PSI Center for Life Sciences

Preclinical Development of ^{161}Tb-based Radiopharmaceuticals for Radioligand Therapy

PRISMAP Radiolanthanide Workshop

3-5 September 2024, Paul Scherrer Institute, Switzerland

Cristina Müller, PhD

Research Group Leader at PSI, adjunct Prof. at ETH Zurich, Switzerland

^{177}Lu-based Radioligand Therapy

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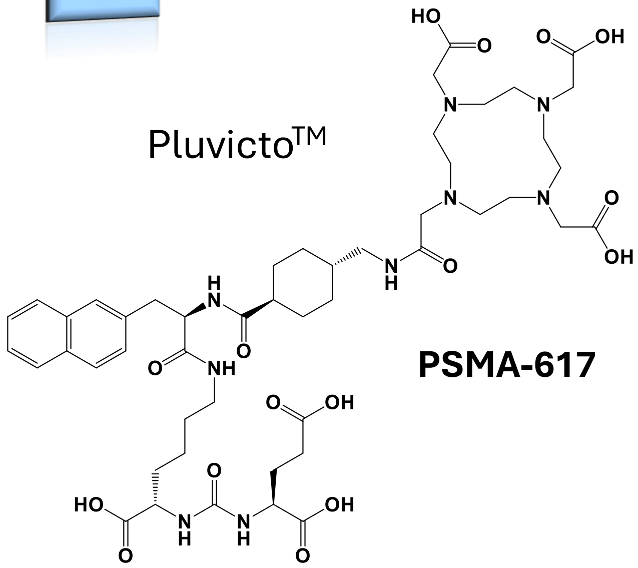
PSMA-targeting radioligand

