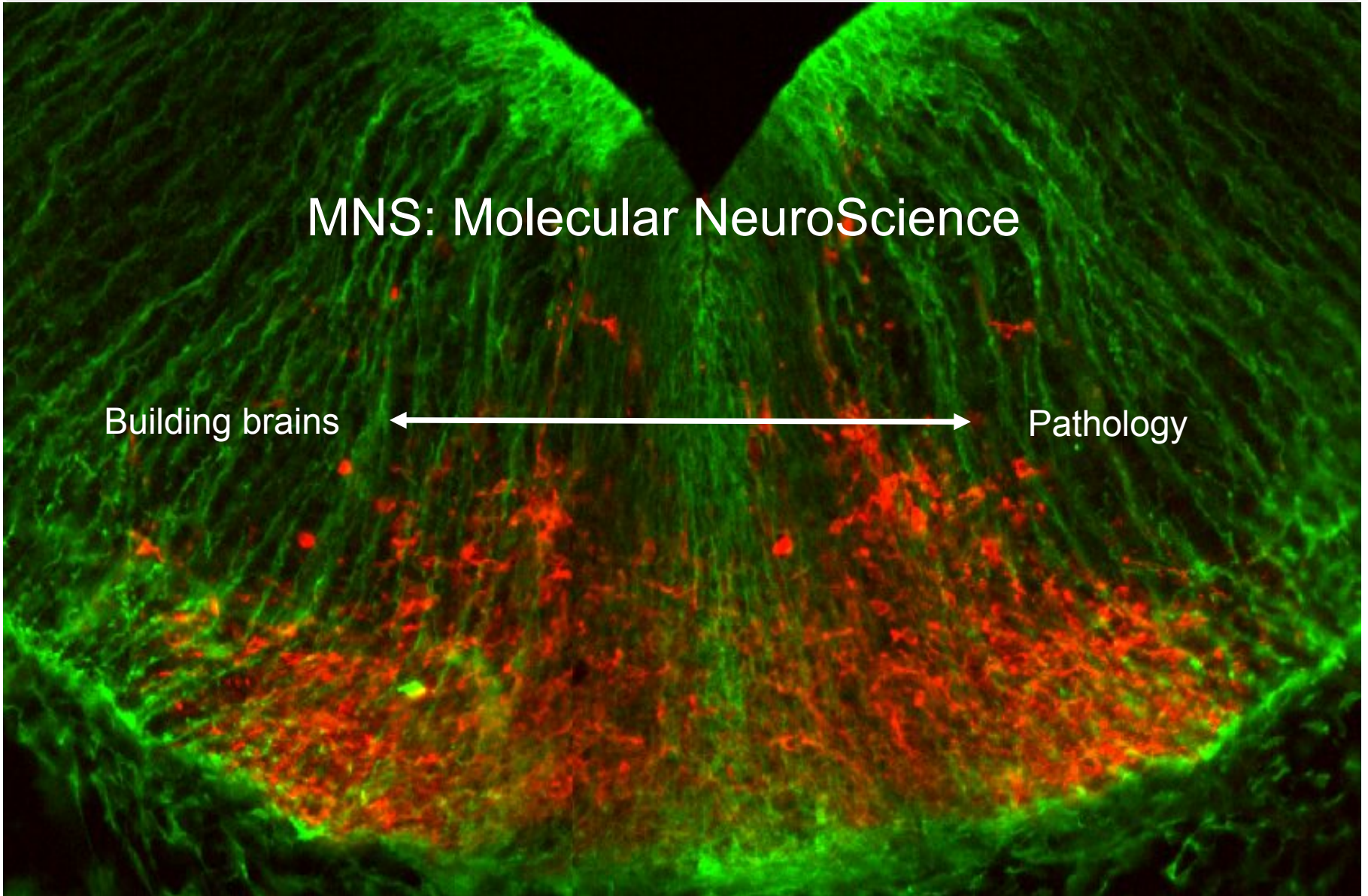


# MNS: Molecular NeuroScience

Building brains

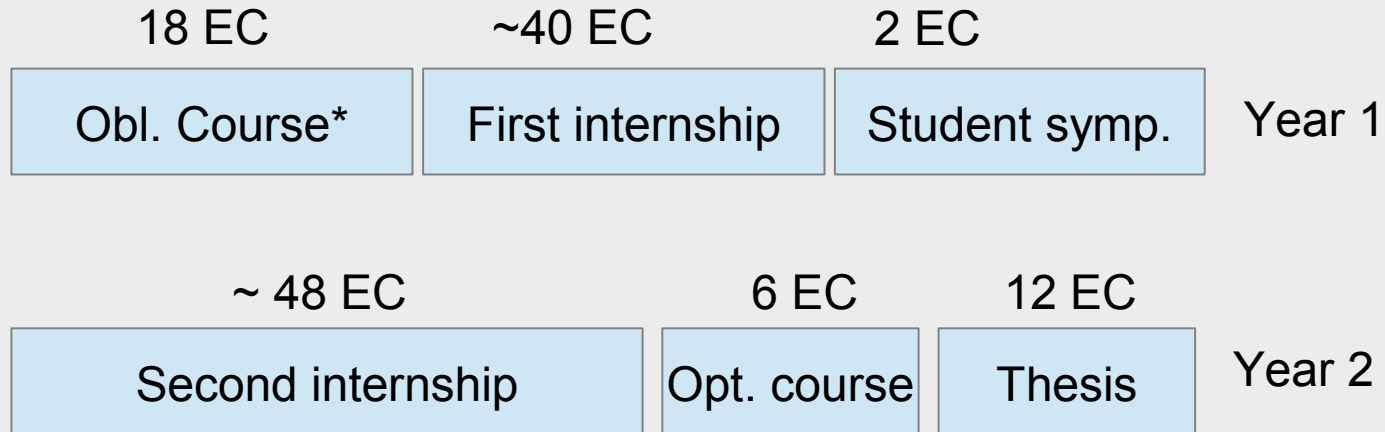


Pathology

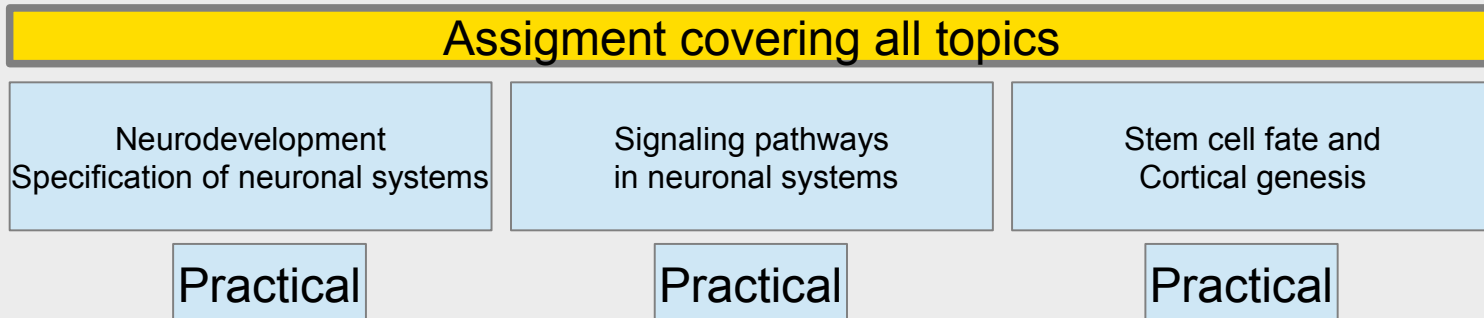




