



European Research Council



Post-Doctoral Positions Available **At the laboratory of Cellular Physiology of the Synapse**

General environment:

The research team runs several related projects revolving around the study of cell motility, synaptogenesis and synaptic plasticity using an array of multidisciplinary approaches. These include development and use of high resolution optical imaging, cell and molecular biology, biochemistry, chemistry, cell culture and electrophysiology.

All research projects are led by a senior scientist (indicated in "contact") and funded either by the European Research Council (ERC) or ministry of research ANR grants.

Our team has pioneered the use of single molecule imaging to track glutamate receptor movements in live neurons and discovered a new function for receptor mobility in fast synaptic transmission (*Science* 320, 201-205 (2008), *Neuron* 59, 359-374 (2008), *Nat Rev Neurosci* 4, 251-65 (2003); *EMBO J* 22: 4656-4665 (2003); *Nature* 417, 649-653 (2002); *Nature Neuroscience* 4, 253-260 (2001)) and will provide an excellent multidisciplinary working environment in a dynamic and bilingual environment at the Francois Magendie Institute, located in the University of Bordeaux II. The host institute consists of several independent research groups exploring in particular molecular and cellular mechanisms of synaptic plasticity (<http://www.inb.u-bordeaux2.fr/>). In addition, the team develops joint projects with the imaging center (<http://www.PICIN.u-bordeaux2.fr/>) and the Nano photonics group at the nearby Physics Center (<http://www.cpmoh.cnrs.fr/spip.php?rubrique49>).

Position 1: Ultra-high resolution imaging of the glutamatergic synapse

Start date: 01/02/2009 and later

Duration: 3 years

Funding: ERC advanced grant Nanoscale Dynamic Organisation of the Synapse

P.I.: Daniel Choquet

Research project:

We are seeking a post-doctoral fellow **expert in optics and fluorescence** imaging to take part in experiments combining leading edge imaging techniques with cellular biology to investigate the dynamical mechanisms underlying glutamate receptor organization at central synapses. The project will involve the development and use of STED (commercial system available), Single Molecule Tracking and PALM imaging to

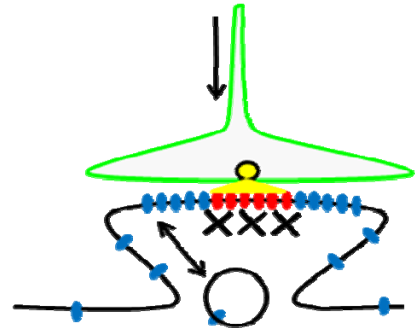
follow in real time glutamate (AMPA type) receptor localisation and trafficking in live brain slices and cultured neurons during synaptic plasticity.

Requirements:

The candidate will have a PhD, or equivalent, in a relevant discipline (Optical Imaging, Cellular Neuroscience or Cell Biology) with excellent past-record of achievement and less than 5 years of post-doctoral experience. A background in neurobiology is an advantage but is not required.

Contact:

Please send CV and two letters of recommendation to Daniel Choquet
bioimaging@u-bordeaux2.fr



Position 2: Nano-dynamics of integrins and actin nucleation complexes during cell motility

Start date: 01/01/2009 and later

Duration: 2 years

Funding: ANR grant, Nano-motility

P.I.: Grégory Giannone

Research project:

We are seeking a post-doctoral fellow **expert in optics and fluorescence** imaging to take part in experiments combining leading edge imaging techniques with cellular biology to investigate the nano-dynamics of integrins and actin nucleation complexes during cell motility. Cell migration is a process having a hierarchical spatial and temporal organization. At the sub-cellular level, migration proceeds through cycles lasting few seconds (*Cell* 116, 431-443 (2004), *Cell* 128, 561-575 (2007)). The robustness of these cycles relies on the precise regulation of motions and transient interactions of protein complexes involved in actin nucleation/polymerization and adhesion. In this postdoctoral project we want to understand the cyclic molecular mechanisms leading to actin nucleation/polymerization and initiation of early integrin-dependent adhesion sites during cell migration. For this purpose we need to elucidate the mechanisms by which the nano-dynamics of integrins, Arp2/3 and Wave2 complexes control molecular motile cycles. To reach this goal we will combine nanotechnology and cell biology approaches to overcome current technological limitations and allow for the continuous and long term single molecule tracking of intracellular actin nucleation/polymerization protein complexes and adhesion proteins as they traffic in and between the different crowded macromolecular structures involved in cell motility.

Requirements:

The candidate will have a PhD, or equivalent, in a relevant discipline (Optical Imaging, Biophysics or Cell Biology) with excellent past-record of achievement and less than 5 years of post-doctoral experience. Physicists having experience with cell biology are encouraged to apply.

Contact:

Please send CV and two letters of recommendation to
Gregory Giannone
bioimaging@u-bordeaux2.fr

Position 3: Physiological role of AMPAR surface trafficking

Start date: 01/09/2009 and later

Duration: 2 years

Funding: ANR grant, Stim-Traf-Park

P.I.: Daniel Choquet

Research project:

We are seeking a post-doctoral fellow expert in **slice electrophysiology** to take part in experiments studying the functional role of AMPAR surface diffusion in fast synaptic transmission and plasticity. This project builds upon our recent discovery of the unexpected key impact of AMPAR mobility on the rate of recovery from paired pulse depression (Heine et al. (2008). Surface mobility of postsynaptic AMPARs tunes synaptic transmission. *Science* 320, 201-205). The project will involve using genetic and chemical tools to modify receptor mobility and analyse its implication of synaptic transmission.

Requirements:

The candidate will have a PhD, or equivalent, in Neuroscience with excellent past-record of achievement and less than 5 years of post-doctoral experience.

Contact:

Please send CV and two letters of recommendation to
Daniel Choquet
bioimaging@u-bordeaux2.fr

Position 4: Physico-chemical approaches to receptor dynamics in living cells.

Start date: 01/02/2009 and later

Duration: 3 years

Funding: ERC grant, Nano-Dyn syn

P.I.: Daniel Choquet

Research project:

We are seeking a post-doctoral fellow expert in peptide and/or fluorophore chemistry to take part in a project aimed at analyzing the role of receptor-scaffold protein interactions in live neurons. This project builds upon our recent development of environment sensitive peptides to report for binding to PDZ domain containing proteins.

Requirements:

The candidate will have a PhD, or equivalent, in Chemistry with excellent past-record of achievement and less than 5 years of post-doctoral experience.

Contact:

Please send CV and two letters of recommendation to
Daniel Choquet or Matthieu Sainlos
bioimaging@u-bordeaux2.fr

Position 5: Physico-chemical approaches to receptor dynamics in living cells.

Start date: 01/02/2009 and later

Duration: 3 years

Funding: ERC grant, Nano-Dyn syn

P.I.: Daniel Choquet

Research project:

We are seeking a post-doctoral fellow expert in **physical chemistry of nano-particles** with a background in cell biology to take part in experiments developing new approaches for the tracking of single molecules in live cells.

Requirements:

The candidate will have a PhD, or equivalent, in Physical-chemistry with excellent past-record of achievement and less than 5 years of post-doctoral experience.

Contact:

Please send CV and two letters of recommendation to
Daniel Choquet
bioimaging@u-bordeaux2.fr

