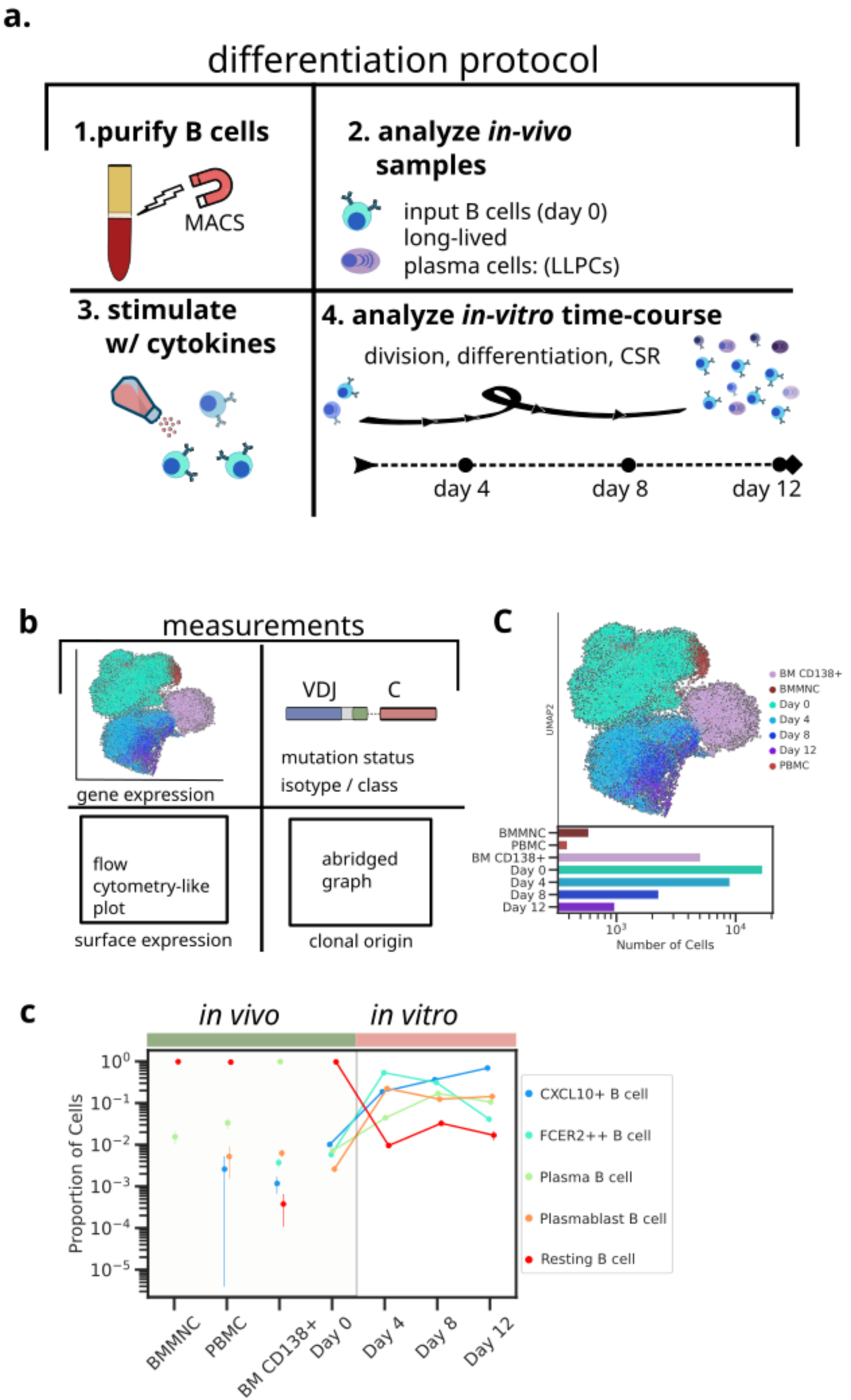
a.
differentiation protocol
1.purify B cells
MACS
2. analyze *in-vivo* samples
input B cells (day 0)
long-lived
plasma cells: (LLPCs)
3. stimulate w/ cytokines
4. analyze *in-vitro* time-course
division, differentiation, CSR
day 4
day 8
day 12
b
measurements
gene expression
VDJ
C
mutation status
isotype / class
flow cytometry-like plot
surface expression
abridged graph
clonal origin
C
UMAP2
BM CD138+
BMMNC
Day 0
Day 4
Day 8
Day 12
PBMC
BMMNC
PBMC
BM CD138+
Day 0
Day 4
Day 8
Day 12
10^3
10^4
Number of Cells
c
in vivo
in vitro
Proportion of Cells
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
BMMNC
PBMC
BM CD138+
Day 0
Day 4
Day 8
Day 12
CXCL10+ B cell
FCER2++ B cell
Plasma B cell
Plasmablast B cell
Resting B cell