

LOCUS COERULEUS NEURONAL, GLIAL, AND VASCULAR POPULATIONS REMAIN STABLE WITH AGE IN COGNITIVELY IMPAIRED RHESUS MACAQUES

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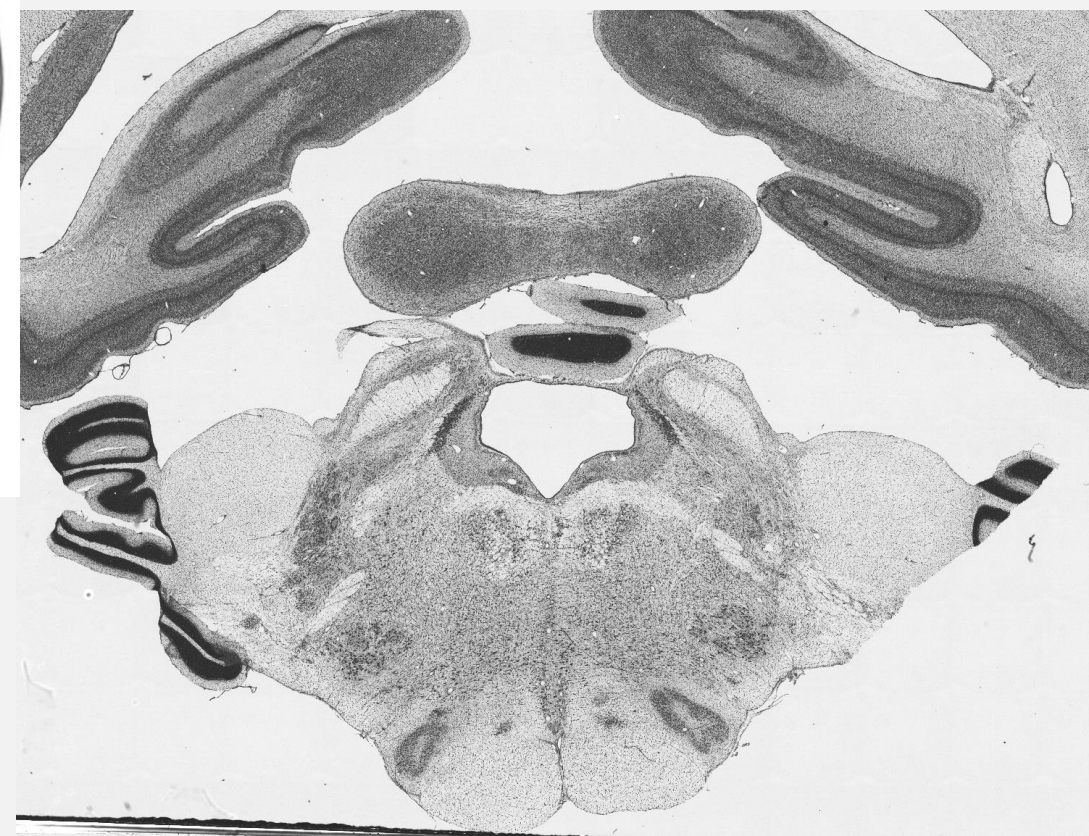
