

Linking executive function and transcription in the medial prefrontal cortex

Lara Ivanov

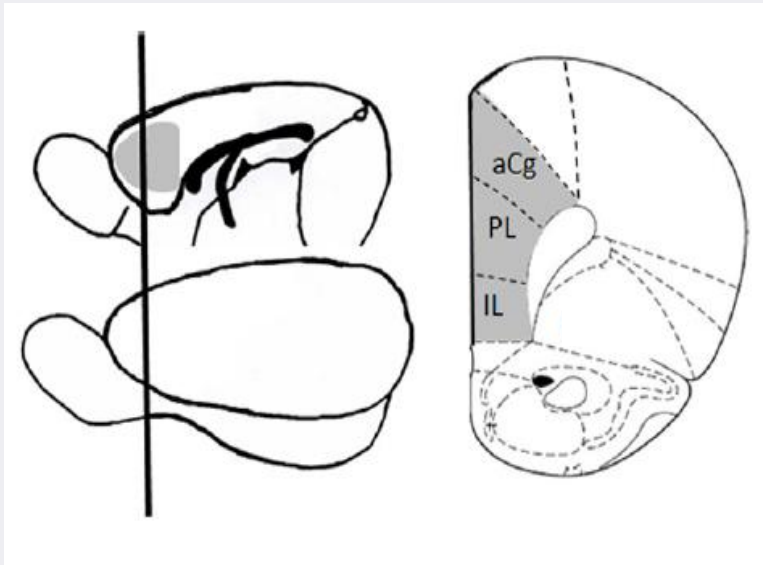
Mentor: Dr. Tom Foster

Department of Neuroscience

University of Florida

medial Prefrontal Cortex (mPFC):

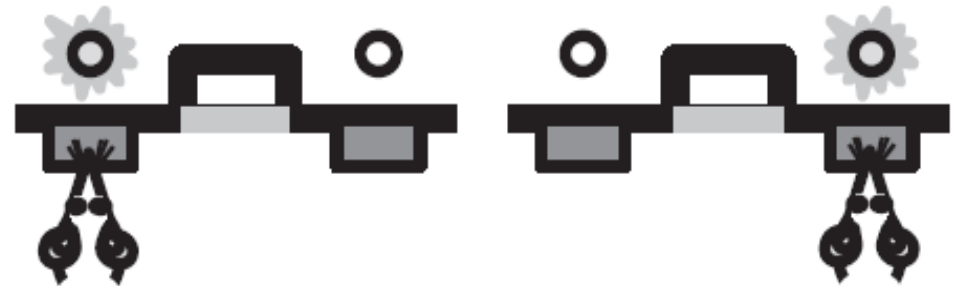
- Executive function → attention, reasoning, working memory and cognitive flexibility



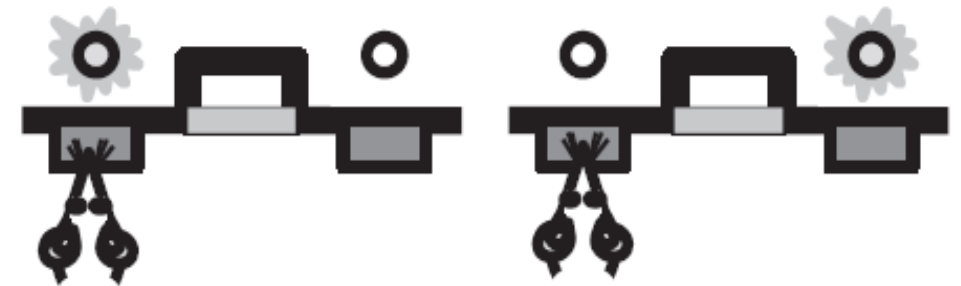
Bizon et al., *Frontiers in Aging Neuroscience*, 2012

