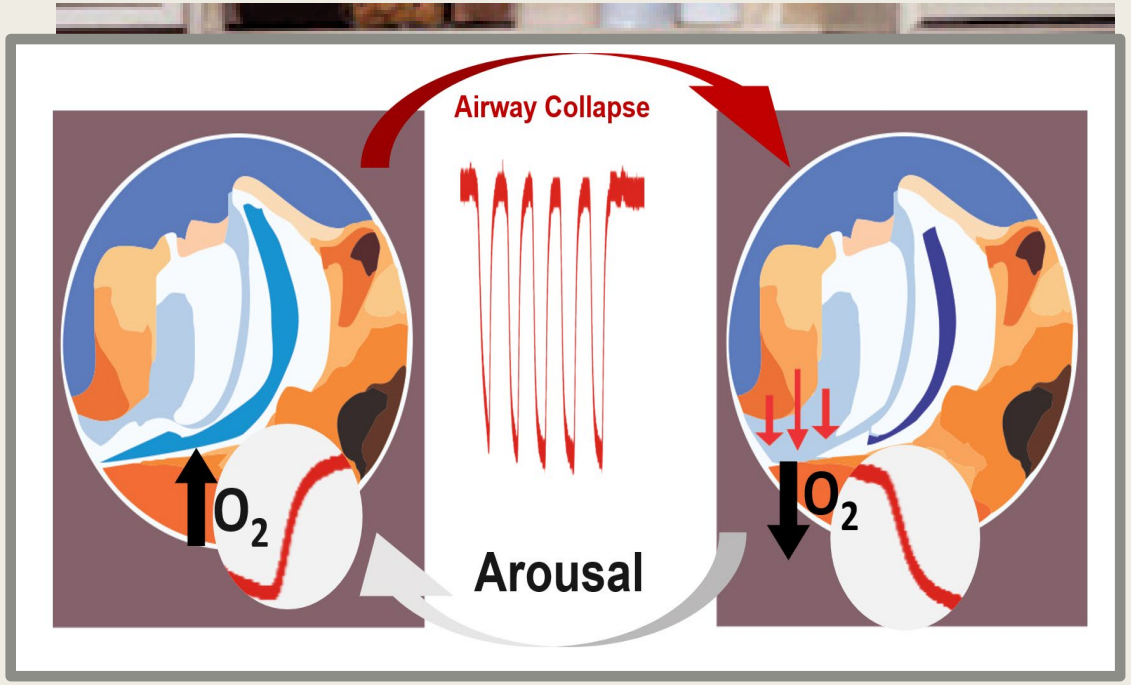
CHRONIC INTERMITTENT HYPOXIA INCREASES NEURAL PROGENITOR CELL DENSITY IN DENTATE GYRUS OF MICE

