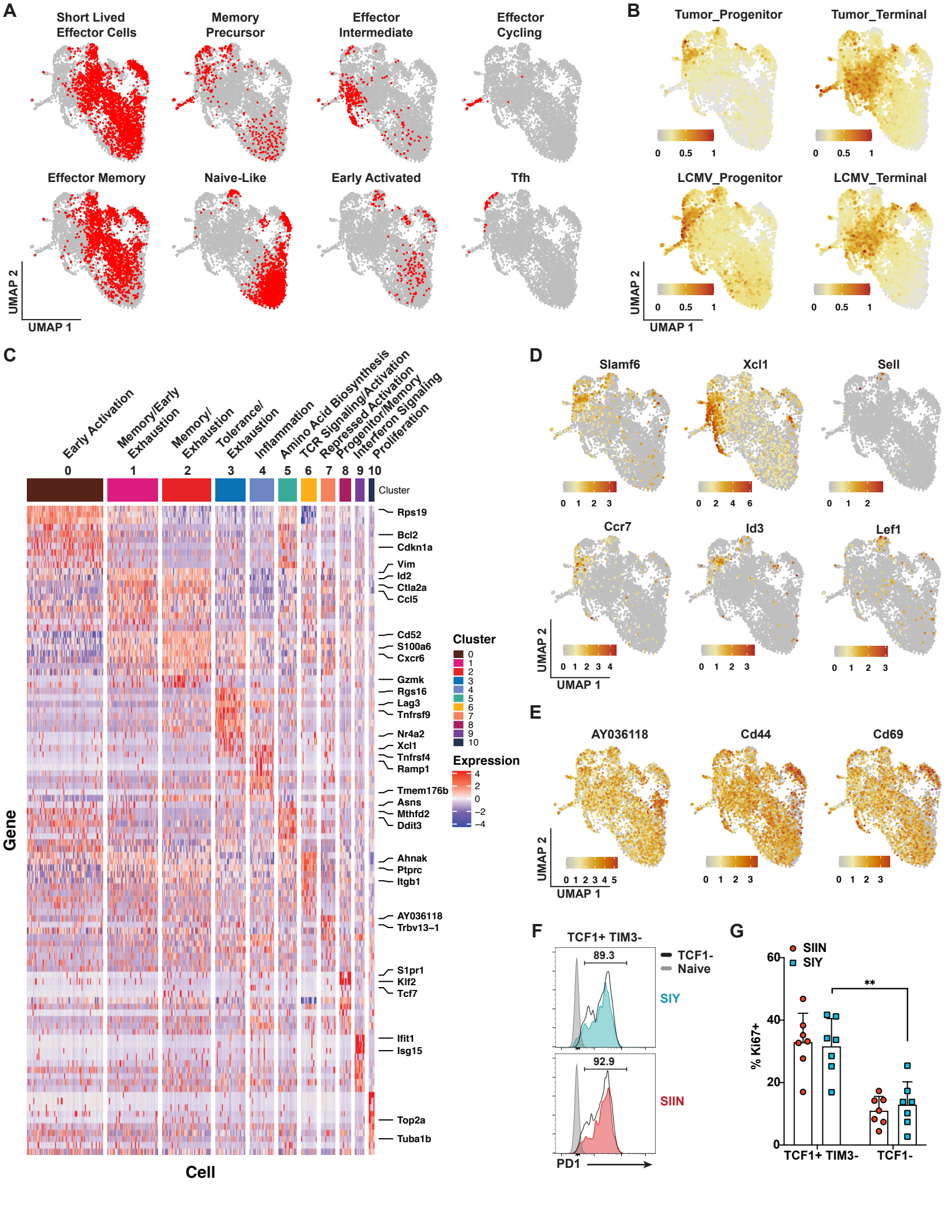
A
Short Lived Effector Cells
Memory Precursor
Effector Intermediate
Effector Cycling
Effector Memory
Naive-Like
Early Activated
Tfh
UMAP 2
UMAP 1
B
Tumor_Progenitor
Tumor_Terminal
LCMV_Progenitor
LCMV_Terminal
0 0.5 1
C
Early Activation
Memory/Early Exhaustion
Memory/ Exhaustion
Tolerance/ Exhaustion
Inflammation
Amino Acid Biosynthesis
TCR Signaling/Activation
Repressed Activation
Progenitor/Memory
Interferon Signaling
Proliferation
0 1 2 3 4 5 6 7 8 9 10
Cluster
Rps19
Bcl2
Cdkn1a
Vim
Id2
Ctla2a
Ccl5
Cd52
S100a6
Cxcr6
Gzmk
Rgs16
Lag3
Tnfrsf9
Nr4a2
Xcl1
Tnfrsf4
Ramp1
Tmem176b
Asns
Mthfd2
Ddit3
Ahnak
Ptprc
Itgb1
AY036118
Trbv13–1
S1pr1
Klf2
Tcf7
Ifit1
Isg15
Top2a
Tuba1b
Gene
Cell
Expression
4 2 0 −2 −4
D
Slamf6
Xcl1
Sell
Ccr7
Id3
Lef1
E
AY036118
Cd44
Cd69
F
TCF1+ TIM3-
89.3
92.9
TCF1-
Naive
SIY
SIIN
PD1
G
SIIN
SIY
% Ki67+
0 20 40 60
**
TCF1+ TIM3-
TCF1-