Post-Doctoral Position, Nantes, France

DogPPK: Absorbed dose assessment in a radioimmunotherapy trial in Dogs with spontaneous cancers by advanced Population PharmacoKinetics analysis and design of optimized sequential SPECT imaging protocols

The AMaROC research unit based at Oniris (French national college of veterinary medicine) opens a 24 months postdoctoral position in the fields of pharmacokinetics and radionuclide dosimetry, from December 1st 2016. The position is funded by the DogPPK project (ITMO Cancer, Inserm).

Scientific context

Molecular radiotherapy is a therapeutic modality based on the injection of radionuclides coupled to a specific vector. This therapy was demonstrated as efficient in the treatment of hematological cancers and neuroendocrine tumors. Nuclear imaging can be used to follow the distribution of the therapeutic agent. By repeating image acquisitions, it is possible to assess its pharmacokinetics (PK) and derive the absorbed doses delivered to the patient. To do so, classical approaches require numerous data points for all individual subjects. This is often non achievable with suffering patients and adds an important cost to the therapy.
Our project aims at evaluating a solution to reduce the number of images per patient without impairing the accuracy of dosimetry. We think that this can be achieved by extending the population PK (popPK) approach to the analysis of the kinetics of activity distribution in tissues of interest. In such a popPk approach, kinetics from different individuals are considered simultaneously. This improves the accuracy of the identification of the different PK parameters, even when the data sampling is limited. Our objective is to test this approach with our in-house popPk software in a preclinical trial of radioimmunotherapy on dogs with spontaneous cancers.

Job description and missions

The main objective of the project is a validation, on a cohort of dogs, of an original PK/dosimetry protocol based on a popPk approach that could minimize constraints on patients in molecular radiotherapy. The hired postdoc will carry out the quantification of the 111In SPECT/CT dogs images and compare the absorbed doses determined with a traditional method to the absorbed doses calculated with a population pharmacokinetics approach. He will also identify patient features that influence the PK (covariates). Finally, he will help developing further our PK software to favor its use by other groups.

Profile

We look for a candidate with a PhD in medical physics, image quantification, dosimetry or computer sciences. Good mathematics skills are an important requisite. Autonomy, open-mindedness and motivation, as well as good English speaking/writing skills are also expected.

Contact and additional information

For application, a folder that contains a CV, a motivation letter, a resume of the thesis, a complete list of publications, as well as letter of recommendation have to be sent, **before November 5th**, to the following emails:

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