# Week of 10/15 Deliverables

Eric Bridgeford

# Eric’s Goals

- Prepare notebook on SBM to determine whether ipsi-lateral connectivity exceeds contra-lateral connectivity
- Prepare repository with plots of megameans for diffusion/functional connectomes for gigantum

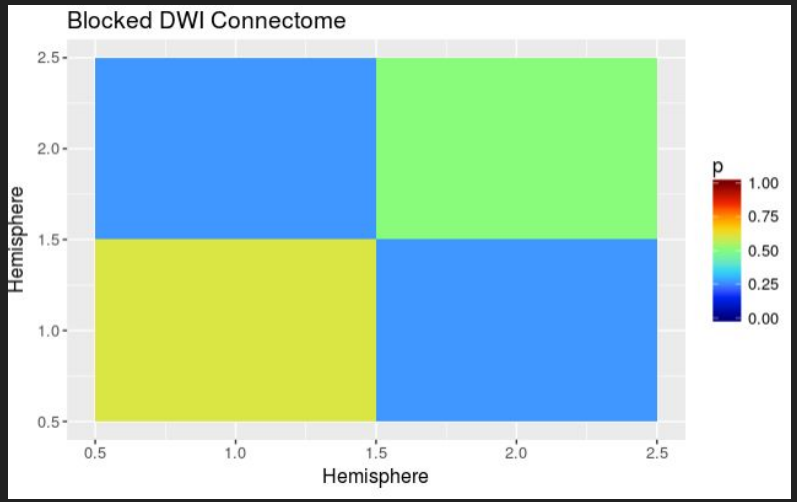
# What Eric Did

- Prepare notebook on SBM to determine whether ipsi-lateral connectivity exceeds contra-lateral connectivity
- Prepare repository with plots of megameans for diffusion/functional connectomes for gigantum

100% done, >50% done, <50% done

# Both Diffusion and Functional Connectomes show higher ipsi-lateral connectivity than contra-lateral connectivity

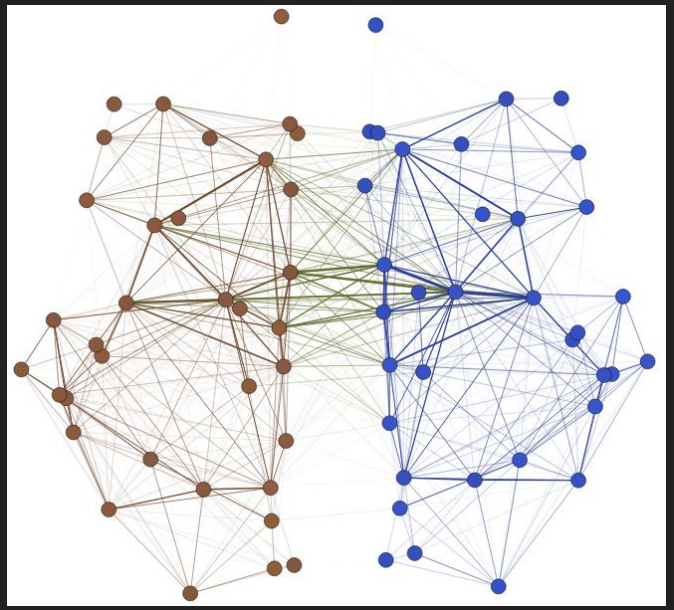
- Goal: identify whether ipsi-lateral connectivity is significantly greater than contra-lateral connectivity
- Pseudo:
  - Estimate the connectivity ipsi-laterally, $p_{ipsi,\,i}$ , and contra-laterally, $p_{contr,\,i}$ for each of our i connectomes
  - Use a paired t-test without assumptions on the variance to determine whether $p_{ipsi,\,i}$ exceeds $p_{contr,\,i}$
- P-value of ~0 for both diffusion and functional connectomes

