



Innovation Thérapeutique et Résistance
UMR 1436 – INRA/ENVT

Anne LESPINE
Phone : +33 5 82 06 63 52
Email : anne.lespine@inra.fr

Objet: Post doc position 2019-2020

Postdoctoral Position: Investigating nuclear hormone receptors involved in anthelmintic drug activity in *Caenorhabditis elegans* and nematode pathogens

Host Unit: The research unit for Innovative Therapeutics and Resistance INThERES (UMR 1436), of the French Agronomic Institute (INRA) and Veterinary Medical School in Toulouse (ENVT) in Toulouse. INRA-InTheRes_UMR 1436 ; 180, Chemin de Tournefeuille, BP 93173 ; F-31027 Toulouse Cedex

Profile: We are looking for a PhD graduate in a relevant branch of natural science or a related field. The preferred candidate needs to be highly motivated, to enjoy cross-disciplinary work in an international environment, enthusiastic and good team player with excellent communication skills, with good command of English. A working knowledge of French would also be an advantage, but not essential.

Specific experience: A strong background in molecular biology and genetics, with experience in the field of mammalian nuclear receptors regulating gene transcription, are expected, with a mastery of the molecular tools necessary for these studies (bio-informatic tools for genome and protein analysis, molecular biology expertise for cloning plasmid construction and transfection in cells for gene reporter assay, transcriptomic analysis). A basic grounding on regulation of lipid metabolism are all considered assets. The balance of these different expertise will be considered on a case-by-case basis.

About the employer: The project is part of the research program of the INThERES unit which concerns the study of the molecular mechanisms of resistance to antiparasitic drugs in target nematodes. We have identified important factors that control the efficacy of ivermectin, a widely used anthelmintic drug in veterinary and human medicine. Of most interest, inhibition of active drug transporters can significantly increase drug activity. More recently, the team has shown a nuclear hormone receptor (NHR) regulating drug transporters, required for the model organism *Caenorhabditis elegans* to become resistant to ivermectin. Interestingly, the absence of this specific NHR delays the development of resistance to ivermectin in *C. elegans* (see for review: Lespine et al, 2012; and relevant publications: Menez et al, 2012, 2016, 2019).

Overall purpose of the job: The project aims at studying the regulating cascade involving such NHR in *C. elegans* and in nematodes of clinical interest, and how this controls the balance between drug efficacy and drug tolerance. The primary objectives include the search for natural ligands for the receptor and the identification of the regulated target genes, that currently remain unidentified. The postdoc will work within a multidisciplinary research group to help develop and apply novel approaches to investigate the role of the drug-regulated events in sensitivity of parasites exposed to the different anthelmintic drugs. The project work will involve a mixture of cellular and worm biology, integrated in the context of adaption of organisms to drug exposure. The project will require genome analysis approaches, and development of laboratory based molecular biology research, such as reporter gene technology and genome editing tools for precise genome modification.

What we offer: The postdoc will be supervised by Dr Anne Lespine and will be part of a large interdisciplinary research group focused on the study of mechanisms of resistance against anti infectious drugs in veterinary



23 chemin des Capelles – BP 87614 – 31076 Toulouse cedex 3 – France –
Tél : 33*(0)5 61 19 39 12 – Fax : 33*(0)5 61 19 39 17 – Email : a.bousquet-melou@envt.fr



INTHERES

Innovation Thérapeutique et Résistance
UMR 1436 – INRA/ENVT

medicine. The unit INTHERES belongs to both institutions ENVV and INRA Animal Health department of INRA that have a strong commitment to production animal health. ENVV works across disciplines and departments, fostering collaborative research, teaching and service. The laboratory has built an expertise in *C. elegans* culture and maintenance and has developed relevant drug analysis methods and approaches to explore drug efficacy, transport-mediated drug movements, and nuclear receptors activity. The research surroundings offer many types of platforms with large specificity and strong expertises. Institutional and international connections with parasitologists with expertise on pathogens facilitate the access to specific models and biological material required for the project.

Descriptions of the laboratory INTHERES and connected institutes can be found on the following websites: <http://www.envt.fr/menu-og-32/intheres>; <http://www.inra.fr/>; <http://www.envt.fr/node?destination=node>;

Gross base salary: Euro 2,250-2,800 per month, commensurate with the Level of education and experience.

Life in Toulouse: Toulouse is a vibrant, multicultural city with a population of half a million people. It's strategic geographic location near the lovely mountains Pyrenees and at equal distance to the Mediterranean Sea and the Atlantic Ocean, offers an enormous opportunity for outdoor activities both in winter and summer.

For additional information and informal enquiries please contact: Dr Anne LESPINE anne.lespine@inra.fr; Phone +33582066352

The application must include: Interested individuals should submit:

- ✓ a current curriculum vitae,
- ✓ a letter of introduction indicating how you meet the criteria outlined in the Job description,

the names of three referees. Review of applications will start ASAP and will be on going until the position is filled.