

# MRI and a Dog Model of Alzheimer's Disease

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# Research Background

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Various animal models of  
Alzheimer's Disease

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Various animal models of  
Alzheimer's Disease

Rodent and Dog

The dog is a naturally occurring  
model of Alzheimer's Disease



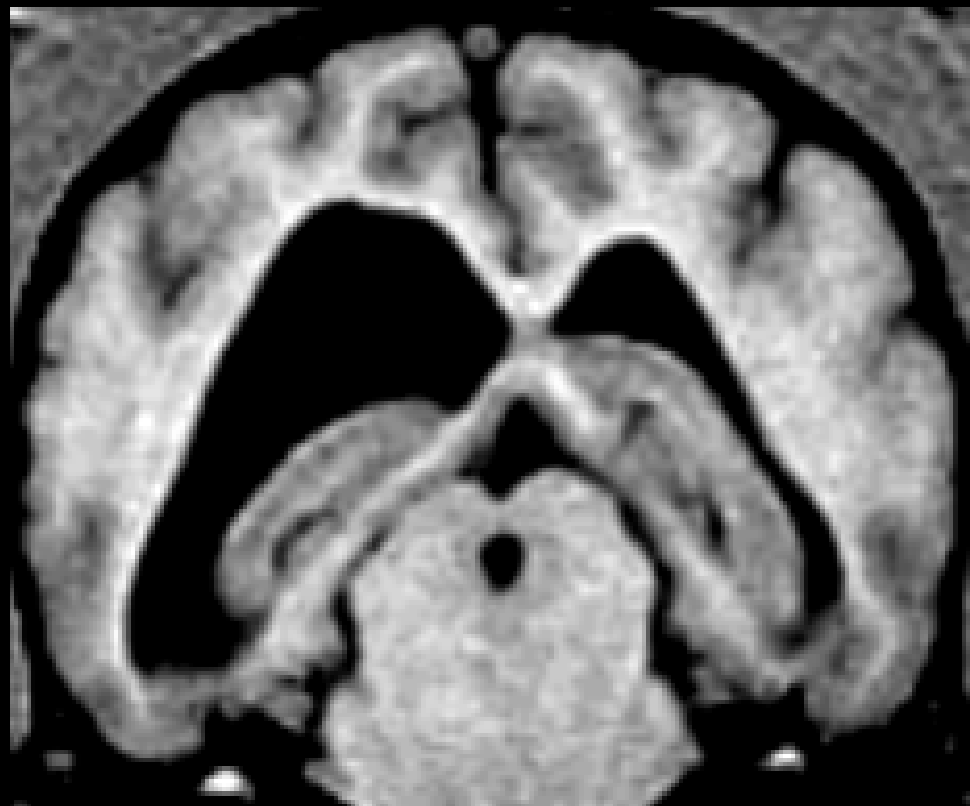
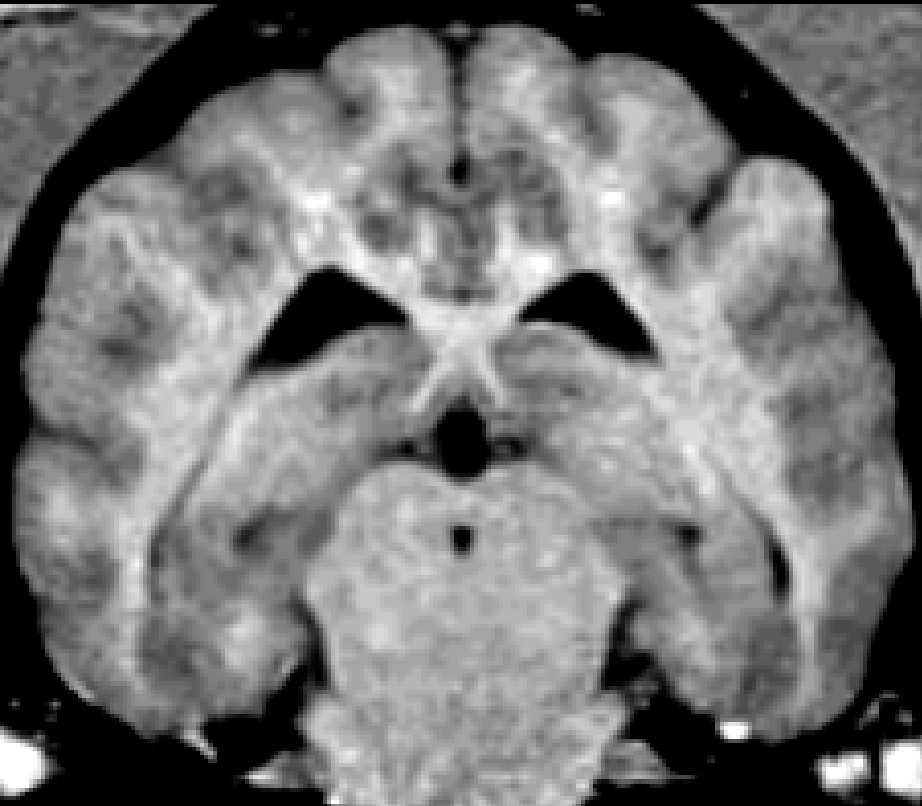
# Non-verbal cognitive function testing