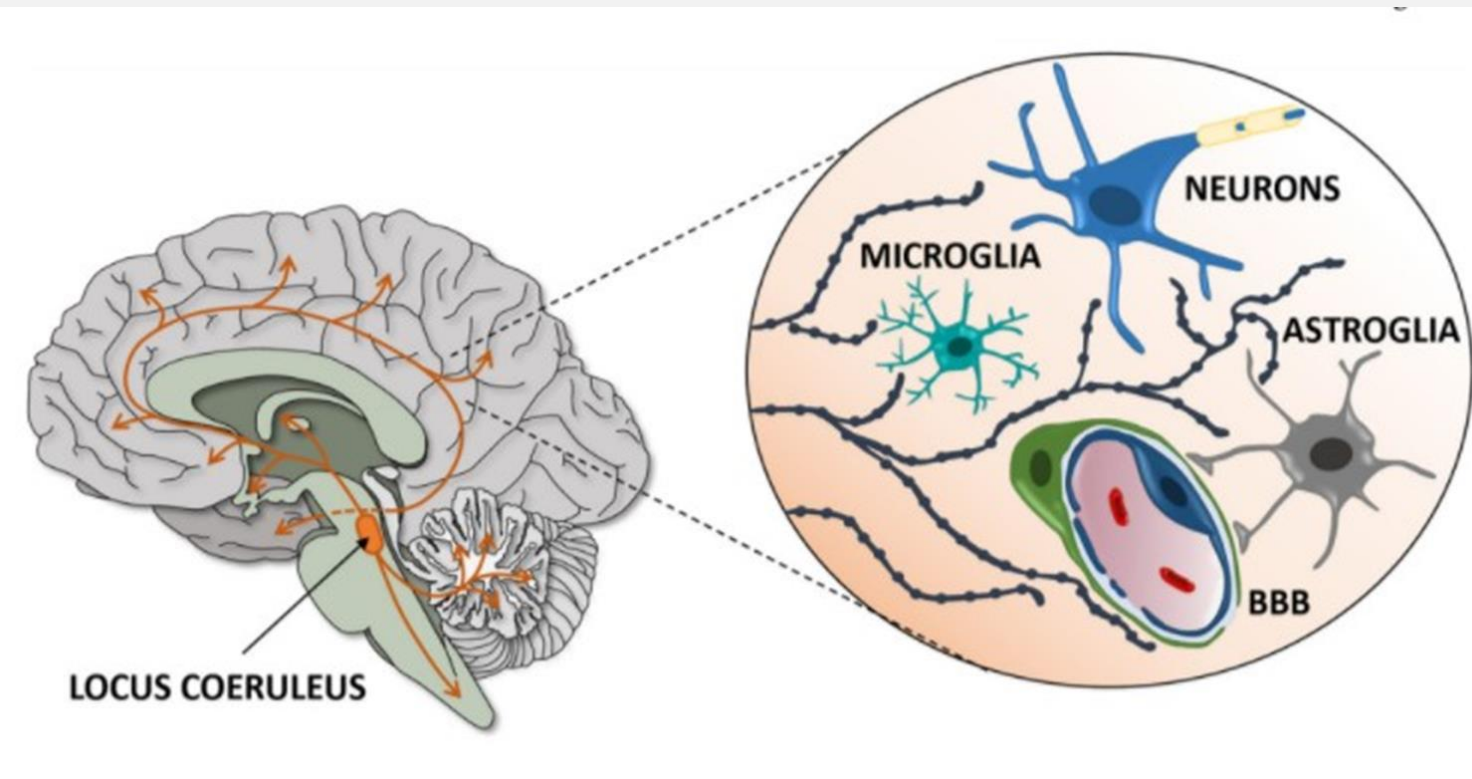
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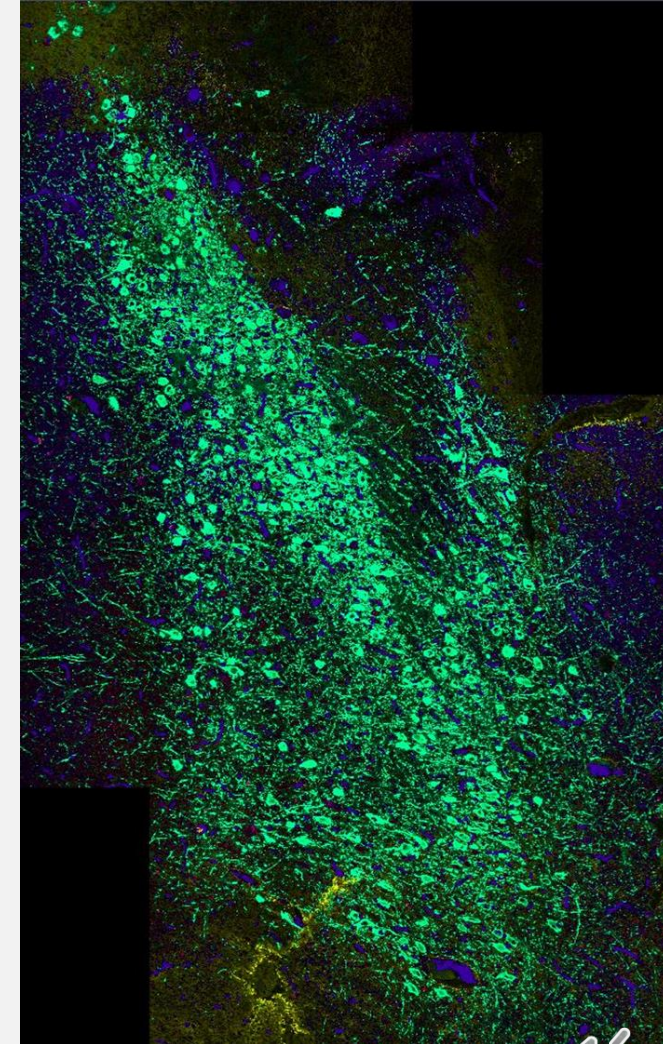
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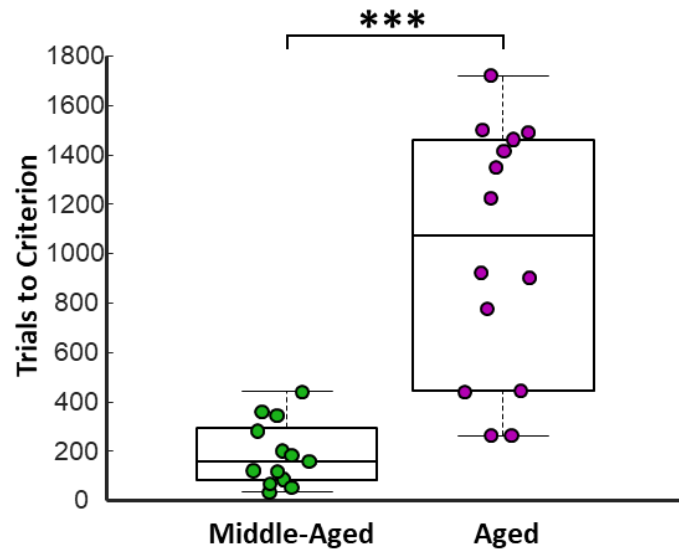


