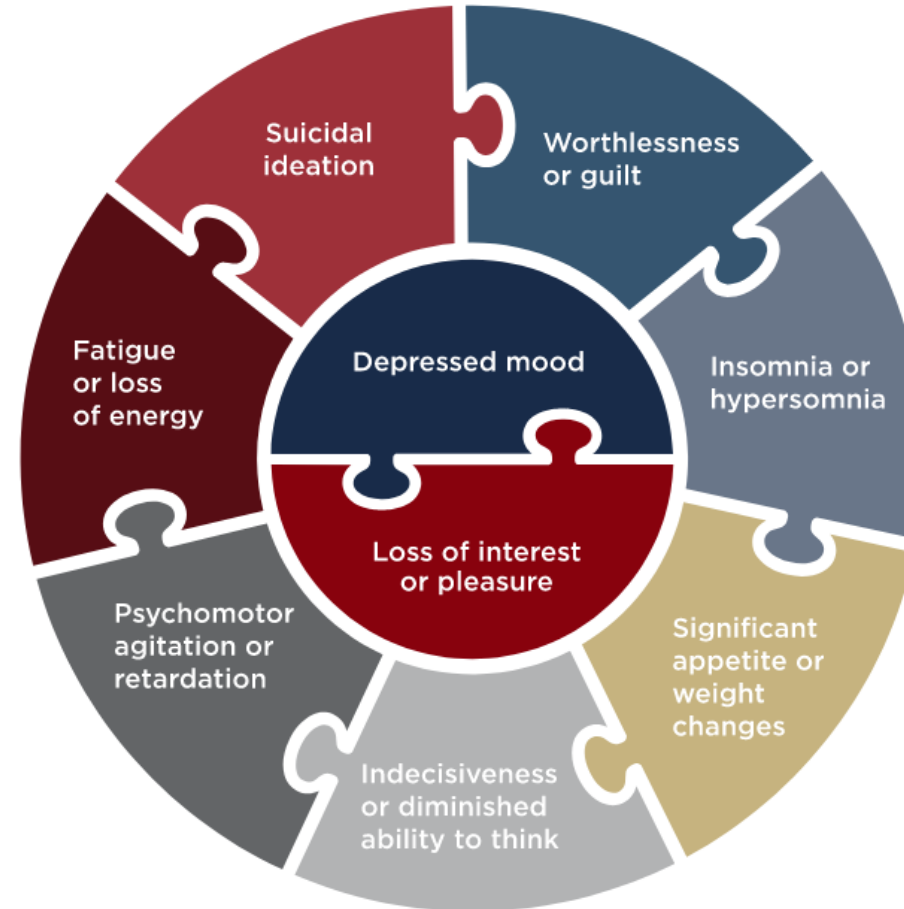


Major Depression

Jer Weann Ang

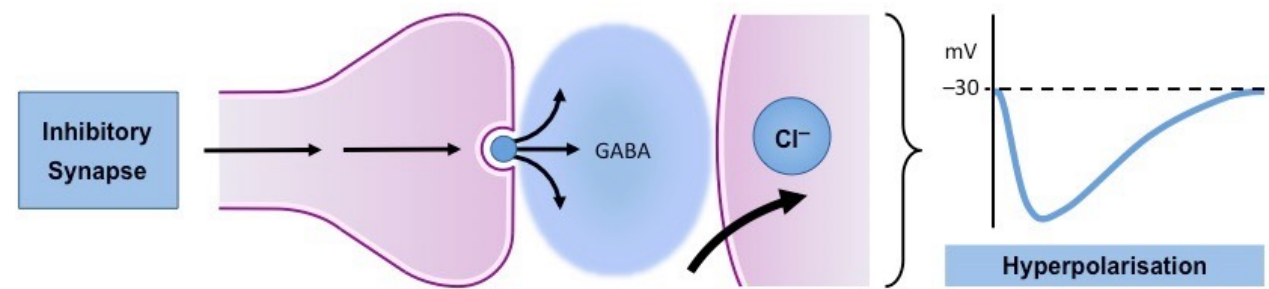
