

Pilot Screening to Identify Social Circuitry

Matthew B. Dawson, Joseph Bruckner, Ph.D., Alexandra Tallafuss, Ph.D.
and Phil Washbourne, Ph.D.
Washbourne Lab – Institute of Neuroscience



Background

- Zebrafish are highly social, making them a great model
- The circuitry behind social behaviors is enigmatic
- Selective ablation can find populations of interest
- Knowing circuitry will inform interventions

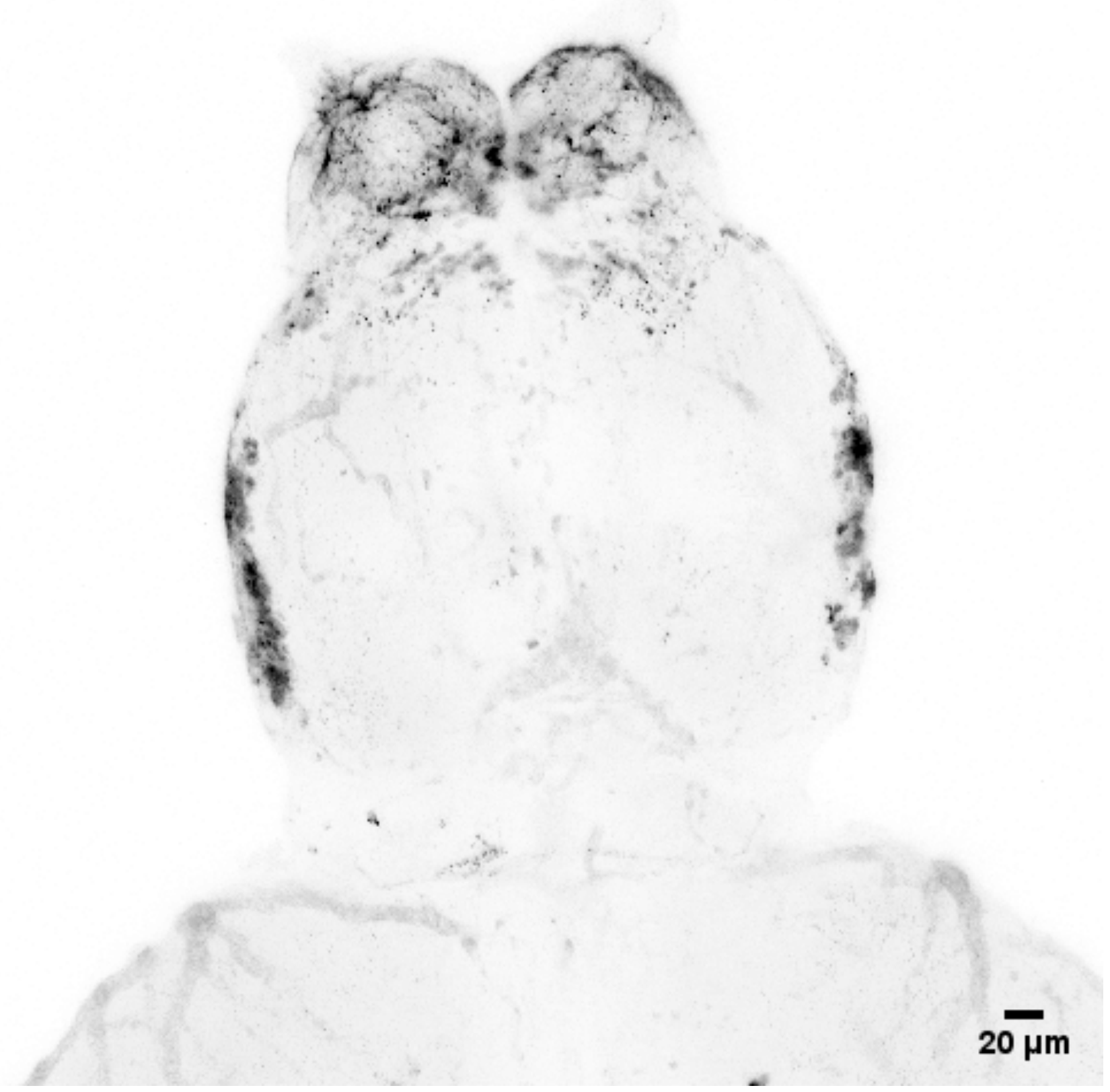
Hypothesis

Neuronal circuitry for social behavior can be deduced by ablation of unique expression patterns