β⁻-Therapy

Pluvicto™



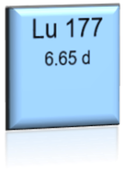
PSMA-617

FDA approved in March 2022

PSMA = prostate-specific membrane antigen

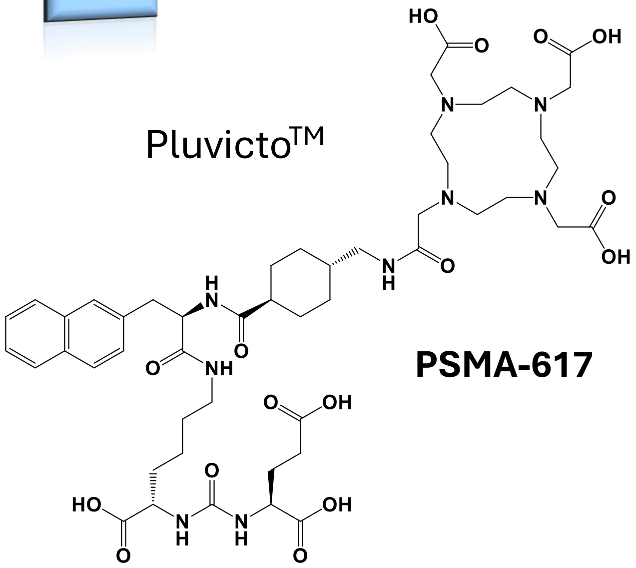
^{177}Lu-based Radioligand Therapy

PSMA-targeting radioligand



β⁻-Therapy

Pluvicto™



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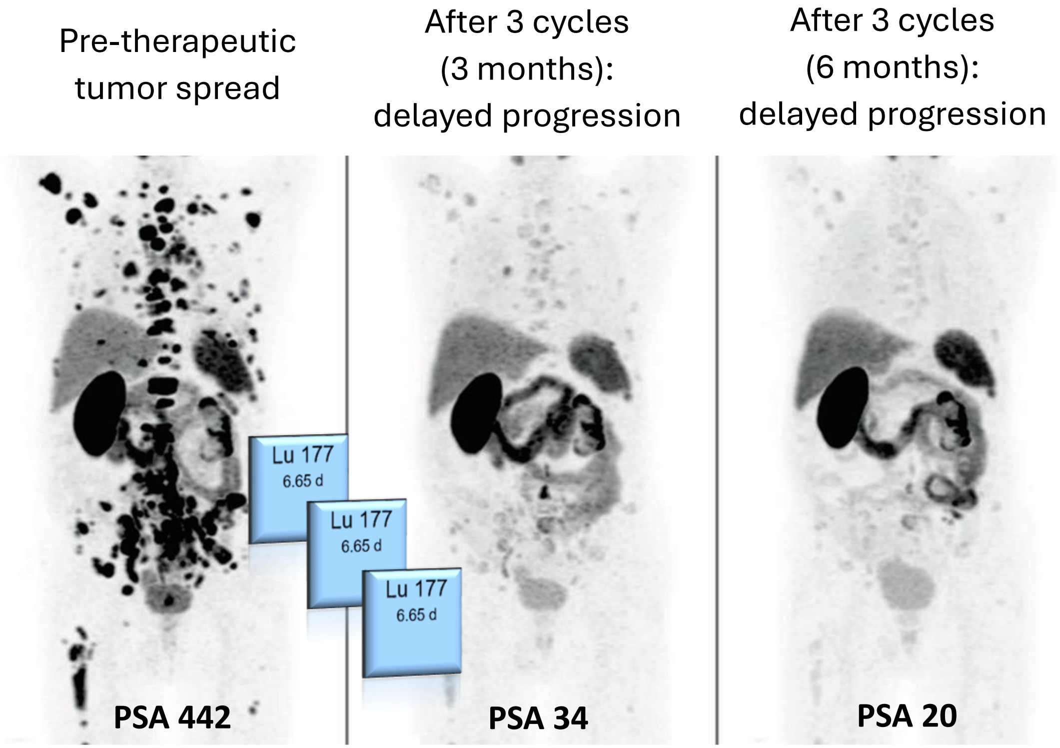
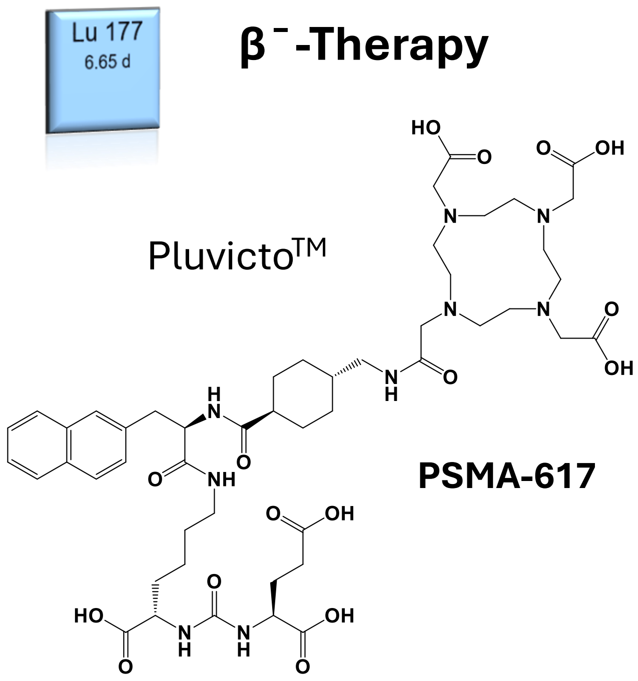


Iravani et al. **2020** Prostate Cancer and Prostatic Diseases, 23:38.

