



Seeding of Tau Protein Aggregation



CHEMICAL ENGINEERING
UC SANTA BARBARA

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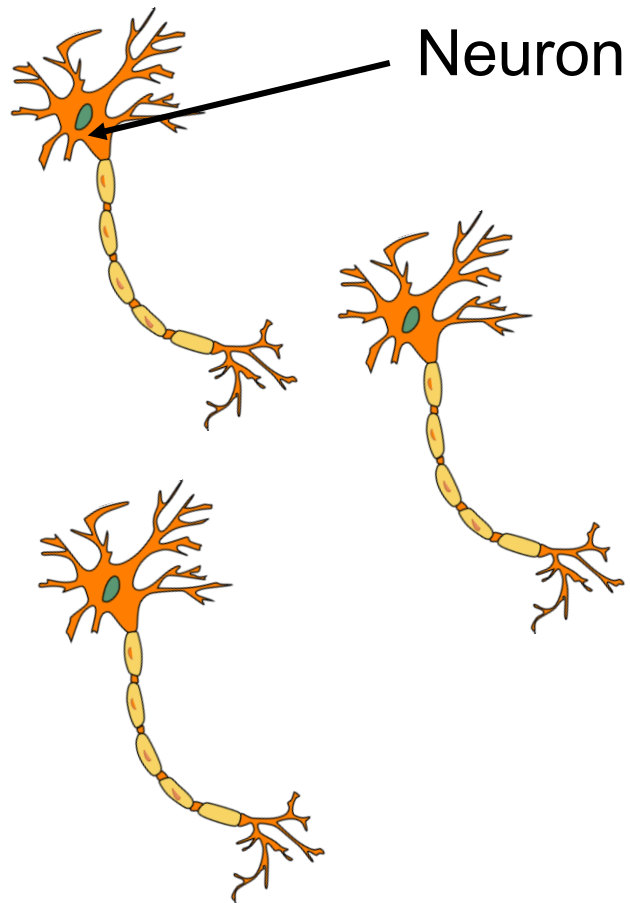
Major: Chemical Engineering

Mentor: Yann Fichou

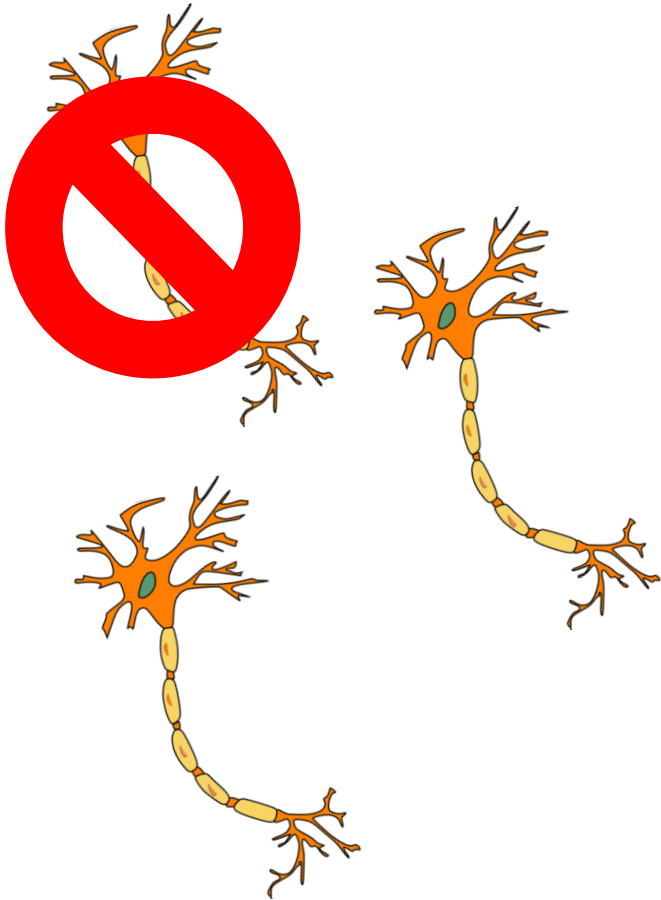
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Department: Joint Chem/Biochem and Chemical Engineering