Set-Shifting Task – Bizon Lab at UF

Initial discrimination

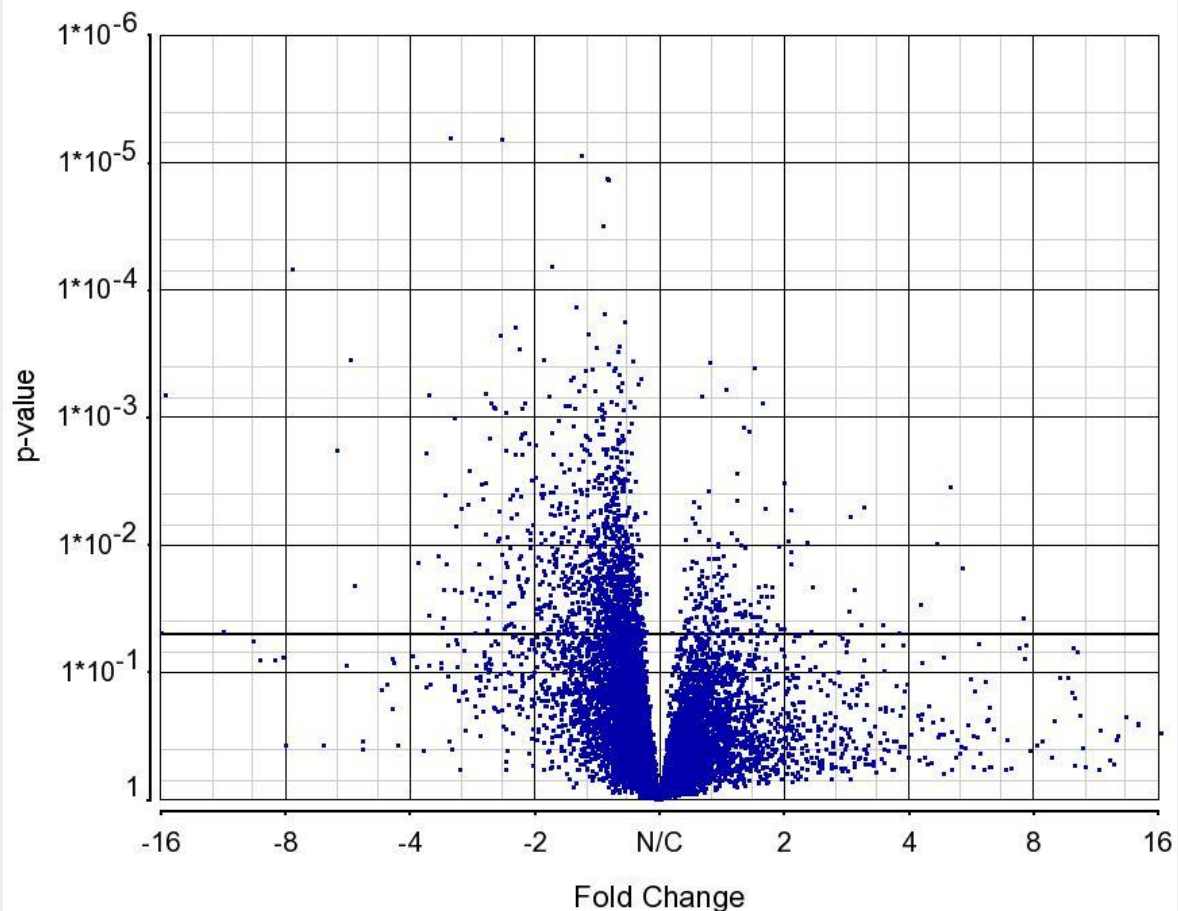


Set-shift



Beas et al., *Neurobiology of Aging*, 2013

Age-related Differential Expression of the mPFC



