Universidade do Minho
Escola de Ciências da Saúde
Instituto de Investigação em Ciências da Vida e Saúde

Research Grant – Call for Applications

Project NS2010/ISAN

A call for applications is open to award one research grant to graduates, under the Project entitled **"Searching for the neurobiological targets through which prenatal corticosteroids program adult social and affective behaviors"**, founded by *Institute for the Study of Affective* Neuroscience (ISAN).

1. **Duration and Terms of the Activity:** duration is 18 months, with starting date predicted for 1st of April 2010. The research activities will be carried out at the Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, Braga, Portugal.
2. **Job summary:** The researcher will integrate the Neuroscience Research domain, which consists of a multidisciplinary team with strong expertise in animal behavioral characterization, imaging tools, stereology and molecular biology techniques. The researcher will characterize in detail an animal model of early life stress in a behavioral, structural, molecular and neurochemical perspective.
3. **Profile:** The researcher should be a graduate or master in Biology, Biochemistry, Biomedical Sciences or similar areas. He/she should be extremely dynamic and capable of designing an experiment and critically analyze the data. Preference will be given to candidates with solid experience in animal manipulation and behavioral analysis. Experience in basic molecular biology techniques (PCR, western blotting, Real-Time PCR) is a plus. Supervision: Nuno Sousa/Ana João Rodrigues.
4. **Evaluation Criteria:** the evaluation will be based on the applicant's merit, taking into account the academic profile, the curriculum vitae as well as experience in scientific research with relevance to this project.
5. **Monthly Stipend:** 750 euros.
6. **Application Documents:** motivation letter, 2-3 recommendation letters, Curriculum Vitae, copy of the degree certificate as well as other documents considered to be relevant.
7. **Application:** Applications will be accepted up to 7th March 2010. All applications must be sent or delivered to:

   Ana João Rodrigues
   Life and Health Sciences Research Institute, School of Health Sciences
   University of Minho
   Campus de Gualtar
   4710-057 Braga
   email: ajrodrigues@ecsaude.uminho.pt

8. **Project Description**

In order to accelerate lung maturation, corticosteroids are prescribed during late gestation to approximately 10% of pregnant women. However, early life experiences, namely stress exposure or administration of corticosteroids, have long-term behavioral effects in adulthood including increased vulnerability to a variety of neurological and psychiatric disorders (3). We have previously shown that administration of the synthetic

corticosteroid dexamethasone (DEX) during pregnancy triggers a hyperanxious phenotype and increases susceptibility for depression in the adult progeny (2). These behaviors were correlated with significant brain structural changes in the nucleus accumbens (NAc) and ventral tegmental area (VTA) (3). DEX-treated pups also display an altered pattern of dopaminergic innervation in NAc and VTA and several molecular changes in the expression of important neuronal receptors.

In this project, we intend to further characterize this animal model of early life stress using a multidimensional approach (stereology, behavior, neurotransmitters profile and molecular changes), in order to better understand the consequences of antenatal DEX exposure. As a final step of the project, we will try to revert the phenotype of these animals by pharmacological manipulation of the affected targets.

References:

1. Mesquita AR, Wegerich Y, Patchev AV, Oliveira M, Leao P, et al. (2009) Glucocorticoids and neuro- and behavioural development. Semin Fetal Neonatal Med 14: 130-135.
2. Oliveira M, Bessa JM, Mesquita A, Tavares H, Carvalho A, et al. (2006) Induction of a hyperanxious state by antenatal dexamethasone: a case for less detrimental natural corticosteroids. Biol Psychiatry 59: 844-852.
3. Leao P, Sousa JC, Oliveira M, Silva R, Almeida OF, et al. (2007) Programming effects of antenatal dexamethasone in the developing mesolimbic pathways. Synapse 61: 40-49.