

High contrast in vivo tumor imaging








Source: Peplau, E. et al. Effective rational humanization of a PASylated anti-galectin-3 Fab for the sensitive PET imaging of thyroid cancer in vivo. *Sci Rep* 11, 7358 (2021)

In vivo imaging using radiolabeled agents is a powerful, sensitive and non-invasive method to diagnose cancer and to assist surgery and radiotherapy. However, choosing the right molecule format can be challenging. Full-length antibody tracers often show a poor tumor penetration and persistent circulation, resulting in a high background. Short-acting tracers like peptides or antibody fragments improve the tumor to blood ratio, but due to a rapid clearance from the body the time for efficient tumor enrichment is too short. PASylation® enables tracer engineering to reach optimal conditions for high tumor uptake and excellent PET/SPECT imaging contrast.

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| <p>✓ Tunable circulation time</p> <ul style="list-style-type: none">• Plasma half-life can be tailored to optimize imaging contrast | <p>✓ High tumor to blood ratio</p> <ul style="list-style-type: none">• PASylation boosts tumor uptake of the tracer |
| <p>✓ No accumulation in healthy tissue</p> <ul style="list-style-type: none">• PAS sequences are inert: no unspecific enrichment in healthy tissue | <p>✓ No Fc region</p> <ul style="list-style-type: none">• No FcγR mediated cellular uptake• No undesired longterm circulation via endosomal recycling |

Related Publications:

-  Richter A. et al. (2020) First in-human medical imaging with a PASylated 89Zr-labeled anti-HER2 Fab-fragment in a patient with metastatic breast cancer. *Nucl. Med. Mol. Imaging* 54, 114–119.
-  Peplau, E. et al. (2021) Effective rational humanization of a PASylated anti-galectin-3 Fab for the sensitive PET imaging of thyroid cancer in vivo. *Sci. Rep.* 11, 7358.
-  Mendler C. T. et al. (2016) Tumor uptake of anti-CD20 Fabs depends on tumor perfusion. *J. Nucl. Med.* 57, 1971-1977.
-  Mendler C. T. et al. (2015) High contrast tumor imaging with radio-labeled antibody Fab fragments tailored for optimized pharmacokinetics via PASylation. *MABs* 7, 96-109.
-  Mendler C. T. et al. (2015) 89Zr-labeled versus 124I-labeled αHER2 Fab with optimized plasma half-life for high-contrast tumor imaging in vivo. *J. Nucl. Med.* 56, 1112-1118.

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