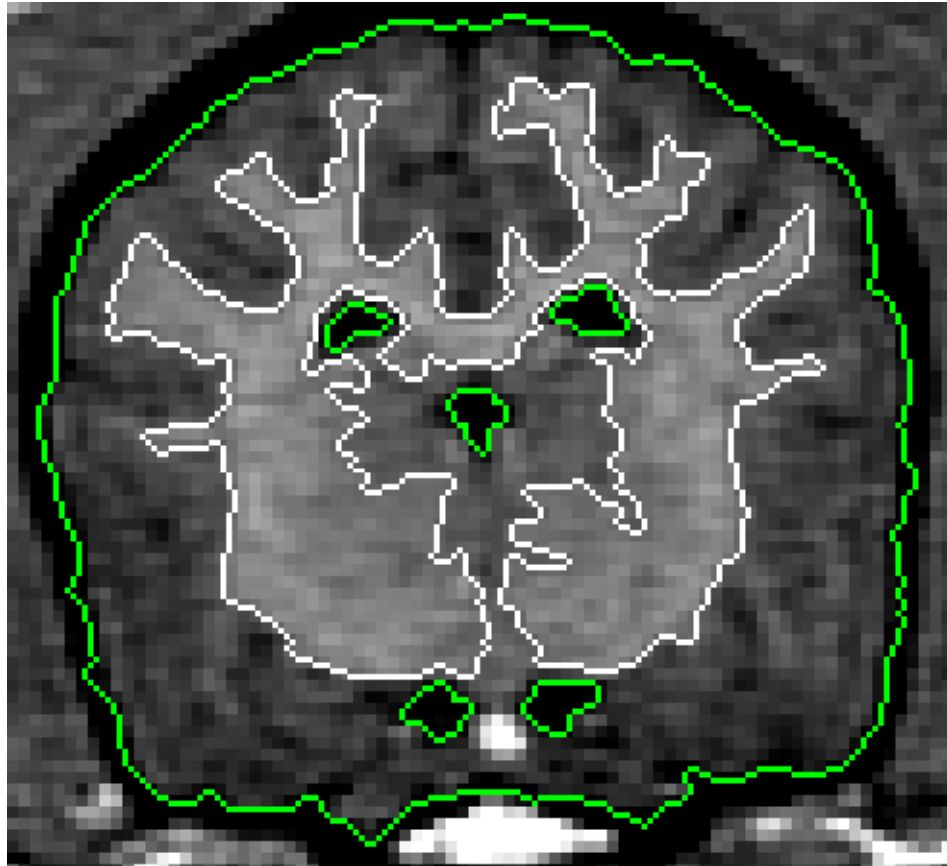
# Industry Research Need

- 1 Develop MRI to quantify changes in the brain associated with aging and dementia in dogs
- 2 Is there a relationship between MRI parameters and cognitive function in dogs