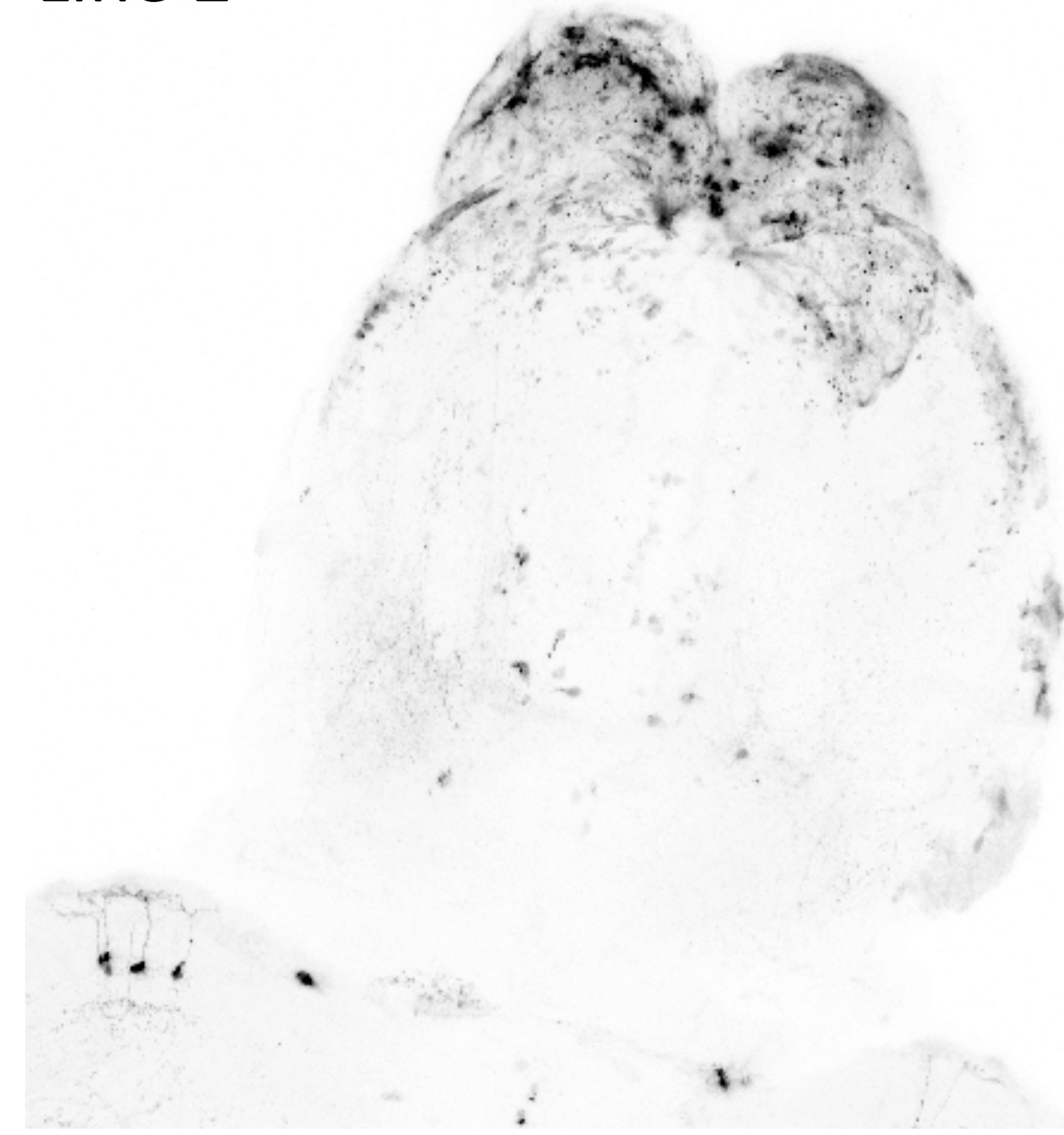
Conclusion

- Ablated fish from Line 4 showed clear deficits in social performance
- The average speed was also higher
- Lines 1-3 can inform which neuronal populations may not necessary for social behavior