Research in Neurodegenerative Diseases is Lacking



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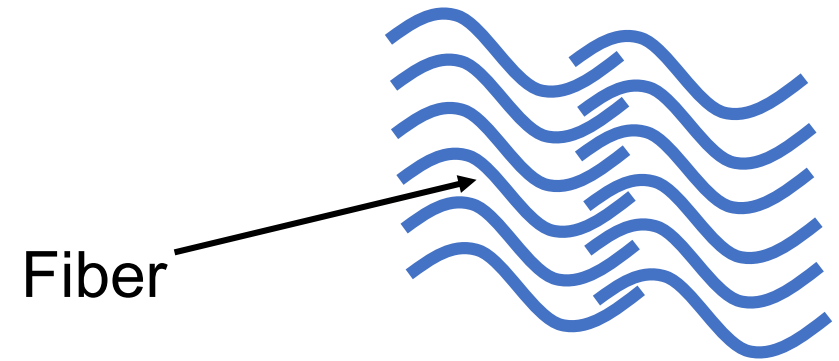
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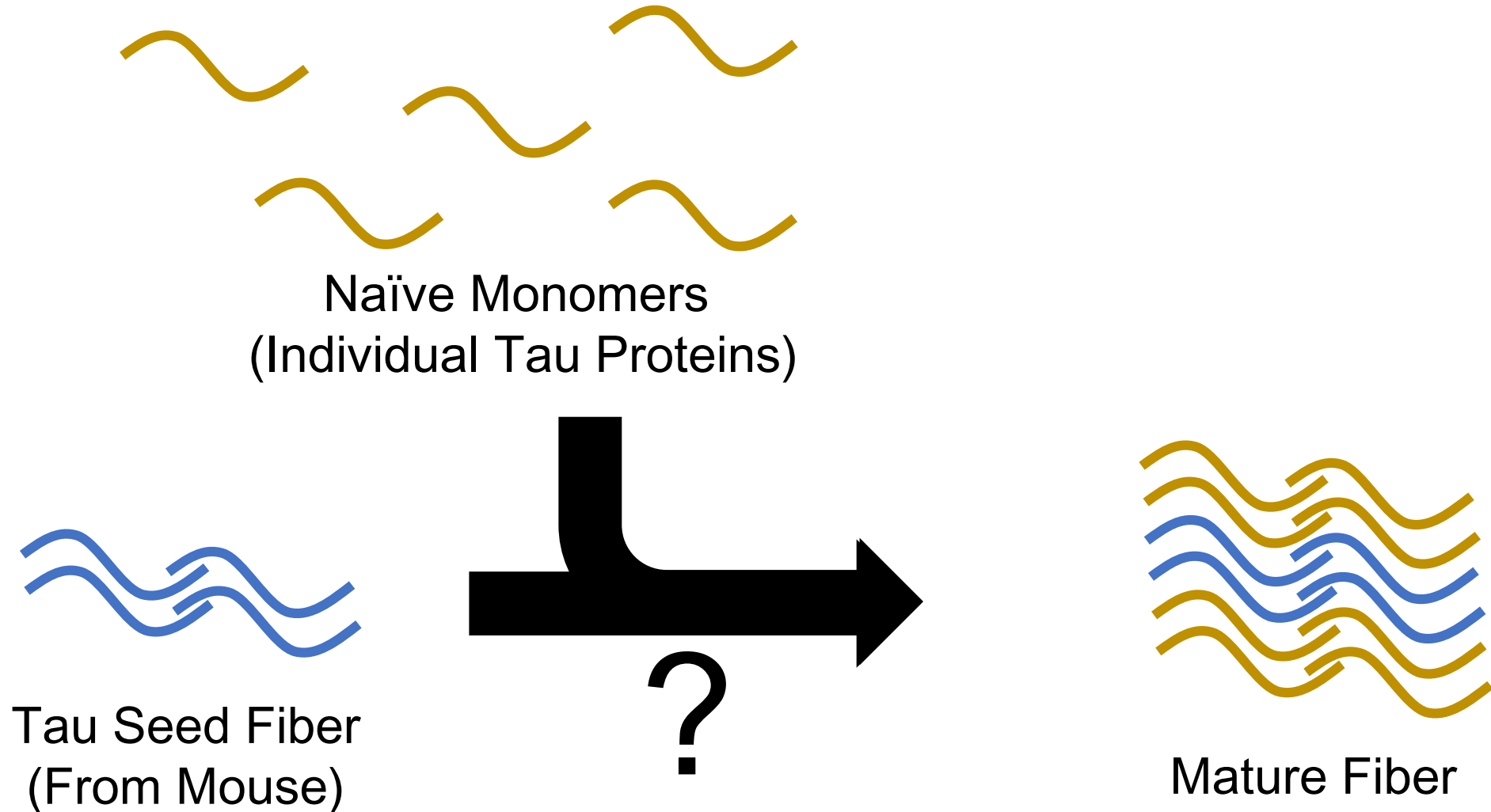


Diseased Tau Fibers from Mice Can Actively Seed

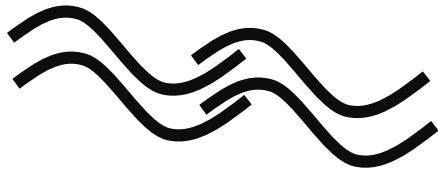


Tau Seed Fiber
(From Mouse)

