Editorial for special issue "Jörg Steinbach"

Mamat, C.;

Originally published:

July 2019

Journal of Labelled Compounds and Radiopharmaceuticals 62(2019)8, 350-351

DOI: https://doi.org/10.1002/jlcr.3773

Editorial to the Special Issue in Honor of Jörg Steinbach†

Constantin Mamat[a,]*

a) Institut für Radiopharmazeutische Krebsforschung, Helmholtz-Zentrum Dresden-Rossendorf, Bautzner Landstraße 400, D-01328 Dresden, Germany

* Correspondence to: Constantin Mamat, Institut für Radiopharmazeutische Krebsforschung, Helmholtz-Zentrum Dresden-Rossendorf, Bautzner Landstraße 400, D 01328 Dresden, Germany; e-mail: c.mamat@hzdr.de

Short title: Editorial Special Issue

† Dedicated to Prof. Dr. Jörg Steinbach on the occasion of his retirement.

This special issue of Journal of Labelled Compounds and Radiopharmaceuticals is dedicated to commemorate the outstanding scientific work of Jörg Steinbach,[1] former director of the Institute of Radiopharmaceutical Cancer Research at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and full professor for Bioinorganic and Radiopharmaceutical Chemistry at the Technical University Dresden. Current legal regulations brought to an end the formal attachment of Professor Steinbach to the TU Dresden as well as the directorship of the institute within his sixty-fifth birthday. A festive symposium has been held at the HZDR on the occasion of his retirement on September 5th, 2018, one day after the inauguration of the new Centre for Radiopharmaceutical Tumor Research at the HZDR.

When he started at the former Central Institute of Nuclear Research of the Academy of Sciences in Rossendorf in 1982, his scientific carrier affected radionuclide production and radiotracer development. Later, the focus of the institute was extended to cell and animal experiments for radiotracer evaluation in vitro and in vivo, radiotracer production under GMP conditions, to the point of the radiotracer translation into the clinic.

In this regard, this special issue reflects all the aspects of radiopharmacy, starting from improved separation techniques for the production of ^{64}Cu,[2] followed by new methods for the introduction of fluorine-18 into aromatics involving the Baeyer-Villiger-oxidation[3] or by ruthenium-catalyzed cycloaddition reactions[4] to green radiochemistry approaches.[5] The identification of receptor ligands precedes radiotracer development as aptly exemplified by the design of novel fluorinated benzo[7]annulen-7-amines as GluN2B-antagonists[6] or preparation of the ^{64}Cu-labeled α-MSH peptide NAP-NS1.[7] Additionally, the synthesis of dual or multimodal imaging agents such as ^{64}Cu- and fluorescence-labeled nanoparticles combining PET and optical imaging[8] for future personalized and specialized applications in nuclear medicine complete the design strategies.

Moreover, the development of cell and animal models for a detailed pharmacological radiotracer characterization[9,10] of e.g. ^{11}C-labeled azadipeptides,[11] ^{18}F-labeled benzylpiperazines[12] or a cyclic uPA-derived peptide for the urokinase-type plasminogen activator receptor[13] follows consistently.

Radiotracers containing the PSMA motif appear more and more in the focus of radiopharmacy and nuclear medicine due to the outstanding imaging as well as therapeutic possibilities for prostate

cancer and attained the clinics in the meantime. To overcome problems with tumor heterogeneity, heterodimers containing PSMA and GRPr were developed.[14] Furthermore, dual-time-point PET/CT-measurements using the PET-tracer ^{64}Cu-PSMA-617 in patients[15] is a successful example for the radiotracer transfer into the clinics. In this regard, a review over are continuing and effective examples.

Eminent reviews covering oncological imaging and therapy approaches using CAR modified T cells,[16] which already found the way into the clinics, exotic radionuclides such as those from manganese[17] or the progress in the development of imaging probes for the GluN2A subunit[18] complete this special issue.

Based on 17 excellent contributions, this special issue covers virtually the entire area of radiopharmaceutical sciences and is certainly of great interest not only for the colleagues working in this area. The authors are happy to take the opportunity to contribute to this special issue and as a sign of their appreciation of Jörg Steinbach and his work in the field of radiopharmacy. As friends and colleagues we wish him a further active and successful life in his retirement.

