

John Talbott

Easterly/McDaniel Award

Ph.D. Student, Chemistry

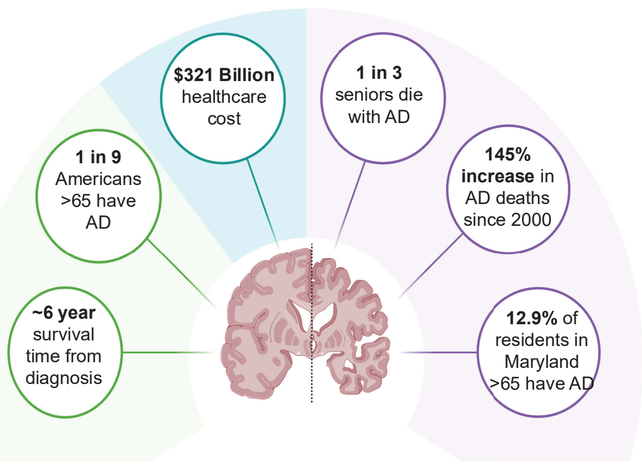
Third Year ARCS Scholar

EMORY UNIVERSITY

Selective Visualization of Catechol Aldehydes in Living Systems as a Biomarker for Alzheimer's Disease

Utilizing organic chemistry, we have developed a novel fluorophore system to specifically detect catechol aldehydes, a biomarker for neurological diseases, in mice tissue and post-mortem human tissue.

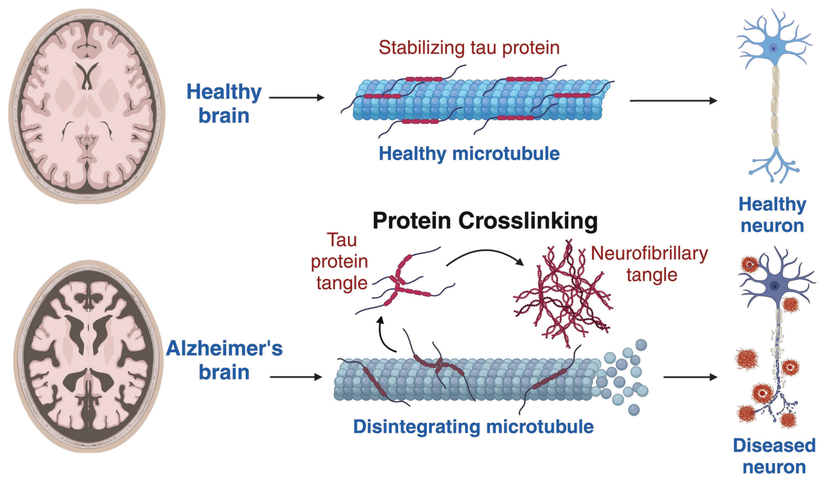
Alzheimer's Disease: Health Crisis



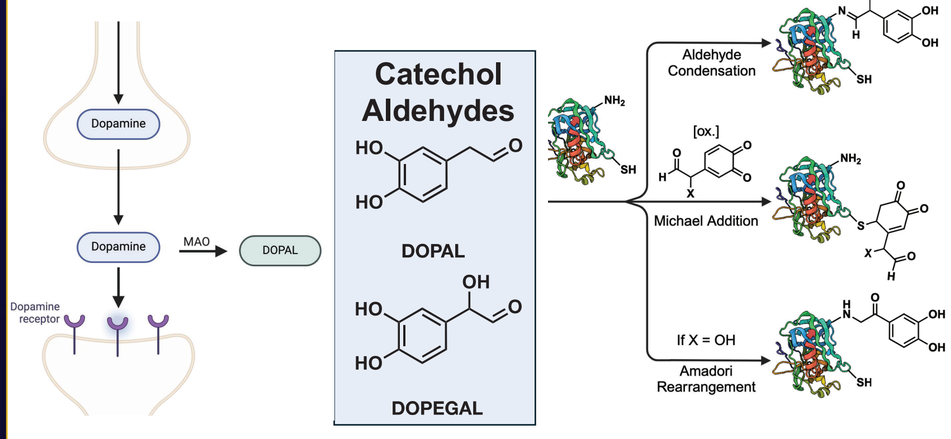
Current FDA Treatments for AD

- Antibody Based
  - Aducanumab (Biogen) 2021 (discontinued)
  - Lecanemab (Biogen) 2023
  - Donanemab (Eli Lilly) 2024

