

Exploring the role of *AGPAT4* in the Central Nervous System

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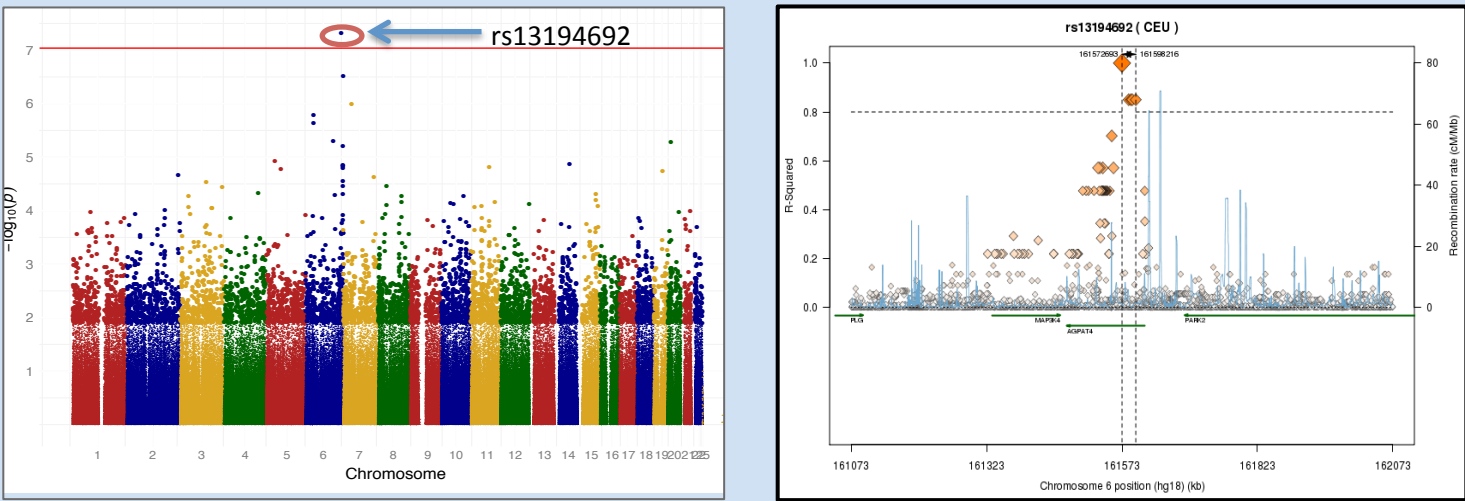
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Allen Brain Institute Workshop

2013

INTRODUCTION

Gene *AGPAT4* found to be associated with brain regions implicated in the development of Alzheimer’s disease.



Hypothesis: *AGPAT4* influences brain function and therefore, it might confer Alzheimer’s disease susceptibility

Method:

1.

Human Brain
A multi-modal, multi-resolution atlas detailing gene expression across the adult human brain

Mouse Brain
A genome-wide, high-resolution atlas of gene expression throughout the adult mouse brain