# Molecular Neurosciences (MNS)



\*





## MNS structure

### Assignment covering all topics

Neurodevelopment  
Specification of neuronal systems

Signaling pathways  
in neuronal systems

Cortical genesis  
and function

### Setup of the course parts

AM  
PM

Theory  
Practical

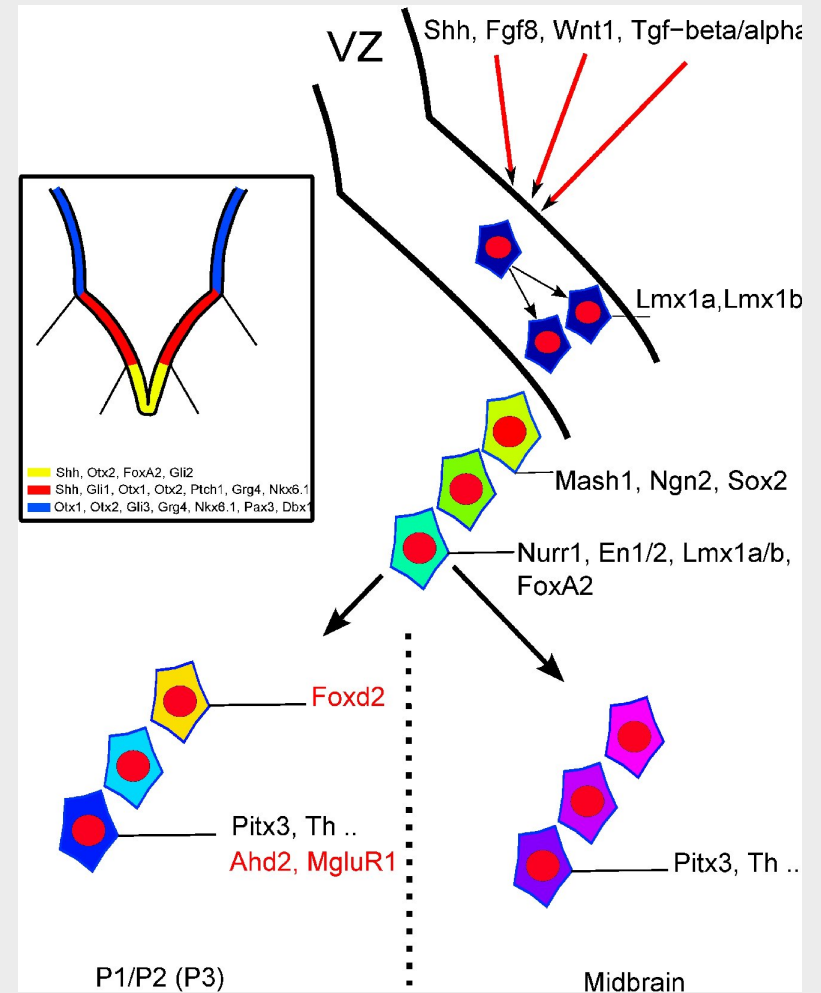
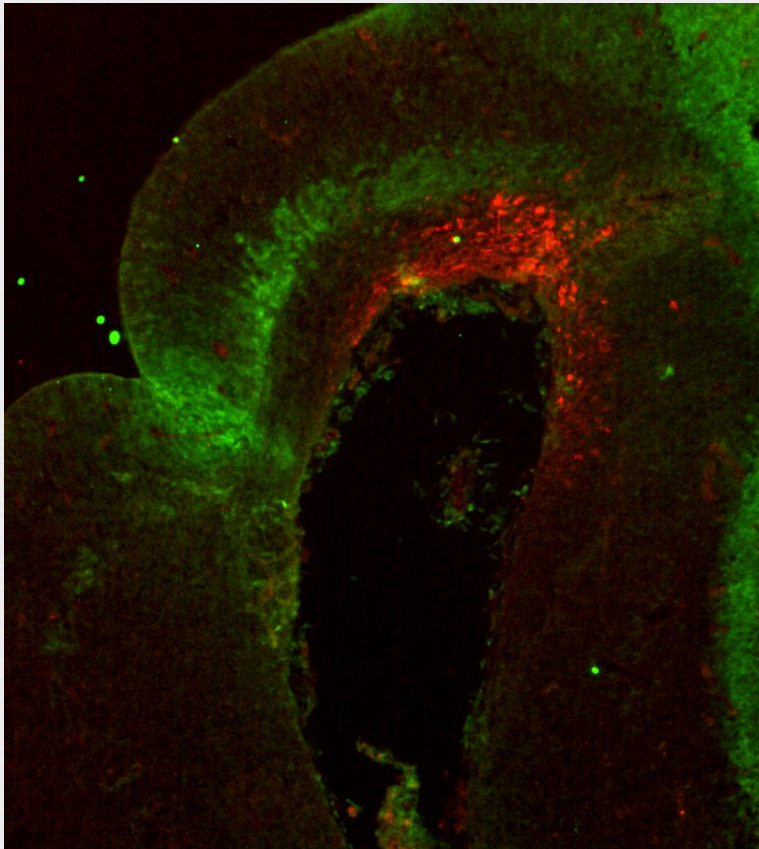
Theory  
Practical