# Previous basic work



# Brain Segmentation



Existing software developed for  
images of people

Existing software developed for  
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Poor reliability when used in dogs

# Diffusion Tensor Imaging (DTI)

Similar modifications to analysis  
software

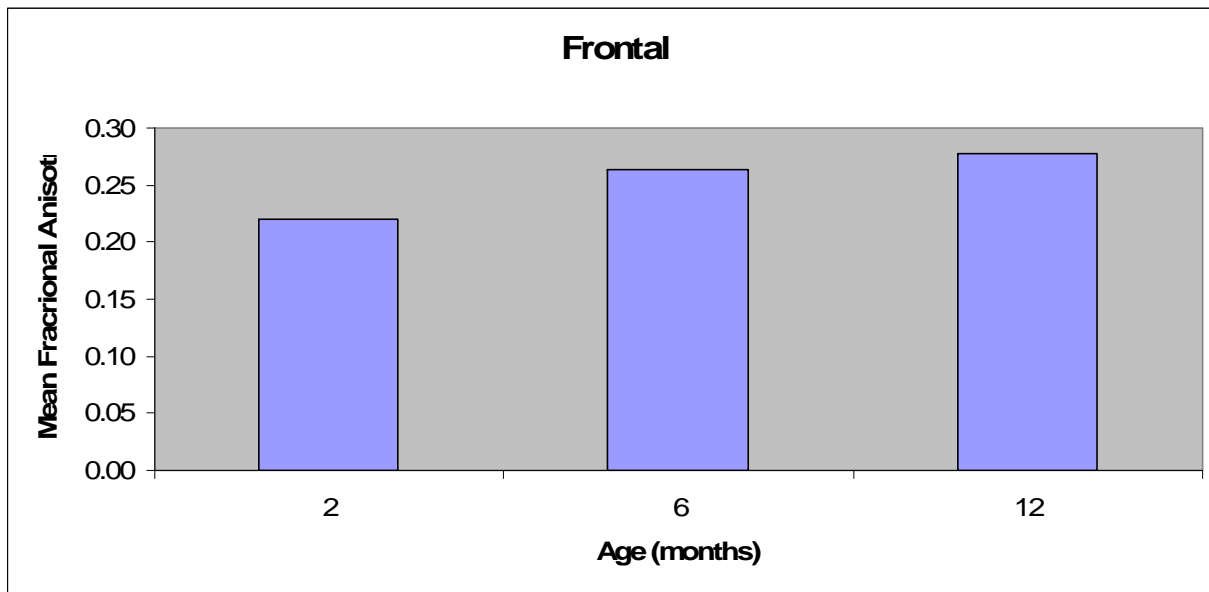
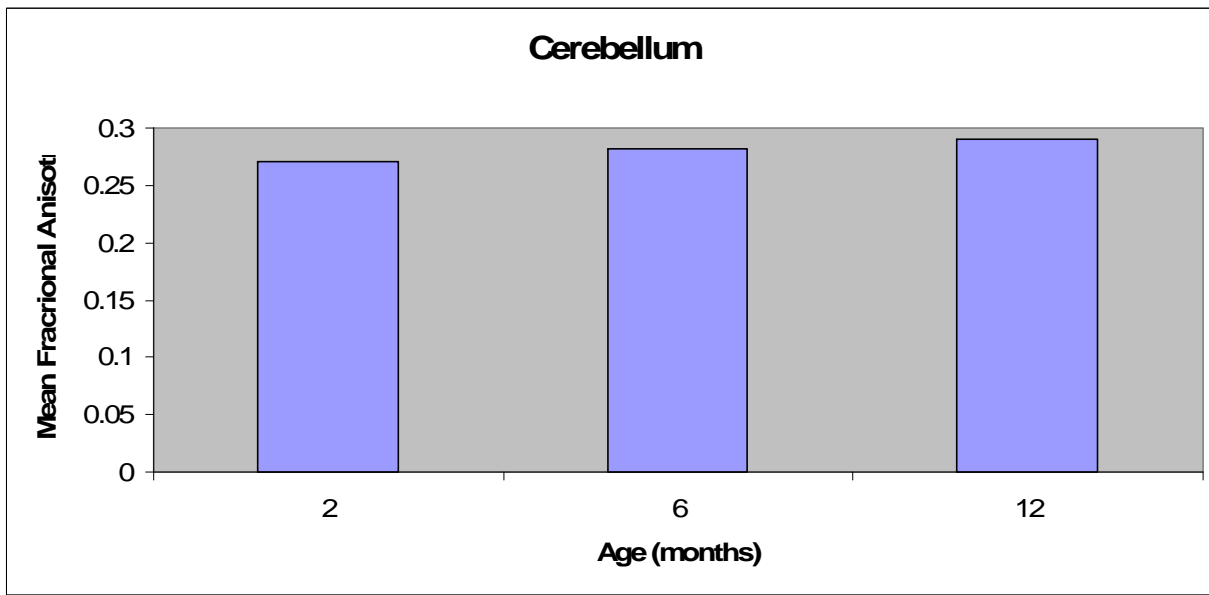
# Diffusion Tensor Imaging (DTI)

