Divergence in KRAB zinc finger proteins is associated with pluripotency spectrum in mESCs

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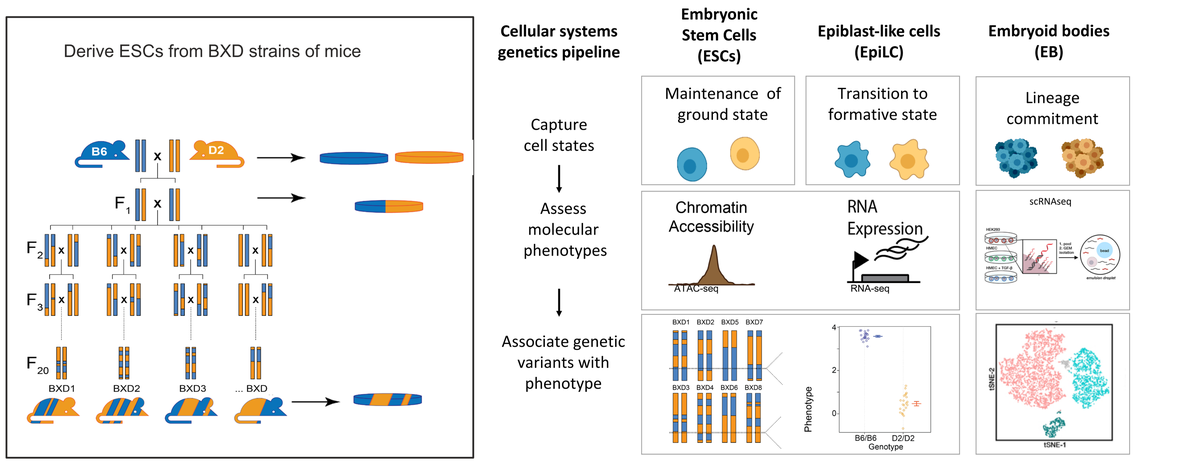
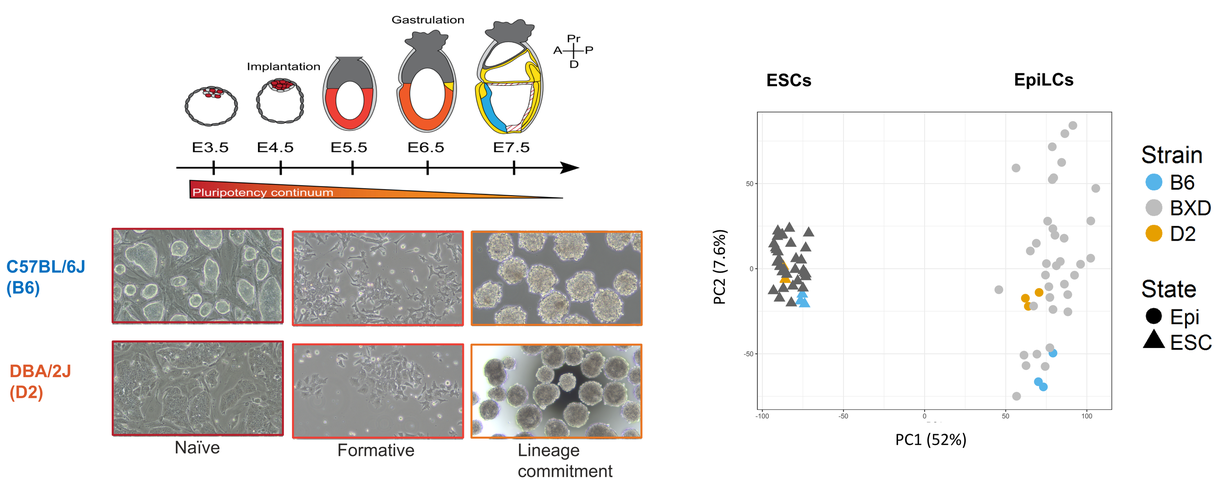
Differentiation propensity of mESCs determined by genetic background