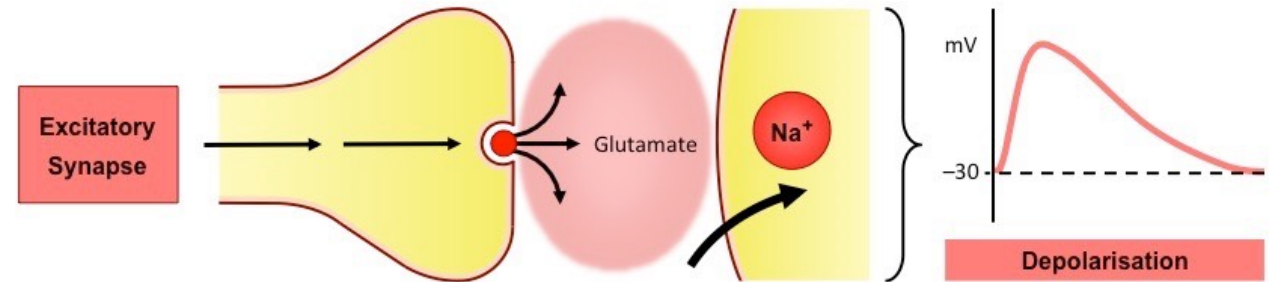
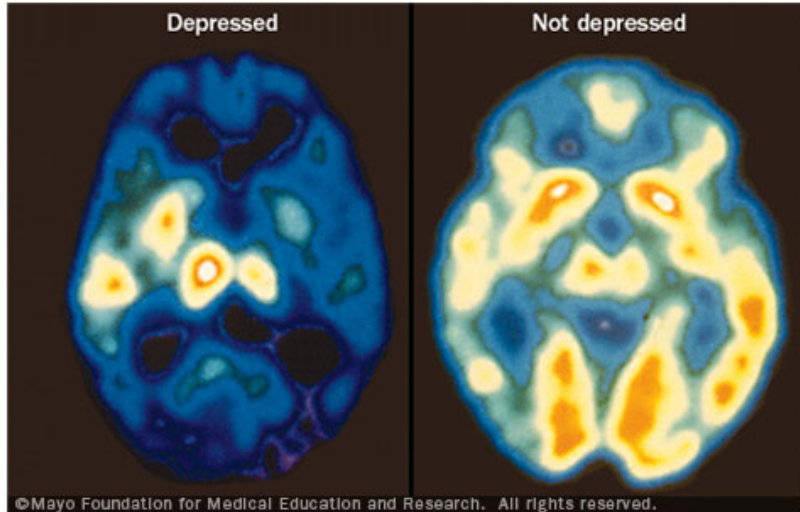


What is major depression?