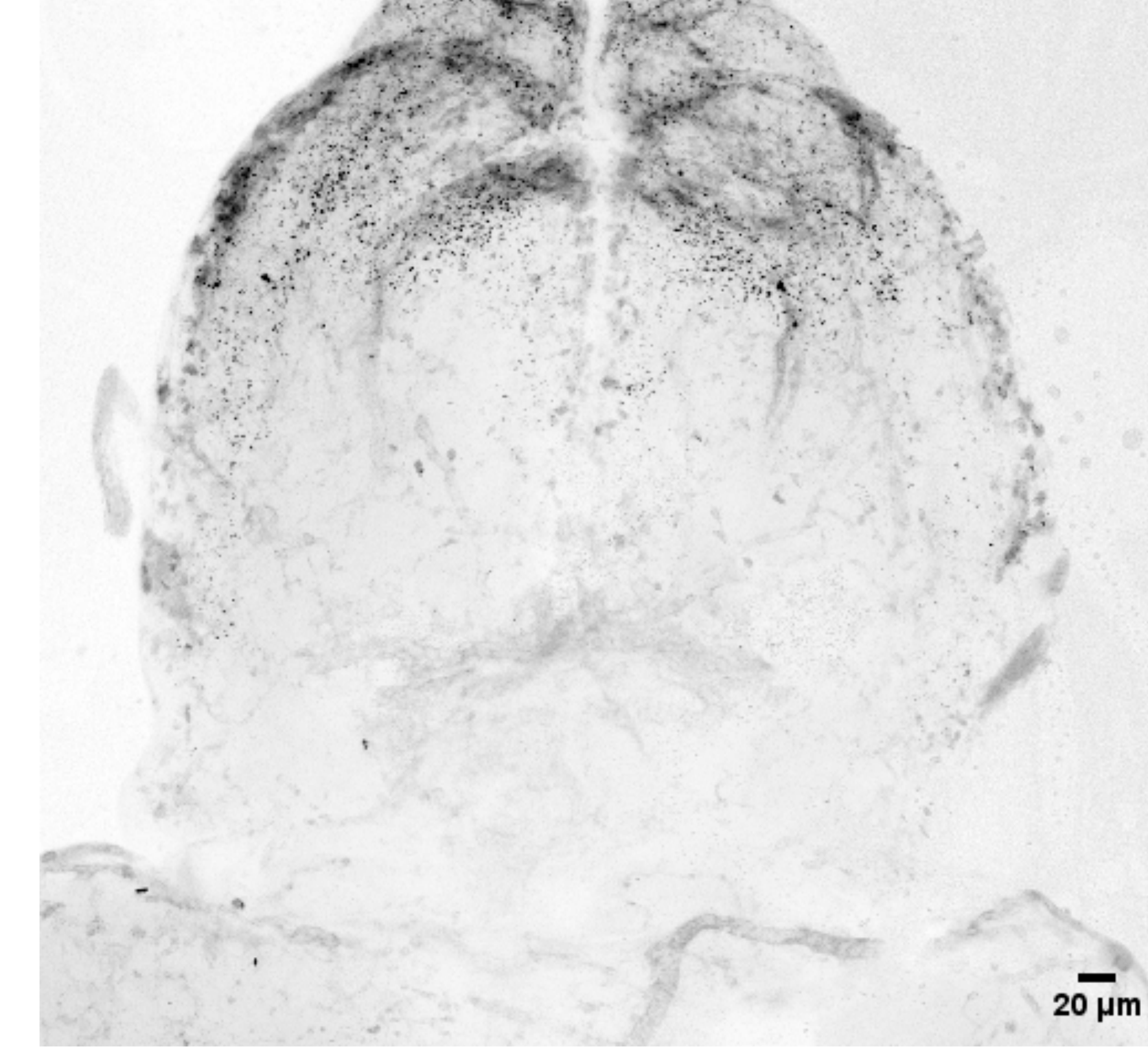
Line 1



