

Mathias Kranz

Employment history

Current

- 2025- **Researcher and PI (TFS/TMS Starting Grant)**
Institute for Medical Biology, Tumor Biology Research Group, UiT The Arctic University of Norway
- 2019- **Researcher and PI (180°N Norwegian Consortium in Nuclear Medicine)**
Dept. of Diagnostic Services, UNN/PET center/ UiT-IKM, Nuclear Medicine and Radiation Biology.

Previous

- 2016-2018 **Post doc** at Helmholtz-Zentrum Dresden-Rossendorf, Leipzig, Germany
- 2016-2017 **Visiting researcher** at Yale university, PET center, New Haven, CT, USA
- 2012-2016 **PhD in Biomedicine** at Helmholtz-Zentrum Dresden-Rossendorf, Neuro-Radiopharmaceuticals (Development and animal testing of brain/cancer radiotracers)

Education

- 2010-2012 **M.Sc.** Biomedical Engineering, Technical University of Ilmenau, Germany
- 2006-2010 **B.Sc.** Biomedical Engineering, Technical University of Ilmenau, Germany/
ERASMUS: Technical University of Košice, Slovakia

Prizes and awards

- 2023 Best paper of the year, Experimental Health Research Conference, Tromsø, Norway
- 2021 Best international contribution, Meeting American Society of Nuclear Medicine, USA
- 2016-2017 Funding of research stay at Yale PET center, USA provided by HZDR (~20 000 €),
- 2015-2016 Best PhD student award, Leipzig, Germany (price: funding of a 100% PhD position)

Current grants, Principal Investigator

- NORTH CARE – TFS/TMS Starting Grant. Treatment enhancement of radiotheranostics using focused ultrasound (24 Mio NOK, 2025-2028)
- Development of theranostic radiopharmaceuticals for precision medicine (Helse-Nord HNF-1724-24 (4.12 Mio NOK, 2024-2027)
- Imaging and treatment of Glioblastoma using radio-theranostics, 180°N, Norwegian Nuclear Medicine Consortium (in total 160 Mio NOK, 2019-2024)

Co-Investigator

- Co-applicant/investigator - IRN-FY2020-grant Mahidol University Thailand. (2.7 Mio NOK 2020-2023), Development of Radiopharmaceuticals

Completed grants (as PI)

- Development of radiocopper radiopharmaceuticals for precision medicine (Helse-Nord HNF-1591-21 (3.2 Mio NOK, 2021-2024)
- Establishing brain tumor animal models, BLIX Fond (50k NOK, 2020)

Institutional responsibilities and commissions of trust

2022-present Editor for *Frontiers in Nuclear Medicine, Branching Out - Current advances in Brain Tumor Imaging of Tumor Microenvironment with PET and New Personalized Treatment Approaches*

2022-present Organizer/lecturer of (i) Radiopharmacy and (ii) Preclinical imaging course at UiT

2019-present Reviewer and editorial board member for *European Journal of Nuclear Medicine - Physics, Cancers, Molecules, International Journal of Molecular Sciences*

Major collaborators: Mahidol University Bangkok, Thailand. Yale PET center, New Haven USA. KU Leuven, Belgium. HZDR, Leipzig, Germany. University Hospital Wuerzburg, Germany

Selected invited talks

International Conference on Molecular Probes. Bangkok, Thailand (2023, 2024), **GE Healthcare user meeting**, Odense, Denmark (2022), **Nukleærmedisinsk Fagnettverk** i Helse-Nord (2020), **22nd International Symposium on Radiopharmaceutical Sciences**, Dresden, Germany (2017), **European Society of Nuclear Medicine Annual Meeting**, Barcelona, Spain (2016).

