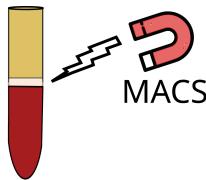
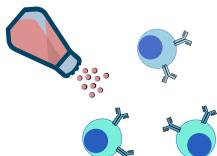


a.**1. purify B cells****2. analyze *in-vivo* samples**

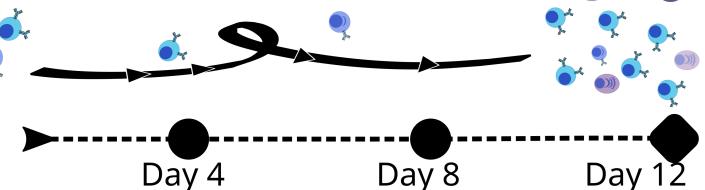
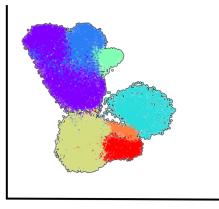
input B cells: (Day 0)

long-lived

plasma cells: (BM CD138+)

3. stimulate input w/ cytokines**4. analyze *in-vitro* time-course**

expansion, differentiation, CSR

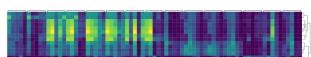
**b****measurements**

VDJ

C

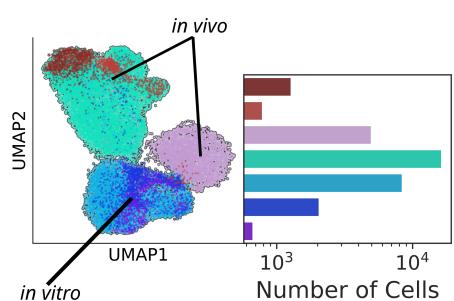
isotype / class

lineage barcode

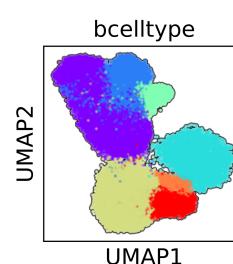


clonal origin

gene expression

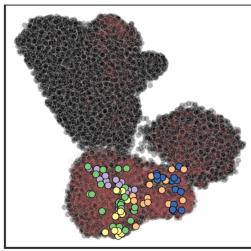
c

- BM CD138+
- BMMNC
- Day 0
- Day 4
- Day 8
- Day 12
- PBMC

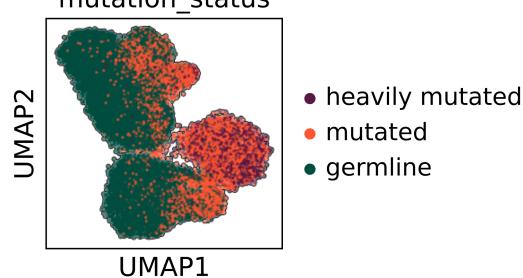


- Naive B cell
- Non-Switched Memory B cell
- Plasma B cell
- Switched Memory B cell
- iv GC B cell
- iv Plasma B cell
- iv Plasmablast

UMAP 2



- Clonal Family Member not Detected
- ↔ Clonal Family Member Detected



- heavily mutated
- mutated
- germline