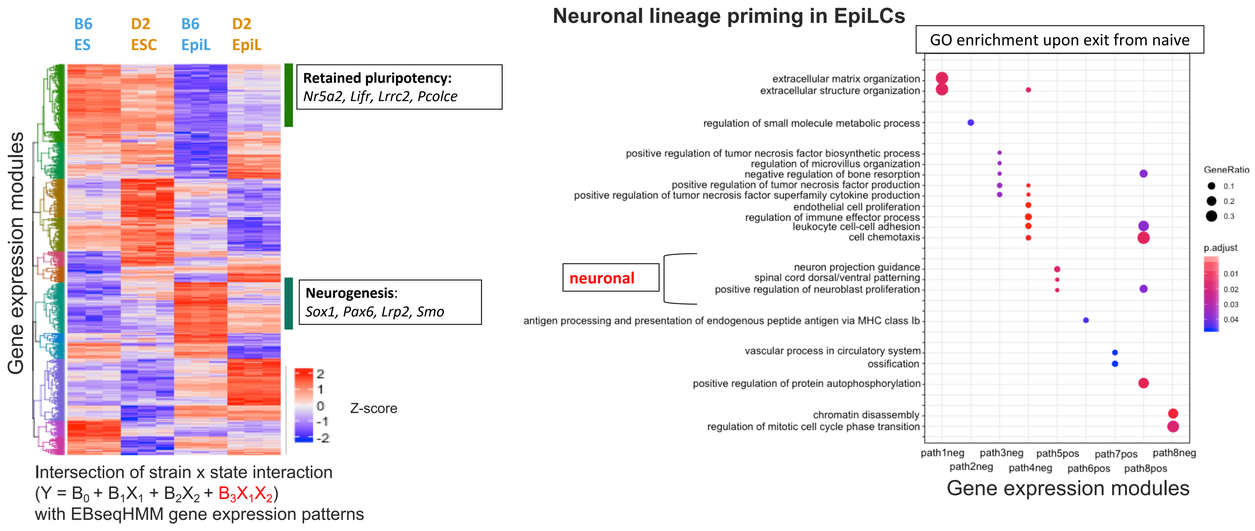
Establish *ex vivo* model of genetic control over pluripotency progression



Genetic influence over establishment of cell state

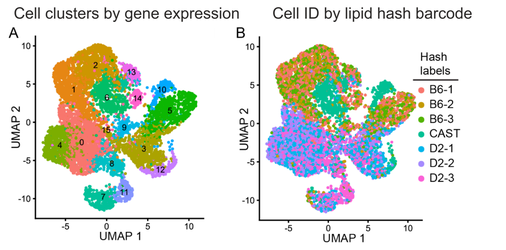


Distinct biological processes are activated as mESCs transition to formative state