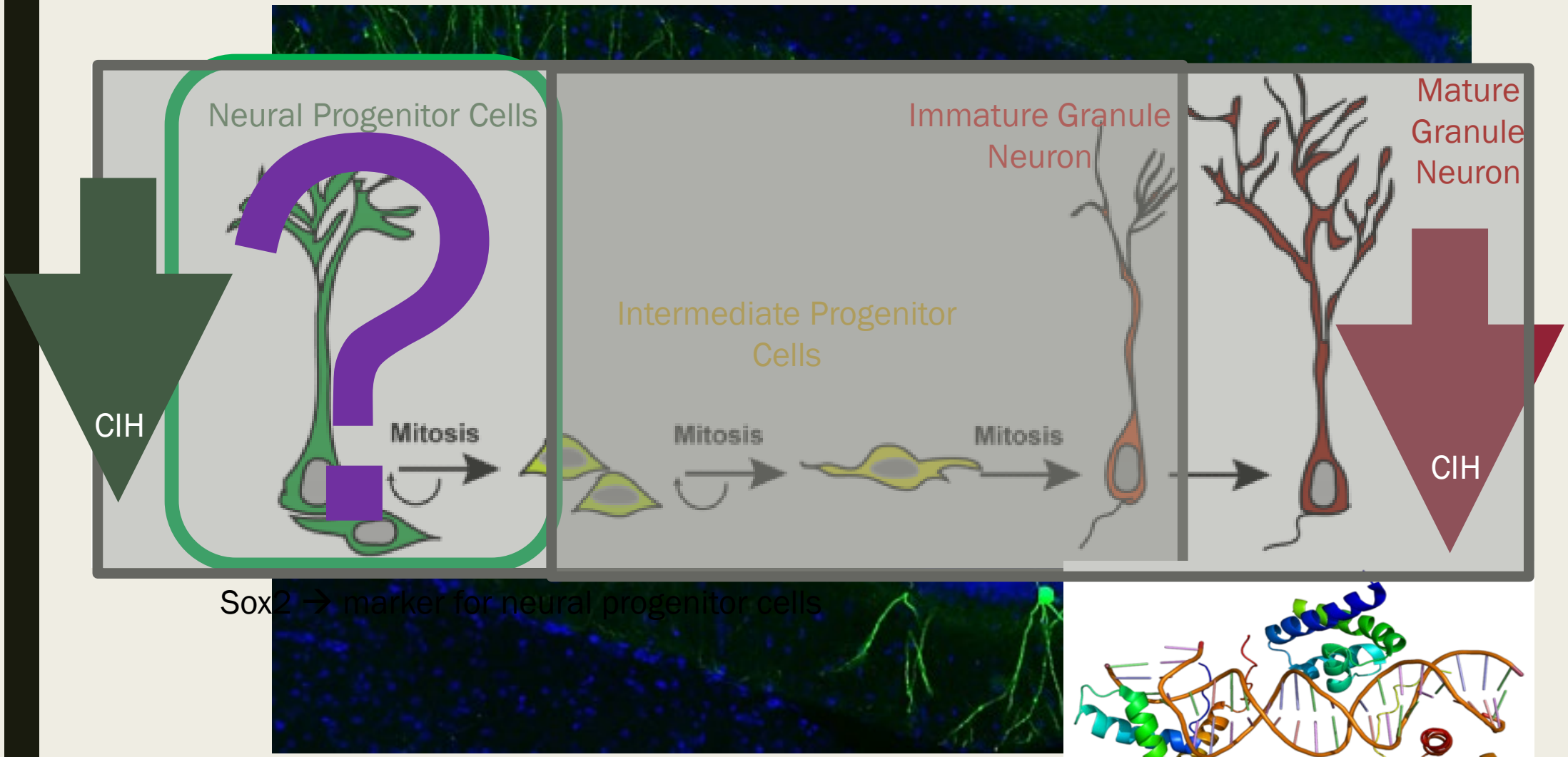
Karissa Lam
Seattle Children's Research Institute
Center for Integrative Brain Research

CIH as a Model for Obstructive Sleep Apnea

- Obstruction of airway
  - *Less oxygen levels*
  - *Arousal increases oxygen levels dramatically*
- Risk factors
  - *Rise of adolescent & childhood obesity*
- Affects
  - *Respiratory function*
  - *Cardiovascular function*
  - *Cognitive function*