Practical

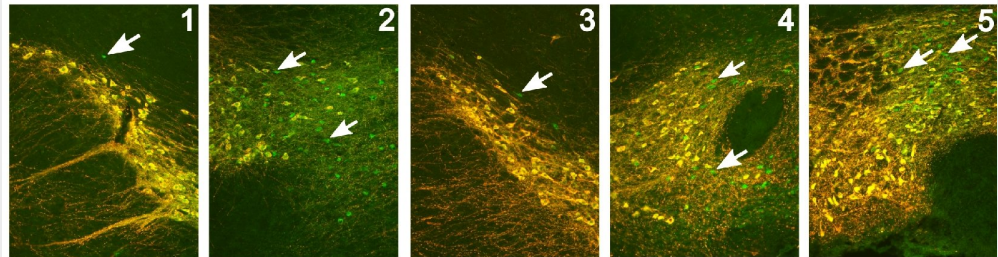
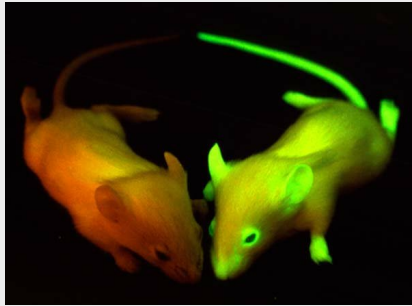
Guests lect.  
Assignment  
presentation



## How are neuronal system specified ?

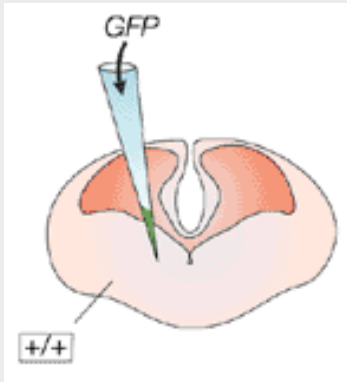


## Technology

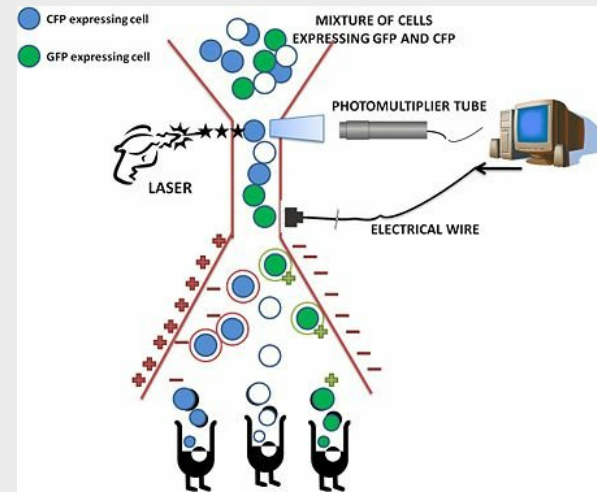
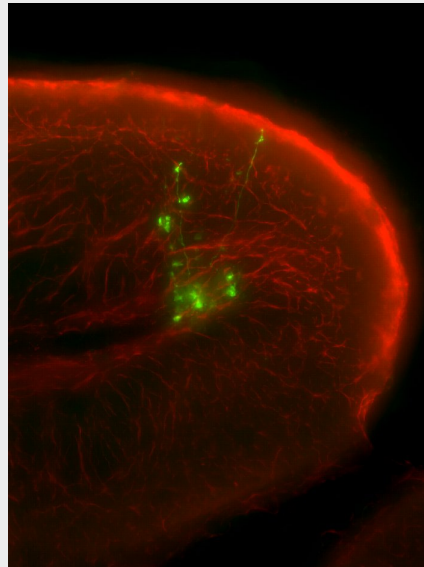