METHODOLOGY

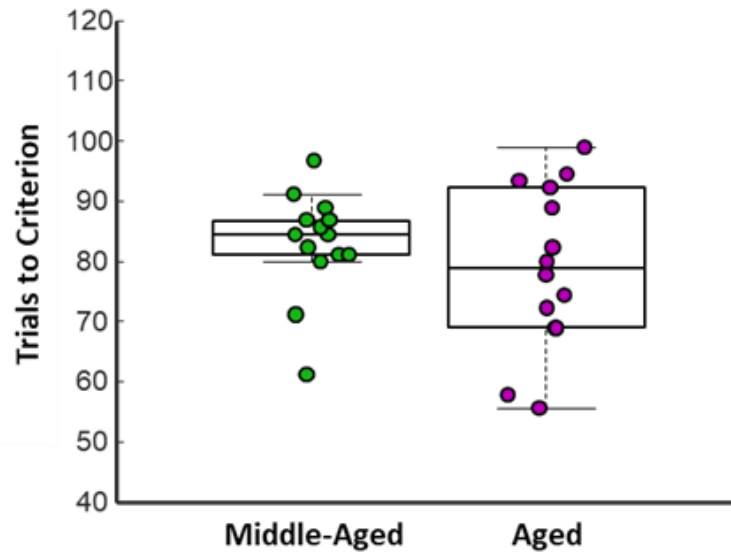
- 30 rhesus macaques (14 adult, mean age 14 years; 16 aged, mean age 25 years) tested on 3 unique memory tasks: Delayed response (DR), delayed nonmatching-to-sample (DNMS), and object discrimination (OD)
- Tasks assess visuospatial working memory (DR), nonspatial object recognition memory (DNMS), and object-reward association memory (OD)
- Animals were perfused with 4% PFA, and brains were serial sectioned coronally at 30 microns.
- LC sections were stained for catecholaminergic neurons (TH+ neurons), mature neurons (NeuN+), vasculature (STL), and active glia (GFAP+).