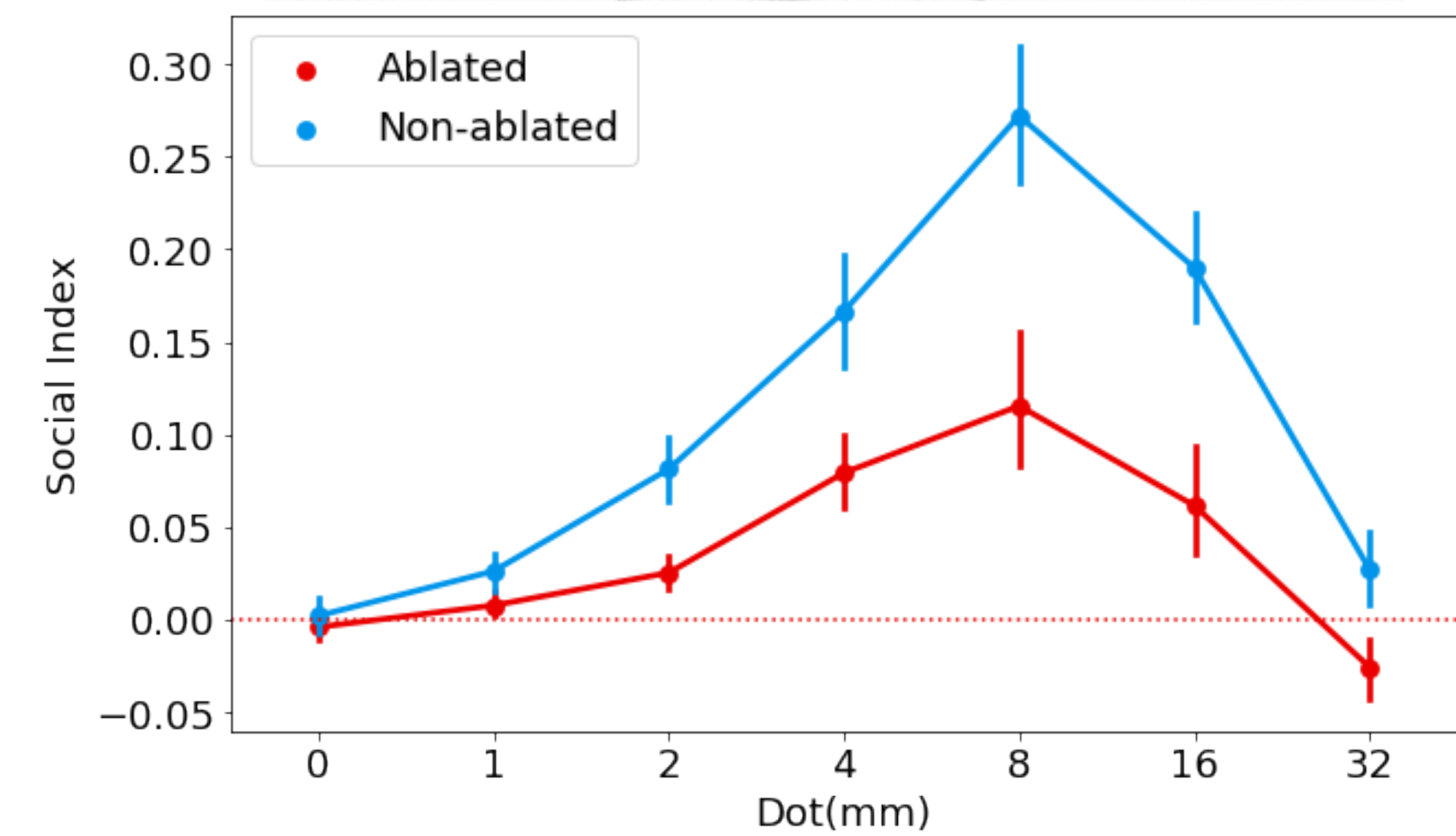