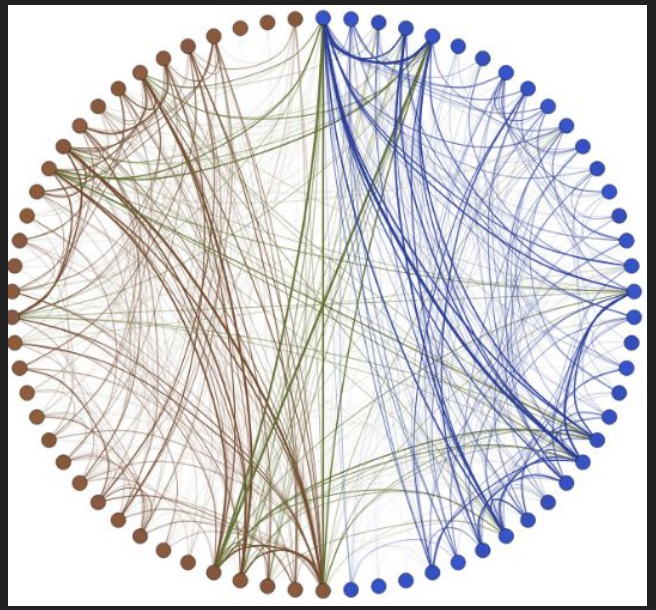


# Diffusion Connectomes show greater structural segmentation than functional connectomes

- Goal: identify visually whether diffusion connectomes show greater structural segmentation than functional connectomes
  - Structural segmentation: do they look more structurally organized? Are they more segmented by hemisphere?
- Diffusion connectome: connectome estimated from water pathways in the brain
  - Edge is a fiber count for the number of pathways from one area to another
- Functional connectome: connectome estimated from blood flow in the brain
  - Edge is the correlation between the relative concentration of oxygenated blood from one part of the brain and another at each time point that we measure

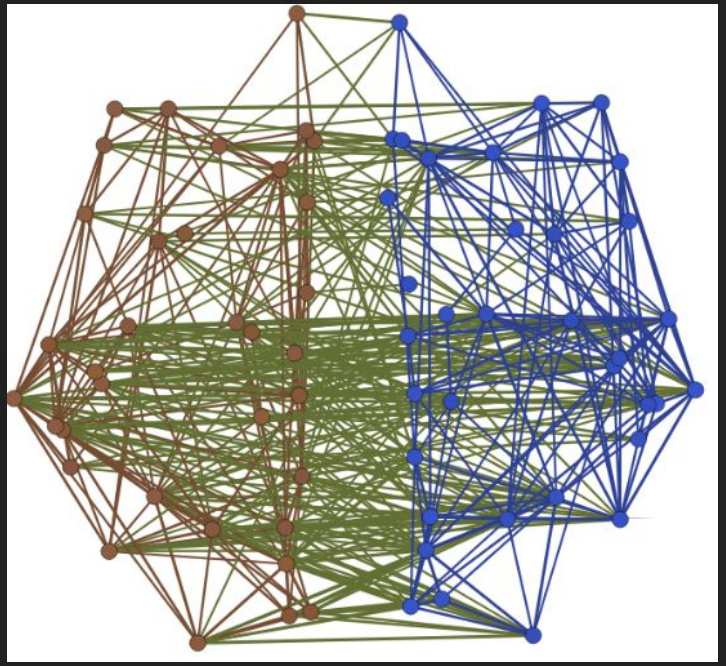
# Diffusion Connectomes show many within-hemisphere connections, and localized across-hemisphere connections

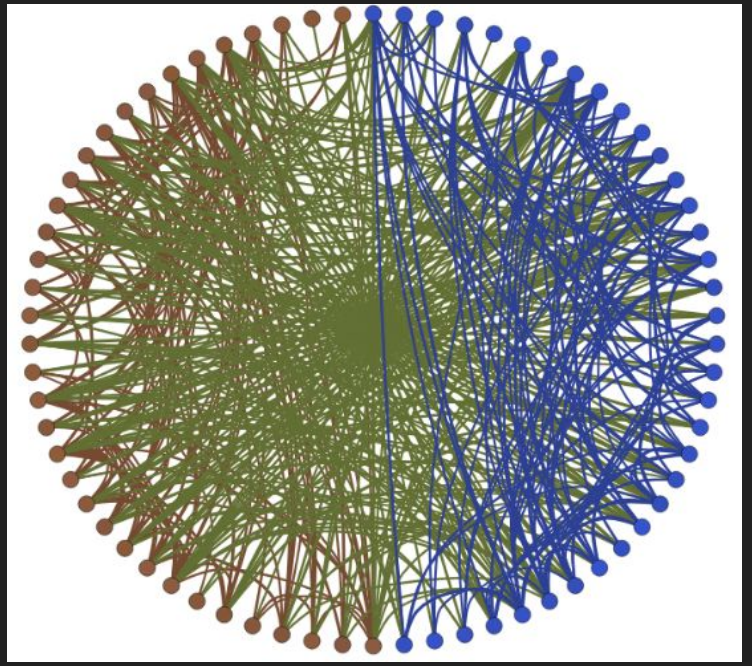




Red edges are left-left ipsi-lateral connections, blue are right-right ipsi-lateral connections, green are contra-lateral connections

# Functional connectomes show less hemispheric localization





Red edges are left-left ipsi-lateral connections, blue are right-right ipsi-lateral connections, green are contra-lateral connections

# Goals for Next Week

- Ndmg paper submitted and updated on arXiv
- Finish gtheory investigations of Noble 2017a