Measure of the degree of myelination  
of brain tissue

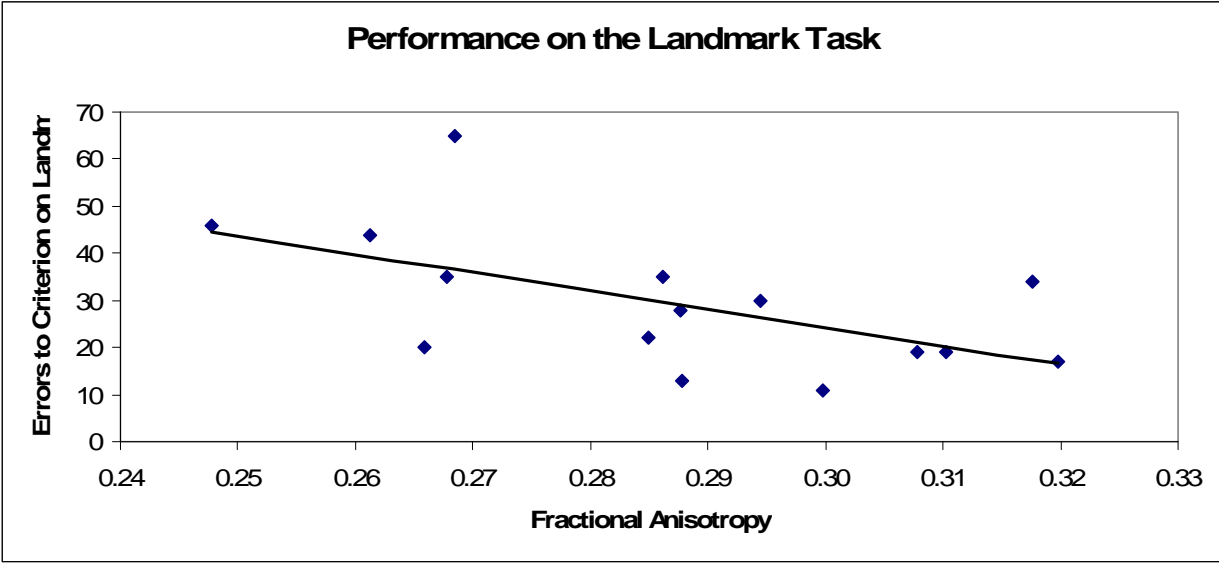
Myelination increase in early  
development and decreases in normal  
aging