Diseased Tau Fibers from Mice Can Actively Seed

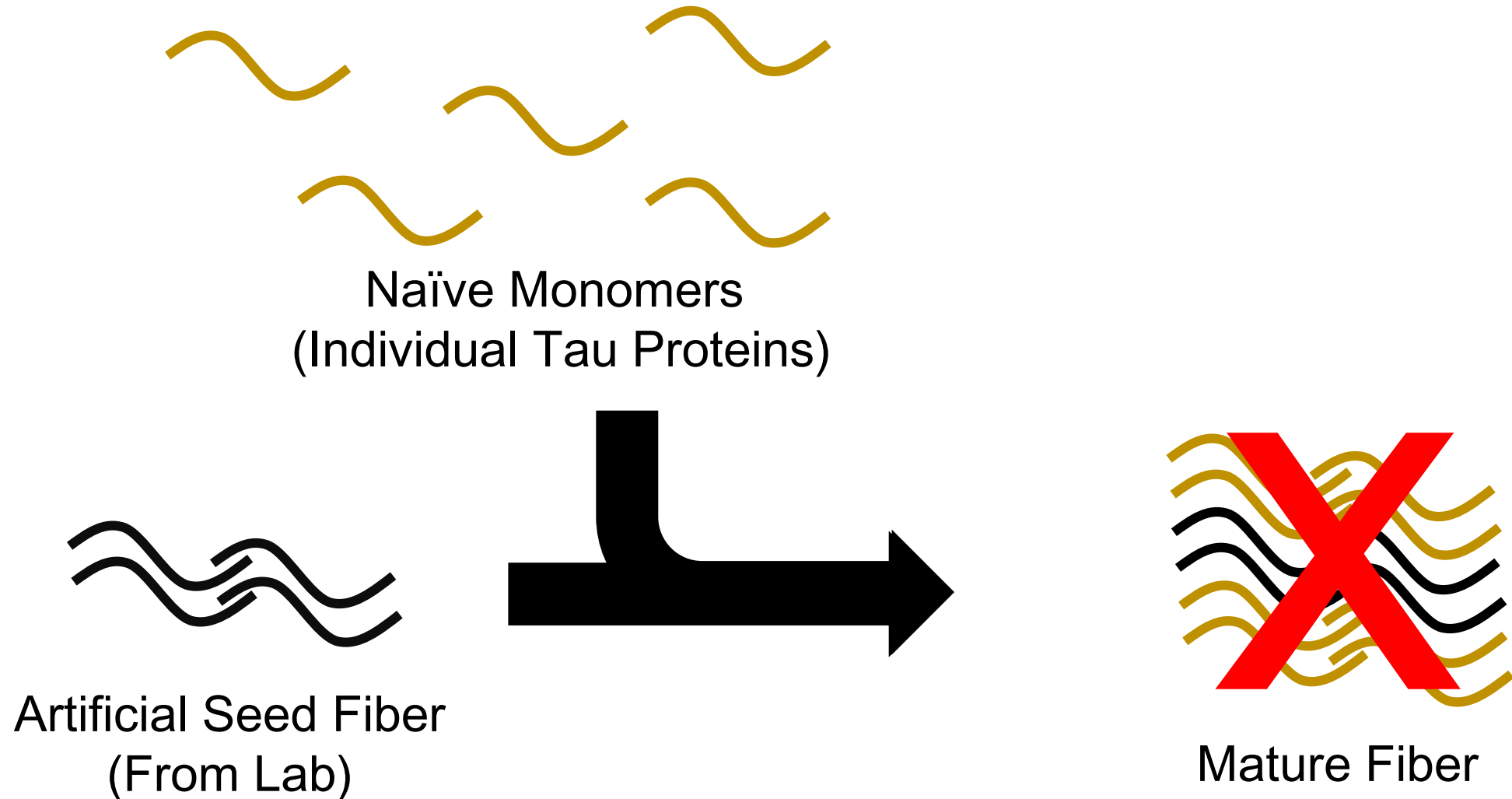


Artificial Tau Fibers from Lab Cannot Actively Seed



Artificial Seed Fiber
(From Lab)

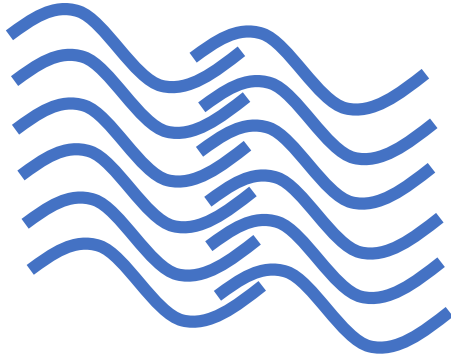
Artificial Tau Fibers from Lab Cannot Actively Seed



Long-term Project Goals

- Understand the seeding mechanism
- Understand why diseased tau fibers from the brain can seed but artificial tau fibers made in lab cannot.

Fiber Formation is Quantified Through Thioflavin T (Th T) Fluorescence

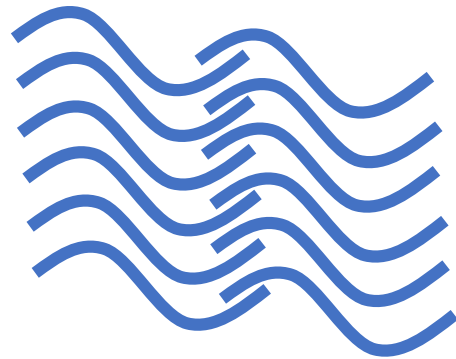


Mature Fiber



Th T

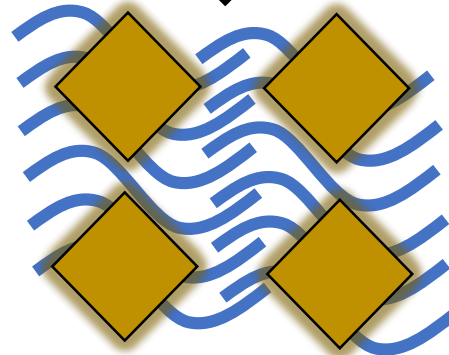
Fiber Formation is Quantified Through Thioflavin T (Th T) Fluorescence



