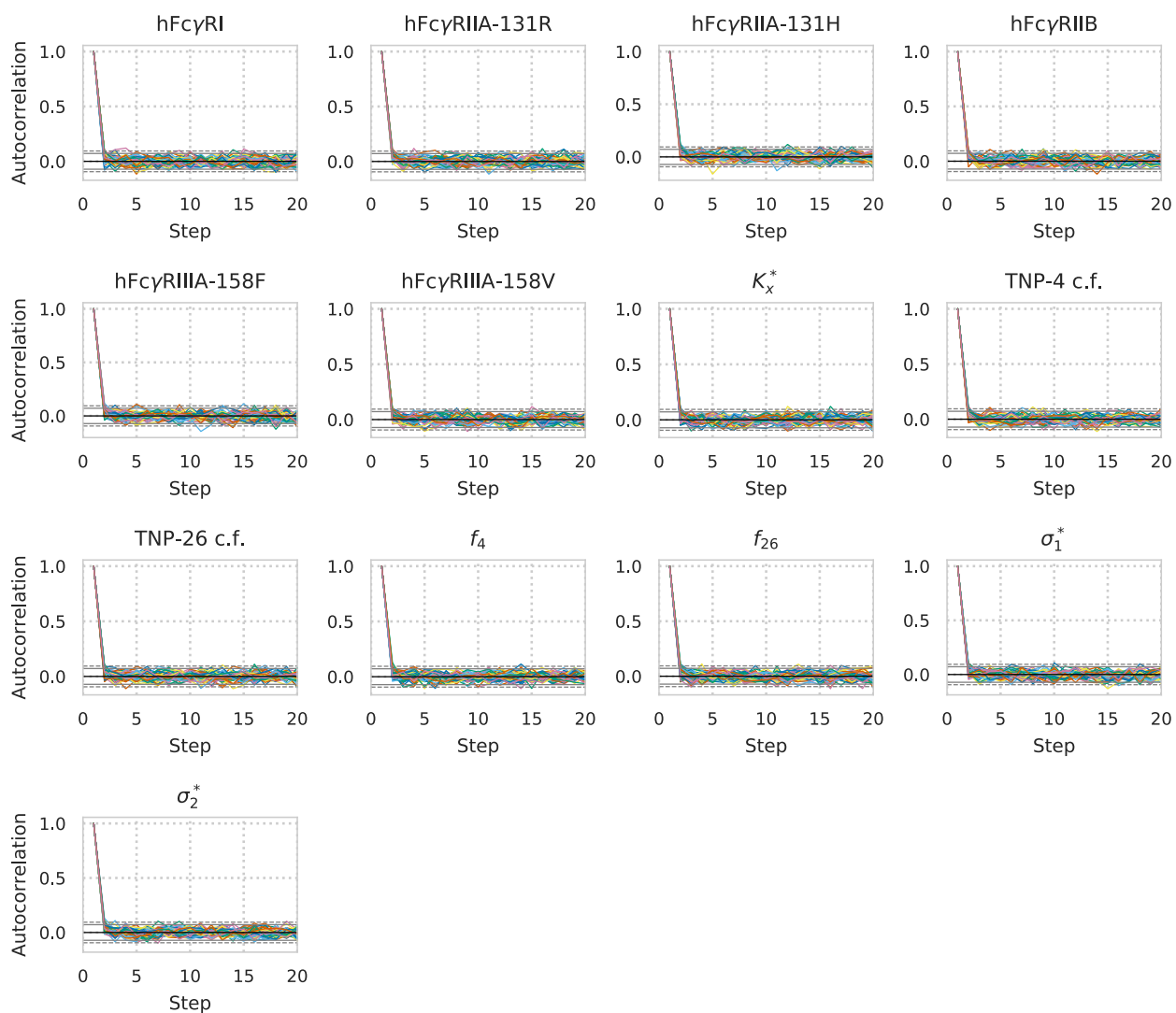
Figure S1: **Parameter autocorrelation for each parameter and each walker. Related to Fig. 2.** Solid and dotted lines indicate the 95th and 99th percentile significance bounds.
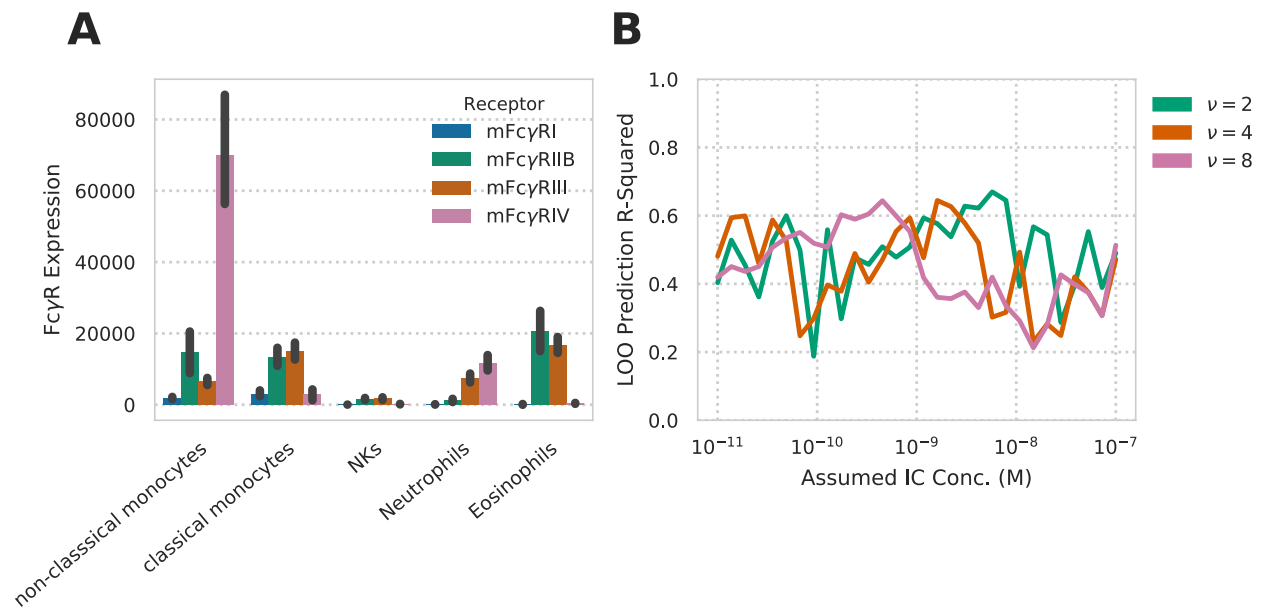
Figure S2: **Supplementary results to *in vivo* predictions. Related to Fig. 4.** A) Receptor abundance quantified across different peripheral immune cell populations. Error bars indicate standard error of biological replicates (N >= 3). B) Prediction performance upon crossvalidation for the model predicting *in vivo* efficacy with differing assumed IC concentration and valency.