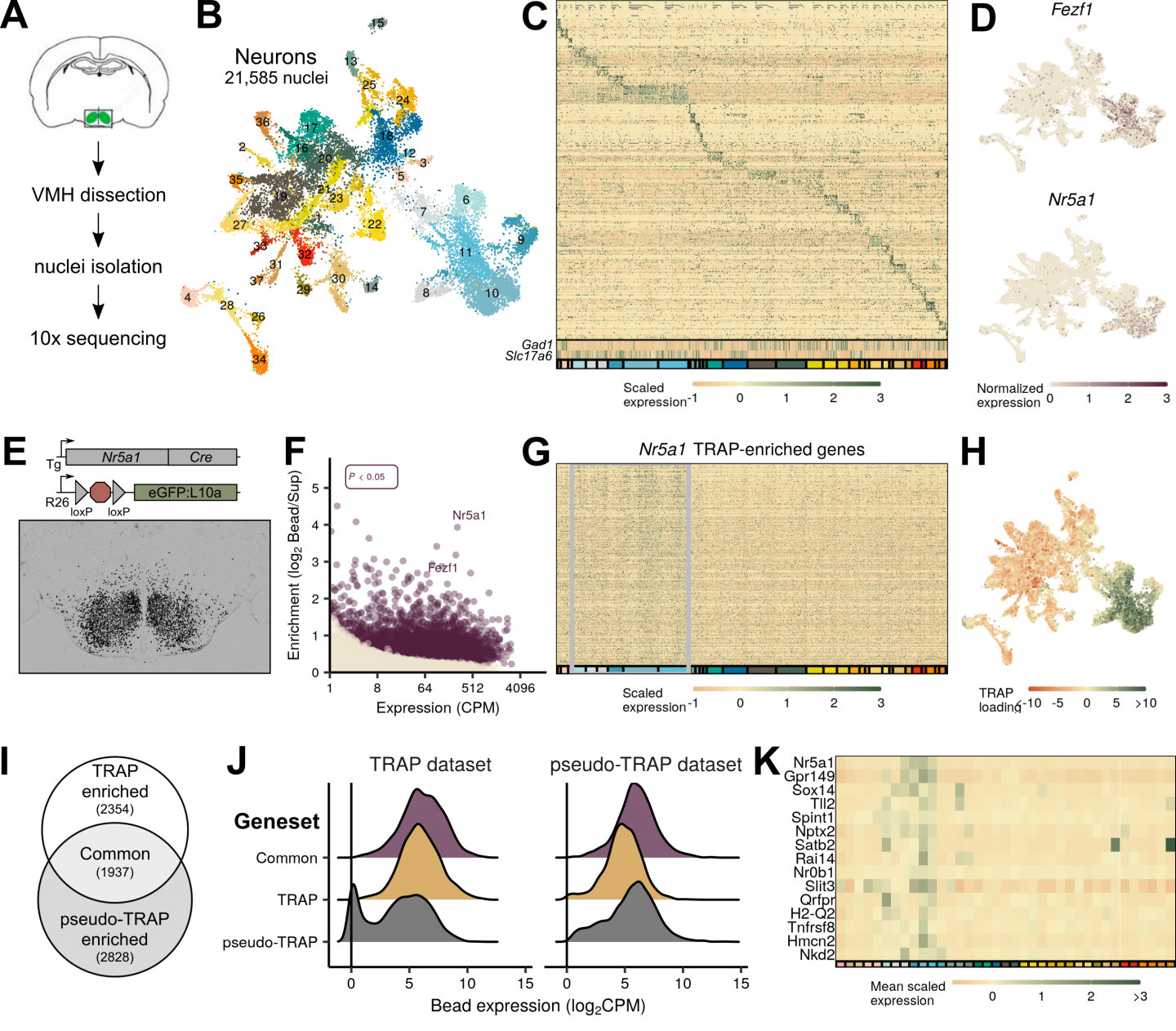
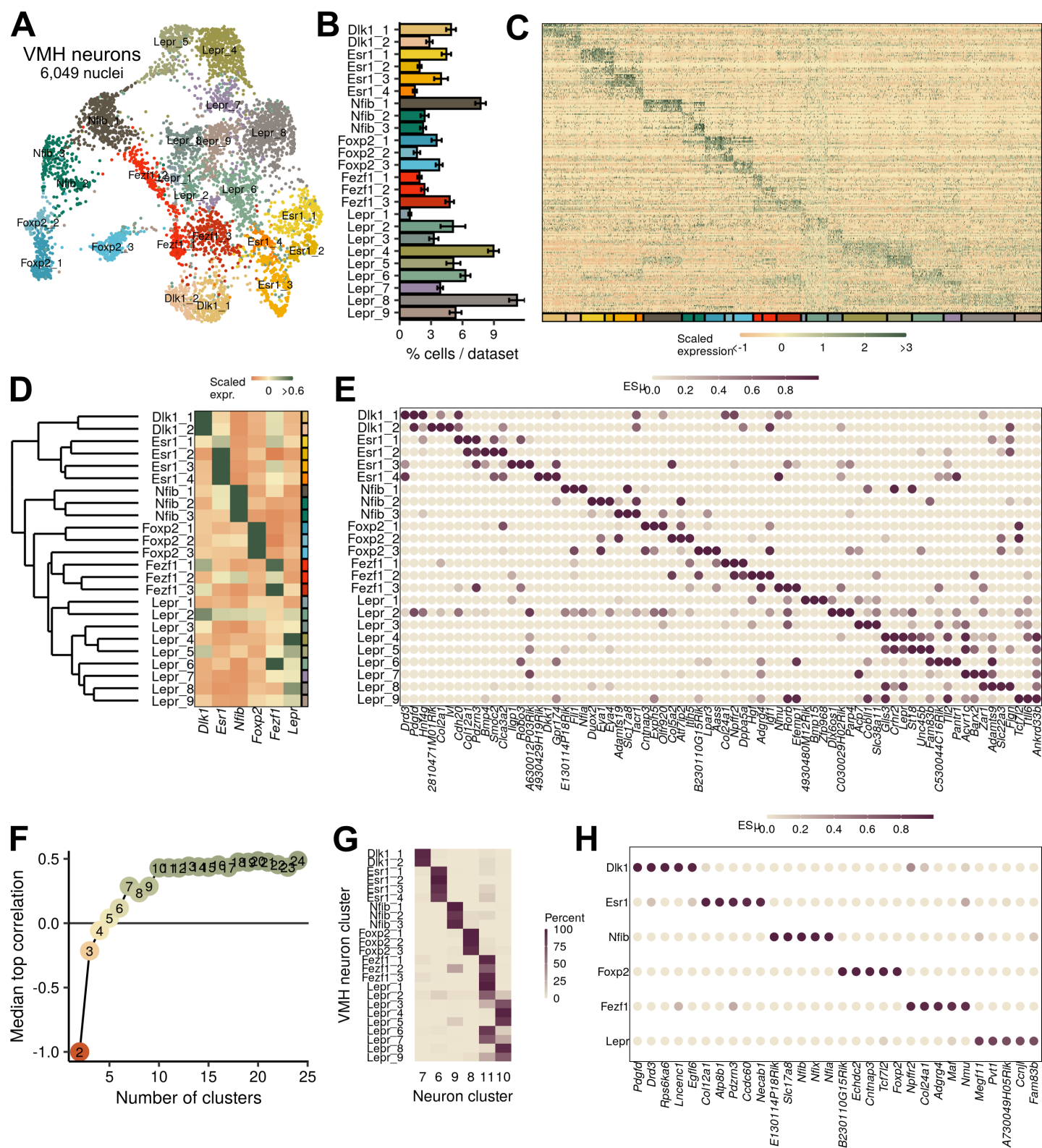
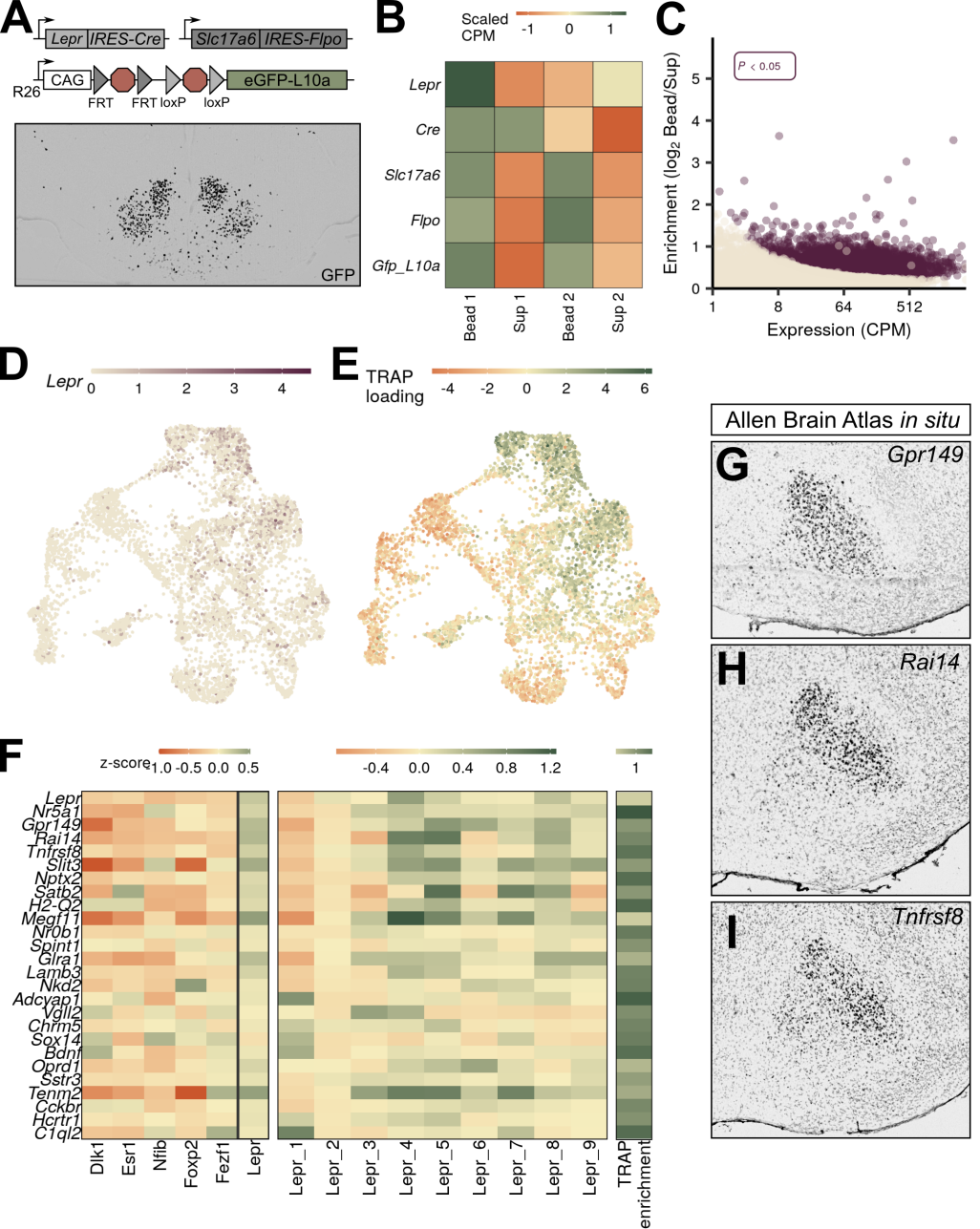
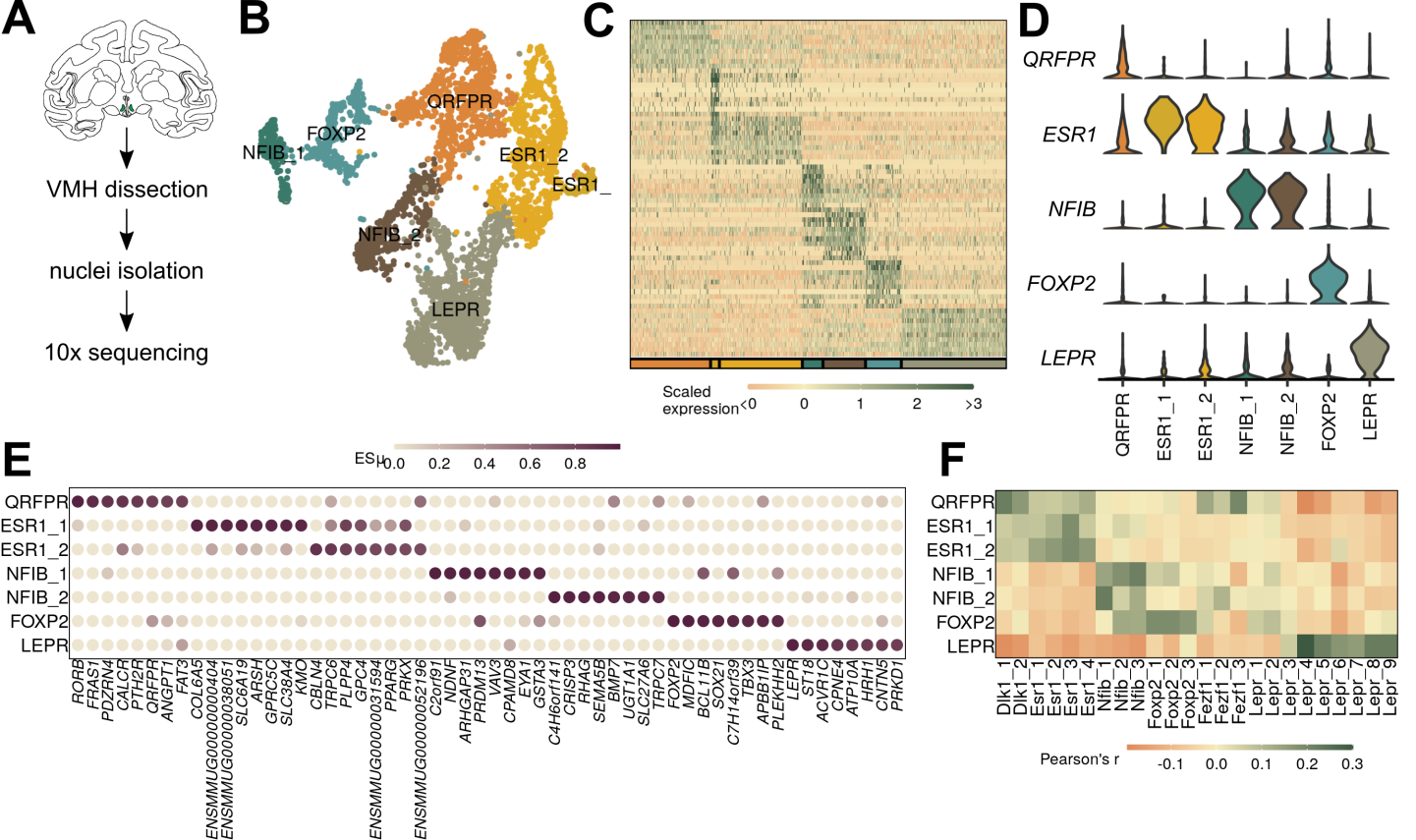
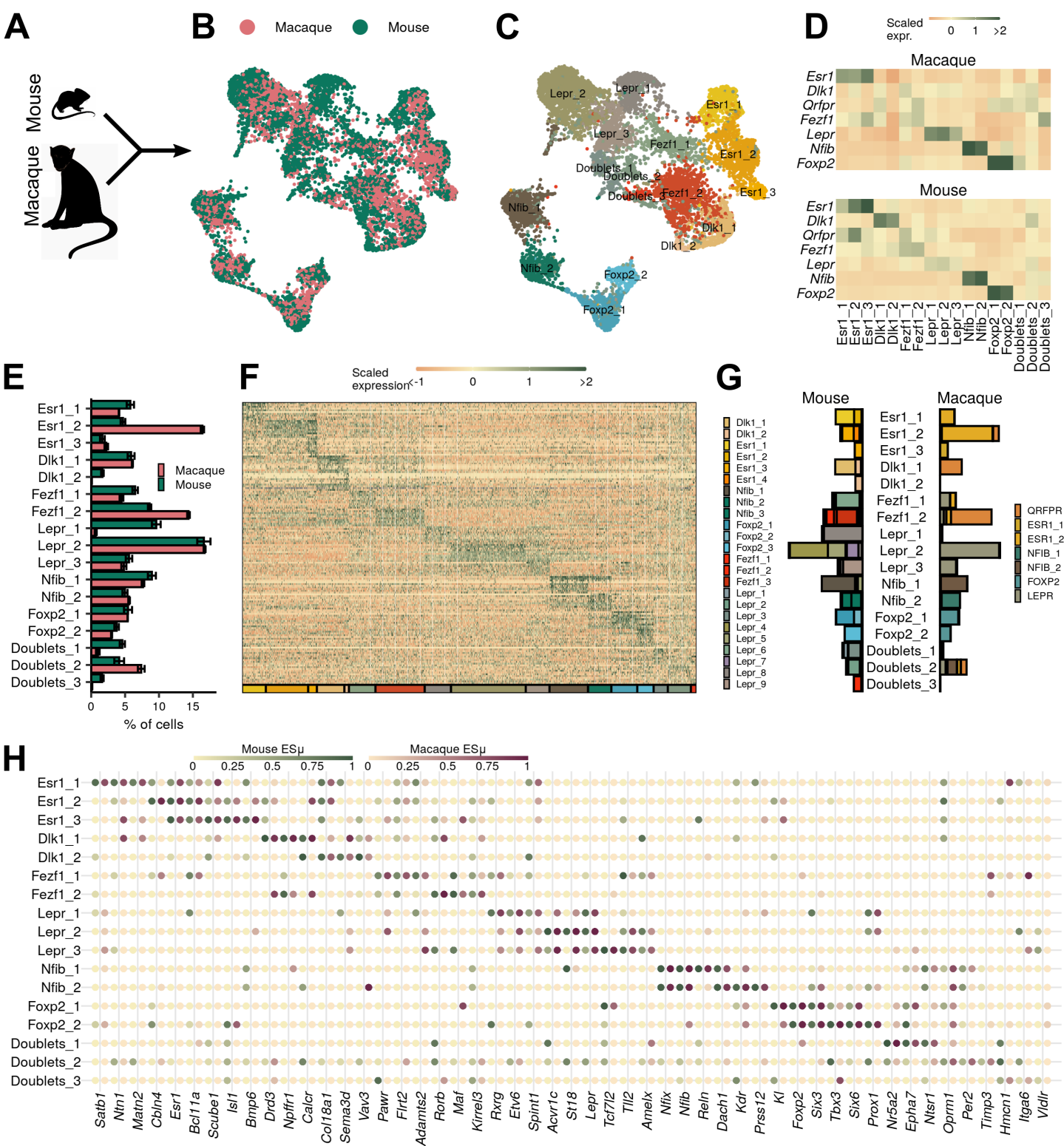

