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Title: Nanoscale Optical Imaging of Protein Amyloids

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Abstract:

There is a burgeoning interest in the study of protein misfolding and aggregation leading to amyloid fibril formation that is implicated in a wide range of human diseases. In order to delineate the structural basis of supramolecular self-assembly into nanoscopic protein aggregates, and to characterize the molecular basis of interactions between amyloids and other cellular components, it is important to perform super-resolution optical imaging down to the nanoscale dimension. In this chapter, we describe a diverse array of state-of-the-art optical imaging methodologies that have been utilized to obtain an incredible wealth of molecular information on the nanoscale assembly involved in amyloid formation. Many of these methodologies have been developed only in the past few years and have yielded novel and unprecedented information pertaining to the exciting nanoscopic world of protein aggregates. We believe that the nanoscale optical imaging methodologies described in this chapter will provide revolutionary capabilities to address some of the most intractable and enigmatic issues in amyloid biology.

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