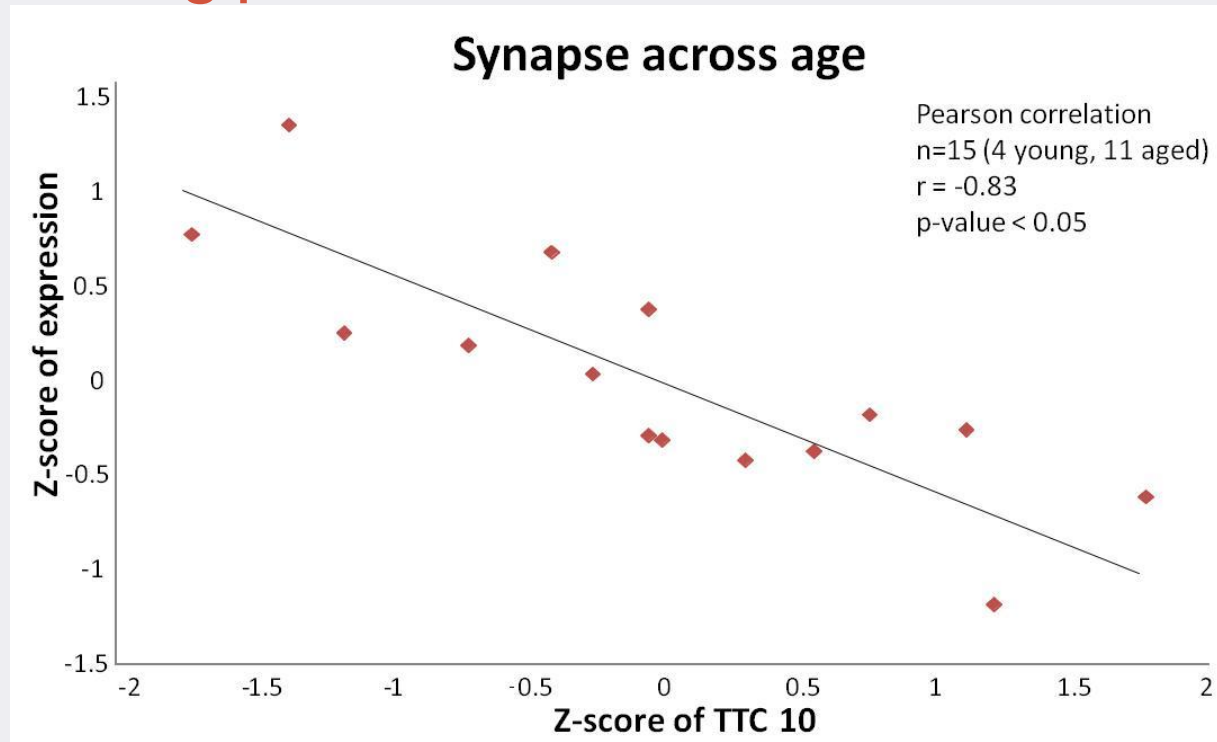
Decreased with age

Category	p-value	# of genes
Mitochondria	1.30×10^{-14}	171
Organelle membrane	9.00×10^{-11}	87