A
VMH dissection
nuclei isolation
10x sequencing
B
Neurons
21,585 nuclei
C
Gad1
Slc17a6
Scaled expression
-1
0
1
2
3
D
Fezf1
Nr5a1
Normalized expression
0
1
2
3
E
Tg
Nr5a1
Cre
R26
loxP
loxP
eGFP:L10a
F
P < 0.05
Nr5a1
Fezf1
Enrichment (log2 Bead/Sup)
Expression (CPM)
1
8
64
512
4096
G
Nr5a1 TRAP-enriched genes
Scaled expression
-1
0
1
2
3
H
TRAP loading
-10
-5
0
5
>10
I
TRAP enriched
(2354)
Common
(1937)
pseudo-TRAP enriched
(2828)
J
TRAP dataset
pseudo-TRAP dataset
Geneset
Common
TRAP
pseudo-TRAP
0
5
10
15
Bead expression (log2CPM)
K
Nr5a1
Gpr149
Sox14
Tll2
Spint1
Nptx2
Satb2
Rai14
Nr0b1
Slit3
Qrfpr
H2-Q2
Tnfrsf8
Hmcn2
Nkd2
Mean scaled expression
0
1
2
>3


A
VMH neurons
6,049 nuclei
B
% cells / dataset
C
Scaled expression
D
Scaled expr.