Press and outreach (selection)

- 26.03.2022 NRK – Radio interview and newspaper article, <https://www.nrk.no/tromsogfinnmark/1.15905774>
- 25.08.2022 iTromsø – Interview <https://www.itromso.no/nyheter/i/mrGdQL/mathias-haaper-forskningen-hans-vil-foere-til-en-kur-mot-uhelbredelig-hjernekreft>
- 18.06.2020 SNMMI highlight movie 2021/2022 annual meeting New Orleans/Vancouver. <https://youtu.be/oqgFdUznHeg?si=MIYNTH7-8CncrRtL>

Ph.D supervision (as primary supervisor)

2020- present Yngve Guttormsen, UiT - The Arctic University of Norway, Tromsø, Norway

Ph.D supervision (as second supervisor)

2022-2024 Piyapan Suwattananuruk, Chulalongkorn University, Bangkok, Thailand.

2021-present Karolin Nordli, UiT - The Arctic University of Norway, Tromsø, Norway

Peer-reviewed publications (24 selected from 40+; citations = 1350, h-index = 16)

More than 40 posters and 10 talks at international conferences (not included here).

- 2024 Suwattananuruk, Piyapan, et al. "Radiosynthesis and preclinical evaluation of a ⁶⁸Ga-labeled tetrahydroisoquinoline-based ligand for PET imaging of CXCR4 chemokine receptor type 4 in an animal model of glioblastoma." *EJNMMI Radiopharmacy and Chemistry* 9.1 (2024): 61.
- 2023 Lindemann M, ..., **Kranz M**. Glioblastoma PET/MRI: kinetic investigation of [¹⁸F]rhPSMA-7.3, [¹⁸F]FET and [¹⁸F]fluciclovine in an orthotopic mouse model of cancer. *Eur J Nucl Med Mol Imaging*. 2023;50(4):1183-1194
- Kranz, M. (2023). Kleintierdosimetrie für die diagnostische PET Bildgebung. *Angewandte Nuklearmedizin* 2023; 46(01): 20 - 25
- Syed, S., Anderssen, K.E., Stormo, S.K., **Kranz, M**. Weakly supervised semantic segmentation for MRI: exploring the advantages and disadvantages of class activation maps for biological image segmentation with soft boundaries, *Scientific Reports*, 2023, 13(1), 2574
- 2022 Anderssen, K. E., **Kranz, M.**, Syed, S., Stormo, S. K. Diffusion tensor imaging for spatially resolved characterization of muscle fiber structure in seafood. *Food Chem*, 380, 132099.
- Gnad, T....**Kranz, M.** ... & Pfeifer, A. (2022). Adenosine/A2B Receptor Signaling Ameliorates the Effects of Aging and Counteracts Obesity. *Cell Metabolism*, 34(4), 649.
- von Hofsten, S., Paulsen, M. H., Magnussen, S. N., Ausbacher, D., **Kranz, M.**, Bayer, A., ... & Berge, G. (2022). The marine natural product mimic MPM-1 is cytolytic and induces DAMP release from human cancer cell lines. *Scientific reports*, 12(1), 1-15.
- 2021 Anderssen, K. E., Gabrielsen, G. W., **Kranz, M.**, & Collard, F. Magnetic resonance imaging for non-invasive measurement of plastic ingestion in marine wildlife. *Marine Poll Bull*, 185, 114334.
- Gündel, D....**Kranz, M.**.... & Brust, P. (2021). Preclinical Evaluation of [¹⁸F] FACH in Healthy Mice and Piglets: An ¹⁸F Labeled Ligand for Imaging of Monocarboxylate Transporters with PET. *International journal of molecular sciences*, 22(4), 1645.
- Weiner, J., Roth, L., **Kranz, M.**, ... & Krause, K. (2021). Leptin counteracts hypothermia in hypothyroidism through its pyrexia effects and by stabilizing serum thyroid hormone levels. *Molecular metabolism*, 54, 101348.
- 2020 Toussaint, M., Deuther-Conrad, W., **Kranz, M.**.... & Brust, P. (2020). Sigma-1 receptor positron emission tomography: a new molecular imaging approach using (S)-[¹⁸F] fluspidine in glioblastoma. *Molecules*, 25(9), 2170.