Pitx3-Cre/Yfp

Th/Yfp



Focal electroporation

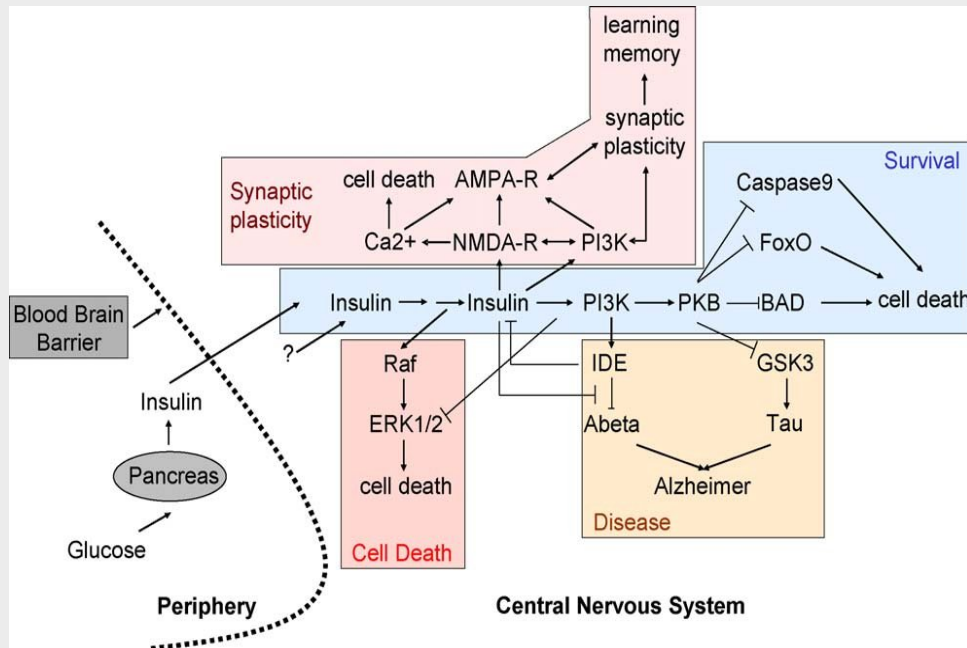


FACS

Neurodevelopment  
Specification of neuronal systems

# Signal Transduction in the Brain

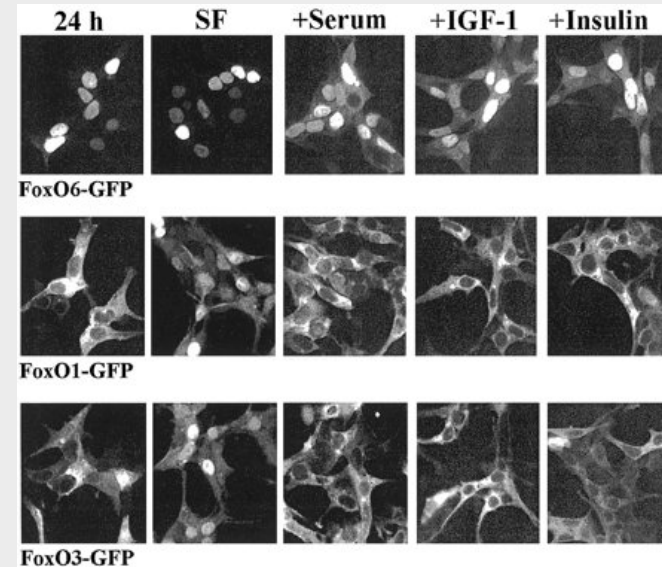
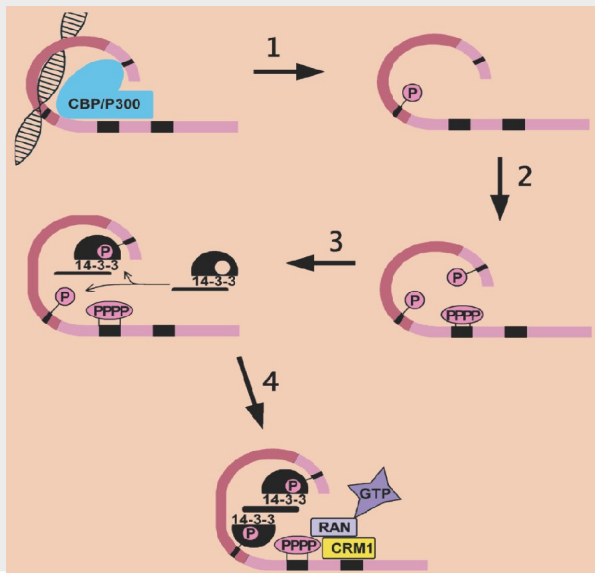
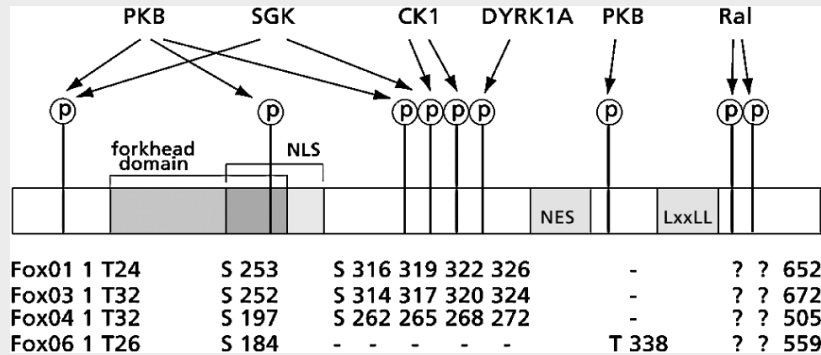