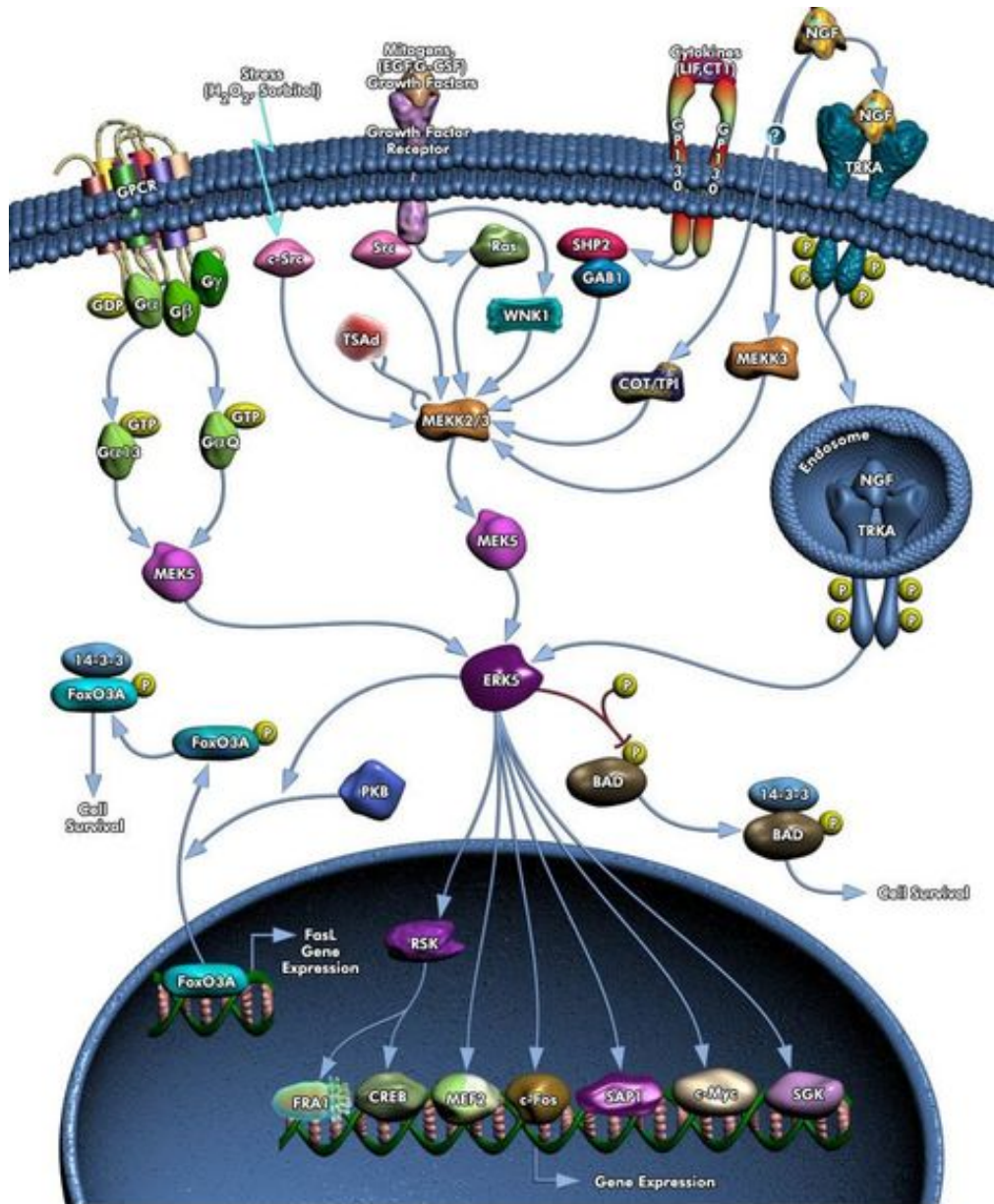
Depressed mood or a loss of interest and pleasure in daily activities for at least a period of two weeks.

What causes major depression?



People with more vulnerable genetic makeup are predisposed to developing major depression.

What gene is involved in depression?