Hippocampus is Important to Memory & Learning

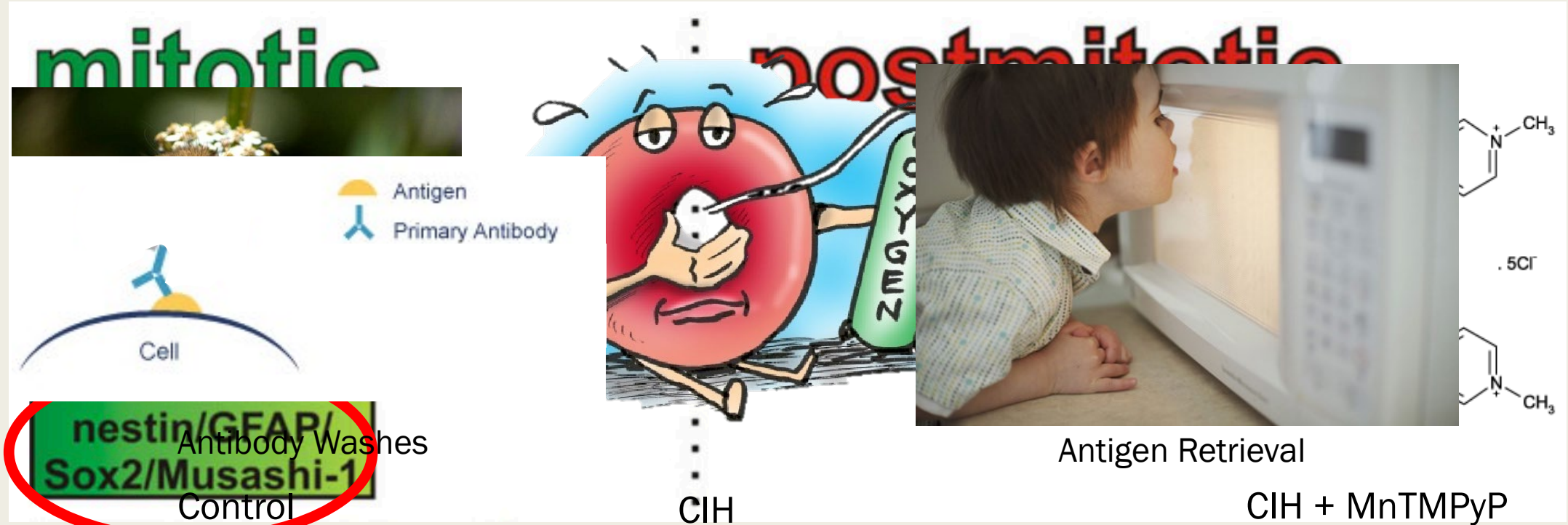


Sox2 → marker for neural progenitor cells

Hodge & Hevner, 2011

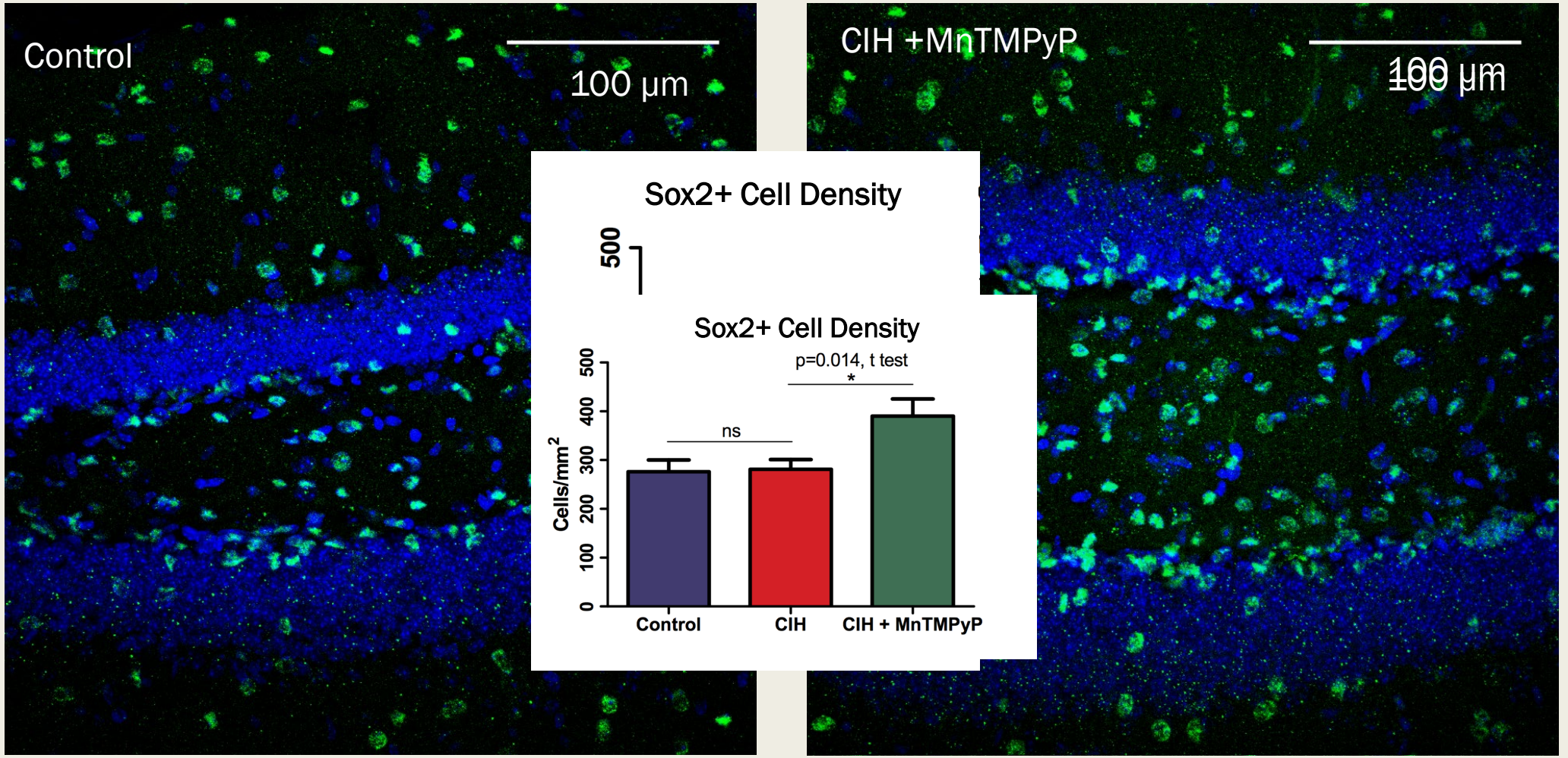
Photo: National News and Pictures

What is the Effect of CIH on Neural Progenitor Cell Proliferation?