Ion Transport	1.10×10^{-5}	25
Chromatin assembly	3.50×10^{-2}	10
Synapse	3.60×10^{-2}	21

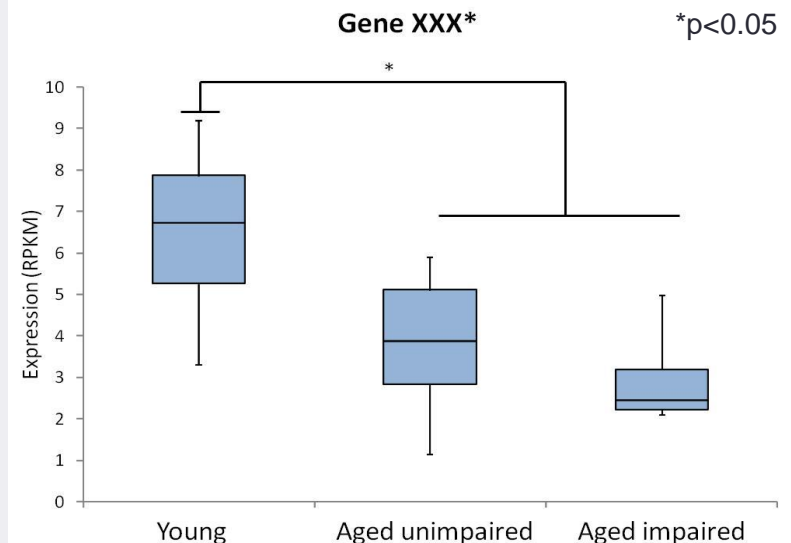
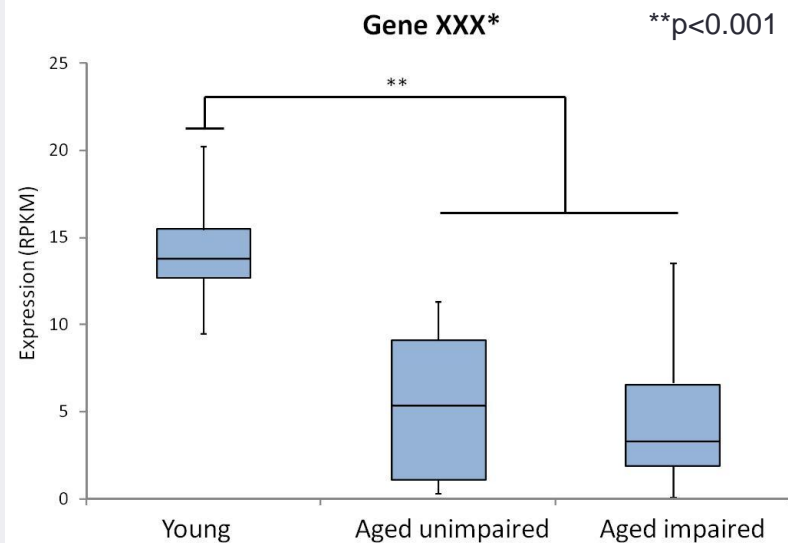
Increased with age