E
ESμ
F
Median top correlation
Number of clusters
G
VMH neuron cluster
Neuron cluster
Percent
H
ESμ


A
Lepr
IRES-Cre
Slc17a6
IRES-Flpo
R26
CAG
FRT
FRT
loxP
loxP
eGFP-L10a
GFP
B
Scaled CPM
-1
0
1
Lepr
Cre
Slc17a6
Flpo
Gfp_L10a
Bead 1
Sup 1
Bead 2
Sup 2
C
P < 0.05
Enrichment (log2 Bead/Sup)
Expression (CPM)
1
8
64
512
D
Lepr
0
1
2
3
4
E
TRAP loading
-4
-2
0
2
4
6
F
z-score
1.0
-0.5
0.0
0.5
-0.4
0.0
0.4
0.8
1.2
1
Lepr
Nr5a1
Gpr149
Rai14
Tnfrsf8
Slit3
Nptx2
Satb2
H2-Q2
Megf11
Nr0b1
Spint1
Glra1
Lamb3
Nkd2
Adcyap1
Vgll2
Chrm5
Sox14
Bdnf
Oprd1
Sstr3
Tenm2
Cckbr
Hcrtr1
C1ql2
Dlk1
Esr1
Nfib
Foxp2
Fezf1
Lepr
Lepr_1
Lepr_2
Lepr_3
Lepr_4
Lepr_5
Lepr_6
Lepr_7
Lepr_8
Lepr_9
TRAP enrichment
Allen Brain Atlas in situ
G
Gpr149
H
Rai14
I
Tnfrsf8


A
VMH dissection
nuclei isolation
10x sequencing
B
QRFPR
FOXP2
NFIB_1
ESR1_2
ESR1_
NFIB_2
LEPR
C
Scaled expression
<0
0
1
2
>3
D
QRFPR
ESR1
NFIB
FOXP2
LEPR
QRFPR
ESR1_1
ESR1_2
NFIB_1
NFIB_2
FOXP2
LEPR
E
ESR1
0.0
0.2
0.4
0.6
0.8
QRFPR
ESR1_1
ESR1_2
NFIB_1
NFIB_2
FOXP2
LEPR
RORB
FRAS1
PDZRN4
CALCR
PTH2R
QRFPR
ANGPT1
FAT3
COL6A5
ENSMMUG00000000404
ENSMMUG00000038051
SLC6A19
ARSH
GPRC5C
SLC38A4
KMO
CBLN4
TRPC6
PLPP4
GPC4
ENSMMUG00000031594
PPARG
PRKX
ENSMMUG00000052196
C2orf91
NDNF
ARHGAP31
PRDM13
VAV3
CPAMD8
EYA1
GSTA3
C4H6orf141
CRISP3
RHAG
SEMA5B
BMP7
UGT1A1
SLC27A6
TRPC7
FOXP2
MDFIC
BCL11B
SOX21
C7H14orf39
TBX3
APBB1P
PLEKHH2
LEPR
ST18
ACVR1C
CPNE4
ATP10A
HRH1
CNTN5
PRKD1
F
QRFPR
ESR1_1
ESR1_2
NFIB_1
NFIB_2
FOXP2
LEPR
Dlk1_1
Dlk1_2
Esr1_1
Esr1_2
Esr1_3
Esr1_4
Nfib_1
Nfib_2
Nfib_3
Foxp2_1
Foxp2_2
Foxp2_3
Fezf1_1
Fezf1_2
Fezf1_3
Lepr_1
Lepr_2
Lepr_3
Lepr_4
Lepr_5
Lepr_6
Lepr_7
Lepr_8
Lepr_9
Pearson's r
-0.1
0.0
0.1
0.2
0.3


A
Mouse
Macaque
B
Macaque
Mouse
C
Lepr_2
Lepr_1
Esr1_1
Lepr_3
Fezf1_1
Esr1_2
Doublets_1
Doublets_2
Doublets_3
Fezf1_2
Esr1_3
Nfib_1
Dlk1_1
Dlk1_2
Nfib_2
Foxp2_2
Foxp2_1
D
Scaled expr.
