High-Affinity Ligand for CXCR4 Imaging & Therapy

Our ligand was designed for the precise diagnosis of CXCR4 expressing lesions and their treatment. The ligand can be labeled with different radioisotopes and shows high affinity towards CXCR4. This allows clinicians to use the same ligand to first precisely diagnose and stage a patient's disease via e.g. PET imaging and then, use the same targeted molecule, to deliver a potent therapeutic radiation dose directly to the tumor or metastatic side.

Imaging & Treatment of CXCR4 Expressing Lesions

IP RIGHTS
PCT application filed in 2025

The CXCR4 chemokine receptor is a highly attractive target for the diagnosis and therapy of numerous cancers and inflammatory diseases. Imaging with CXCR4-targeting radiopharmaceuticals has become a key tool for visualizing tumor progression and guiding treatment. The invention provides a next-generation ligand.

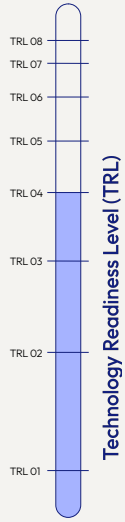
01 Superior Target Affinity: 4-10x higher affinity than current standards
02 Enhanced Image Contrast: Significantly improved target-to-background ratios
03 Theranostic Potential
04 For Key Medical Needs: Imaging & developing therapies for CXCR4 expressing malignancies

CHALLENGE

The current standard for CXCR4 PET imaging, [68Ga]Ga-Pentixafor, has proven its value in clinical practice. However, its diagnostic precision is in some instances limited by suboptimal target-to-background ratios (TBR), typically around 2-3. This makes the reliable detection of tumors with low CXCR4 expression challenging and can obscure the full extent of the disease.

INNOVATION

This invention describes novel CXCR4 ligands with a strategically modified structure. Compared to existing compounds, our ligand demonstrates a 4 to 10-fold higher binding affinity to human CXCR4. This superior affinity translates directly into significantly improved TBRs, enabling the clear visualization of even low-expression tumor sites. The compound has already been successfully tested in patients for PET imaging. Its versatile structure also allows for stable complexation with therapeutic isotopes like 177Lu and 90Y, paving the way for highly targeted therapies.



01 Basic principles observed · **02** Technology concept formulated · **03** Experimental proof of concept · **04** Technology validated in lab · **05** Technology validated in relevant environment · **06** Technology demonstrated in relevant environment · **07** System prototype demonstrated in operational environment · **08** System complete and qualified

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