



POSTDOCTORAL POSITION

The orchestration of most biological functions is the responsibility of proteins, structures that can now be regarded as **bionanomachines** and whose inner workings are being revealed thanks to so-called **single-molecules techniques**. Nanomanipulation is one type of such single-molecule techniques that enables us to apply mechanical forces to individual proteins, using mechanical force as a new biochemical parameter. Indeed, it has been demonstrated that many bionanomachines generate, transmit or are subject to mechanical forces. As a result, **Protein Nanomechanics** has emerged in a decade as an active field in which the nanomechanical properties of proteins are studied. **Atomic force microscopy** is the one of the main techniques used in this field.

In our laboratory we are interested in the molecular mechanisms responsible for cell adhesion, membrane fusion and neurotoxicity. Thus, our research programmes focus on the nanomechanics of the adhesion (cadherins) and the membrane fusion (SNARE complex) machineries, as well as that of the proteasome and its neurotoxic substrates.

One postdoctoral position (full-time contract renewable up to 3 years) is now available immediately at the Cajal Institute (Madrid, Spain) for an enthusiastic, highly-motivated, and hard-working individual to collaborate on the ongoing research in our laboratory and to develop an innovative research program in:

The nanomechanics of a selection of proteins from the nervous system

Our laboratory has a strong multidisciplinary vocation, combining state-of-the-art atomic force microscopy with protein engineering and molecular dynamics in order to understand how individual molecules mediate neuronal function. These studies are carried out at the Cajal Institute, a pioneering and leading Neurobiological research institution situated in the centre of Madrid.

Applicants should have a strong background in biophysics, as well as ample experience in atomic force microscopy (in either the force spectroscopy or imaging modes) and functionalization. Experience in instrumentation and/or molecular dynamics simulation are also desirable. Please address inquiries (including CV, description of research interests and references from two scientists) to:

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Representative publications: **J. Biol. Chem.** 283, 6617-6621 (2008); **Rev. Sci. Instrum.** 78, 113707 (2007); **Nature Str. Biol.** 10, 738-743 (2003).
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