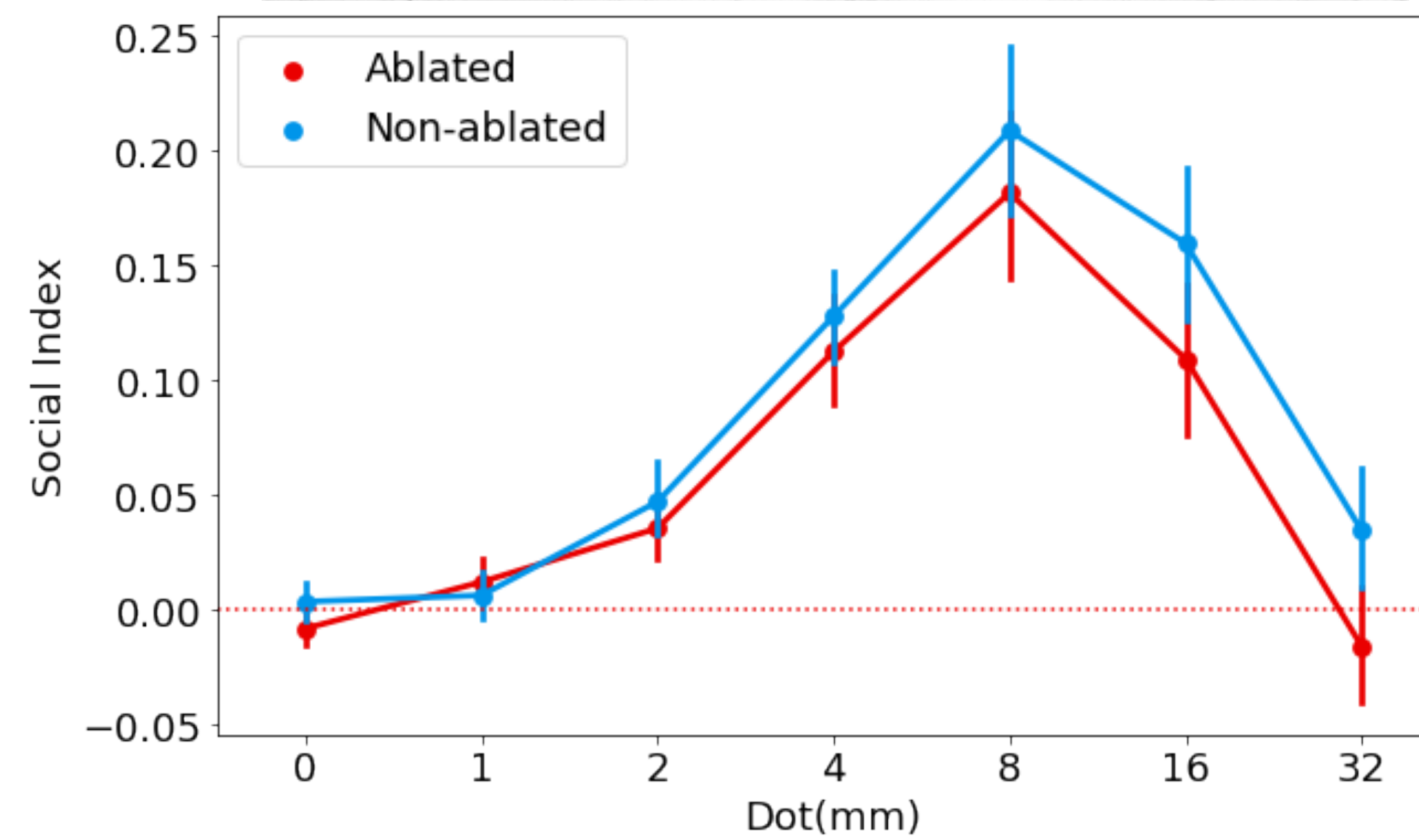
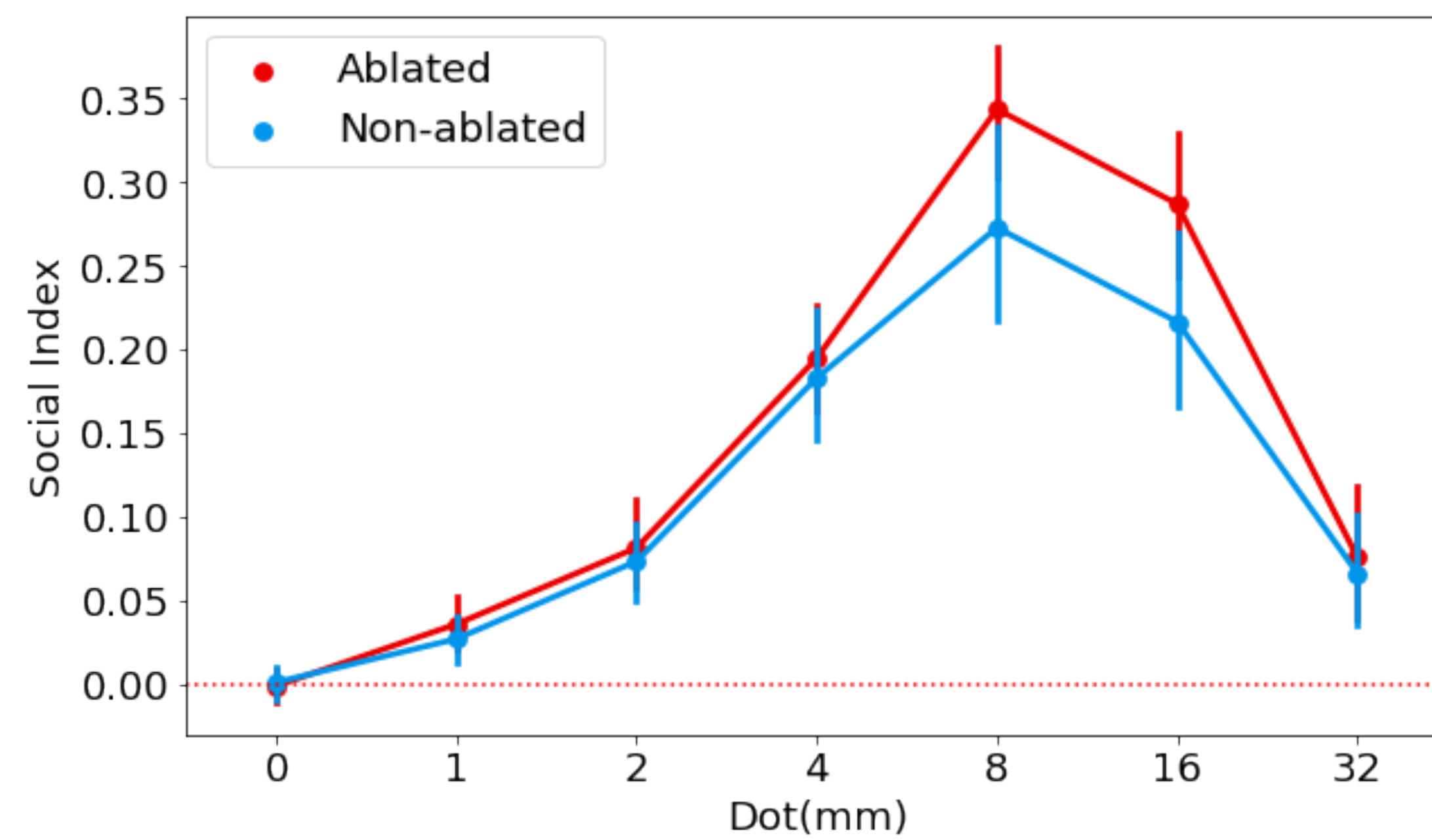