Mature Fiber

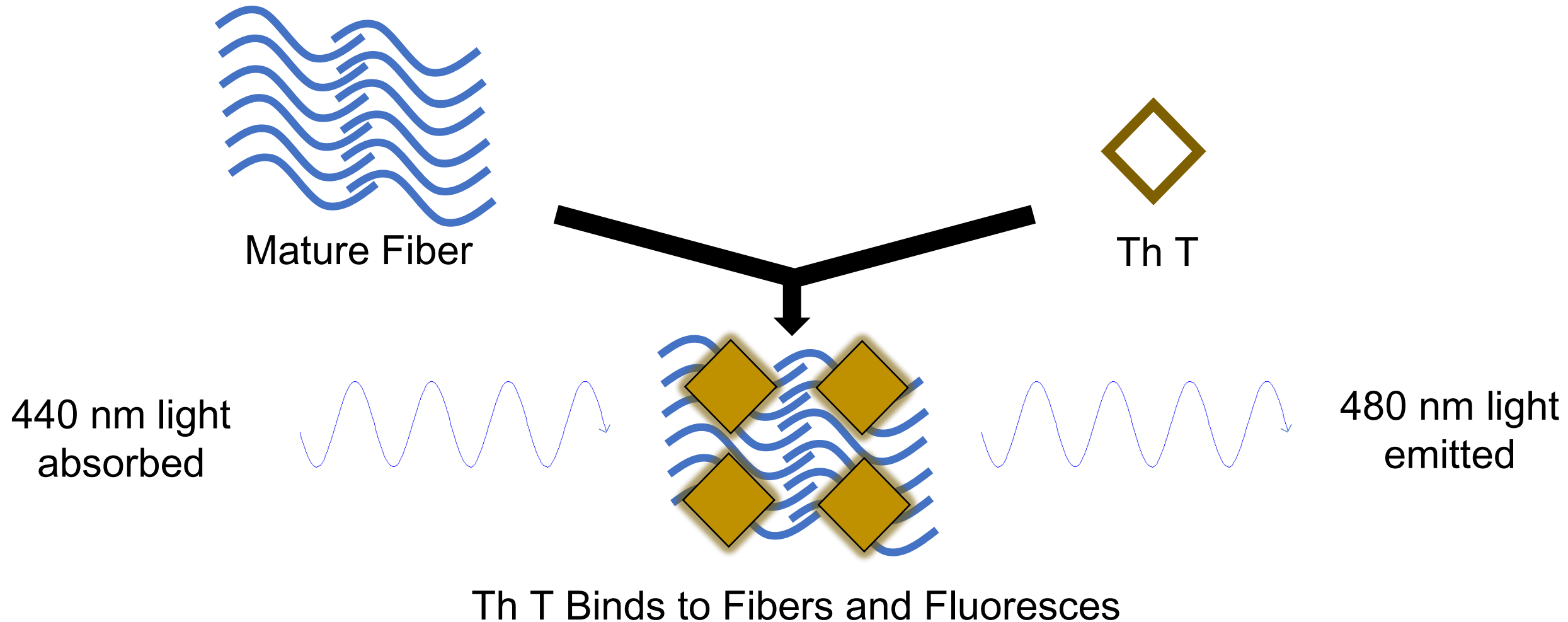


Th T

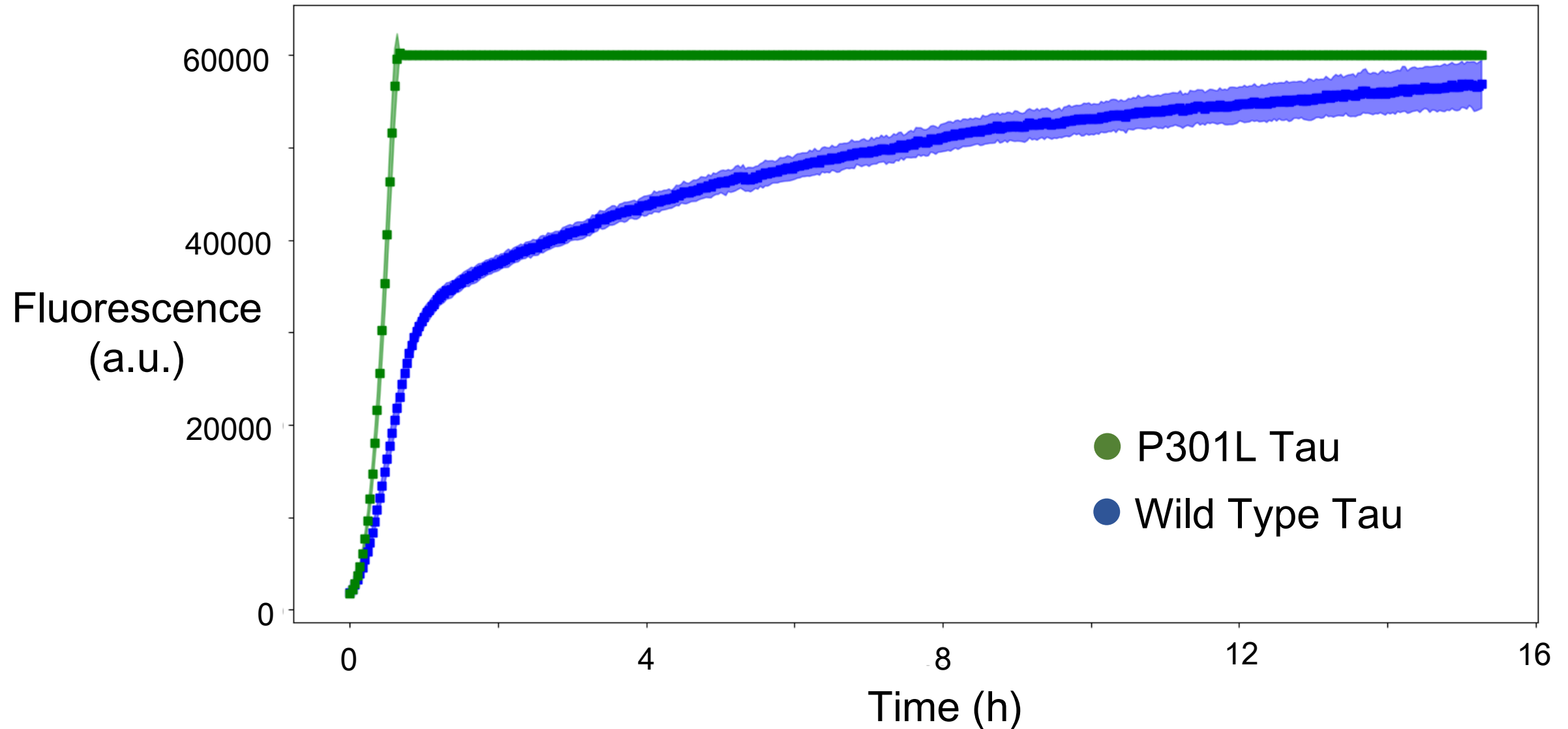


Th T Binds to Fibers and Fluoresces

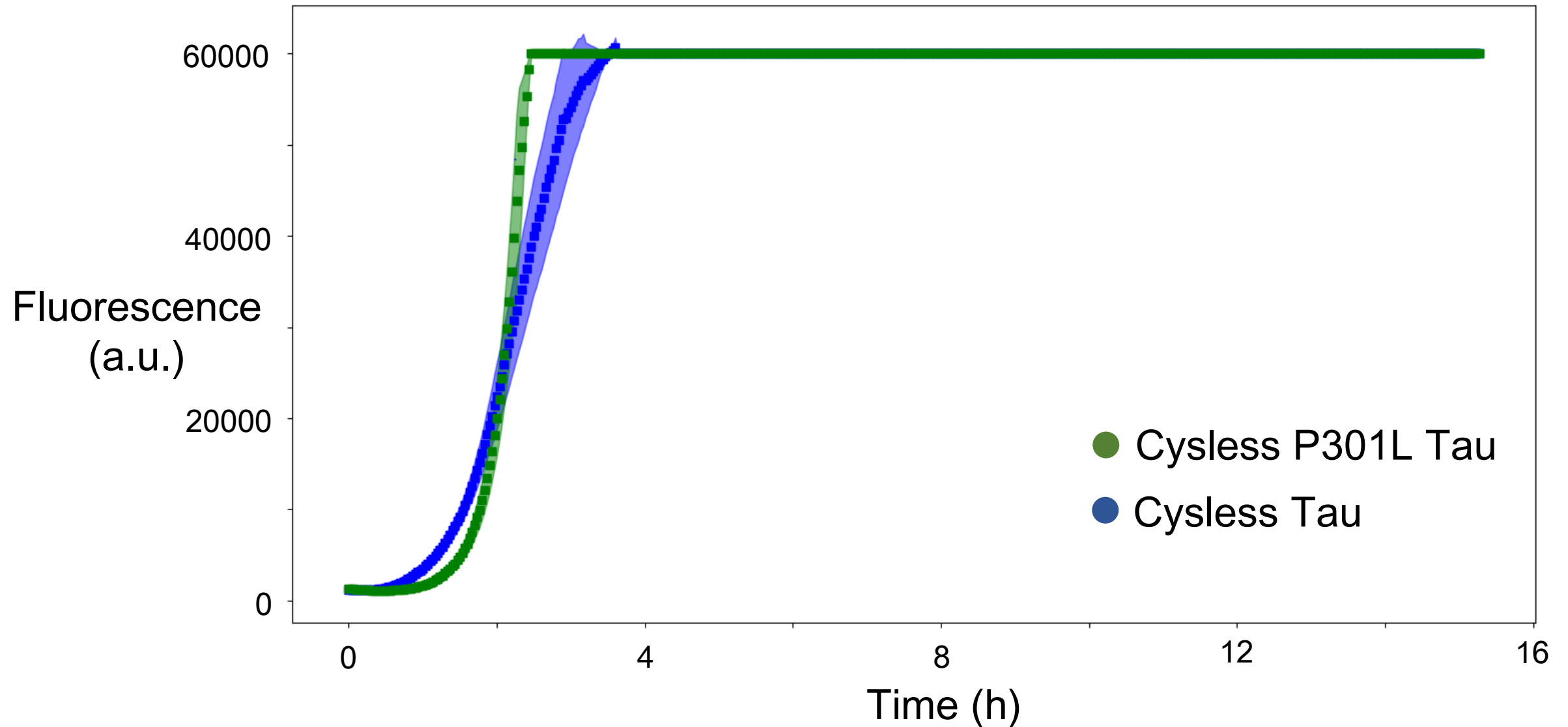
Fiber Formation is Quantified Through Thioflavin T (Th T) Fluorescence