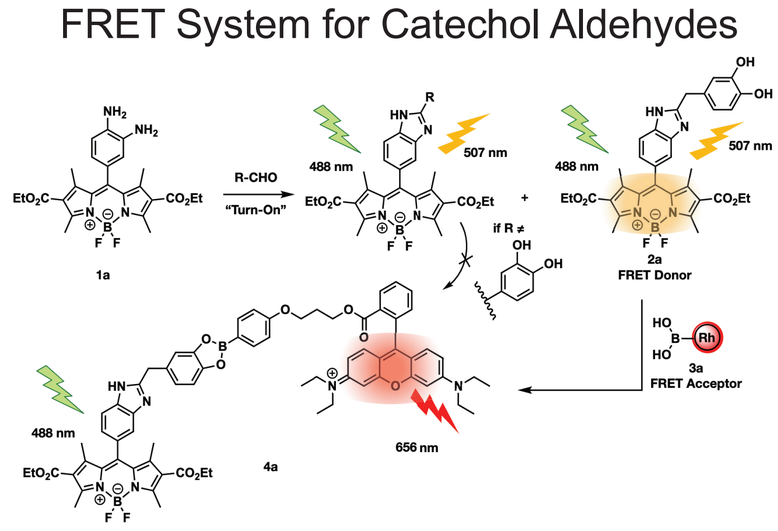
Alzheimer's Results from Protein Crosslinks



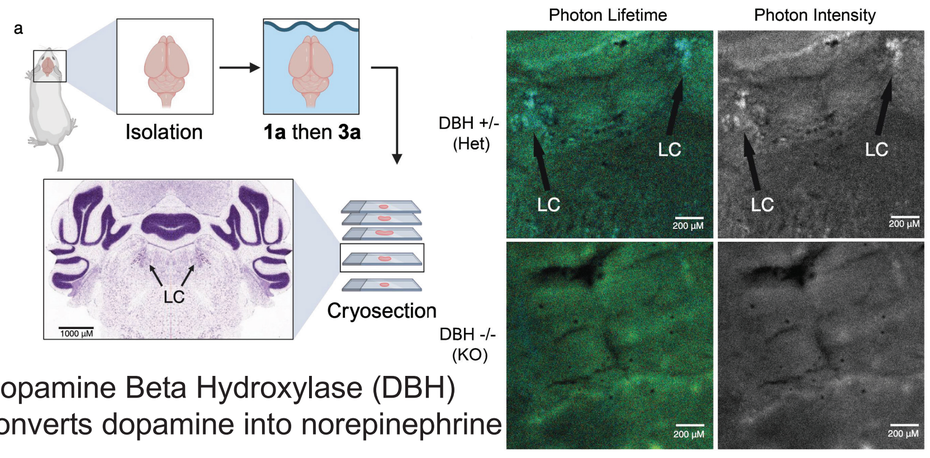
Catechol Aldehydes Crosslink Proteins



FRET System for Catechol Aldehydes

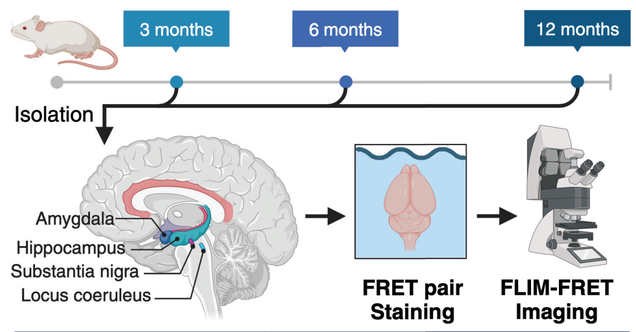


Mice Locus Coeruleus (LC) Tissue Imaging



Dopamine Beta Hydroxylase (DBH) converts dopamine into norepinephrine

Future Studies



Aldehyde Class	L. C.	S. N.	Hippocampus	Amygdala
Catechol	Elevated	Elevated	Unknown	Unknown
α,β-unsaturated	Unknown	Unknown	Elevated	Elevated
Dicarbonyl	No Identified Localization			

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