MEF2C

MADS

HJURP_C

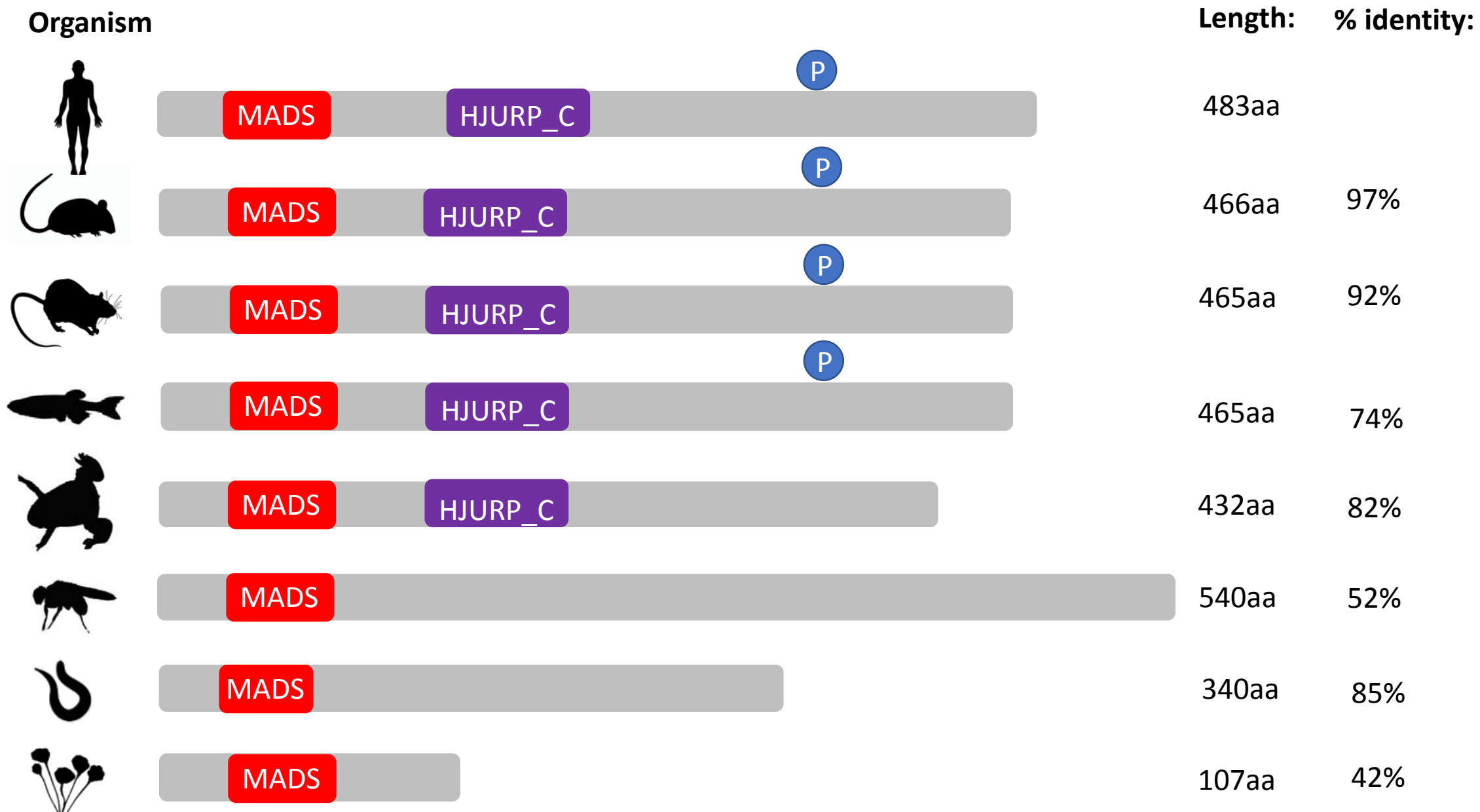
P

Molecular function: transcription factor

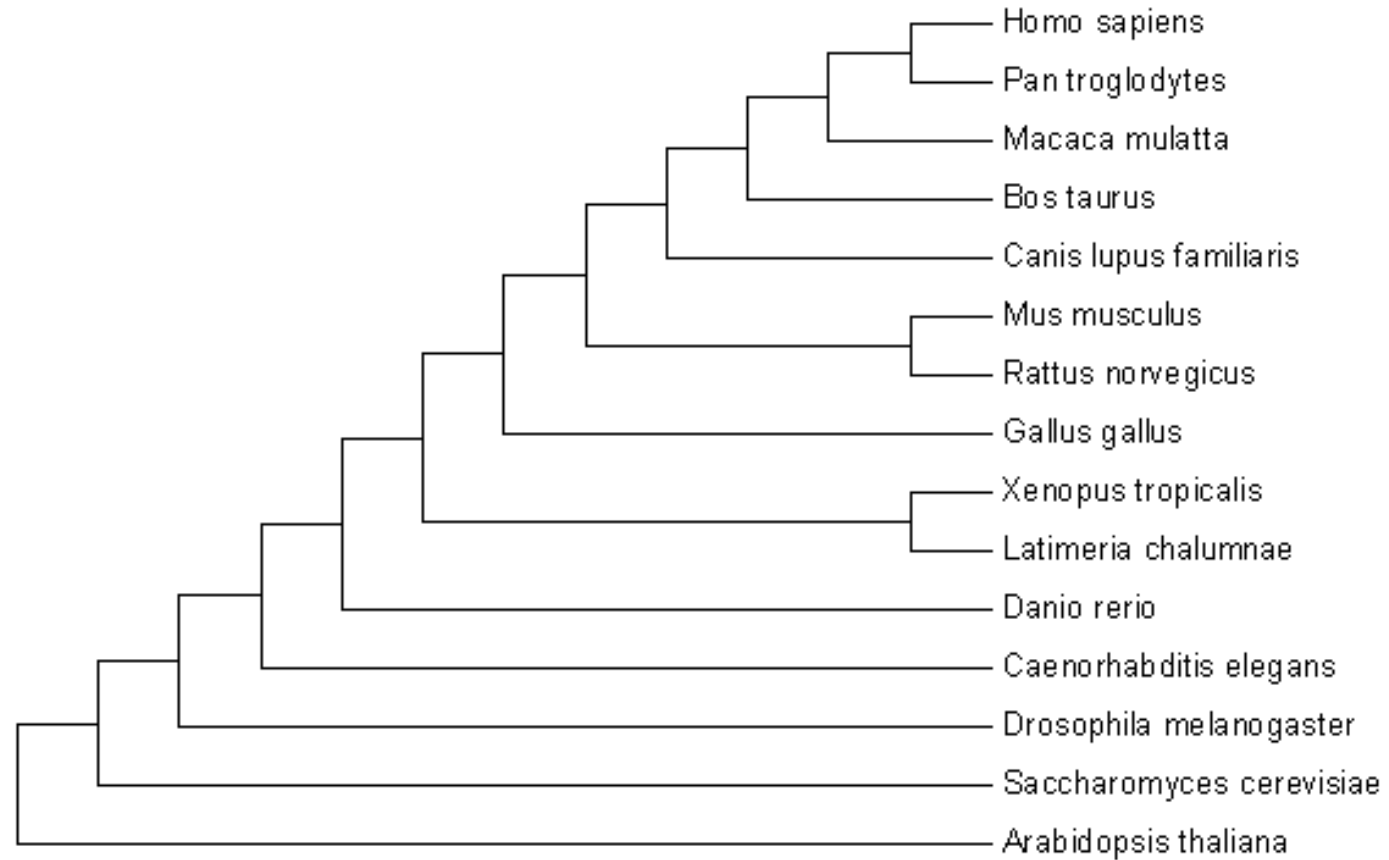
Cellular component: nucleus