P301L Tau Shows More Aggregation Than Wild Type Tau



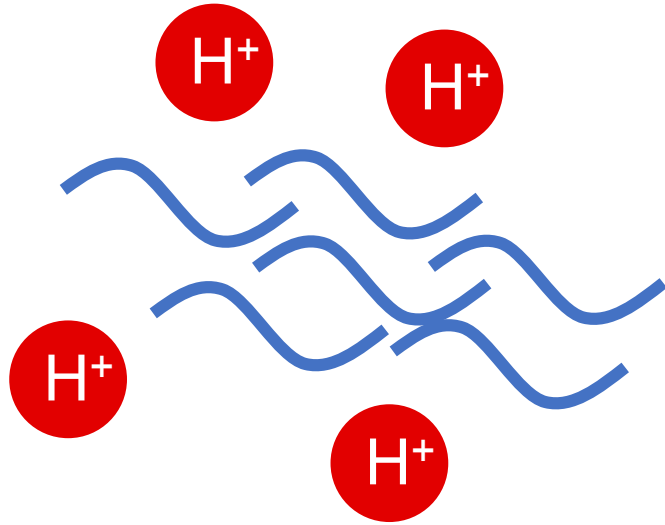
Cysless Mutation Still Shows Aggregation



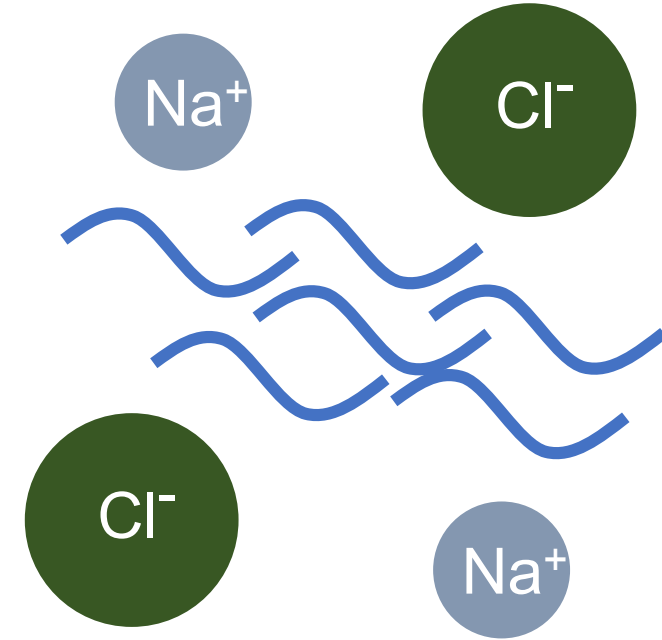
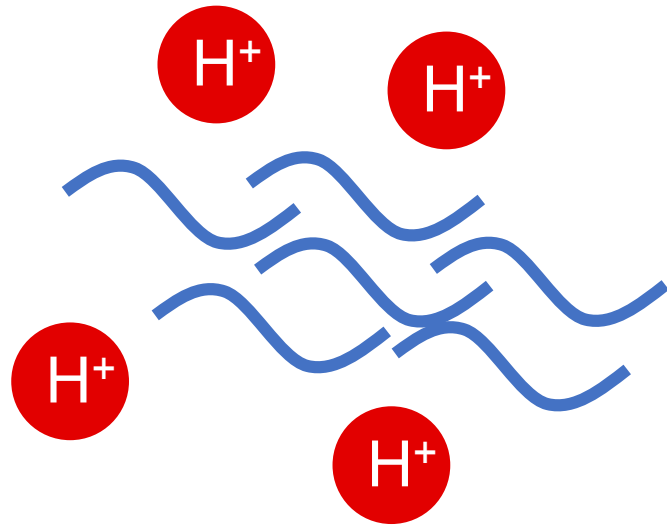
Tau Mutations Do Have an Effect on Aggregation

- P301L mutations aggregate faster and in greater quantity
- Cysless mutations show that disulfide bonds are not involved in aggregations

