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Atomic force microscopy based nanoassay: a new method to study α-Synuclein-dopamine bioaffinity interactions STEFANIA CORVAGLIA, Elettra-Sincrotrone Trieste S.C.p.A., BARBARA SANAVIO, IFOM, Italy, BARBARA SORCE, ETH-Zurich, ALESSANDRO BOSCO, Elettra-Sincrotrone Trieste S.C.p.A., STEFANIA SABELLA, PIERPAOLO POMPA, Istituto Italiano di Tecnologia, Lecce, Italy, GIACINTO SCOLES, University of Udine, Italy, LOREDANA CASALIS, Elettra-Sincrotrone Trieste S.C.p.A. — Intrinsically Disordered Proteins (IDPs) are characterized by the lack of well-defined 3-D structure and show high conformational plasticity. For this reason, they are a strong challenge for the traditional characterization of structure, supramolecular assembly and biorecognition phenomena. We show here how the fine tuning of protein orientation on a surface turns useful in the reliable testing of biorecognition interactions of IDPs, in particular α-Synuclein. We exploited atomic force microscopy (AFM) for the selective, nanoscale confinement of α-Synuclein on gold to study the early stages of α-Synuclein aggregation and the effect of small molecules, like dopamine, on the aggregation process. Capitalizing on the high sensitivity of AFM topographic height measurements we determined, for the first time in the literature, the dissociation constant of dopamine-α-Synuclein adducts.

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