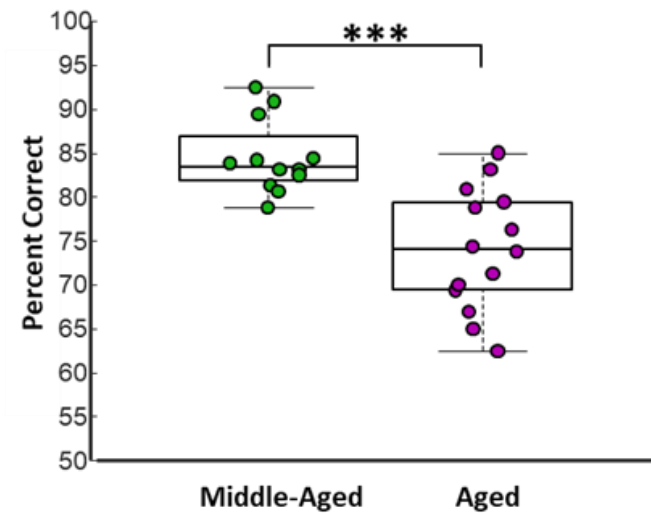
DNMS Trials to Criterion



DR Trials to Criterion

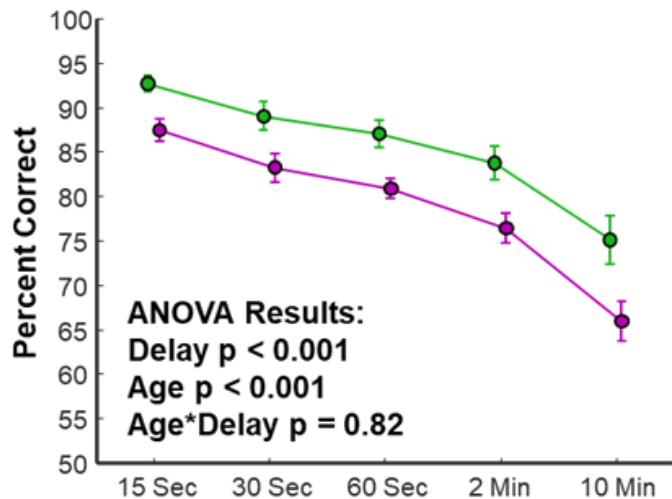


OD Acquisition

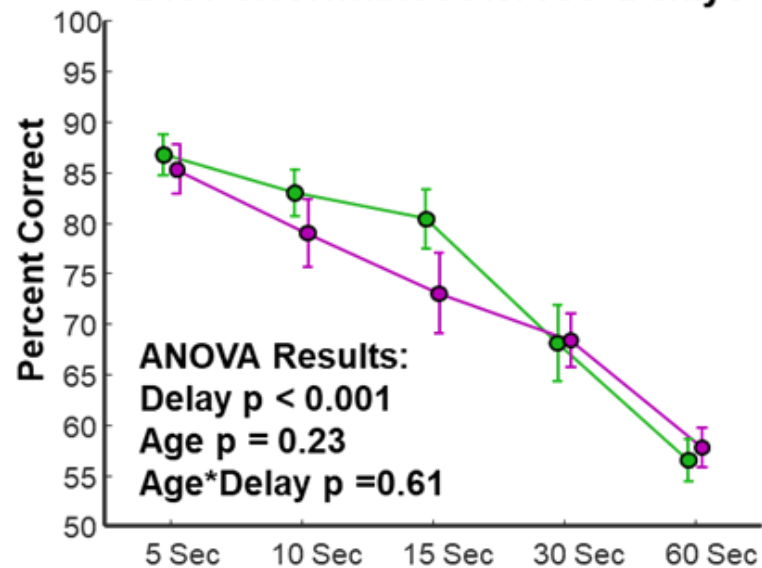


Aged
Middle-Aged
*** <0.001

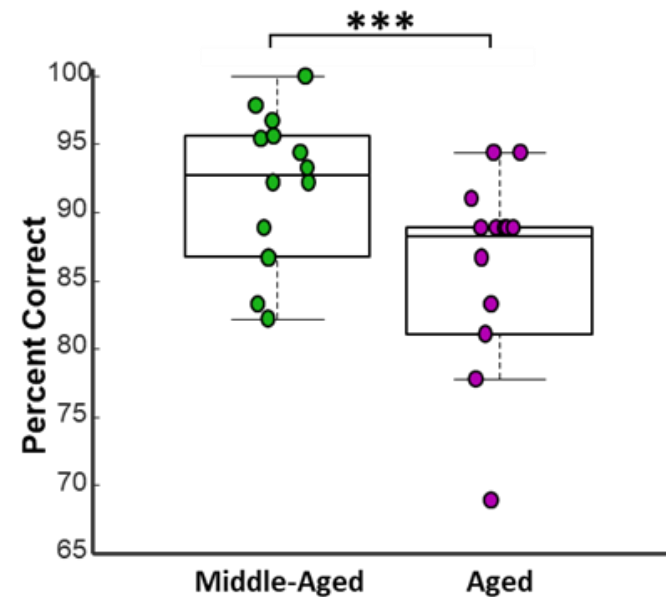