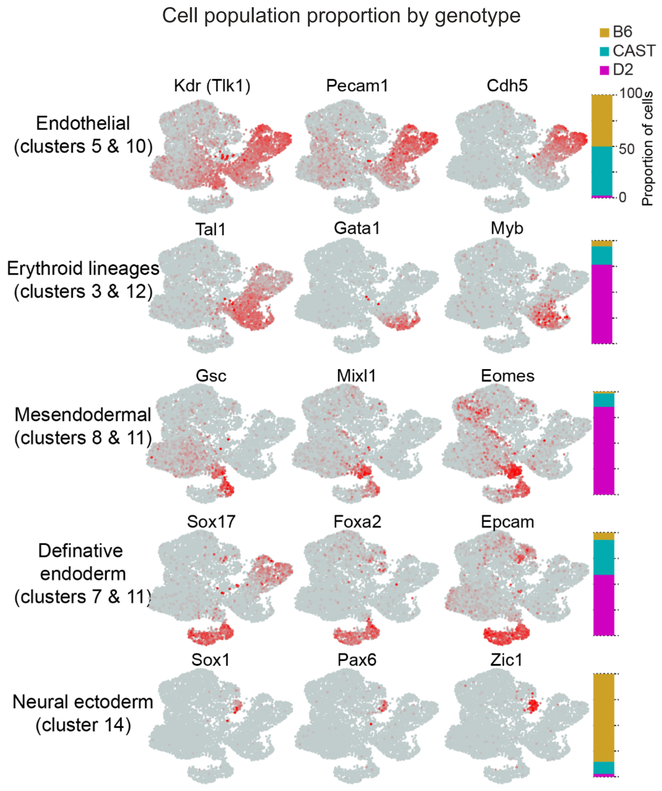


EpiLC priming signatures of neuronal lineage results in cell population biases in EBs.

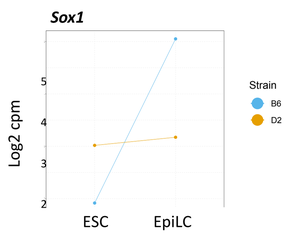
Single cell RNA sequencing in multiplexed EB samples using MULTIseq method



Cell population proportion by genotype

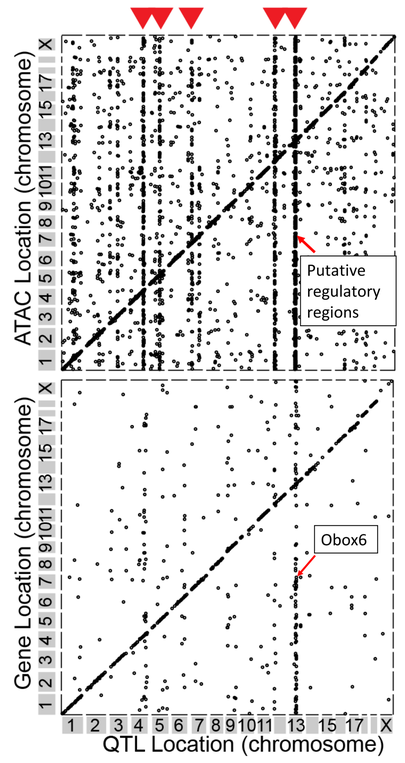


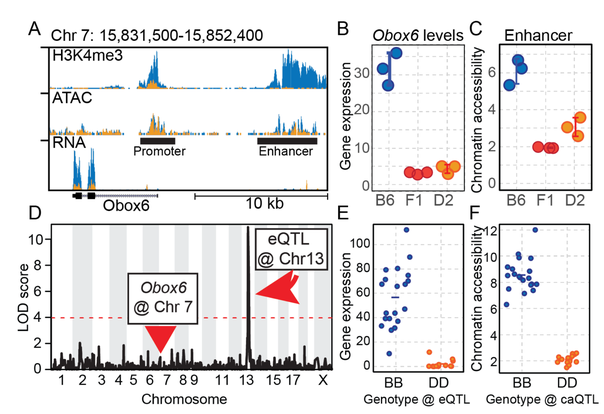
Bias in neuronal cell population upon lineage commitment in EBs



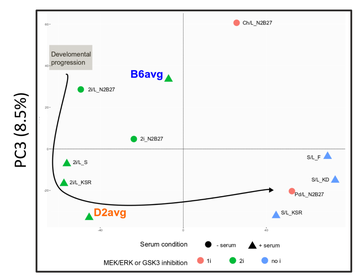
KRAB ZFP on Chr13 targets pluripotency promoting gene, *Obox6*, in ESCs