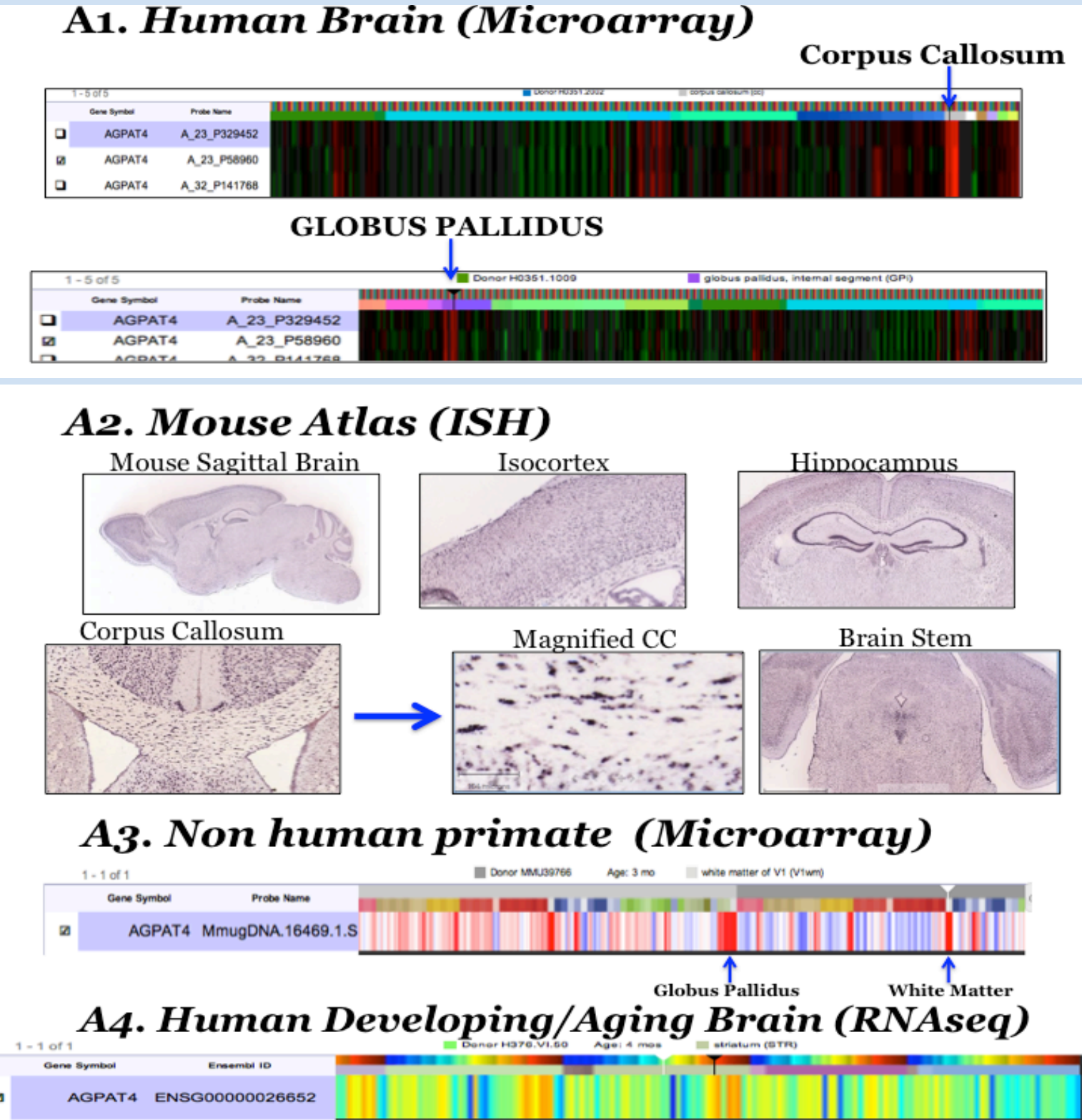
Non-Human Primate
A detailed atlas of gene expression across postnatal primate brain development

2. GENSAT

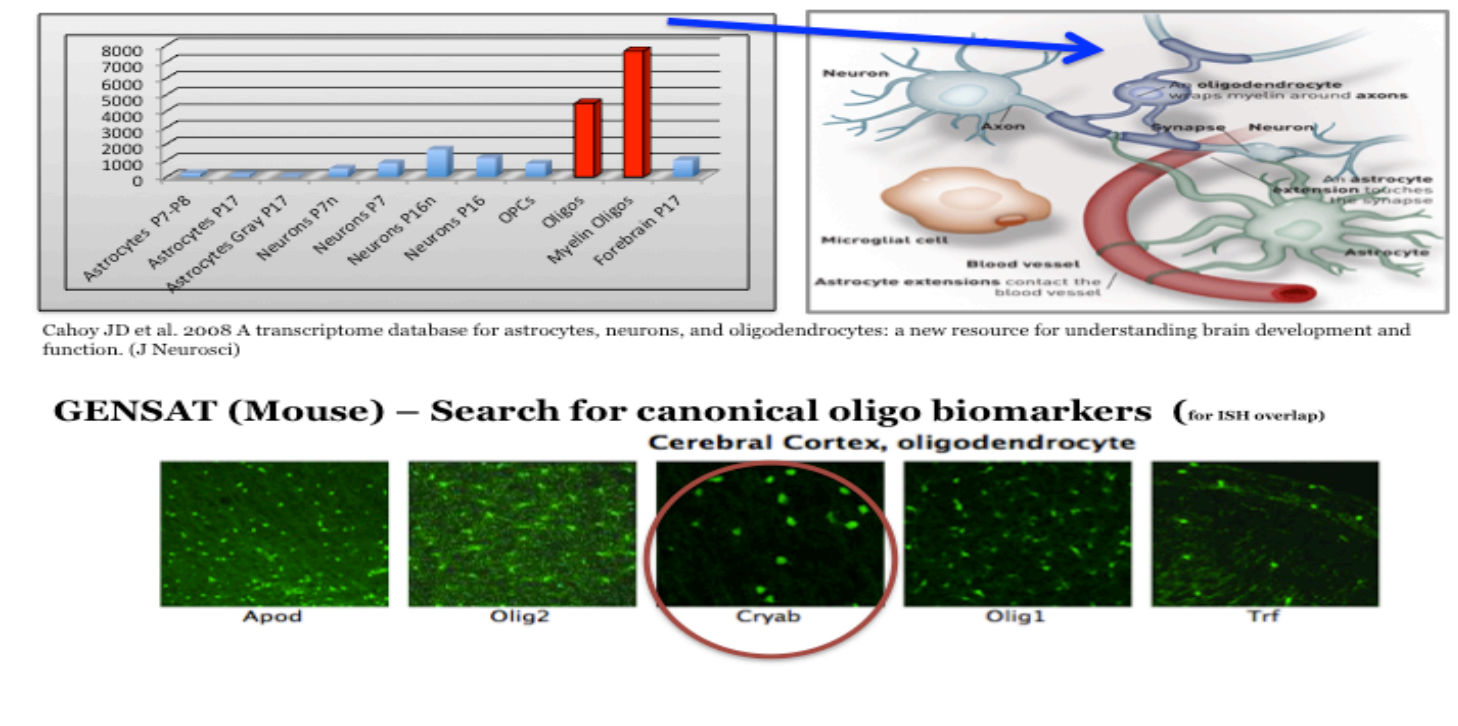
3. Cahoy JD et al. 2008 A transcriptome database for astrocytes, neurons, and oligodendrocytes: a new resource for understanding brain development and function.

