Modelling MZB development during an active immune response

Background

B cell fate determination upon TD immunization

We are intersted in understanding how and to what degree the cross-talk between antigen derived signals and environmental cues affect the fate decisions of B cells responding to an antigenic stimuli. To address this, we study precursor-progeny relationships, cellular-flux and turnover of B cells in mice challenged with a T-dependent antigen (NP-CGG).

Mouse model for fate-mapping of B cells responding to an antigen

To analyze B cells, which are activated by T-dependent (TD) immunization, we use Cγ1-Cre driven CAR-reporter mice, in which B cells responding during an immune response permanently express CARprotein and thus can be tracked over time by antibody staining. Our preliminary analysis of B cell developmental dynamics in these mice revealed that a fraction of B cells that responded to the TD antigen (marked by CAR+ label) acquire MZ B cells phenotype and localize to the marginal zone in the spleen. To investigate the factors determining the bifurcation of activated B cells (CAR+) into the MZ fate versus the GC driven plasma or memory fates, we track and model the kinetics of antigenically activated B cells within follicular (FO), GC and MZ B cell subsets in the CAR reporter mice post immunization and use it to build a quantitative map of B cell differentiation pathways during an immune response.