"Probing amyloid structure and function through designed fibril cores”

We expect the form and function of proteins to depend on their sequence; the three-dimensional structure of a protein being dictated by the linear arrangement of amino acids in its sequence. My research interests span this landscape, where amyloids present a unique platform for evaluating non-canonical structure-function relationships. Amyloids exhibit templated growth, where the presence of a preformed fibril seed can promote the growth of new amyloid fibrils. The structural basis for this mechanism, however, is poorly understood. My efforts aim to understand the sequence-structure relationship of the pathogenic amyloid, alpha-synuclein, through the use of protein design, with the ultimate goal of gaining a better understanding of seeding properties and in vivo spread of this class of proteins as a whole.