Biological process: MAPK cascade , neuron migration, neuron differentiation

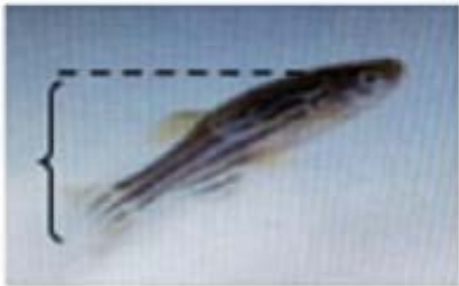
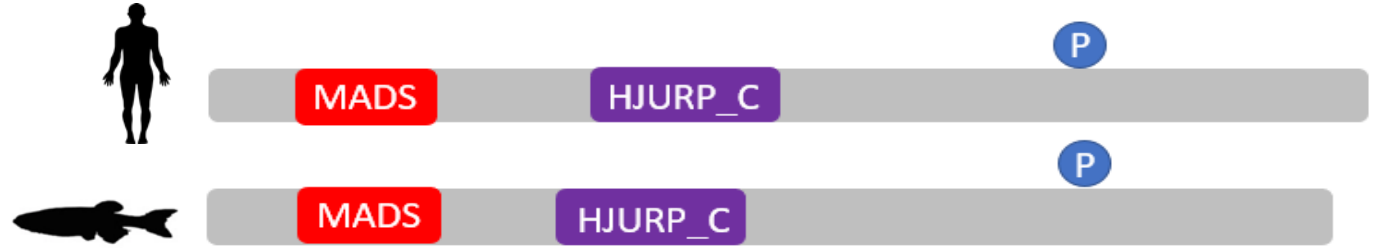
How well conserved is MEF2C ?



