Department of Chemistry

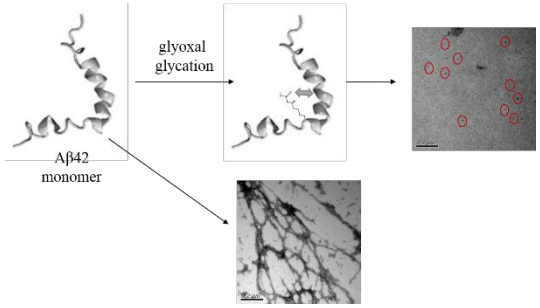
Study the amyloid formation and find solutions for amyloidosis

Our research interests mainly focus on amyloid formation which is an unusual process that hundreds to thousands of monomeric peptides or proteins polymerize into long starch-like but unbranched fibrils. Besides understanding the mechanism of amyloid formation, we also developed therapeutic strategies such as use of natural compounds and nanomaterials to prevent amyloid formation. One the other hand, we were looking for fluorescent molecules which can be utilized to label amyloid.

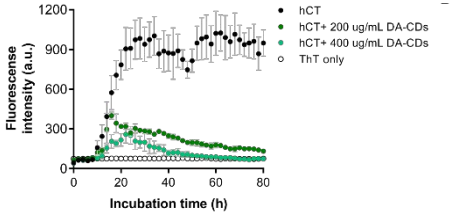
Techniques used in study

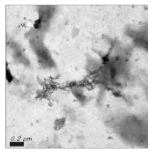
Peptide preparation: Peptide synthesizer, HPLC, MALDI
Biophysical Characterization: Fluorimeter, DLS, CD, FTIR, TEM
Other related analysis: gel electrophoresis, protein binding assay.

Exploring the impact of glyoxal glycation on β-amyloid peptide (Aβ) aggregation in Alzheimer's disease



Dopamine conjugated carbon dots inhibit human calcitonin fibrillation





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Background:

PhD in Chemistry, Stony Brook University, NY, USA

Funding:

Ministry of Science and Technology
National Taiwan Normal University

Publications

- TDP-43 interacts with amyloid-β, inhibits fibrillization, and worsens pathology in a model of Alzheimer's disease, **2020**, Nature Communications, 11
- Role of Lysine Residue of Islet Amyloid Polypeptide in Fibril Formation, Membrane Binding, and Inhibitor Binding, **2020**, Biochimie, 177
- A Fluorogenic Molecule for Probing Islet Amyloid Using Flavonoid as a Scaffold Design, **2020**, Biochemistry, 59
- Inhibiting Human Calcitonin Fibril Formation with Its Most Relevant Aggregation-Resistant Analog, **2019**, J. Phys. Chem. B, 123
- Protein Glycation by Glyoxal Promotes Amyloid Formation by Islet Amyloid Polypeptide, **2019**, Biophysical Journal, 116