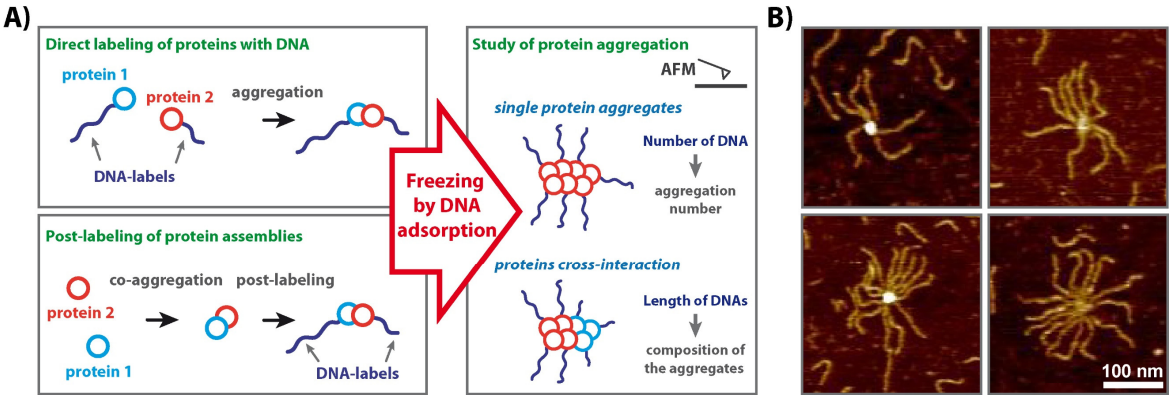
Object: open postdoctoral position
Title: DNA labels for AFM imaging of amyloid protein aggregates
Period: 2 years (1+1)

Postdoctoral position in Chemistry Department of 'Ecole Normale Supérieure' is open in Paris for motivated applicants interested in the interdisciplinary research at the interface between chemistry, biochemistry and atomic force microscopy (AFM). During 2 years selected candidate will develop labeling of amyloidogenic proteins for AFM, and investigate their pathogenic aggregation.

AFM is a powerful microscopy technique having sub-nanometer resolution, but suffering from the lack of labeling approaches. Proteins of similar size and shape cannot thus be distinguished, and the number of protein molecules in an aggregate cannot be determined by AFM. The purpose of this postdoctoral research is to extend the applicability of AFM by **using double stranded DNA of defined length to label amyloid proteins** and to investigate the first steps of their aggregation. For single protein aggregates, counting of the number of DNA molecules distributed around the aggregate will give the information about its aggregation number, whereas for multiprotein aggregates (cross-interactions) the number and the lengths of observed DNA will indicate their structure and composition (Fig. A.). After preparation, labeling and purification of labeled proteins, amyloid aggregation of α-Synuclein (Fig. B), amyloid-β and tau proteins will be investigated by AFM and the obtained results compared with the conventional methods of study of amyloid aggregation.



A) Scheme and the main concepts of the project; B) Examples of AFM observation of α-Synuclein oligomers labeled with 206 bp DNA.

Independence and autonomy in everyday research are demanded. Applicants are expected to have a strong experience in synthesis, purification and manipulation of proteins. Experience in bioconjugation techniques will be highly considered. The successful candidate will be trained on place in using the top-quality AFM microscope (Cypher ES) available in the host laboratory for this research.

The candidate will join highly dynamic and international research team (see www.baigllab.com), and a part of the experiments will be performed in collaboration with the team of Prof. Sandrine Ongeri in Université Paris-Saclay.

Interested candidates should send their CV, motivation letter and contacts of reference (in English or French) at the e-mail address mentioned below. The position is open until a proper candidate is identified.

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