Postdoc Position for Environmental / Biological Scientists (ER)

ACTIVATION OF CELLULAR DETOXIFICATION PATHWAYS

The Spanish National Institute for Agricultural and Food Research and Technology (INIA) is an autonomous Public Research Organization (OPI) belonging to the Ministry of Science and Innovation (MICINN) in Spain. The INIA is responsible for the management and coordination of agrifood R&D programs at the national level, as well as of the execution of its own research programs. At the INIA, the activity of the Department of Environment focuses, among others areas, on Ecotoxicology and Environmental/Ecological Risk Assessment of potentially polluting activities. The group EDTC (Endocrine Disruption and Toxicity of Contaminants) is interested in the particular mechanisms by which some toxics cause specific toxicity. The main tools used by the group are based on in vitro culture of some fish cells and cell lines. The knowledge obtained in the laboratory is applied to the detection of contaminants in the field and to the environmental risk assessment of chemicals.

Job description:
The researcher will work on the structural features that determine the ability of chemicals to activate cellular detoxification pathways mediated by the aryl hydrocarbon receptor (AhR). Although it has been assumed that AhR activators share some structural features (they show planar, polycyclic, polyaromatic molecules) in the last years it has been observed that AhR can be activated by a number of chemicals with different structural properties probably through alternative mechanisms than direct ligand-binding. The main objective of this work will be to establish the molecular structural features that determine the ability of chemicals to activate the receptor. For that, the induction of AhR by selected compounds will be studied in cell lines originated from different taxonomic groups, although most of them will be piscine cell lines. The induction of AhR will be evidenced by measuring the expression of dependent genes at the transcriptional level by means of real time PCR. The protein products and related enzyme activities will be also measured. Insights in the mechanism of activation of the AhR will be obtained by co-exposure of the cells with different AhR activators and inhibitors (e.g. AhR, protein kinase or cytochrome P450 inhibitors) or by using subcellular fractions (S9) to observe metabolism. The molecular structural features of chemicals will be studied by means of ab initio computational calculations and the values of the different descriptors will be related with the results obtained in-vitro using different approaches, from simple mathematical models to even neural networks.

We are looking for a highly motivated candidate, with capabilities to work independently but in an interdisciplinary and international environment. Education in Biology, Biochemistry or related fields will be necessary and knowledge of Molecular Biology techniques desirable. Exchange with other laboratories is foreseen, so that the candidate should be willing to pass part of his/her time outside of INIA.

Job Requirements:

- Applicants are expected to have a university degree (MSc), ideally a PhD and must be in the first five years of their career in research.
- Applicants must be proficient in spoken and written English.

Application deadline (date of receipt) 30.09.2010
How to apply Please apply online at http://www.eco-itn.eu
Website http://www.eco-itn.eu **Contact person** Dr. José M. Navas **Contact phone** +34-91 347 41 55 **email** jmnavas@inia.es