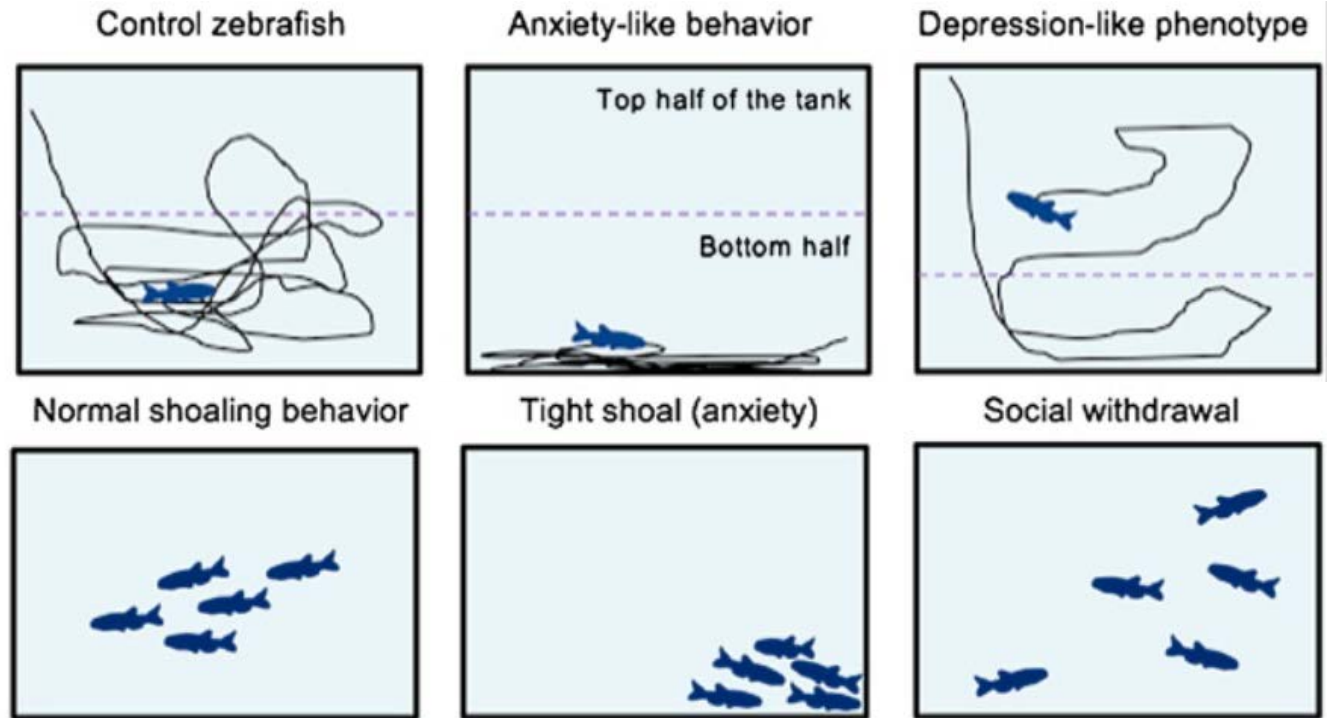
Phylogenetic tree of MEF2C



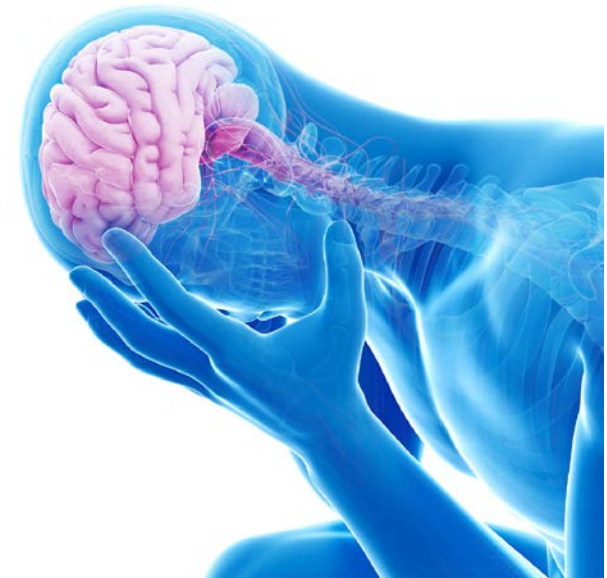
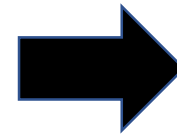
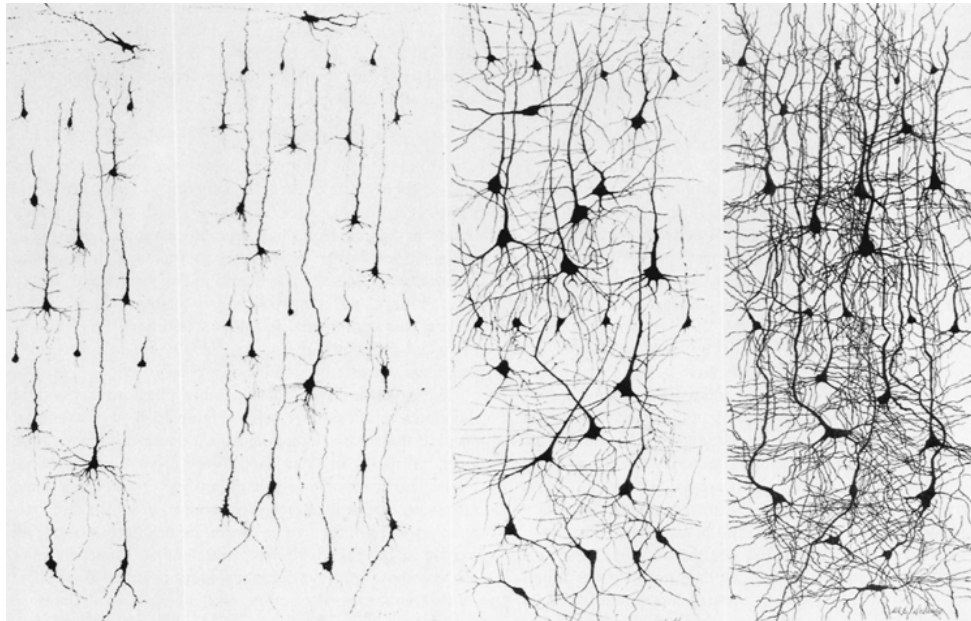
What model organisms to use?



'Droopy tail' phenotype