How does a neuron transduce a signal from a growth factor into a response?



Receptors, Kinases, Transcription factors  
Neuronal outgrowth and small GTPases  
...and the signaling pathways that connect them.

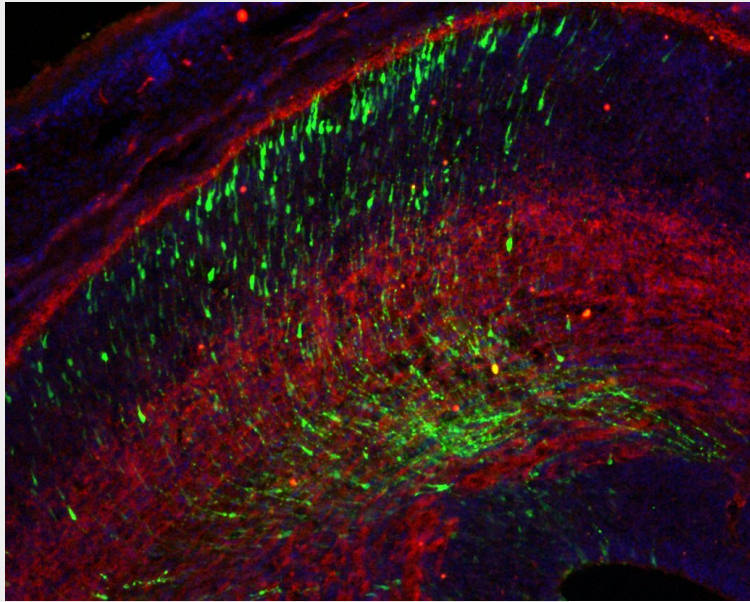
Signaling pathways  
in neuronal systems