Myelination increase in early  
development and decreases in normal  
aging

Greater decrease in myelination in  
dementia



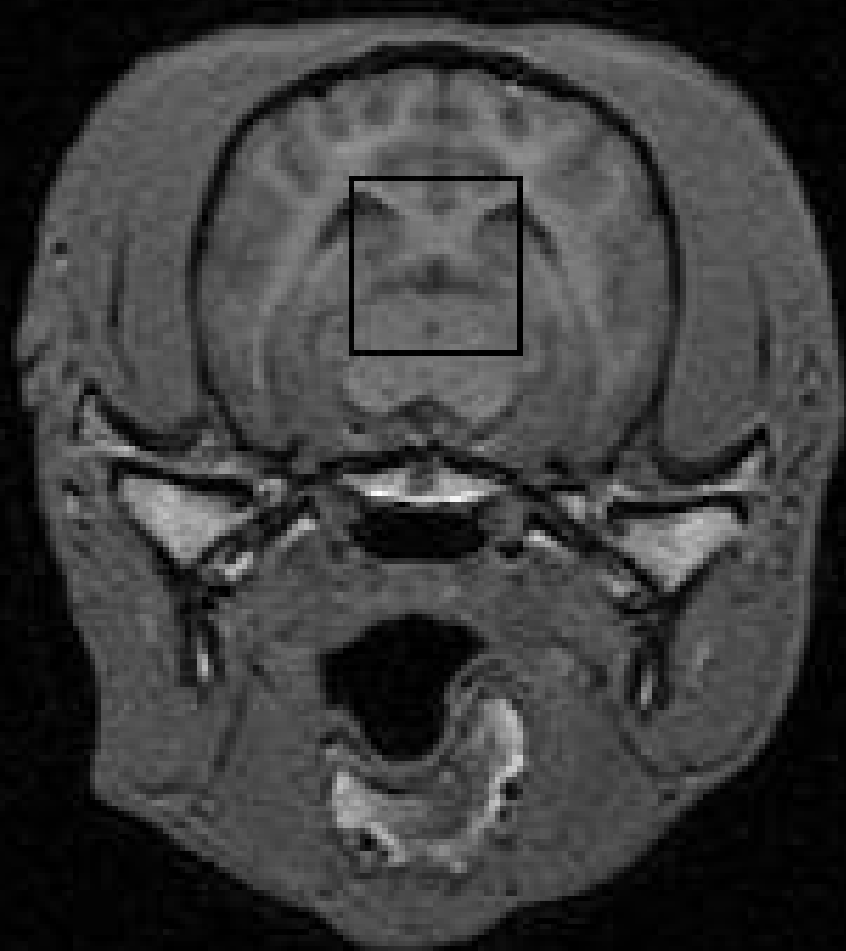
# Correlation between DTI and Cognitive Function