^{177}Lu-based Radioligand Therapy

PSI

PSMA-targeting radioligand



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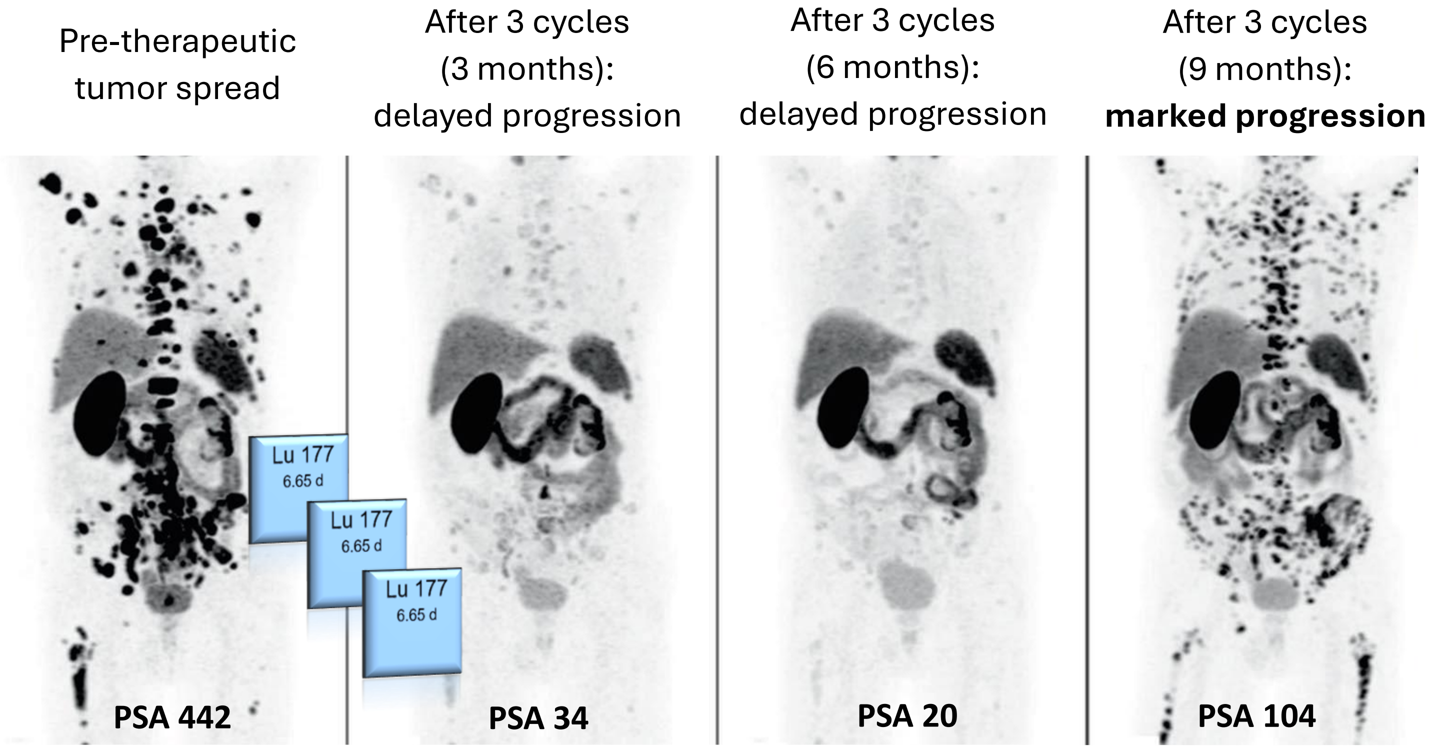

Iravani et al. **2020** Prostate Cancer and Prostatic Diseases, 23:38.

^{177}Lu is not sufficiently effective to eliminate single cancer cells and cancer cell clusters.