# Practical Course FoxO Phosphorylation and Translocation

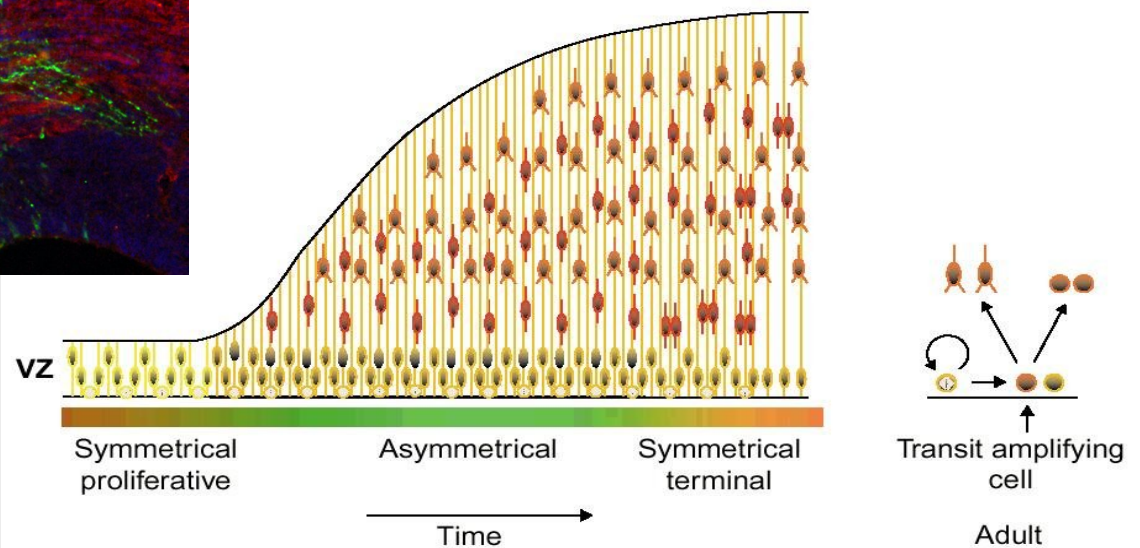


Basics about:  
 Identifying regulatory motifs  
 FoxO-GFP translocation analysis  
 Western Blot analysis.  
 Formulating a novel hypothesis on FoxO regulation and testing in during the practical course

Signaling pathways  
 in neuronal systems



## Stem cell fate and cortical genesis

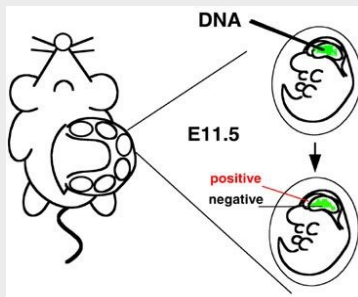


Fishell and Kriegstein, Curr Opin Neurobiol, 2003

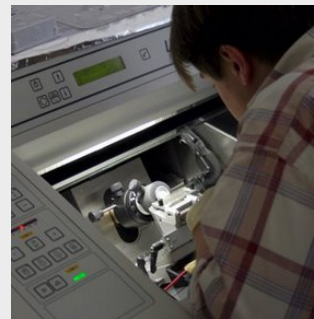
Cortical genesis  
and function

## *Cortical development: Practicals*

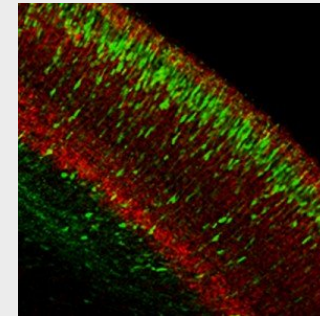
In utero electroporation  
(gene transfer in the dev.cortex)



Cryostat slicing of  
electroporated brains



Immunohistochemistry on  
electroporated brain slices



Dissociation and FACS sorting



qPCR



Final analysis  
and evaluation

Cortical genesis  
and function



# Questions