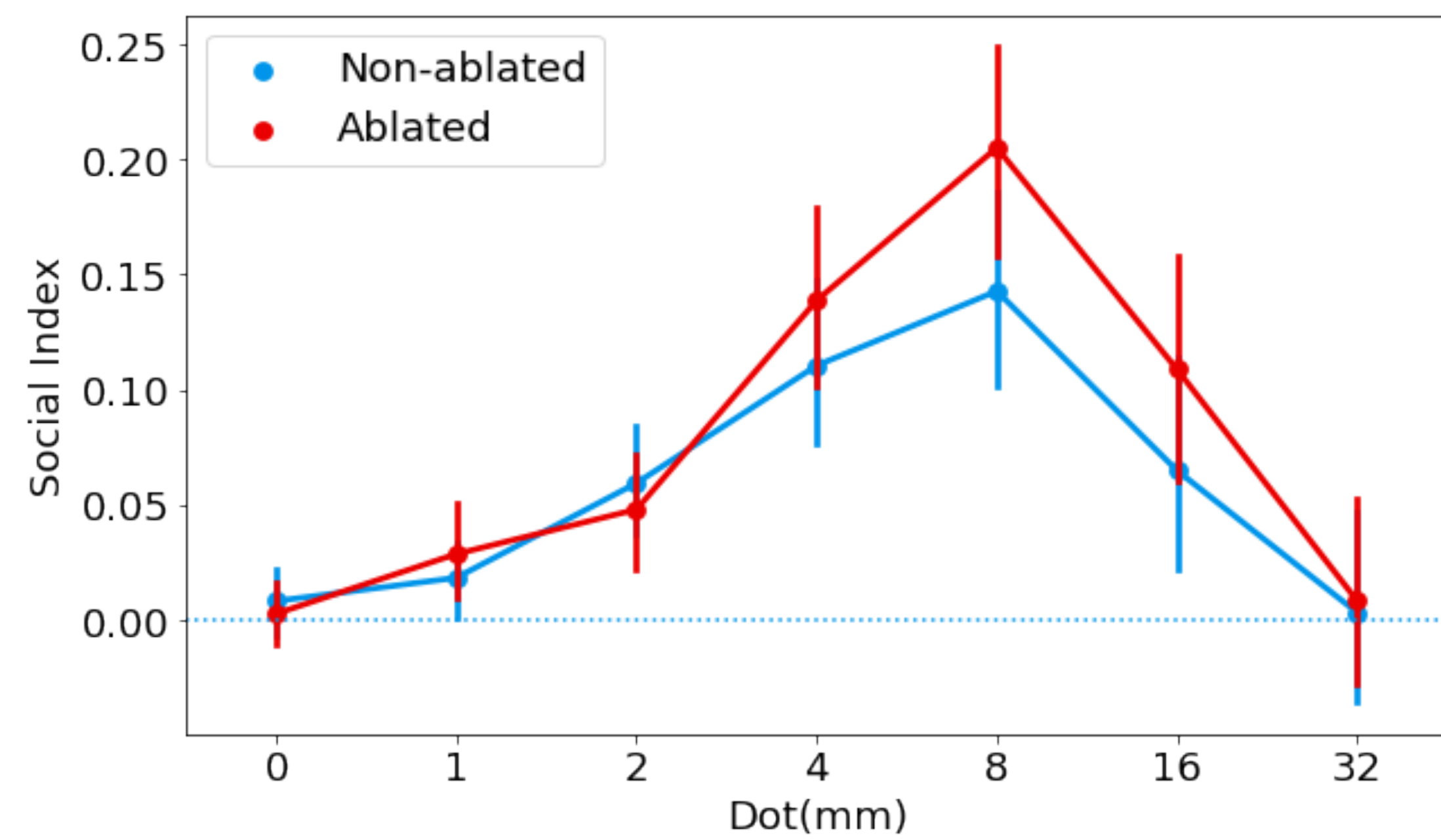