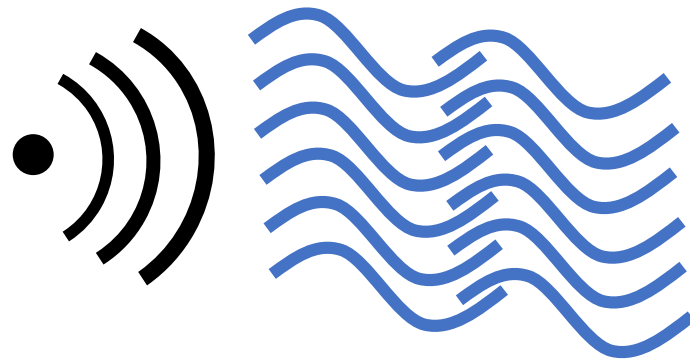
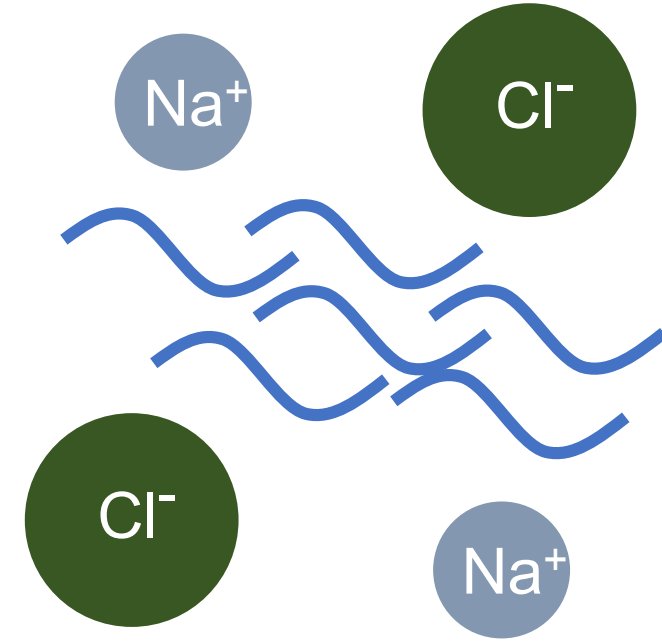
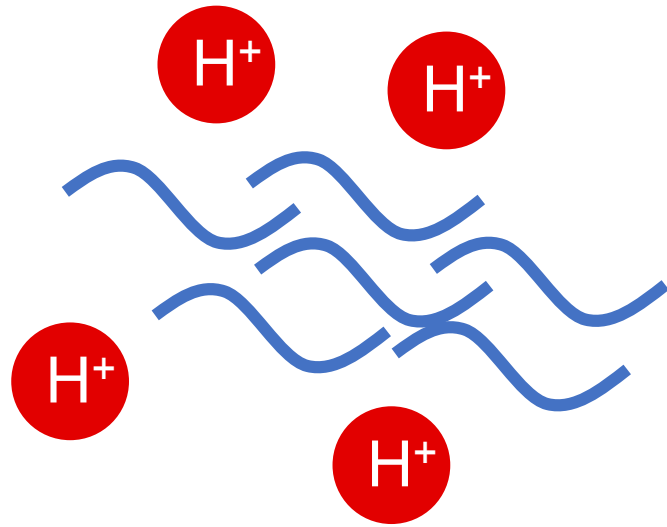
Does pH, Salt Concentration, or Sonication Have an Effect on Seeding?



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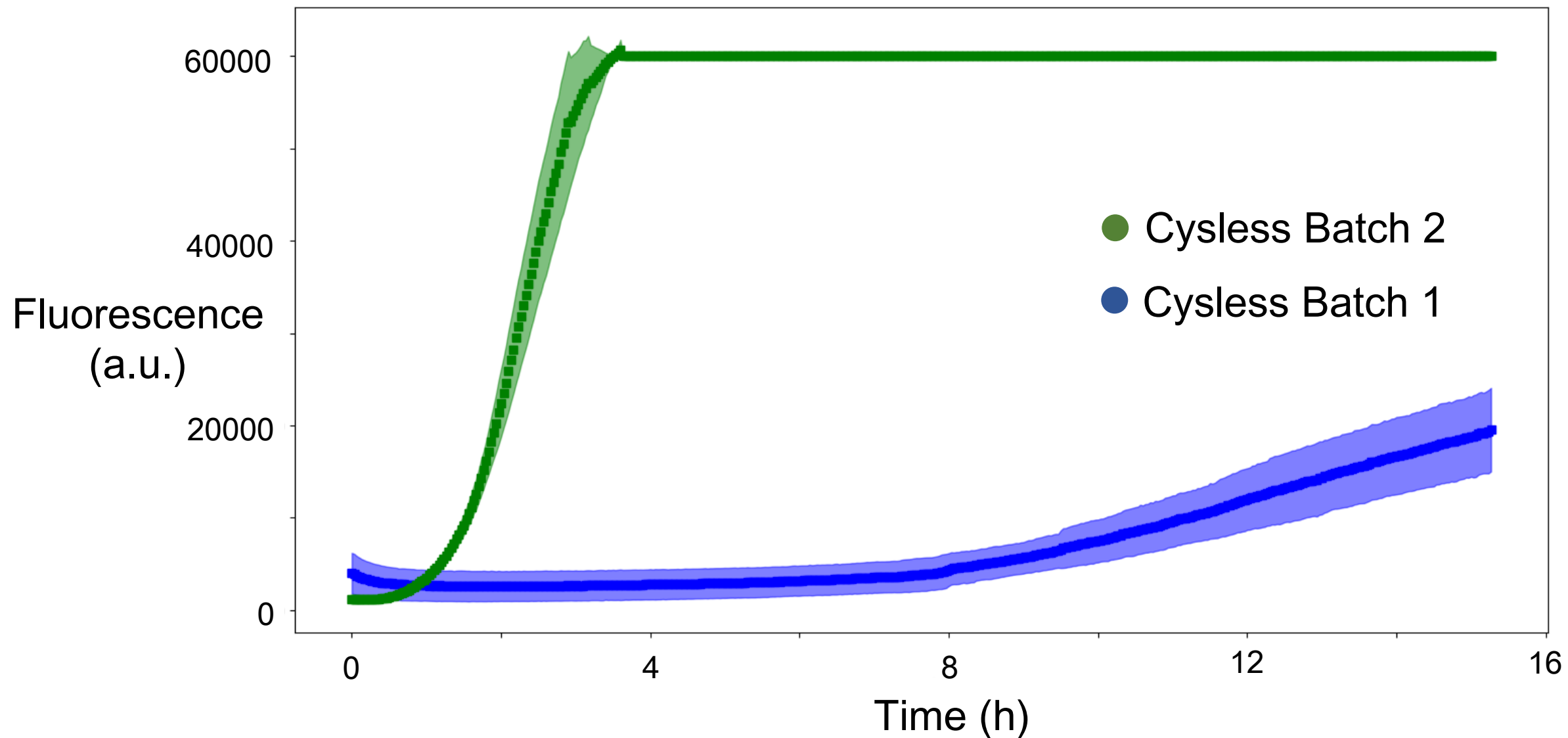
National Institutes
of Health

