Zirconium-89 training

3-day training

During the 3-day training, the following topics will be practiced and discussed:

- Conjugation of DFO-chelate to a monoclonal antibody (two methods)
- Radiolabeling of conjugated DFO-mAb with ^{89}Zr
- Purification of radiolabeled ^{89}Zr-DFO-mAb
- Quality control of ^{89}Zr-DFO-mAb
- GMP aspects to start-up clinical ^{89}Zr-immuno-PET studies

Apart from these, other alternative topics can be discussed in advance and added to the training, when possible.

After the 3-day training, the course participant can implement ^{89}Zr-radiolabeling of mAbs at their own facility. In addition, BV Cyclotron VU will provide technical support as required during the implementation phase.

For availability and prices, please contact our product manager radionuclides, Maria Vosjan, PhD:

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Description

Molecular imaging with the PET tracer Zirconium-89 (^{89}Zr, $t_{1/2}$ = 78.4 h) can considerably accelerate drug development and facilitate improved patient selection. This has been demonstrated in several preclinical and clinical studies. The pharmaceutical industry now realizes that ^{89}Zr-PET can offer excellent sensitivity and accurate quantification, from mouse to man. Some pharmaceutical companies have already shown their interest in ^{89}Zr-immuno-PET, and also academic biomedical research institutions are directed to initiate ^{89}Zr-immuno-PET studies.

To fulfill the needs from potential ^{89}Zr users, BV Cyclotron VU decided to set up a dedicated training to help new customers implement ^{89}Zr-radiolabeling at their facilities.

The aim of this program is to train researchers who are interested in immuno-PET with ^{89}Zr, teaching them how to perform the radiolabeling of mAbs and mAb-fragments with ^{89}Zr, and subsequently start preclinical and clinical studies at their own location.

The training will be provided as a 3-day course in Amsterdam. However, a training at the customer's location is possible upon request.

Program

Day 1 — Introduction and Modification of mAbs

Morning: Introduction: History / Theoretical background
Modification of mAbs with N-suc-Df-TFP ester
(old/general 'Verel' method – 2003)
(METHOD 1): 5 mg mAb (33 nmol) and 66 nmol ester

Afternoon: Modification of mAbs with Df-Bz-NCS chelate
(new 'Nature Protocols' method – 2010)
(METHOD 2): 5 mg mAb (33 nmol) and 100 nmol chelate
preparation of buffers and solutions for ^{89}Zr labeling

Day 2 — ^{89}Zr-Labeling and Quality Control

Morning: Evaluation of day 1
^{89}Zr labeling with modified mAbs, from day 1 –
METHOD 1 and METHOD 2 (e.g. ~20-37 MBq ^{89}Zr
and 1 mg of mod-mAb in 2 ml reaction)

Afternoon: Quality control of the labeled products
TLC, HPLC (size exclusion chromatography),
Binding assay (immunoreactivity/Lindmo assay),
Pyrogen test (LAL assay), SDS PAGE (optional)

Day 3 — Supervised Repetition of the Complete Program by Trainees

Morning: Evaluation of day 2
Finishing binding assays from day 2 (overnight assay)
Modification of mAb with desired method
^{89}Zr labeling with modified mAb from this morning

Afternoon: Quality control of the labeled product
Evaluation of day 3 and wrap up

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