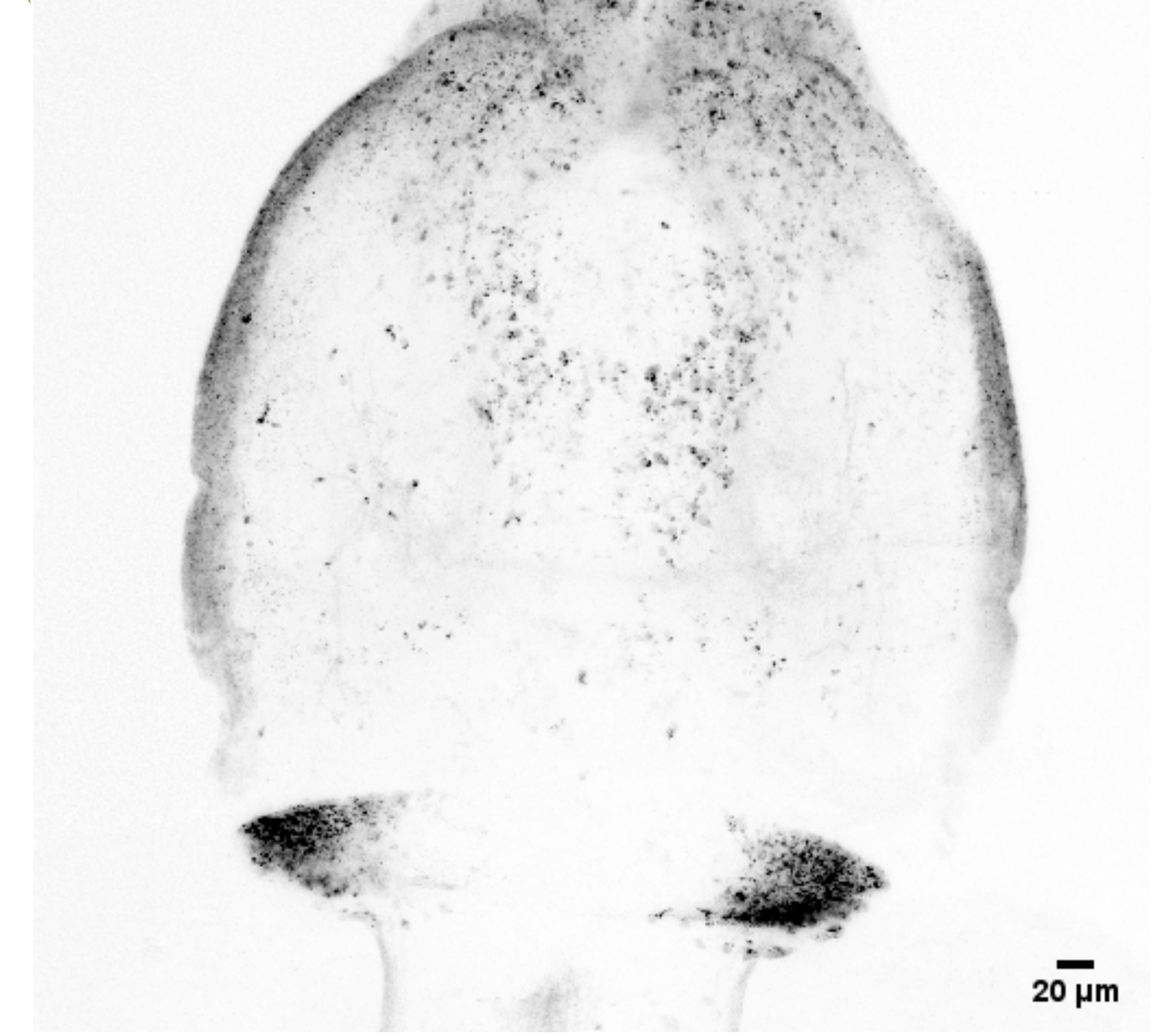
Line 2