Category	p-value	# of genes
Regulation of apoptosis	1.90×10^{-2}	28
Immune response	3.60×10^{-2}	10

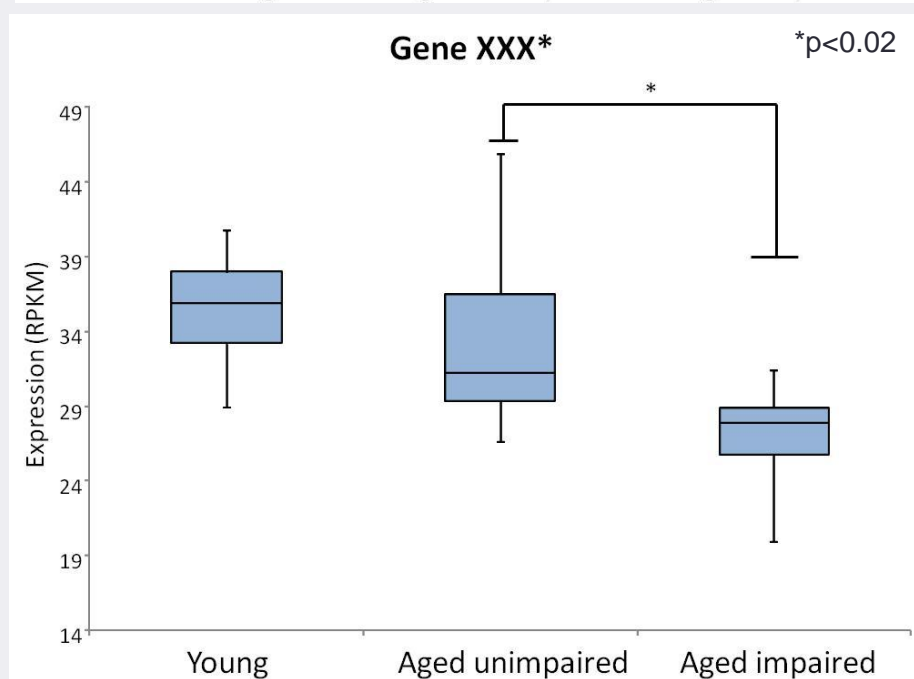
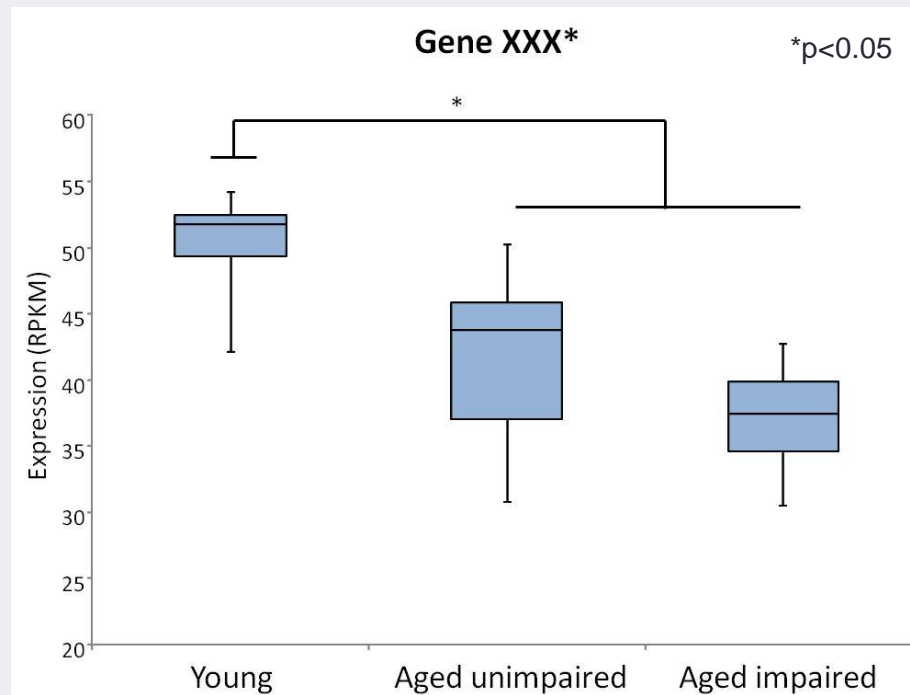
Set-shifting performance correlation to clusters