^{225}Ac-based Radioligand Therapy

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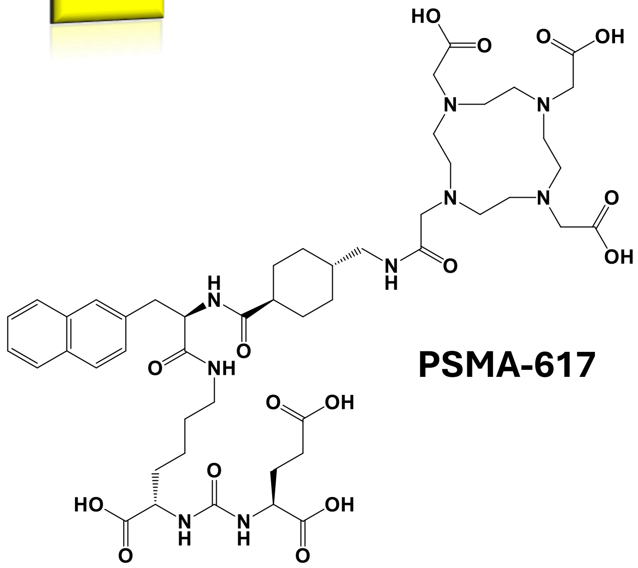
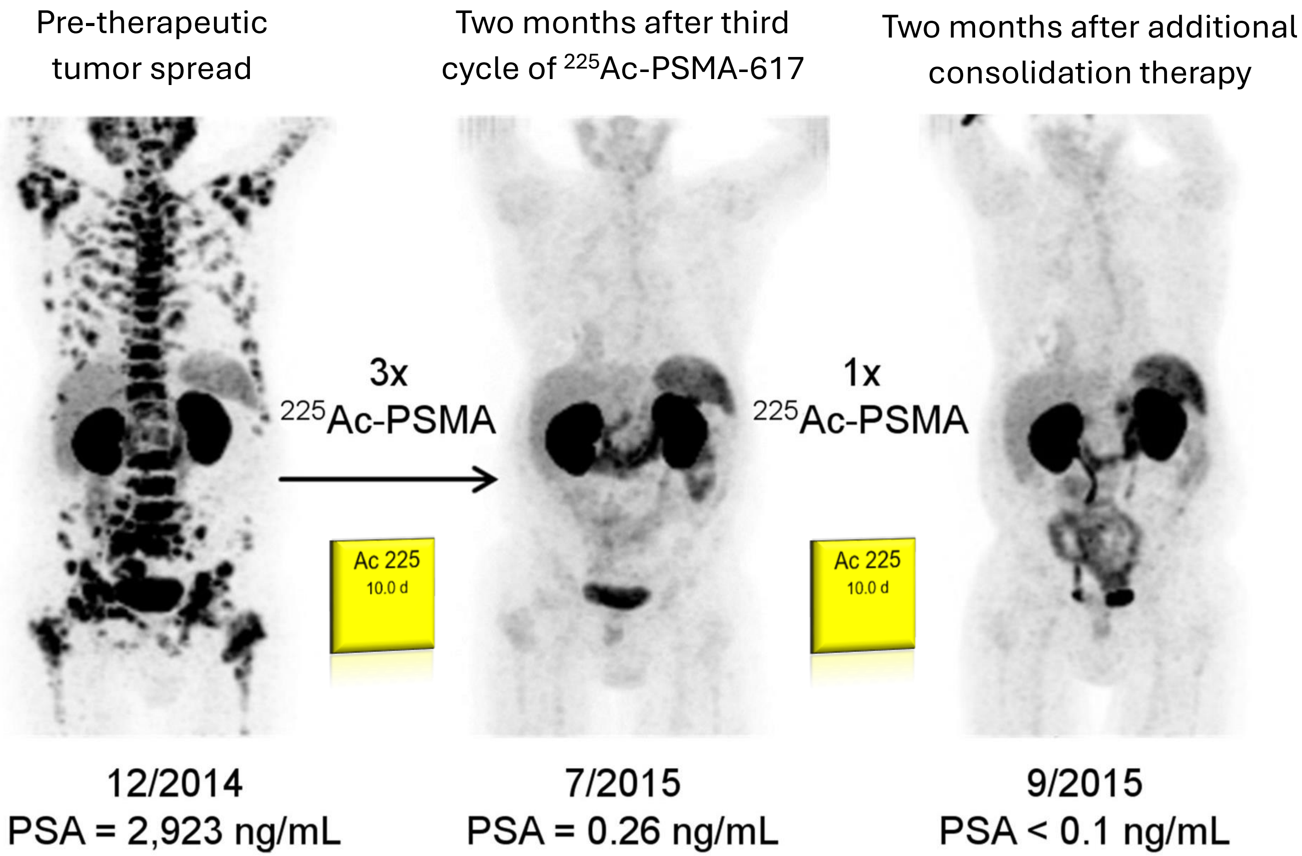
PSMA-targeting radioligand

α-Therapy



PSMA-617



Kratochwil et al. **2016**, J Nucl Med Mol Imaging 57:1941.