What is the gap in knowledge?

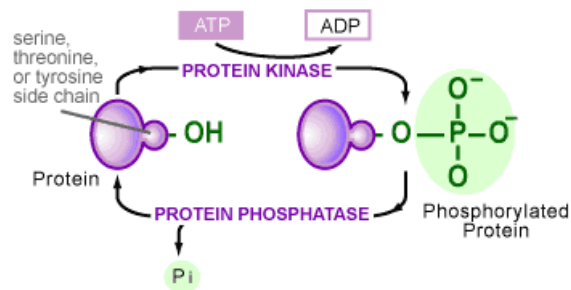


What is the primary goal?

Understand the role of MEF2C phosphorylation sites in the regulation of excitatory synapse elimination

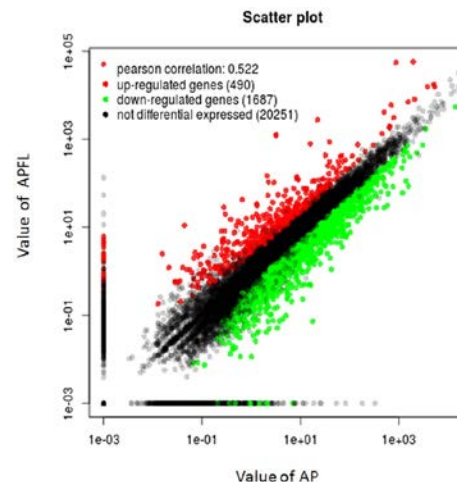
Aim 1:

Identify conserved phosphorylation sites



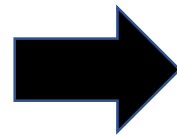
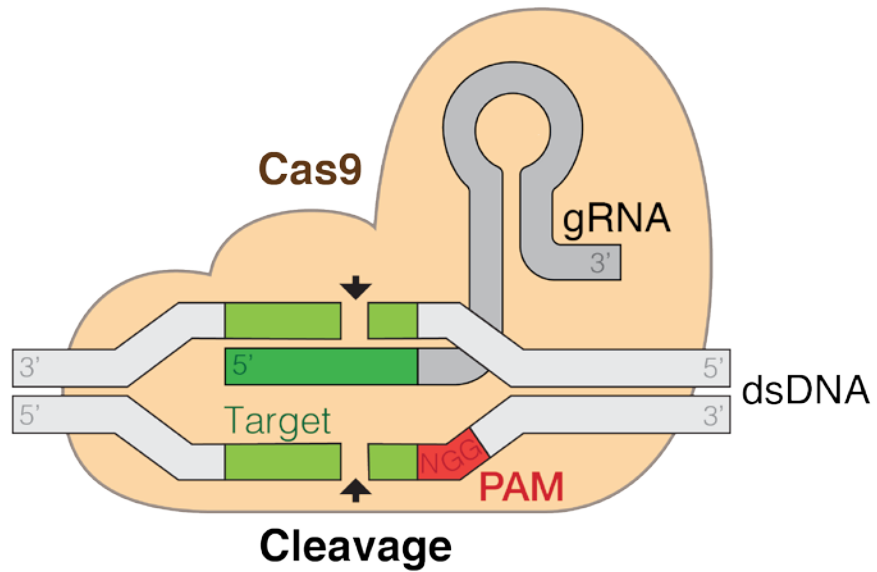
Aim 2:

Identify differently expressed genes involved in synapse development

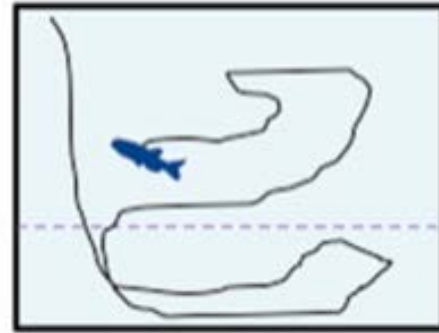


Aim 3:

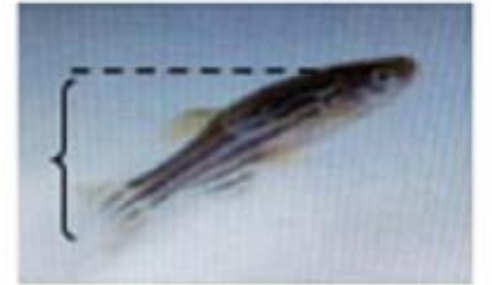
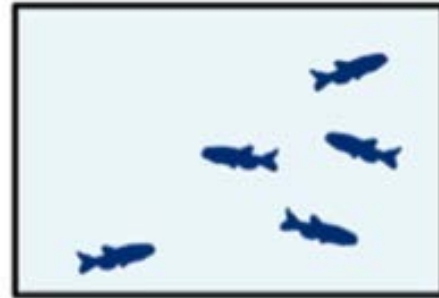
Aim 1: Which phosphorylation sites are conserved across MEF2C homologs?



Depression-like phenotype



Social withdrawal



Aim 2: What genes are differentially expressed in zebrafish with depressive phenotypes?

References

- <http://newhopeclinicalresearch.com/specialties/major-depression/>
- Nguyen, M., Stewart, A. M., & Kalueff, A. V. (2014). Aquatic blues: modeling depression and antidepressant action in zebrafish. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 55, 26-39.
- <https://www.powerofpositivity.com/depression-changes-brain-ways-reverse/>
- https://www.google.com/search?q=differentially+expressed+genes&source=lnms&tbm=isch&sa=X&ved=0ahUKEwibyvdKxKTaAhWr7oMKHQ89BlSQ_AUICigB&biw=1422&bih=629#imgsrc=ZjzpMPTPWScj5M: