



### 3-years PhD position in molecular, cellular and *in vivo* screening of nanobodies targeting G-protein-coupled receptors

Position: A three-year PhD position is available at INRA UMR-0085/Université Rabelais of Tours (Nouzilly) to select and characterize *in vitro* nanobodies targeting two GPCRs involved in the control of social behavior, GPR10 and GPR54, starting 10/01/2016.

Scientific background: Converging evidence from the study of social behavior in animals and functional imaging in Humans show that cerebral circuits recruited by positive (empathy, sympathy) or negative (rejection) social experiences widely overlap with reward circuitry. Several neurotransmitter systems contribute to regulate reward processes, including the family of RFamide neuropeptides and their respective G-protein-coupled receptors (GPCRs), which may exert an inhibitory action on reward processes (Becker et al. Nature Neurosci. 2005). Expression of several genes coding for actors of this system are deregulated in mice lacking the mu opioid receptor, that we have identified as showing autistic-like symptoms (Becker et al. Neuropsychopharm. 2014). We propose to put a brake on RFamide system activity to relieve impaired social interaction in these animals and other mouse models of social deficit disorders. To this aim, we will identify, produce and characterize for their pharmacological profile single chain antibody fragments, or nanobodies, targeting RFamide peptide receptors, with a particular focus on GPR10 and GPR54. The most promising candidates will next be tested *in vivo* for their effects on social behavior in various mouse models of social deficit. The successful candidate will acquire a solid background in FRET/BRET techniques, *in vitro* pharmacology (GPCR signaling), identification and production of antibodies and testing in animal models.

The research will be performed in the team “Deficits of Reward, GPCRs and Sociability” (DRuGS - leaders: JAJ Becker and J Le Merrer), in tight interaction with the group “Biology and Bioinformatics of Signaling Systems” (Bios, <http://bios.tours.inra.fr> - leaders: P. Crépieux and A. Poupon). The research will be carried out at the laboratory “Physiology of Reproduction and Behaviors”, INRA UMR-0085, CNRS UMR-7247, University Rabelais of Tours ([http://www6.val-de-loire.inra.fr/physiologie\\_reproduction\\_comportements](http://www6.val-de-loire.inra.fr/physiologie_reproduction_comportements)), in Nouzilly, 20-km from Tours (free shuttle from city center) and in the heart of the Loire Valley area.

Criteria: We are looking for a highly motivated PhD candidate with a Master’s level degree in Cellular Biology, Molecular Biology, Pharmacology or Neuroscience. Team working skills and a high degree of initiative and autonomy are also requested.

References: Send covering letter and CV together with contacts of two referees to [julie.lemerrer@tours.inra.fr](mailto:julie.lemerrer@tours.inra.fr) and [Jerome.becker@tours.inra.fr](mailto:Jerome.becker@tours.inra.fr), including contact detail, research interest and your suitability for this position. Please also include experience, if any, of academic or professional research. Deadline for applications: June 3<sup>rd</sup> 2016.