References

1 Johannsen B, Schubiger PA. Jörg Steinbach—A highly motivated radiopharmaceutical scientist. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3689

2 van der Meulen NP, Hasler R, Blanc A, Farkas R, Benešová M, Talip Z, Müller C, Schibli R. Implementation of a new separation method to produce qualitatively improved ^{64}Cu. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3730

3 Ermert J, Meleán JC, Humpert S, Modemann D, Krupp D, Kern I, Kreft S, Coenen HH. Baeyer-Villiger oxidation tuned to chemoselective conversion of non-activated [^{18}F]fluorobenzaldehydes to [^{18}F]fluorophenols. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3740

4 Roscales S, Kniess T. Access to ^{18}F-labelled isoxazoles by ruthenium-promoted 1,3-dipolar cycloaddition of 4-[^{18}F]fluoro-N-hydroxybenzimidoyl chloride with alkynes. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3708

5 Neumaier B, Zischler J, Krapf P, Richarz R, Lauchner K, Zlatopolskiy B. Minimalist approach meets green chemistry: Synthesis of 18F- labeled (hetero)aromatics in pure ethanol. *J. Labelled Compd. Radiopharm.* 2019;62: submitted.

6 Thum S, Schepmann D, Reinoso RF, Alvarez I, Ametamey SM, Wünsch B. Synthesis and pharmacological evaluation of fluorinated benzo[7]annulen-7-amines as GluN2B-selective NMDA receptor antagonists. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3718

7 Gao F, Sihver W, Bergmann R, Walther M, Stephan H, Belter B, Neuber C, Haase-Kohn C, Bolzati C, Pietzsch J, Pietzsch, H-J. Radiochemical and radiopharmacological characterization of a 64Cu-labeled α-MSH analog conjugated with different chelator. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3728

8 Pretze M, van der Meulen NP, Wängler C, Schibli R, Wängler B. Targeted ^{64}Cu-labeled gold nanoparticles for dual imaging with positron emission tomography and optical imaging. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3736

9 Sadeghzadeh M, Moldovan R-P, Fischer S, Wenzel B, Ludwig F-A, Teodoro R, Deuther-Conrad W, Jonnalagadda S, Sravan K. Jonnalagadda, Gudelis E, Šačkus A, Higuchi K, Ganapathy V, Mereddy VR, Drewes LR, Brust P. Development and radiosynthesis of the first ^{18}F-labeled inhibitor of monocarboxylate transporters (MCTs). *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3739

10 Kuçi Z, Ehrlichmann W, Sauer J, Handgretinger R, Bruchelt G, Reischl G. Fast enzymatic synthesis of n.c.a. 6-[^{18}F]fluorodopamine (FDA) from n.c.a. 6-[^{18}F]FDOPA and the fate of 6-FDOPA and 6-FDA in neuroblastoma and Caki-1 cells after their uptake. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3752

11 Laube M, Frizler M, Wodtke R, Neuber C, Belter B, Kniess T, Bachmann M, Gütschow M, Pietzsch J, Löser R. Synthesis and preliminary radiopharmacological characterisation of an ^{11}C-labelled azadipeptide nitrile as potential PET tracer for imaging of cysteine cathepsins. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3729

12 Ye J, Wang L, Deuther-Conrad W, Chen Y, Zhang X, Zhang J, Huang Y, Brust P, Jia H. ^{18}F-Labeled benzylpiperazine derivatives as highly selective ligands for imaging σ_1 receptor with positron emission tomography. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3738

13 Wacker A, Bauder-Wüst U, Schäfer M, Schmidt J, Remde Y, Stadlbauer S, Eder M, Liolios C, Kopka K. Designing Tracers for PET Imaging of the Urokinase-type Plasminogen Activator Receptor from a Cyclic uPA-derived Peptide – First in Vitro Evaluations. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3735

14 Liolios C, Sachpekidis C, Schäfer M, Kopka K. Bispecific Radioligands targeting Prostate Specific Membrane Antigen (PSMA) and Gastrin Releasing Peptide receptors (GRPr) on the surface of prostate cancer cells. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.

15 Hoberück S, Wunderlich G, Michler E, Hölscher T, Walther M, Seppelt D, Platzek I, Zöphel K, Kotzerke J. Dual-time-point ^{64}Cu-PSMA-617-PET/CT in patients suffering from prostate cancer. *J. Labelled Compd. Radiopharm.* 2019;62: submitted.

16 Arndt C, Bachmann M, Bergmann R, Berndt N, Feldmann A, Koristka S. Theranostic CAR T cell Targeting, a brief review. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3727

17 Brandt M, Cardinale J, Rausch Ivo, Mindt T. Manganese in PET imaging – opportunities and challenges. *J. Labelled Compd. Radiopharm.* 2019;62: submitted.

18 He Y, Mu L, Ametamey SM, Schibli R. Recent progress in allosteric modulators for GluN2A subunit and development of GluN2A-selective nuclear imaging probes. *J. Labelled Compd. Radiopharm.* 2019;62: DOI: 10.1002/jlcr.3744