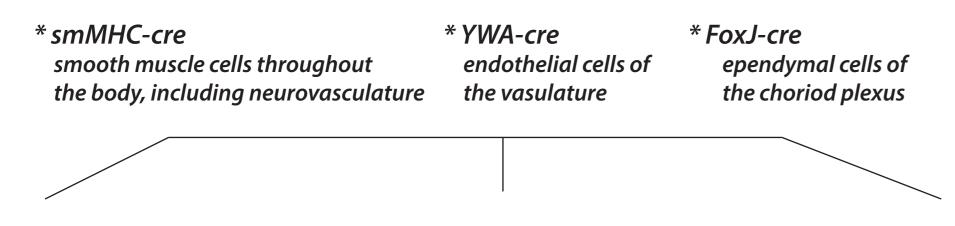
# **Cre/Flp Lines**

These are recombinase proteins knocked into specific cell types based on promoters.

These recombinases can then cleave knocked-in genes in "reporter lines" enabling specific capabilities.

### Neurovascular Lines



## **Neocortical Lines**

### Cortical Projection Cells

\* Sepw-Cre (aka Selenow)

Layer 2/3 cortical neurons
including those projecting
to layer 5 and basal ganglia

\* RBP4-Cre
Layer 5 cortical neurons
including those projecting
to the basal ganglia

## Basal Ganglia Related Lines

\* A2A-cre
Striatal spiny neurons
containing D2 receptors

\* DAT-cre

Dopaminergic neurons in the midbrain and retina.

#### **Local Cortical Interneurons**

- \* pvalb-cre/flp (aka PV)
  GABAergic cell that expresses
  calcium-binding protein parvalbumin
- calcium-binding protein parvalbumin
  We have 2 variants pvalb-cre/flp
  and PV-2A-CreER. ER needs tta or tomoxifen.
- \* sst-cre/flp (aka SOM)
  GABAergic cell that expresses
  the peptidergic transmitter
  somatostatin
- \* VGAT-cre
  GABAergic interneurons expressing
  vescicular GABA transporter (mostly all)
- \* **Ascl1-cre**Developmental marker that defines
  a PV+ subpopulation.

# "Reporter Lines"

These harbor genetic tools 'unmasked' in Cre or Flp expressing cells.

GCaMP6f (Ai93): Calcium Indicator: to image spiking

*tta:* Produces tta (tomoxifen analog)

tdTomato: Variant of red fluorescent protein: marks cells red

ChETA: Allows cells to be depolarized with blue light

**CatCh (Ai80):** Allows cells to be depolarized with blue light (more Ca2+ permiable)

Halo (Halorhodopsin): Allows cells to be hyperpolarized with orange light

**Chronos:** Allows cells to be depolarized with blue light (rapid kinetics)

RCL-hChR2 (Ai27): Allows cells to be depolarized with blue light (fused to tdTomato)

**LMO3:** Allows cells to be depolarized with blue light also fused with a bioluminescent protein to make light

# **BAC Transgenic Lines**

These animals have a bacterial artificial chromosome that contains a promoter and gene knocked-in to a subset of neurons' germline. These mice are less flexible than combining cre/flp lines with reporters. We have been phasing out their use because our experiments are highly dynamic.

\* Thy1-GCaMP6f

GCaMP6f (calcium indicator) knocked into a subset of Layer 5 cortical neurons.