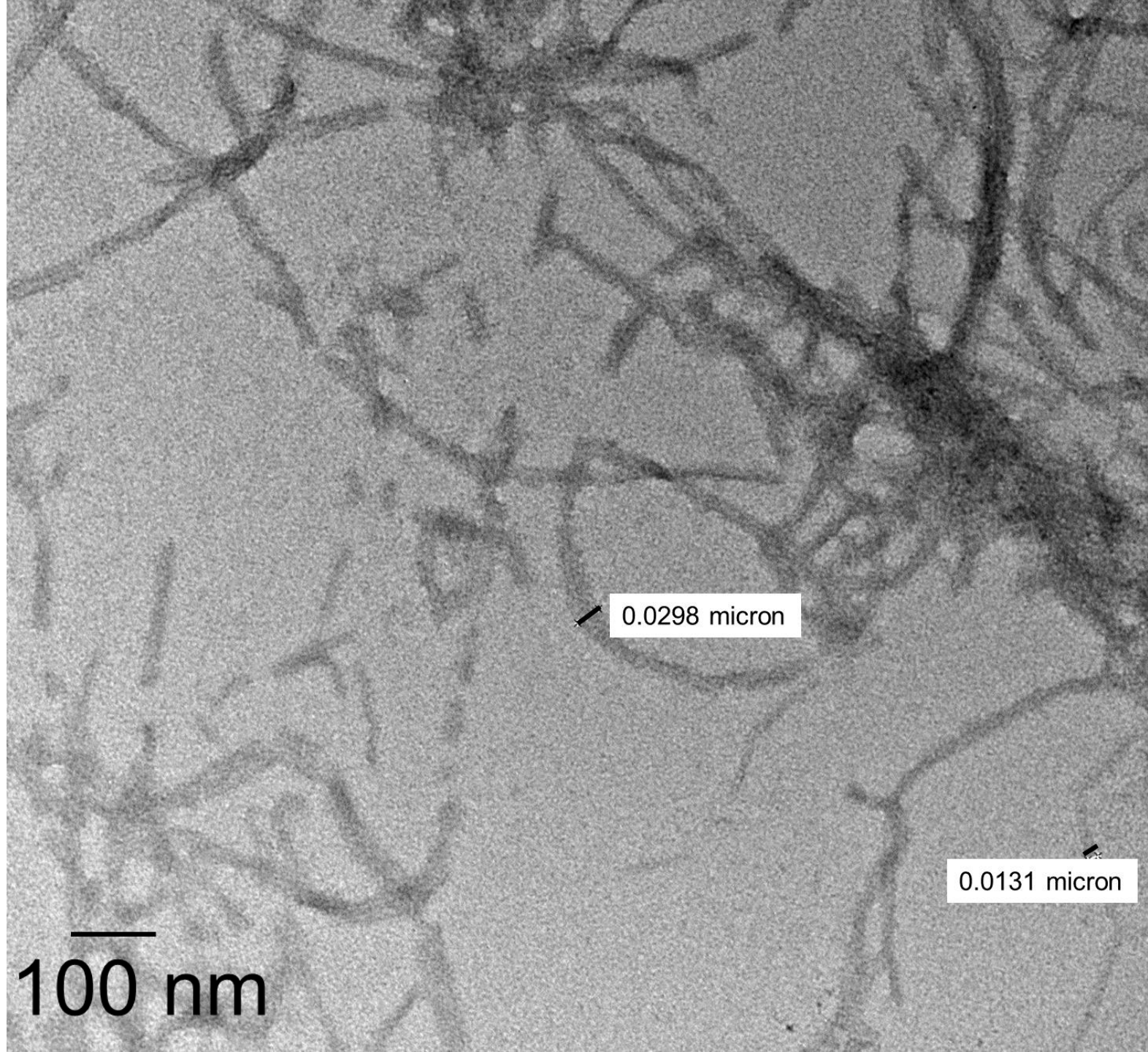
Acknowledgements

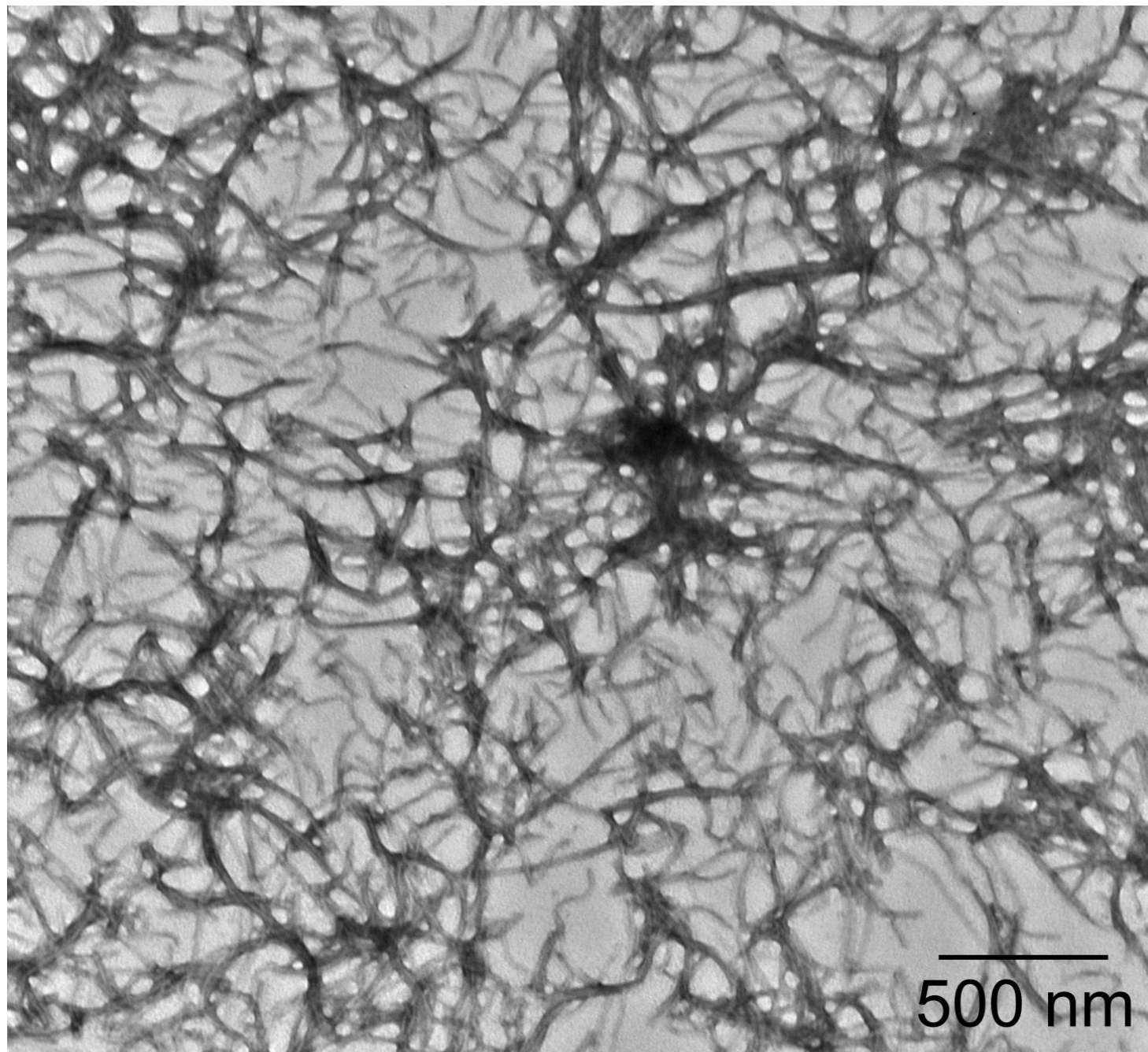
I would like to thank Yann Fichou for mentoring me this summer, my Principal Investigator Dr. Han for being very supportive and allowing me to do research in her lab, and the