Line 3

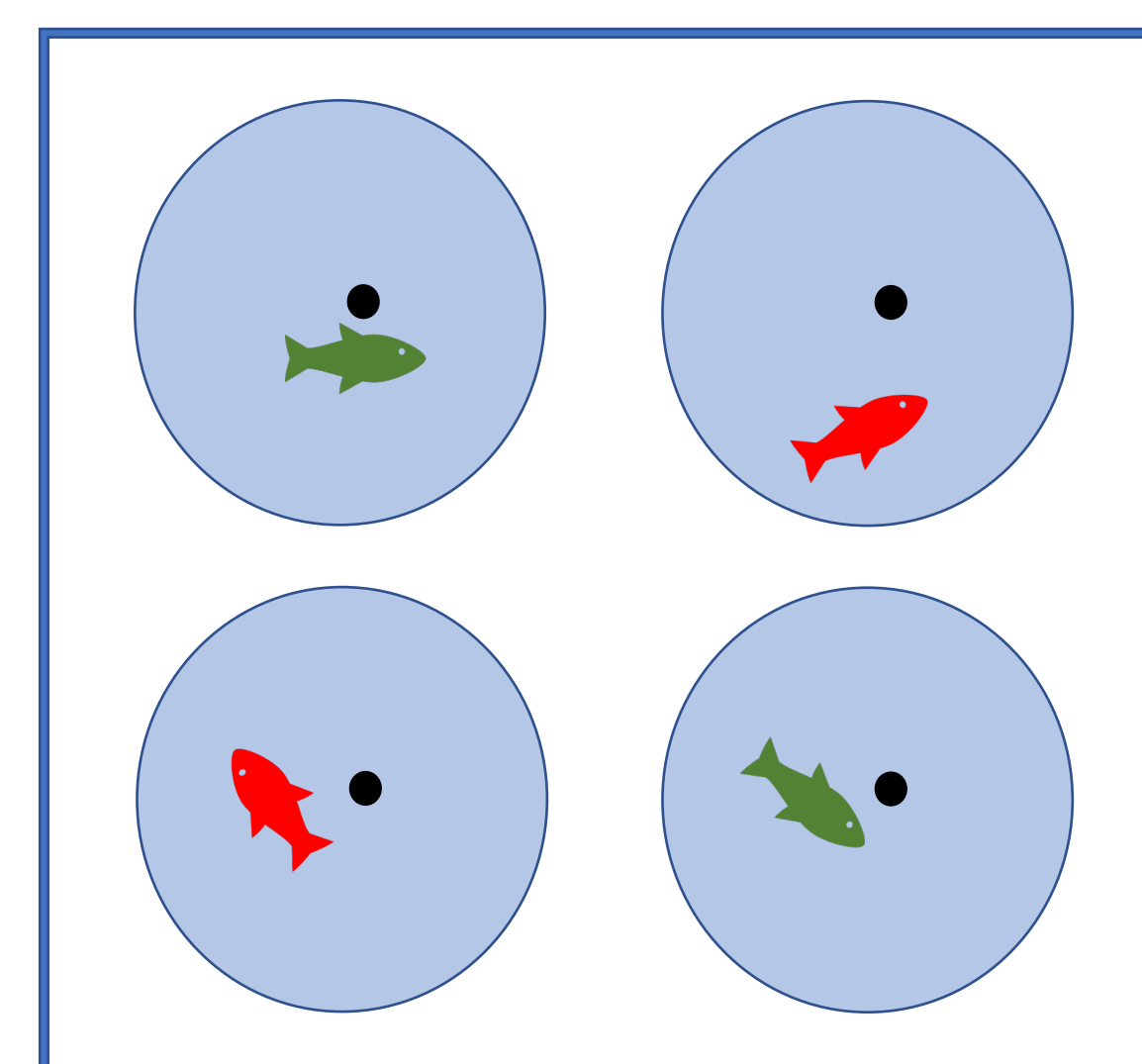


★ Line 4



Methods

- Selected for genetic expression (GFP vs RFP)
- Induced chemo-genetic ablation
- Examined for social differences
- Extracted samples for confocal microscopy



Future Directions

- Enhance images via antibody tagging and increased image size
- Use image processing to begin mapping unique populations to average brain
- Further analysis of lines that didn't show clear deficits

