

Innovative ^{18}F -labeled Norepinephrine analog PET tracers for broad diagnostic applications in neurology, cardiology and oncology

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CHALLENGE

Positron emission tomography (PET) is an important imaging method in clinical medicine allowing, amongst others, the 3D mapping of molecular and cellular processes. With its high sensitivity and high temporal and spatial resolution, PET is constantly gaining importance as a state-of-the-art diagnostic tool. Conventional research use PET tracer molecules are mostly based on ^{14}C labeled substances, which come with a **significant drawback for clinical use**. Their short half-lives (20 min) require on-site quick synthesis and a direct patient administration.

Numerous significant diseases such as neuroblastoma, Parkinson's disease and heart failure are known to be associated with **norepinephrine transporter (NET)** expression. For early and precise diagnosis and prognosis of the above-mentioned diseases, the challenge lies in finding a **NET-specific PET tracer**, which combines high patient tolerance and superior tracing properties with a long half-life and moderate production costs.



- ✓ Cost-efficient synthesis
- ✓ High labelling efficiency
- ✓ High yields of ^{18}F tracer
- ✓ Long half-life
- ✓ High PET signal strength

INNOVATION

Here, we present a novel ^{18}F labeled NET-specific PET tracer, which is synthesized using a simple **1-step protocol** and allows sufficient time for flexible synthesis and administration protocols and even possibility to deliver from particle accelerator facility to hospital. Both *ex vivo* autoradiography and *in vivo* imaging show specific **NET** uptake and indicate promising properties for the broad applicability of this novel tracer. Comparable ^{18}F labeled PET tracers in early clinical development have already shown both high tolerance and favorable bio-distribution.

COMMERCIAL OPPORTUNITIES

Innovative PET tracers with broad diagnostic purposes in

- ✓ Neurodegenerative and psychiatric diseases (e.g. Parkinson's, ADHS)
- ✓ Heart diseases (Heart failure, Ischemic heart diseases)
- ✓ Different tumors

DEVELOPMENT STATUS

Proof of concept *in vitro* and in animal models.

REFERENCES:

- 1 Mol Imaging Biol. 2019 Jul 22. doi: 10.1007/s11307-019-01407-5.

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