0
1
>2
Macaque
Esr1
Dlk1
Qrfpr
Fezf1
Lepr
Nfib
Foxp2
Mouse
Esr1
Dlk1
Qrfpr
Fezf1
Lepr
Nfib
Foxp2
Esr1_1
Esr1_2
Esr1_3
Dlk1_1
Dlk1_2
Fezf1_1
Fezf1_2
Lepr_1
Lepr_2
Lepr_3
Nfib_1
Nfib_2
Foxp2_1
Foxp2_2
Doublets_1
Doublets_2
Doublets_3
E
Esr1_1
Esr1_2
Esr1_3
Dlk1_1
Dlk1_2
Fezf1_1
Fezf1_2
Lepr_1
Lepr_2
Lepr_3
Nfib_1
Nfib_2
Foxp2_1
Foxp2_2
Doublets_1
Doublets_2
Doublets_3
Macaque
Mouse
0
5
10
15
% of cells
F
Scaled expression
<-1
0
1
>2
G
Mouse
Macaque
Dlk1_1
Dlk1_2
Esr1_1
Esr1_2
Esr1_3
Esr1_4
Nfib_1
Nfib_2
Nfib_3
Foxp2_1
Foxp2_2
Foxp2_3
Fezf1_1
Fezf1_2
Fezf1_3
Lepr_1
Lepr_2
Lepr_3
Lepr_4
Lepr_5
Lepr_6
Lepr_7
Lepr_8
Lepr_9
Esr1_1
Esr1_2
Esr1_3
Dlk1_1
Dlk1_2
Fezf1_1
Fezf1_2
Lepr_1
Lepr_2
Lepr_3
Nfib_1
Nfib_2
Foxp2_1
Foxp2_2
Doublets_1
Doublets_2
Doublets_3
QRFPR
ESR1_1
ESR1_2
NFIB_1
NFIB_2
FOXP2
LEPR
H
Mouse ESμ
0
0.25
0.5
0.75
1
Macaque ESμ
0
0.25
0.5
0.75
1
Esr1_1
Esr1_2
Esr1_3
Dlk1_1
Dlk1_2
Fezf1_1
Fezf1_2
Lepr_1
Lepr_2
Lepr_3
Nfib_1
Nfib_2
Foxp2_1
Foxp2_2
Doublets_1
Doublets_2
Doublets_3
Satb1
Ntn1
Matn2
Cbln4
Esr1
Bcl11a
Scube1
Isl1
Bmp6
Drd3
Npffr1
Calcr
Col18a1
Sema3d
Vav3
Pawr
Flrt2
Adamts2
Rorb
Maf
Kirrel3
Rxrg
Etv6
Spint1
Acvr1c
St18
Lepr
Tcf7l2
Tll2
Amelx
Nfix
Nfib
Reln
Dach1
Kdr
Prss12
Kl
Foxp2
Six3
Tbx3
Six6
Prox1
Nr5a2
Epha7
Ntsr1
Oprm1
Per2
Timp3
Hmcn1
Itga6
Vldlr