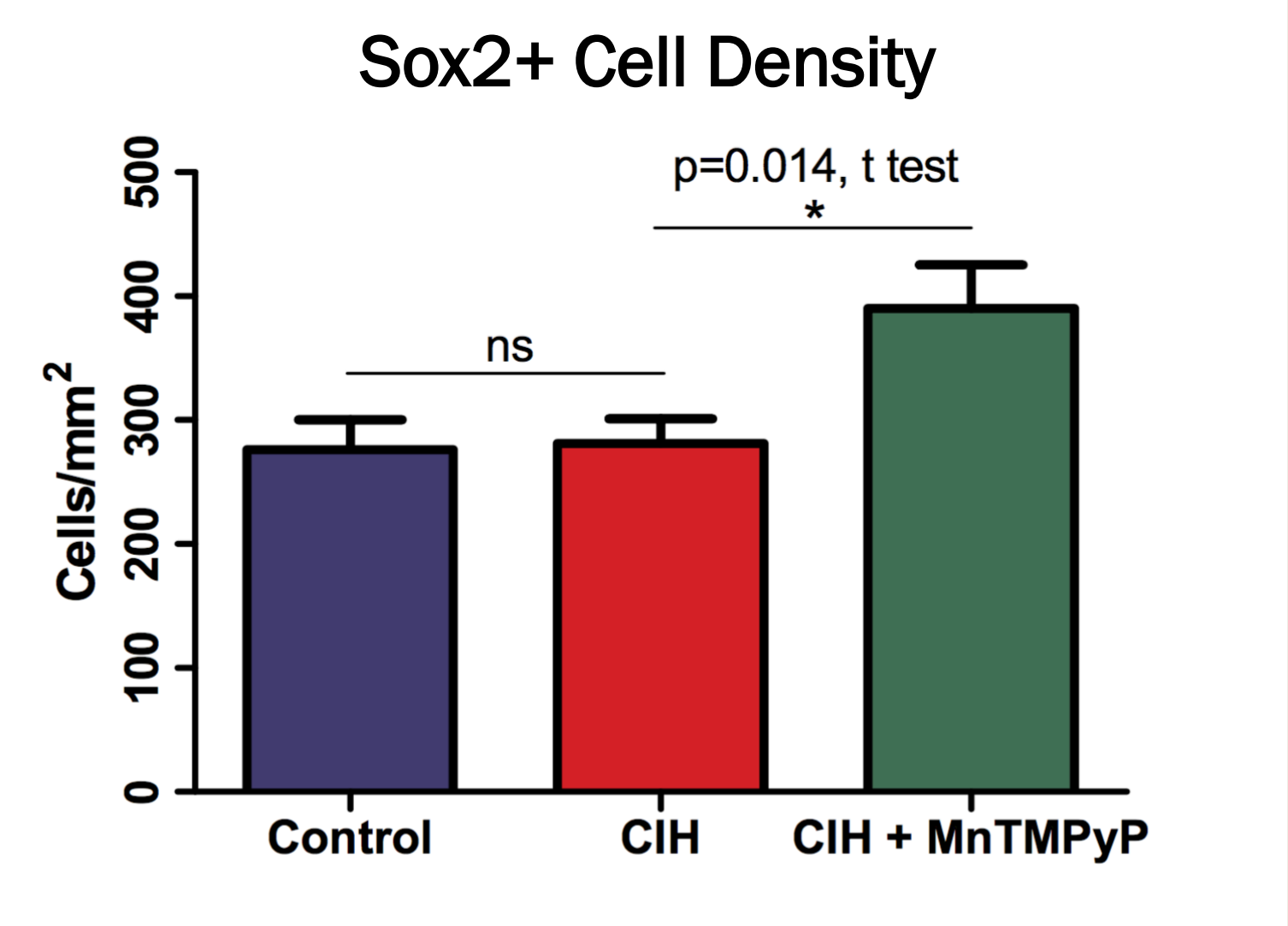
Van Bohren, 2011

Results


Control
100 µm
CIH +MnTMPyP
100 µm
Sox2+ Cell Density
500
Sox2+ Cell Density
p=0.014, t test
*
ns
Cells/mm2
0
100
200
300
400
500
Control
CIH
CIH + MnTMPyP

Conclusions

- No difference between control & CIH
- MnTMPyP increases neural progenitor cell proliferation
  - *How?*
  - *Why?*
- Further questions
  - *Does CIH affect later stages of neurogenesis?*
  - *What is the affect of MnTMPyP on the maturation of neurons?*



Thank You!

- Chelsea Pagan
- Dr. Nino Ramirez
- The Ramirez Lab
- Center for Integrative Brain Research
- Summer Research Experience in Translational Neuroscience and Neurological Surgery Grant
  - *NIH R25 NS095377-01*
- Dr. Ellenbogen & UW Neurological Surgery
- Christina Buckman
- Jim Pridgeon, MHA
- Fellow interns