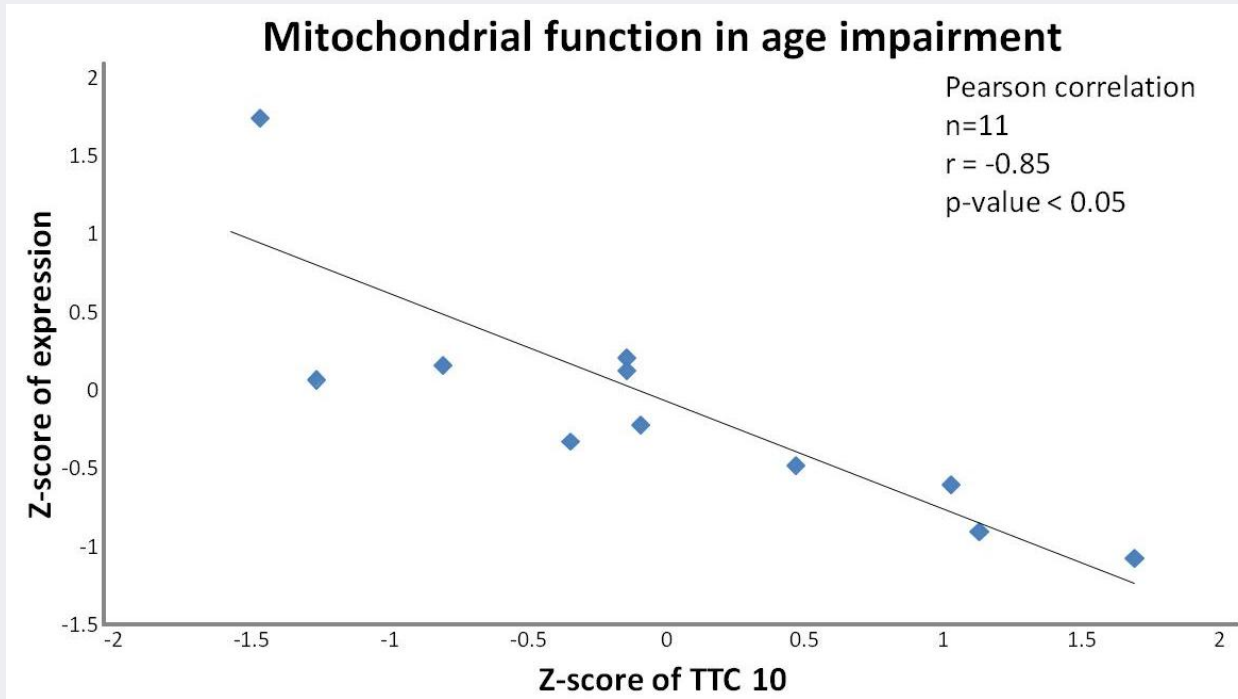
Gene XXX*:
unpublished data



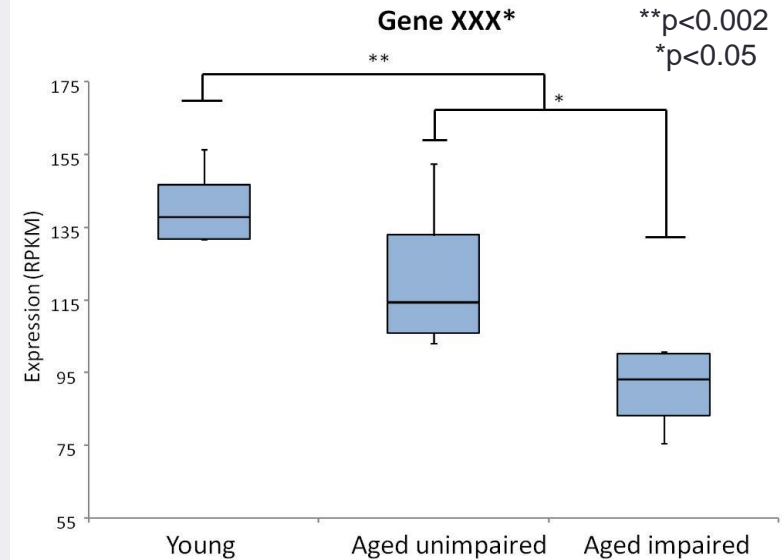
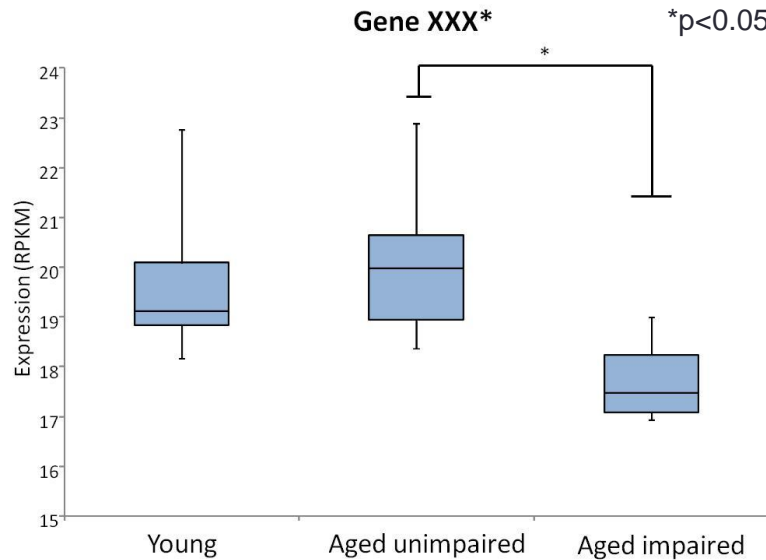
Gene XXX*:
unpublished data



