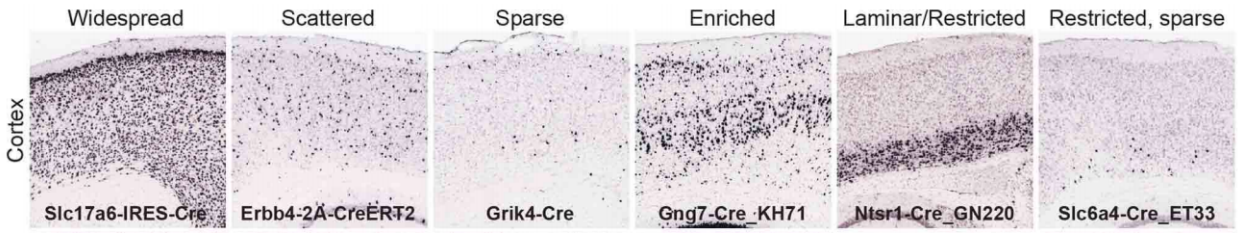
Allen Cell Types Cre Lines Glossary

This glossary provides a short description of the cortical expression patterns of the transgenic Cre lines available in the Allen Cell Types dataset.

Notes

- The focus here is on the cortex because the Cell Types data only contains whole-cell patch recordings from cells in the cortex.
- This glossary does not contain any Flp lines or Cre/Flp crosses.
- You can find additional information as well as links to experiments in these Cre lines here.
- Various terms are used to describe different patterns and extents of expression:



(Figure from Harris et al., 2014)

Chat-IRES-Cre-neo: Expressed in cholinergic neurons, and sparsely expressed in the cortex (Harris et al., 2014)

Chrna2-Cre_OE25: Enriched in Layer 5 of cortex in cells that express Cholinergic Receptor Nicotinic Alpha 2 Subunit (Harris et al., 2014)

Ctgf-T2A-dgCre: Restricted expression in Layer 6 of cortex (Harris et al., 2014)

Cux2-CreERT2: Enriched in Layers 2/3/4 of cortex (Franco et al., 2012; Harris et al., 2014)

Esr2-IRES2-Cre and **Esr2-IRES2-Cre-neo**: Marks estrogen receptor 2, scattered expression in Layer 6 of cortex

Fezf2-Cre: Expression in layer 5 (Tantirigama et al., 2016 & 2014)

Gad2-IRES-Cre: broadly marks inhibitory cells in cortex (Taniguchi et al., 2014)

Glt25d2-Cre_NF107: marks excitatory pyramidal cells in Layer5b of the cortex (Kim et al., 2016)

Gng7-Cre_KH71: enriched in layers 2 and 5 of the cortex(Harris et al., 2014)

Htr3a-Cre_NO152: marks interneurons that express 5-hydroxytryptamine (serotonin) receptor 3A (Madisen et al., 2015)

Nkx2-1-CreERT2: marks interneurons that express thyroid transcription factor 1 (Du et al., 2008)

Ndnf-IRES2-dgCre: expressed in Layer 1 of cortex

Nos1-CreERT2: sparse expression in interneurons in the cortex

Nr5a1-Cre: expressed in Layer 4 of cortex

Ntsr1-Cre_GN220: marks excitatory cells in Layer 6 that project to the thalamus and other subcortical areas (Bortone et al., 2014, Seeman et al., 2018)

Oxtr-T2A-Cre: expressed in oxytocin+ cells sparsely throughout the cortex

Penk-IRES2-Cre-neo: marks Preproenkephalin expressing cells, sparsely found in Layers 2 & 6 of cortex

Pvalb-IRES-Cre: marks Parvalbumin positive, fast-spiking inhibitory (GABAergic) cells in cortex (Harris et al., 2014; Taniguchi et al., 2014)

Rorb-IRES2-Cre: primarily marks RAR-related orphan receptor beta expressing cells in Layer 4 of cortex, with some expression in Layers 5 & 6 (Harris et al., 2014, Seeman et al., 2018, Clark et al., 2020)

Rbp4-Cre_KL100: marks cells in Layer 5 of cortex

Scnn1a-Tg3-Cre and **Scnn1a-Tg2-Cre:** expressed in cells in Layer 4 that project to the lateral geniculate nucleus (Madisen et al., 2010; Harris et al., 2014; Sun et al., 2016)

Sim1-Cre_KJ18: marks cells in Layer 5 of cortex that project to subcortical areas (Seeman et al., 2018)

Slc32a1-T2A-FlpO: marks GABAergic cells in the cortex

Slc17a6-IRES-Cre: Enrichment in upper cortical layers and scattered expression in lower cortical layers

Sst-IRES-Cre: Expressed in Somatostatin positive cells, a subset of GABAergic interneurons (Taniguchi et al., 2014)

Tlx3-Cre_PL56: expressed in excitatory pyramidal cells in Layer 5A that project to other cortical areas (Kim et al., 2016, Seeman et al., 2018)

Vipr2-IRES2-Cre and Vipr2-IRES2-Cre-neo: mark Vasoactive Intestinal Peptide Receptor 2 expressing neurons

Vip-IRES-Cre: marks vasopressin-expressing inhibitory neurons (Harris et al., 2014)

Credit, Resources, and Acknowledgements
These exercises and documents were adapted from Ashley Juavinett, PhD at UCSD.