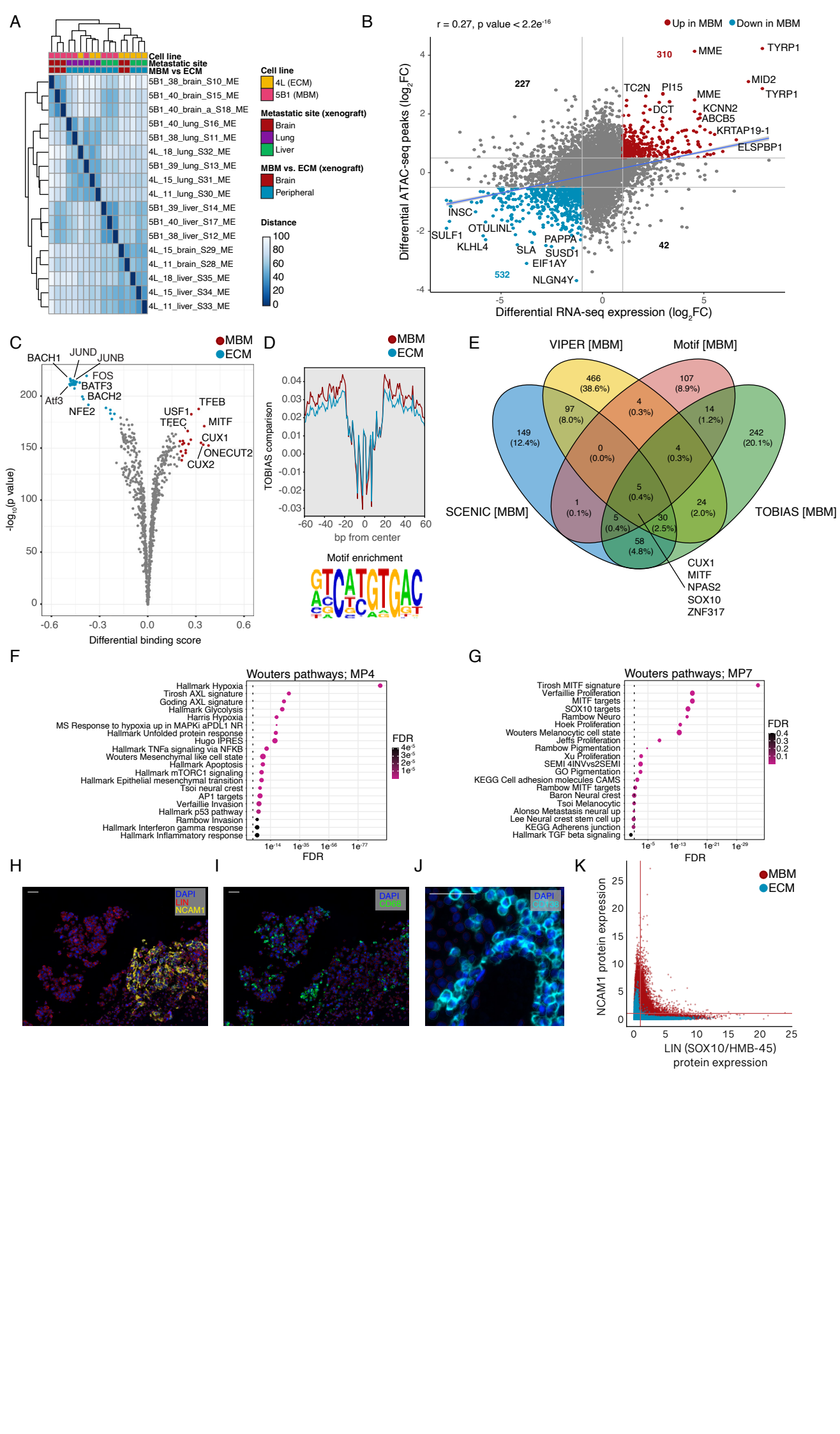
A
Cell line
Metastatic site
MBM vs ECM
5B1_38_brain_S10_ME
5B1_40_brain_S15_ME
5B1_40_brain_a_S18_ME
5B1_40_lung_S16_ME
5B1_38_lung_S11_ME
4L_18_lung_S32_ME
5B1_39_lung_S13_ME
4L_15_lung_S31_ME
4L_11_lung_S30_ME
5B1_39_liver_S14_ME
5B1_40_liver_S17_ME
5B1_38_liver_S12_ME
4L_15_brain_S29_ME
4L_11_brain_S28_ME
4L_18_liver_S35_ME
4L_15_liver_S34_ME
4L_11_liver_S33_ME
Cell line
4L (ECM)
5B1 (MBM)
Metastatic site (xenograft)
Brain
Lung
Liver
MBM vs. ECM (xenograft)
Brain
Peripheral
Distance
100
80
60
40
20
0
B
r = 0.27, p value < 2.2e-16
Up in MBM
Down in MBM
310
227
42
532
MME
TYRP1
MID2
TYRP1
TC2N
PI15
MME
DCT
KCNN2
ABCB5
KRTAP19-1
ELSPBP1
INSC
OTULINL
SULF1
KLHL4
PAPPA
SLA
SUSD1
EIF1AY
NLGN4Y
Differential ATAC-seq peaks (log2FC)
Differential RNA-seq expression (log2FC)
C
MBM
ECM
BACH1
JUND
JUNB
FOS
BATF3
BACH2
Atf3
NFE2
TFEB
USF1
TFEC
MITF
CUX1
ONECUT2
CUX2
-log10(p value)
Differential binding score
D
MBM
ECM
TOBIAS comparison
bp from center
Motif enrichment
E
VIPER [MBM]
Motif [MBM]
SCENIC [MBM]
TOBIAS [MBM]
466 (38.6%)
107 (8.9%)
97 (8.0%)
4 (0.3%)
14 (1.2%)
149 (12.4%)
242 (20.1%)
0 (0.0%)
4 (0.3%)
5 (0.4%)
1 (0.1%)
24 (2.0%)
5 (0.4%)
30 (2.5%)
58 (4.8%)
CUX1
MITF
NPAS2
SOX10
ZNF317
F
Wouters pathways; MP4
Hallmark Hypoxia
Tirosh AXL signature
Goding AXL signature
Hallmark Glycolysis
Harris Hypoxia
MS Response to hypoxia up in MAPKi aPDL1 NR
Hallmark Unfolded protein response
Hugo IPRES
Hallmark TNFa signaling via NFKB
Wouters Mesenchymal like cell state
Hallmark Apoptosis
Hallmark mTORC1 signaling
Hallmark Epithelial mesenchymal transition
Tsoi neural crest
AP1 targets
Verfaillie Invasion
Hallmark p53 pathway
Rambow Invasion
Hallmark Interferon gamma response
Hallmark Inflammatory response
FDR
G
Wouters pathways; MP7
Tirosh MITF signature
Verfaillie Proliferation
MITF targets
SOX10 targets
Rambow Neuro
Hoek Proliferation
Wouters Melanocytic cell state
Jeffs Proliferation
Rambow Pigmentation
Xu Proliferation
SEMI 4INVvs2SEMI
GO Pigmentation
KEGG Cell adhesion molecules CAMS
Rambow MITF targets
Baron Neural crest
Tsoi Melanocytic
Alonso Metastasis neural up
Lee Neural crest stem cell up
KEGG Adherens junction
Hallmark TGF beta signaling
FDR
H
DAPI
LIN
NCAM1
I
DAPI
CD68
J
DAPI
CD150
K
MBM
ECM
NCAM1 protein expression
LIN (SOX10/HMB-45) protein expression