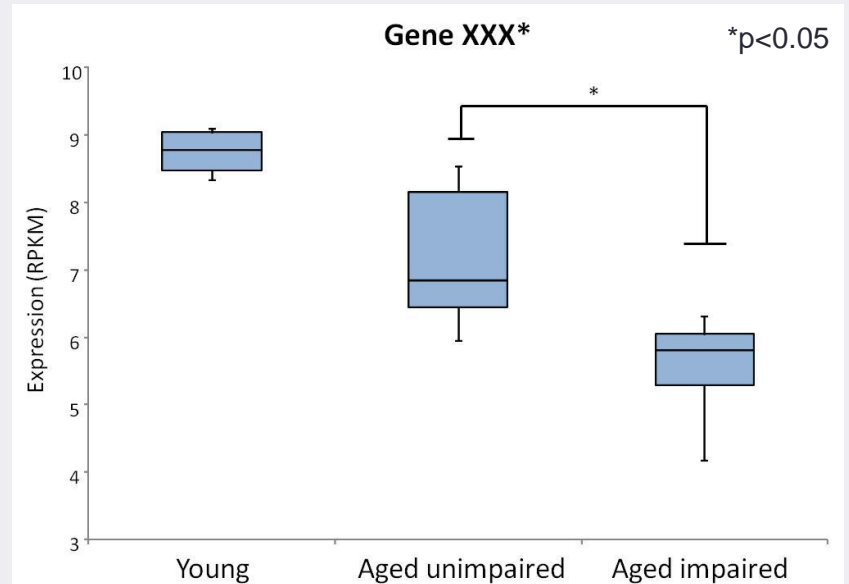
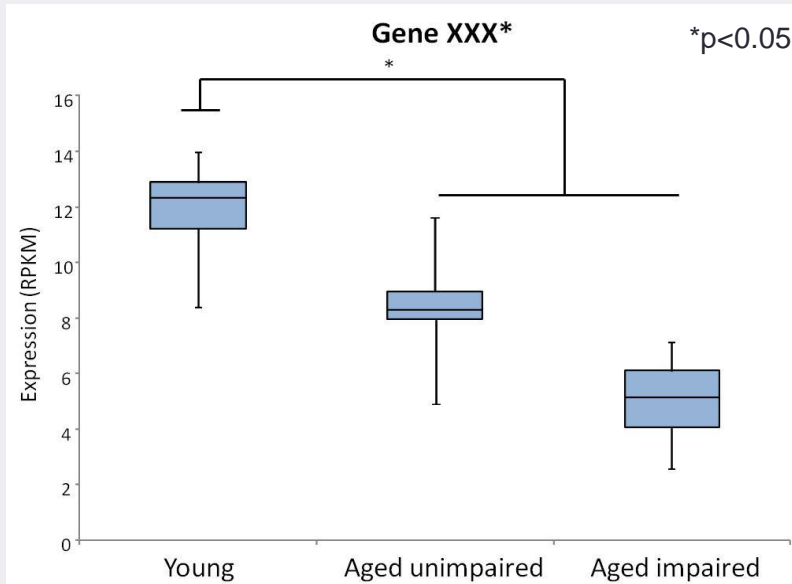
Set-shifting performance correlation to clusters



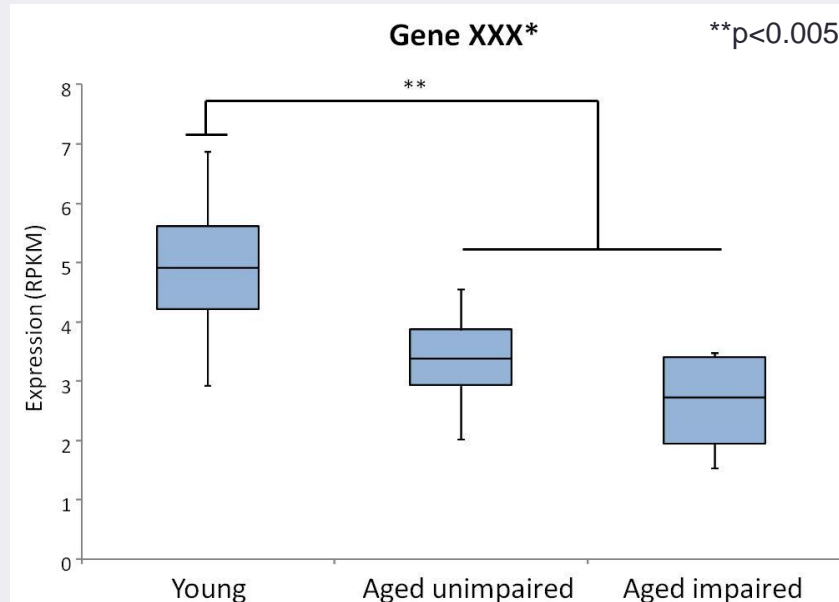
Gene XXX*:
unpublished data



Chromatin assembly & disassembly genes



**Gene XXX*:
unpublished data**



**More young and aged
rats will be included**

Acknowledgements

- Foster lab:
 - Dr. Ashok Kumar
 - Asha Rani
 - Linda Bean
- Bizon lab:
 - Dr. Jennifer Bizon
 - Sofia Beas
- Committee:
 - Dr. Thomas C. Foster
 - Dr. Leonid Moroz
 - Dr. Jorg Bungert
 - Dr. Martha Campbell-Thompson



**Evelyn F. & William L.
McKnight Brain Institute**
UNIVERSITY *of* FLORIDA

- Funding:
 - Evelyn F. McKnight Brain Research Foundation
 - National Institute on Aging