RESULT:

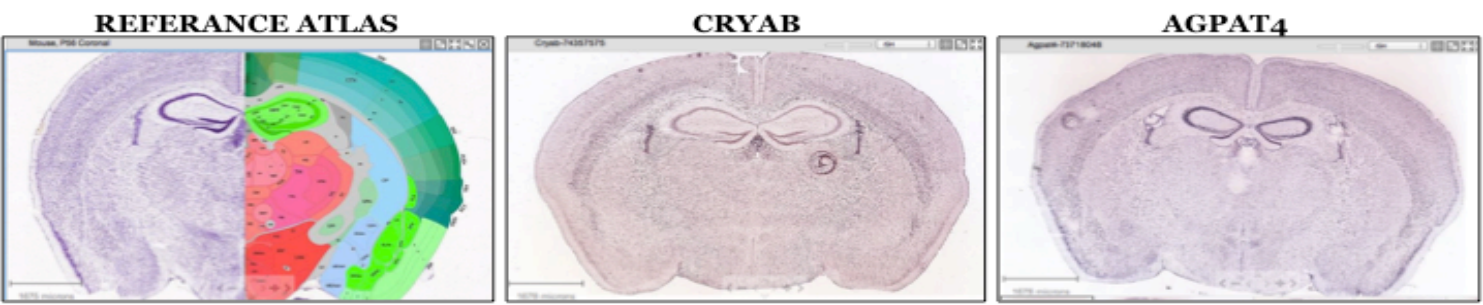
1. Brain Region Localization



2. Cell Type Localization



1. Distribution (Mouse Dataset - ISH)



2. Correlation of oligo marks with *AGPAT4* (Human Microarray data)

| id | name | gene-id | gene-symbol | gene-name | entrez-id | chrom | r |
|---------|-------------------------|---------|-------------|--|-----------|-------|-------|
| 1024575 | CUST_109960_PI416261804 | 4314 | MOG | myelin oligodendrocyte glycoprotein | 4340 | 6 | 0.615 |
| 1057942 | CUST_152388_PI416261804 | 1401 | CRYAB | crystallin, alpha B | 1410 | 11 | 0.589 |
| 1059135 | CUST_108599_PI416261804 | 344 | APOD | apolipoprotein D | 347 | 3 | 0.578 |
| 1019323 | A_23_P154849 | 77779 | OLIG1 | oligodendrocyte transcription factor 1 | 116448 | 21 | 0.507 |
| 1021925 | A_23_P211079 | 10069 | OLIG2 | oligodendrocyte lineage transcription factor 2 | 10215 | 21 | 0.497 |

CONCLUSION:

1. *AGPAT4* is widely expressed in the brain
2. *AGPAT4* is mainly localized in oligodendrocytes (white matter)
3. No high expression in Globus Pallidus
4. *AGPAT4* might be involved in myelin related biological processes and indirectly to synaptic formation