DNMS Performance Across Delays



DR Performance Across Delays

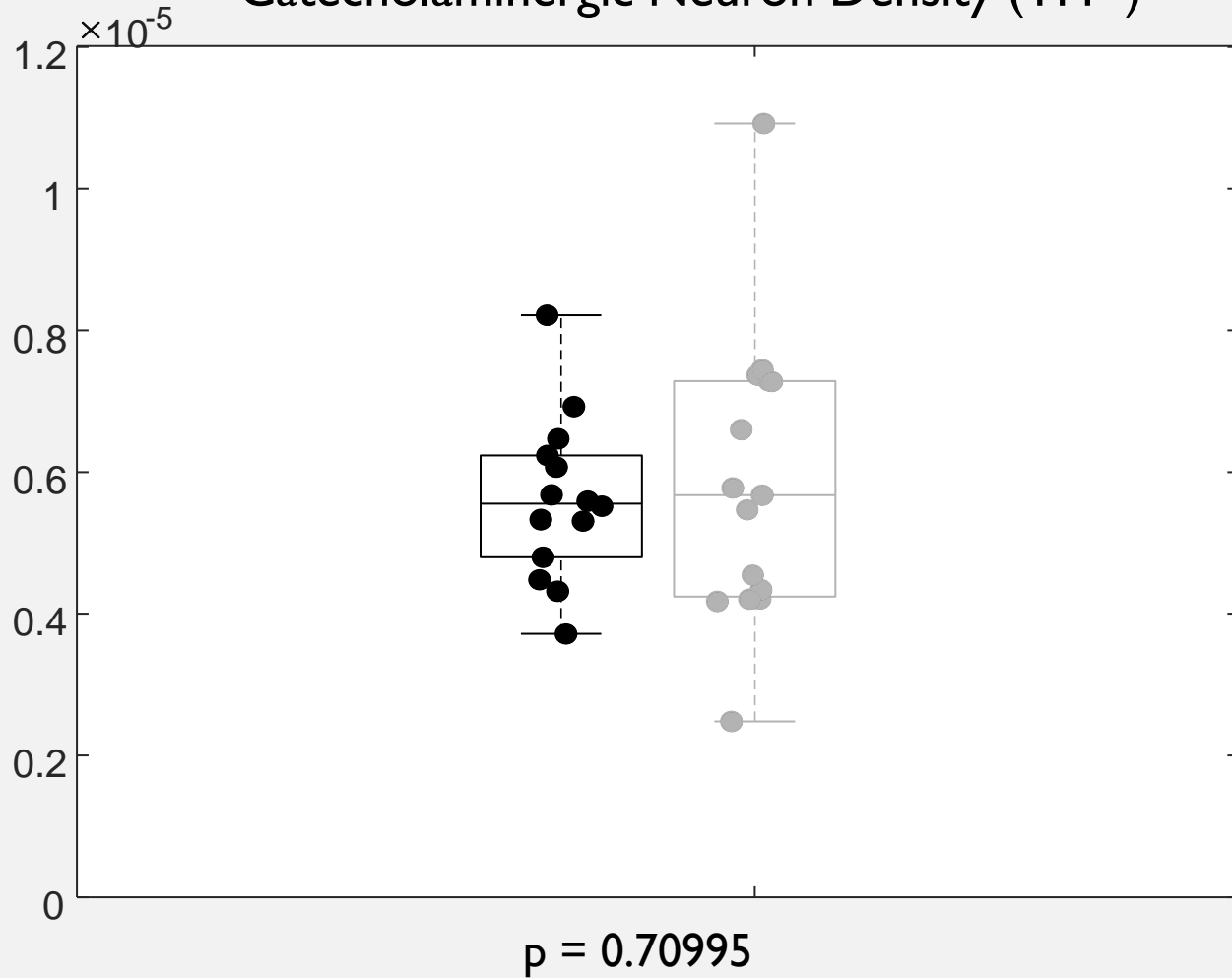


OD Performance

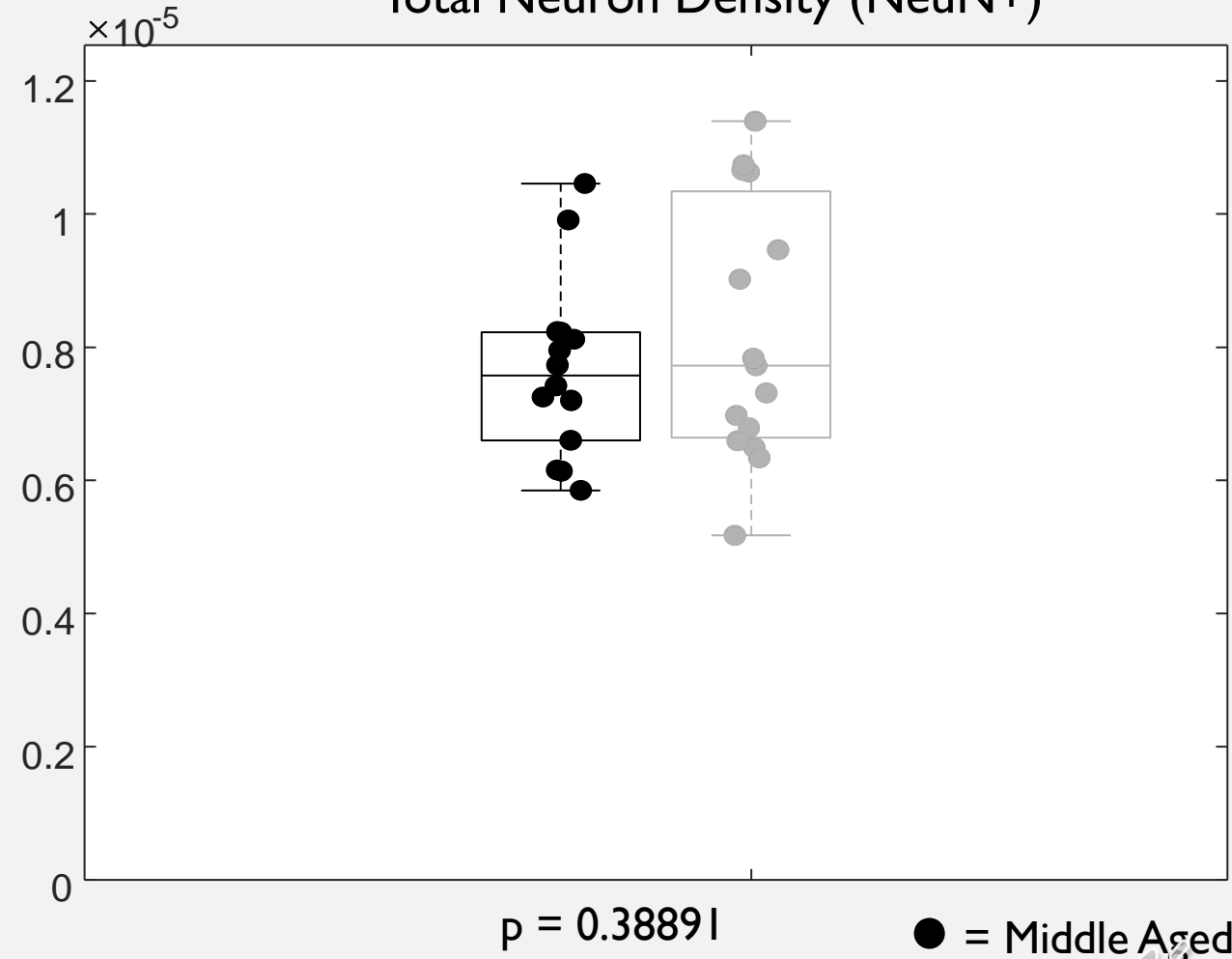


NEURON DENSITY

Catecholaminergic Neuron Density (TH+)