- Gnad, T., ...**Kranz, M.** ... & Pfeifer, A. (2020). Adenosine/A2B receptor signaling ameliorates the effects of aging and counteracts obesity. *Cell metabolism*, 32(1), 56-70.
- Sattler, B., **Kranz, M.** ... & Brust, P. (2020). Preclinical incorporation dosimetry of [¹⁸F] FACH—a novel 18F-labeled MCT1/MCT4 lactate transporter inhibitor for imaging cancer metabolism with PET. *Molecules*, 25(9), 2024.
- 2019 Ritawidya, R., ...**Kranz, M.**, Deuther-Conrad, W., ... & Brust, P. (2019). Radiosynthesis and Biological Investigation of a Novel Fluorine-18 Labeled Benzoimidazotriazine-Based Radioligand for the Imaging of Phosphodiesterase 2A with Positron Emission Tomography. *Molecules*, 24(22), 4149.
- Schröder, S., Lai, T. H., **Kranz, M.**... Brust, P. (2019). Investigation of [¹⁸F] FESCH for PET imaging of the adenosine A2a receptor in a rotenone-based mouse model of Parkinsons disease and development of a two-step one-pot radiolabeling strategy. *J. of radiolabelled comp.* (Vol. 62, pp. S183-S183).
- 2018 Kranz, M.... & Pietzsch, J. (2018). Bridging from brain to tumor imaging:(s)-(-)-and (r)-(+)-[¹⁸F] fluspidine for investigation of sigma-1 receptors in tumor-bearing mice. *Molecules*, 23(3), 702.
- 2017 Njemanze, P., **Kranz, M.**, Amend, M., Hauser, J., Wehrl, H., Brust, P. (2017). Gender differences in cerebral metabolism for color processing in mice... *PloS one*, 12(7).
- 2016 **Kranz, M.** ...O., Brust, P. (2016). Radiation dosimetry of the $\alpha 4\beta 2$ nicotinic receptor ligand (+)-[¹⁸F]flubatine, comparing preclinical PET/MRI and PET/CT to first in-human PET/CT results. *European Journal of Nuclear Medicine and Molecular Imaging Physics*, 3(25).
- Kranz, M.** ... Brust, P., Sabri, O. (2016). Evaluation of the Enantiomer Specific Biokinetics and Radiation Doses of [¹⁸F]fluspidine - A New Tracer in Clinical Translation for Imaging of $\sigma 1$ Receptors. *Molecules*, 21(9), 1164.
- Hankir, MK., ...**Kranz, M.**, Deuther-Conrad, W.,..., Fenske, WK. (2016). Gastric Bypass Surgery Recruits a Gut-Striatal Dopamine Pathway to Reduce Fat Appetite in Obese Rats. *Cell metabolism*, 25(2), 335-344.
- Hankir, M. K., **Kranz, M.** ... Brust, P., Fenske, W. (2016). A novel thermoregulatory role for PDE10A in mouse and human adipocytes. *EMBO molecular medicine*, 8(7), 796-812.
- 2015 Teodoro, R. ... **Kranz, M.**, Donat, CK., Patt, M., Hillmer, A., ..., Brust, P. (2015). A Promising PET Tracer for Imaging of $\alpha 7$ Nicotinic Acetylcholine Receptors in the Brain: Design, Synthesis, and in Vivo Evaluation of a Dibenzothiophene-Based Radioligand. *Molecules*, 20(10), 18387-18421.
- 2014 Gnad, T. ... **Kranz, M.**, DeutherConrad, W., Brust, P., Lidell, ME., Betz, MJ, Muller, CE., Pfeifer, A. (2014). Adenosine activates brown adipose tissue and recruits beige adipocytes via A2A receptors. *Nature*, 516(7531), 395-399.
- Sattler, B.*, **Kranz, M.*** ... Sabri, O. (2014). Internal Dose Assessment of (-)-¹⁸F-Flubatine, Comparing Animal Model Datasets of Mice and Piglets with First-in-Human Results. *Journal of Nuclear Medicine*, 55(11), 1885-1892. *contributed equally

Granted patents

DE 10 2019 112 040.3. Filed July, 2024

WO2020225386A1. Filed August 5th, 2019,

DE102019110904A1. Filed April 26th, 2019