Center for Science and Engineering Partnerships for funding my summer here.

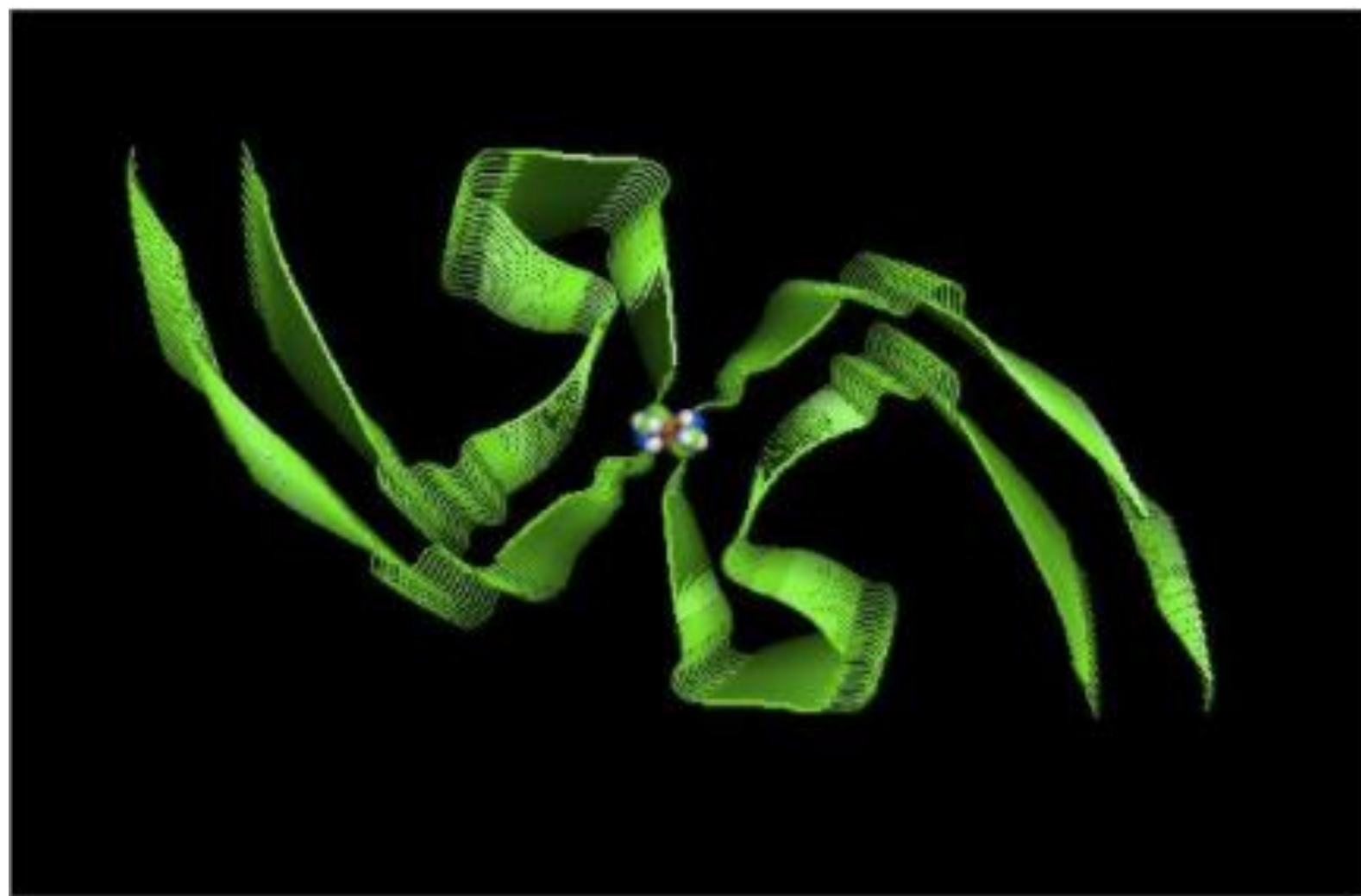


Batch 1 of Cysless Tau is Bad; it Doesn't Aggregate









C3 End | A | B' | B' | B' | C1 | C3 | C3 End | A | B' | B' | B' | C1 | C3

Cysless

Cysless P301L