Total Neuron Density (NeuN+)

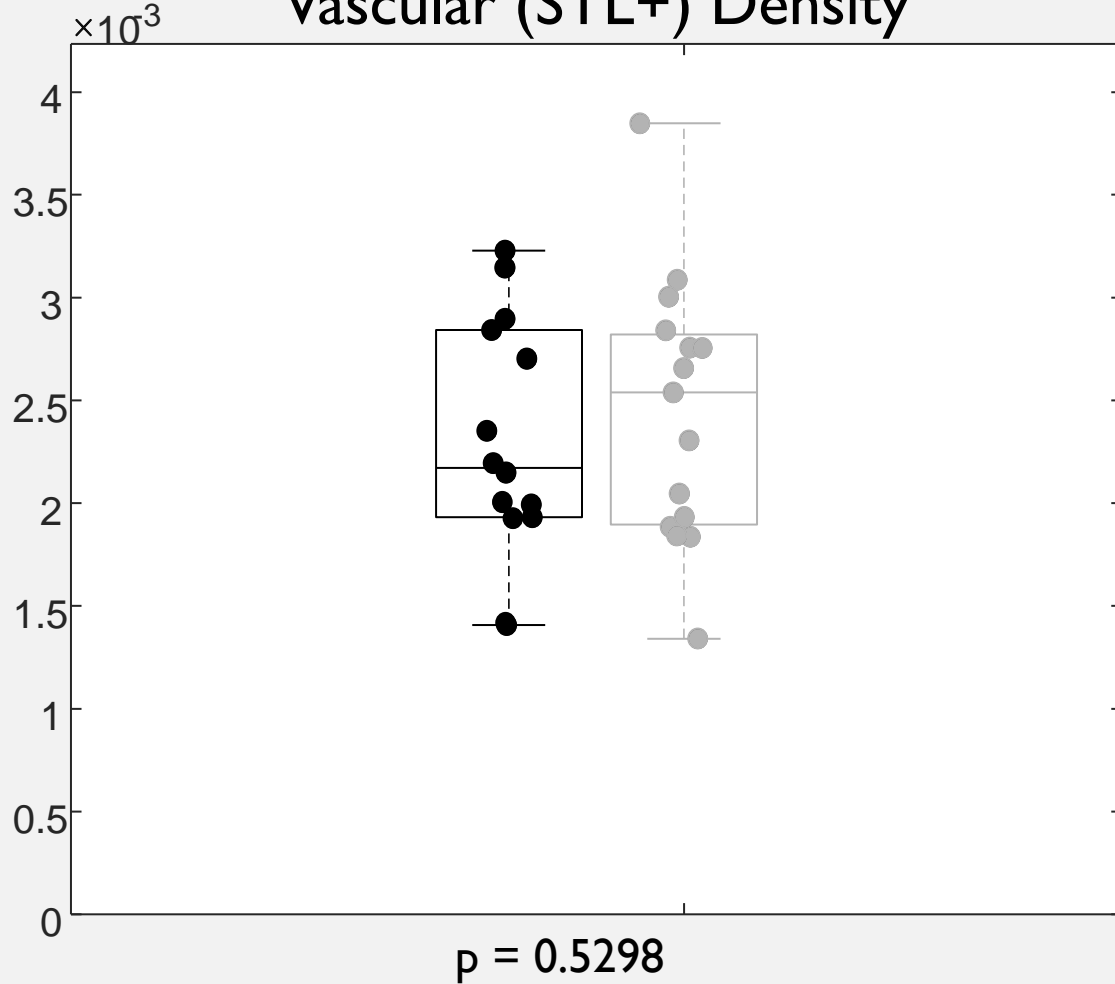


● = Middle Aged
● = Aged

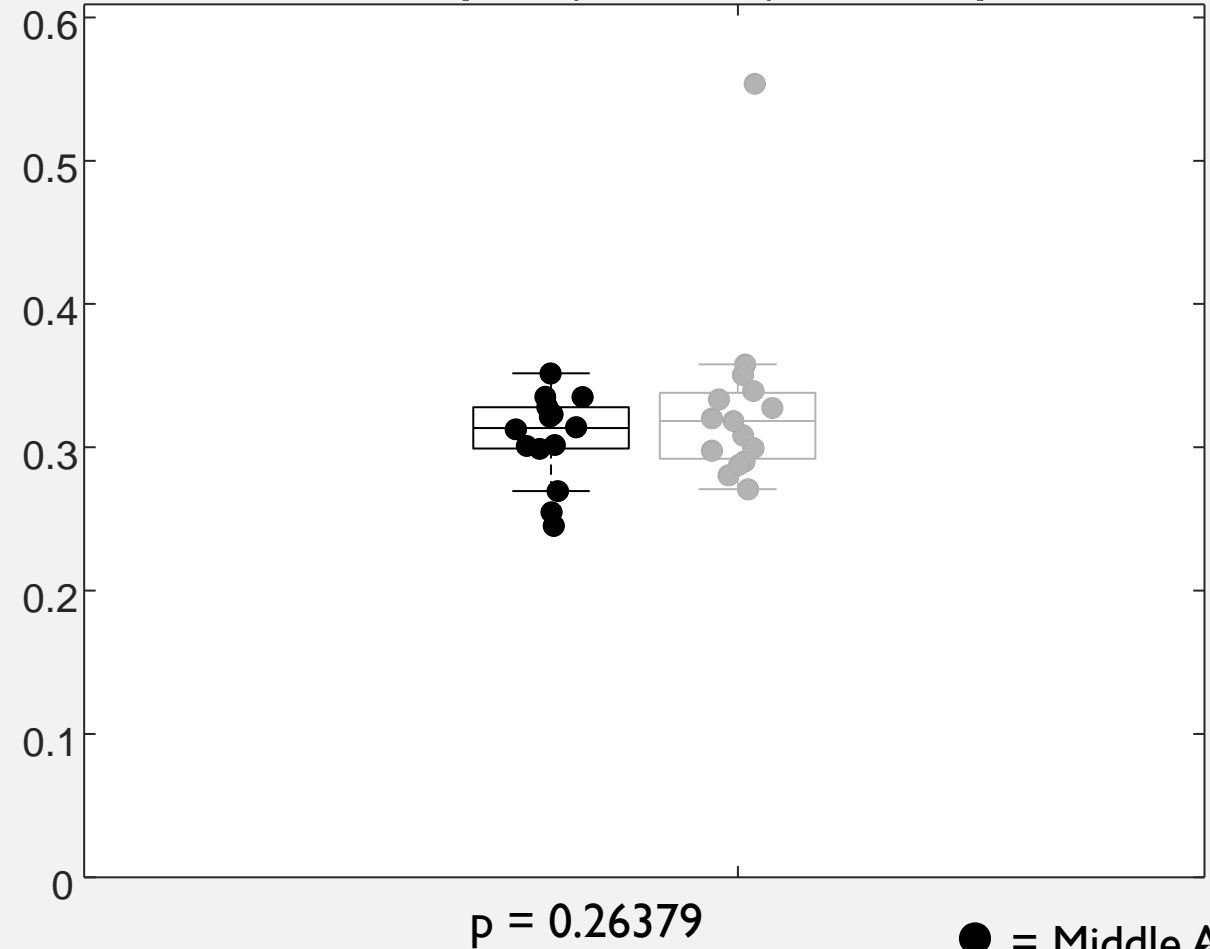


VASCULAR AND GLIAL DENSITY

Vascular (STL+) Density



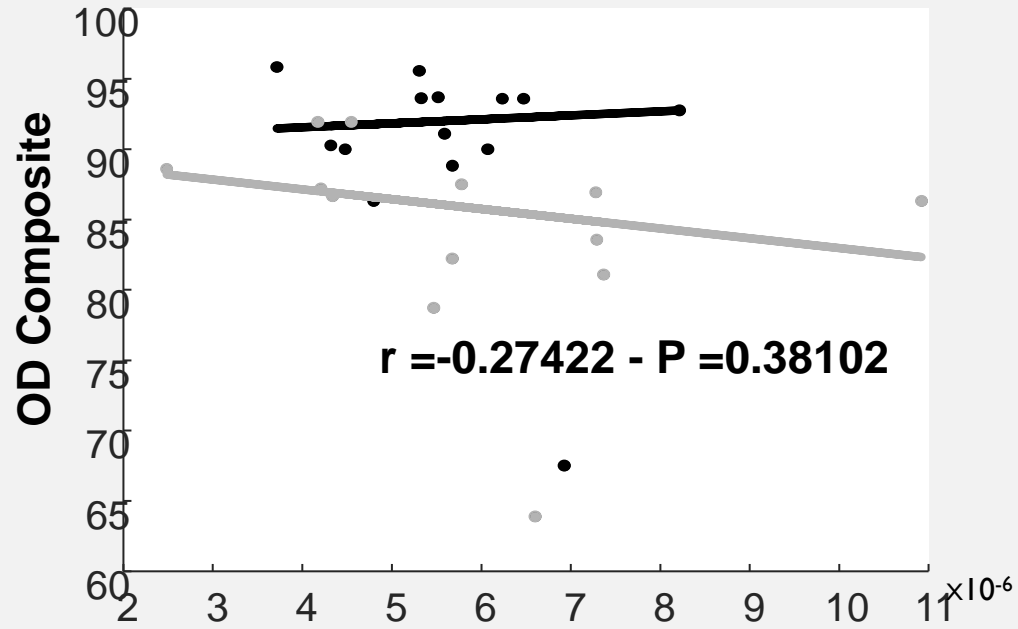
Astrocyte (GFAP+) Density



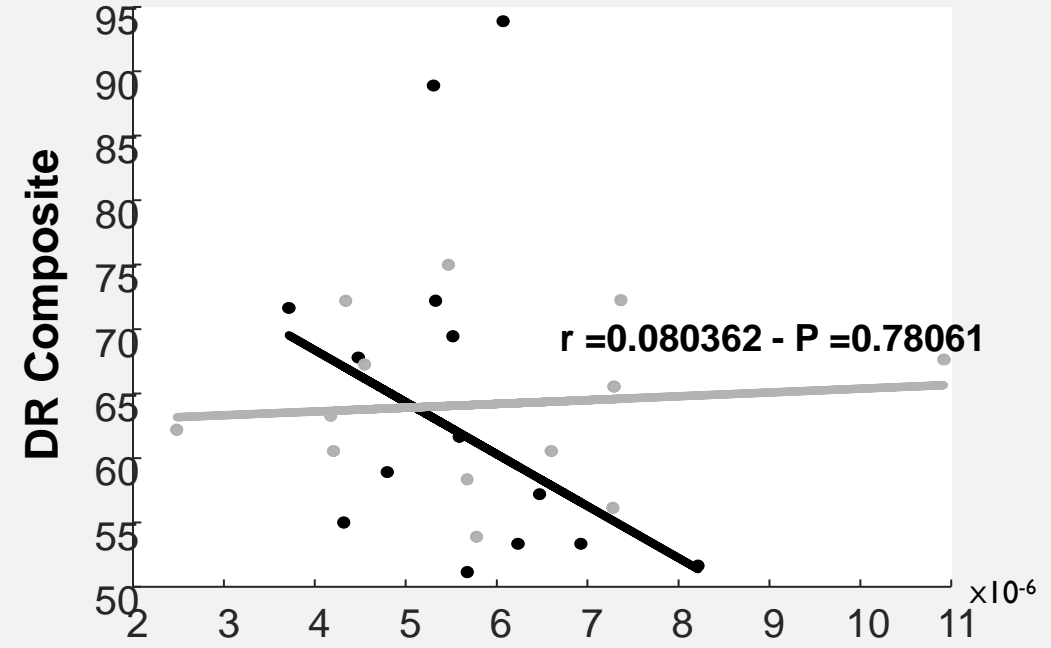
● = Middle Aged
