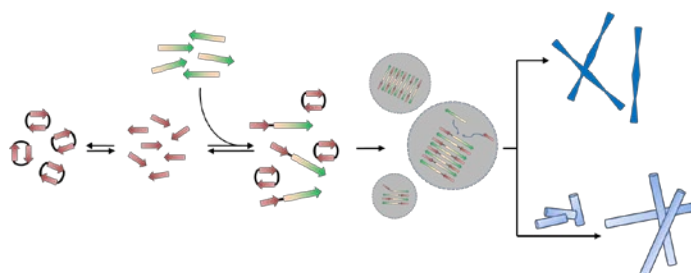


## Peptide Assembly Dynamics in Metastable Liquid Phases

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Intrinsically disordered protein domains exist in more than a third of eukaryotic proteins where they mediate diverse context dependent molecular associations ranging from RNA management to protein aggregation events in at least 40 amyloid protein diseases. The oligomer cascade hypothesis holds that metastable aggregates of amyloid- $\beta$  ( $A\beta$ ) initiate and propagate neurodegeneration in Alzheimer's disease as a protein-only infection. We will discuss how these liquid-liquid phases carry dynamic kinetic information that can be used to control mesoscale molecular order via substrate-level inception of the ultimate liquid-solid transition.

Chen, C.; Junjun Tan, Ming-Chien Hsieh, Ting Pan, Jay T Goodwin, Anil K. Mehta, Martha A. Grover, and David G. Lynn **2017** Design of Multi-phase Dynamic Chemical Networks, *Nat. Chem*, doi:10.1038/nchem.2737.

Omosun, T.O.; Hsieh, M-C.; Childers, W.S.; Das, D.; Anil K. Mehta, AK; Anthony, NR; Pan, T.; Grover, M.A.; Berland, K.M.; and Lynn, D.G. **2017**, Catalytic Diversity in Self-propagating Peptide Assemblies, *Nature Chem*. doi:10.1038/nchem.2738.

Rengifo, RF; Li, NX; Anthony Sementilli, A; Lynn, DG **2017** Amyloid scaffolds as alternative chlorosomes, *Organic & Biomolecular Chemistry*, DOI: 10.1039/C7OB01170A

Hsieh, M-C; Liang, C; Mehta, A; Lynn, DG; Grover, MA **2017** Multi-step Conformation Selection in Amyloid Assembly, *J. Am. Chem. Soc.* DOI: 10.1021/jacs.7b09362 **ACS Editor's Choice**

Yushi Bai, Agata Chotera, Olga Taran, Chen Liang, Gonen Ashkenasy and David G. Lynn, **2018** Achieving biopolymer synergy in Systems Chemistry, *Royal Chemical Society Reviews*, DOI: 10.1039/c8cs00174j