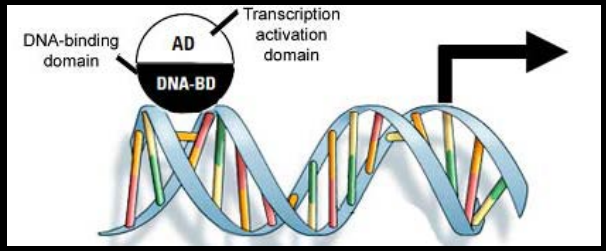
Kroll Lab: Graded Expression of Transcription Factors Regulates Neocortical Arealization

Graded Expression:

A gene being turned on in a high to low gradient.

Transcription Factors:

Class of proteins that regulate the turning on and off of specific genes

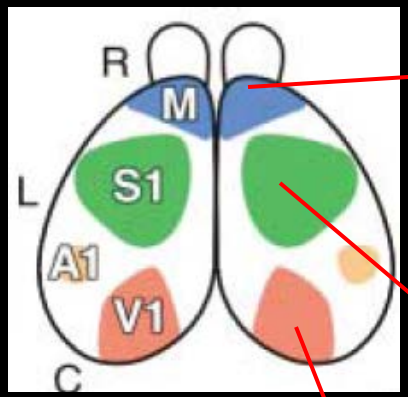


Neocortical Arealization:

The process of dividing the neocortex into functional units

The neocortex of all mammalian species have four primary areas, the Motor (M), Somatosensory (S1), Visual (V1), and Auditory (A1)

The sizes of these areas are different in different individuals……Why?



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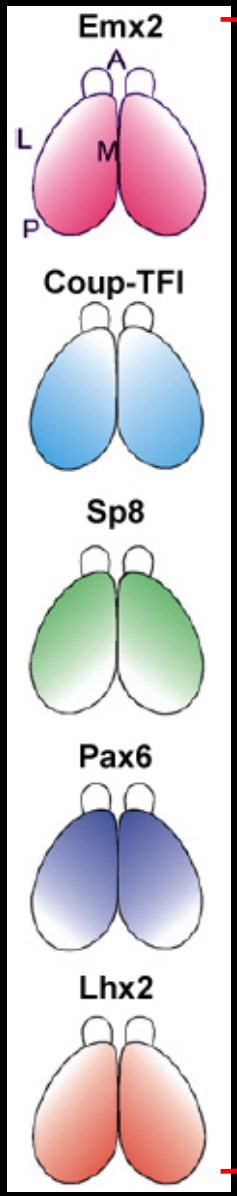

Altering the concentration gradients of any of these transcription factors results in predictable changes in the size of neocortical areas:

change in gradient

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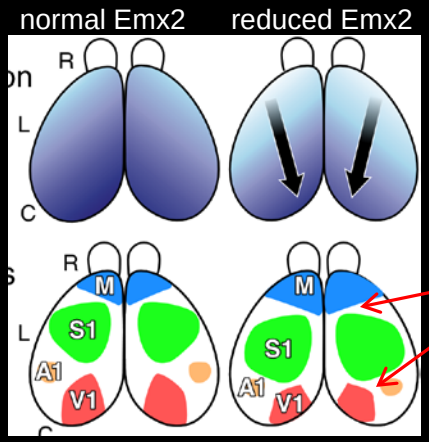
change in area sizes



but, there are always clear boundaries separating the areas

The big question now are:

1) How are these boundaries established
2) How do these transcription factors transmit positional information within the cells

We are attempting to answer these questions by finding the proteins to which these transcription factors interact.