● = Aged



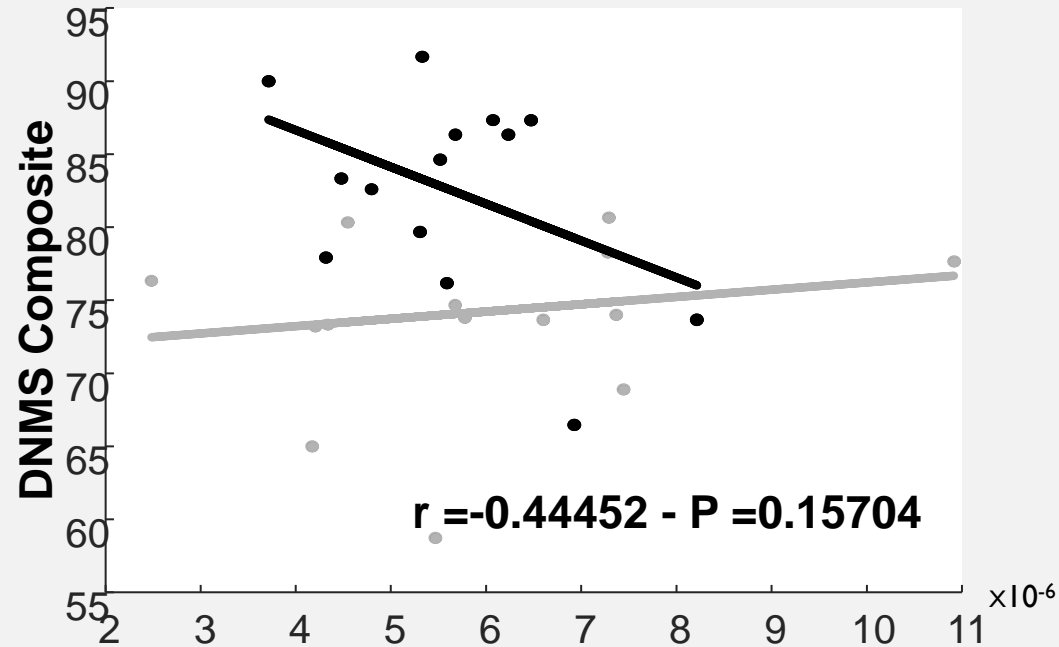
TH+ Neuron Density & OD Composite



TH+ Neuron Density & DR Composite



TH+ Neuron Density & DNMS Composite



CONCLUSIONS

- Bilateral LC catecholaminergic cell density does not differ between aged and adult monkeys, nor does vasculature nor GFAP expression.
- Cell density, vasculature, and GFAP expression were not significantly associated with behavioral performance.



THANK YOU

Barnes Lab & Affiliates

Carol Barnes

Daniel Gray

Irina Sinakevitch

Salma Khattab

Rachel Schwyhart

Wonn Pyon

Wesley Schnapp

Carolyn Harley

Luann Snyder

Funding

McKnight Brain Research Foundation