KZFP clusters co-regulate chromatin accessibility and gene expression in ESCs

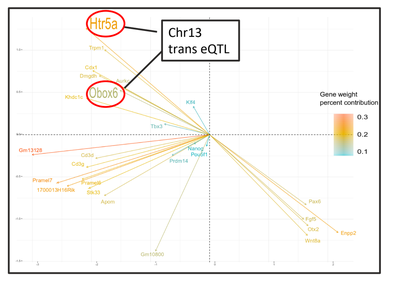




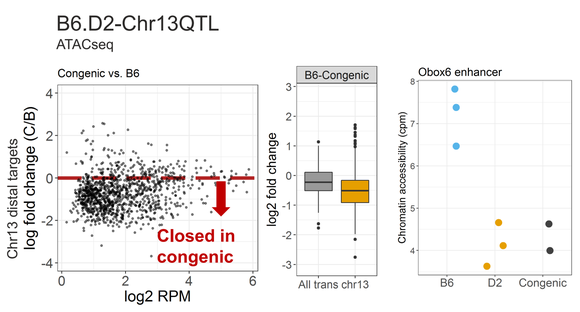
B6 associates with naïve culture conditions



Gene weights show *Obox6* contributing to B6 naïve expression program



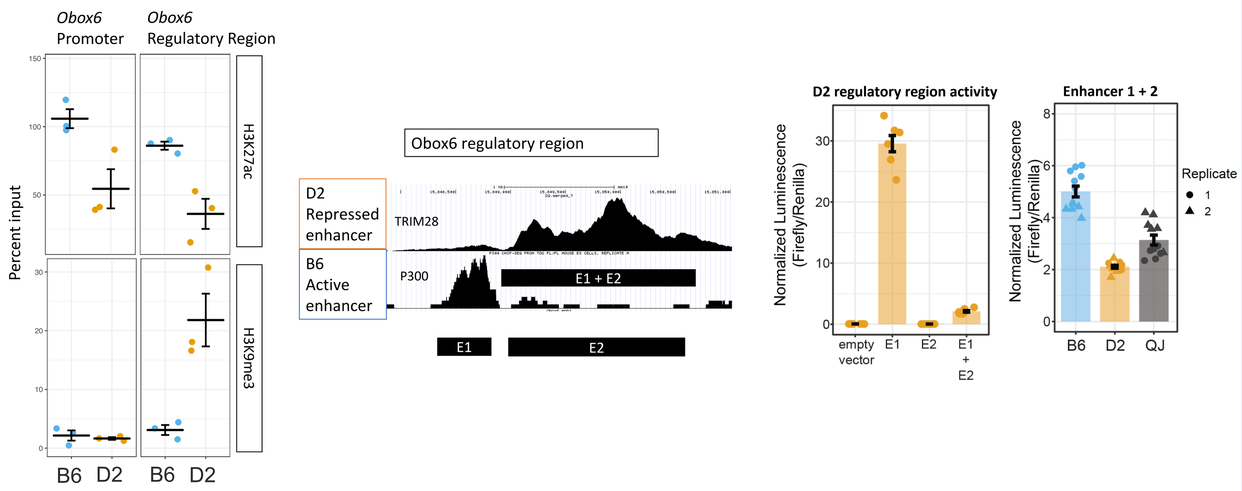
D2 allele at Chr13 selectively represses distal chromatin sites through TRIM28 recruitment



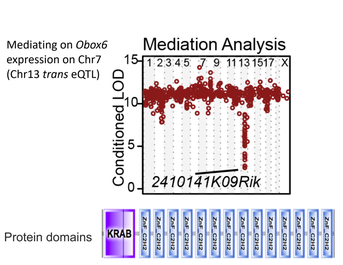
B6 background with D2 allele at Chr13 QTL interval represses Chr13 distal targets, including Obox6

Sites occupied by TRIM28 are less accessible, whereas sites lacking TRIM28 binding are more open

TRIM28 mediated repression at E2 element silences *Obox6* enhancer



Divergence in 2410141K09RIK KZFP explains suppressed expression of *Obox6* in D2 ESCs



1Mb deletion in C57BL/6NJ within Chr13 QTL interval containing best mediator of Obox6