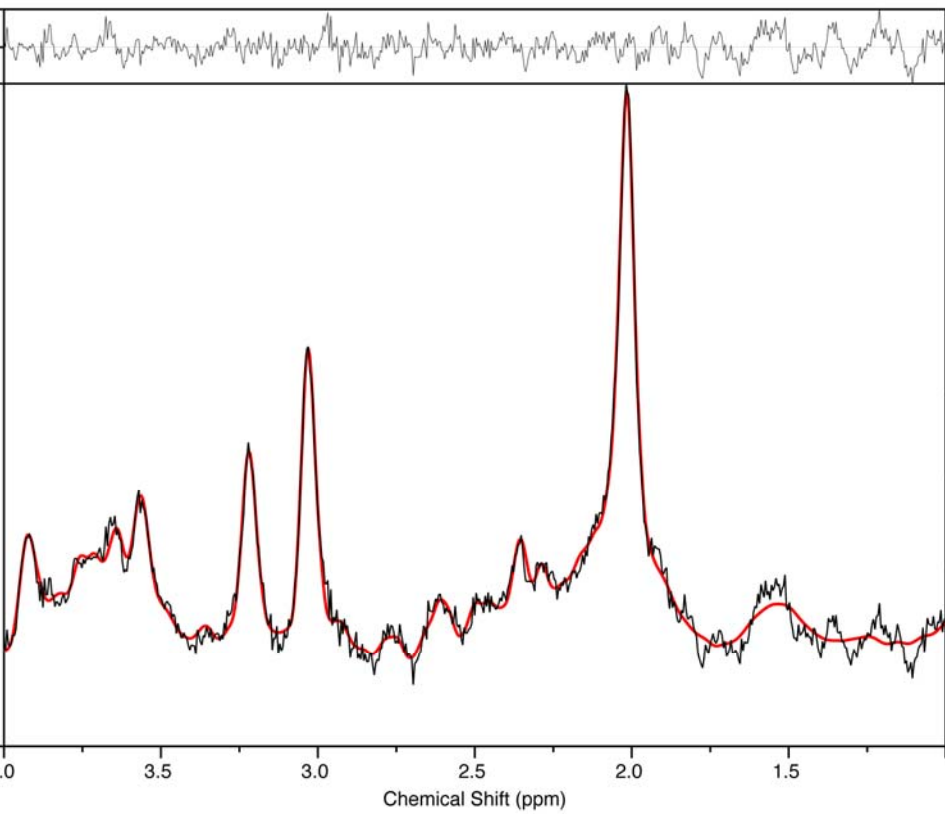


# Magnetic Resonance Spectroscopy

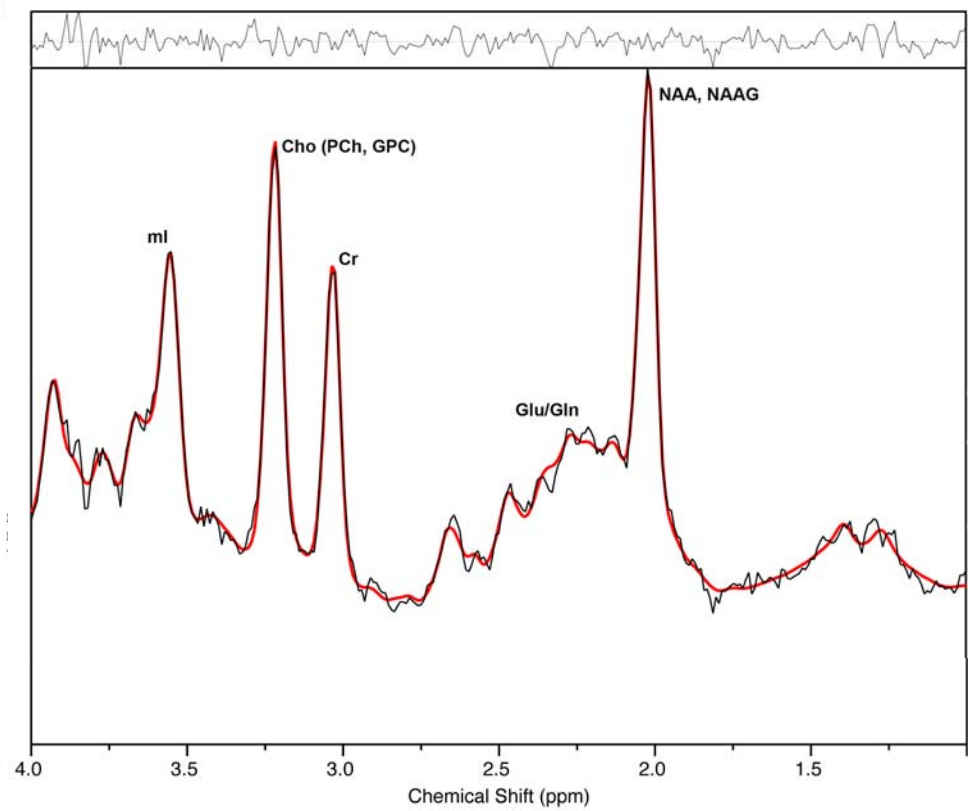
# Magnetic Resonance Spectroscopy

Measure of brain chemistry



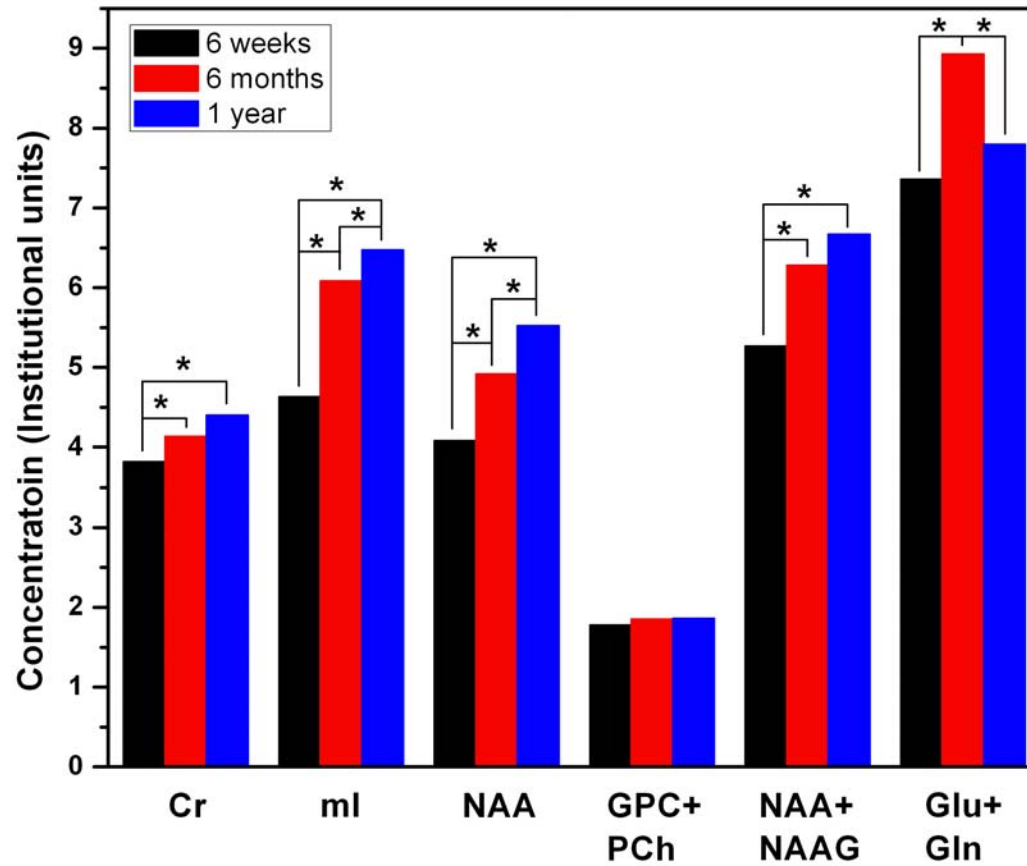


Human



Dog

# Changes occur with age



# Conclusion

1. The dog can be used as a model of the quantitative imaging changes that occur in people associated with development and aging
2. Supports the use of the dog as a model for Alzheimer's Disease

What do we have to offer?

Experience in imaging large animal  
models of neurological disease

# Future Directions

Further validation of imaging techniques using the dog and the cat as a model of diseases in people

# Questions?

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