^{225}Ac-based Radioligand Therapy

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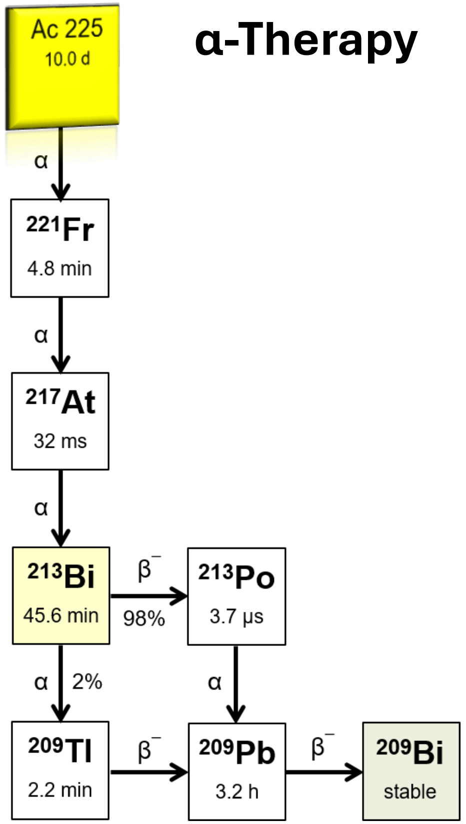
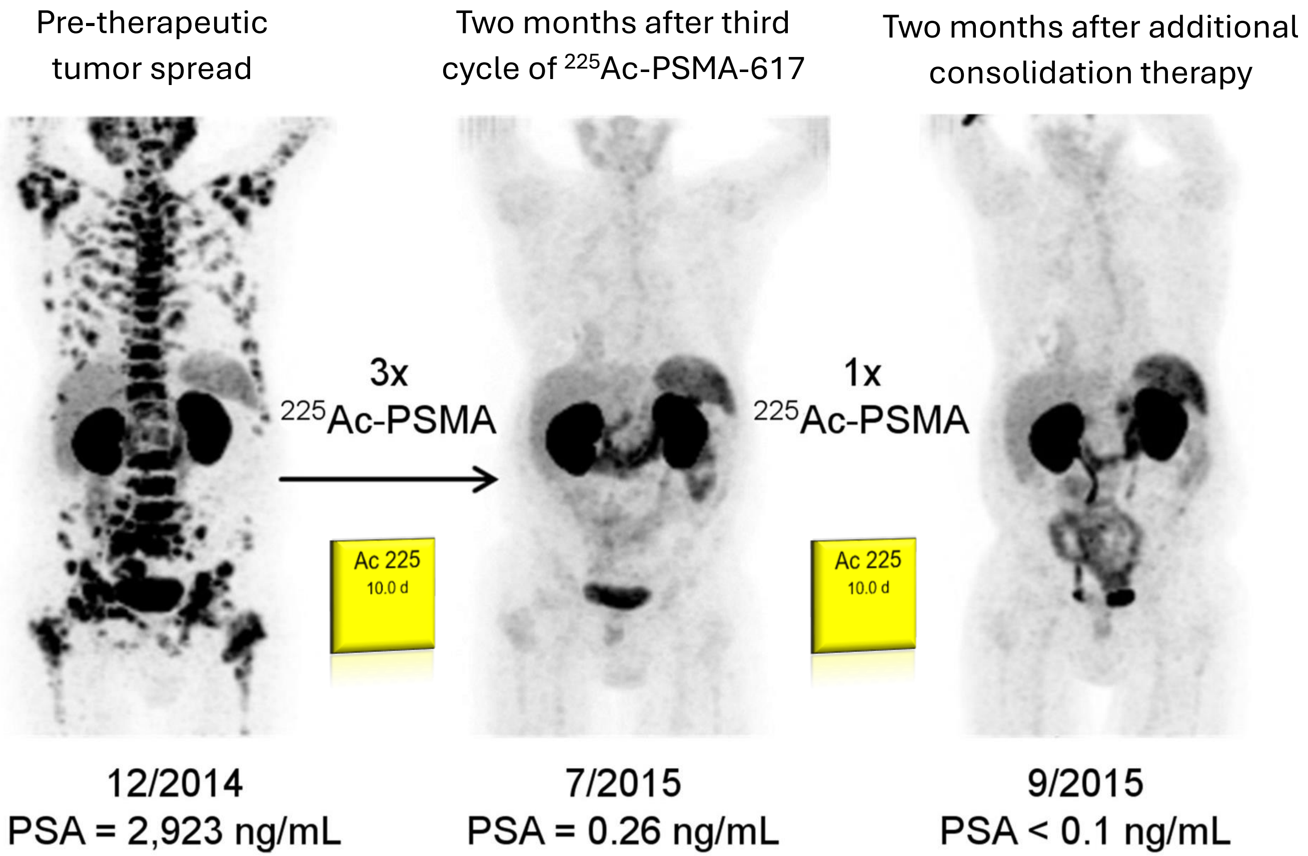
^{225}Ac decay chain



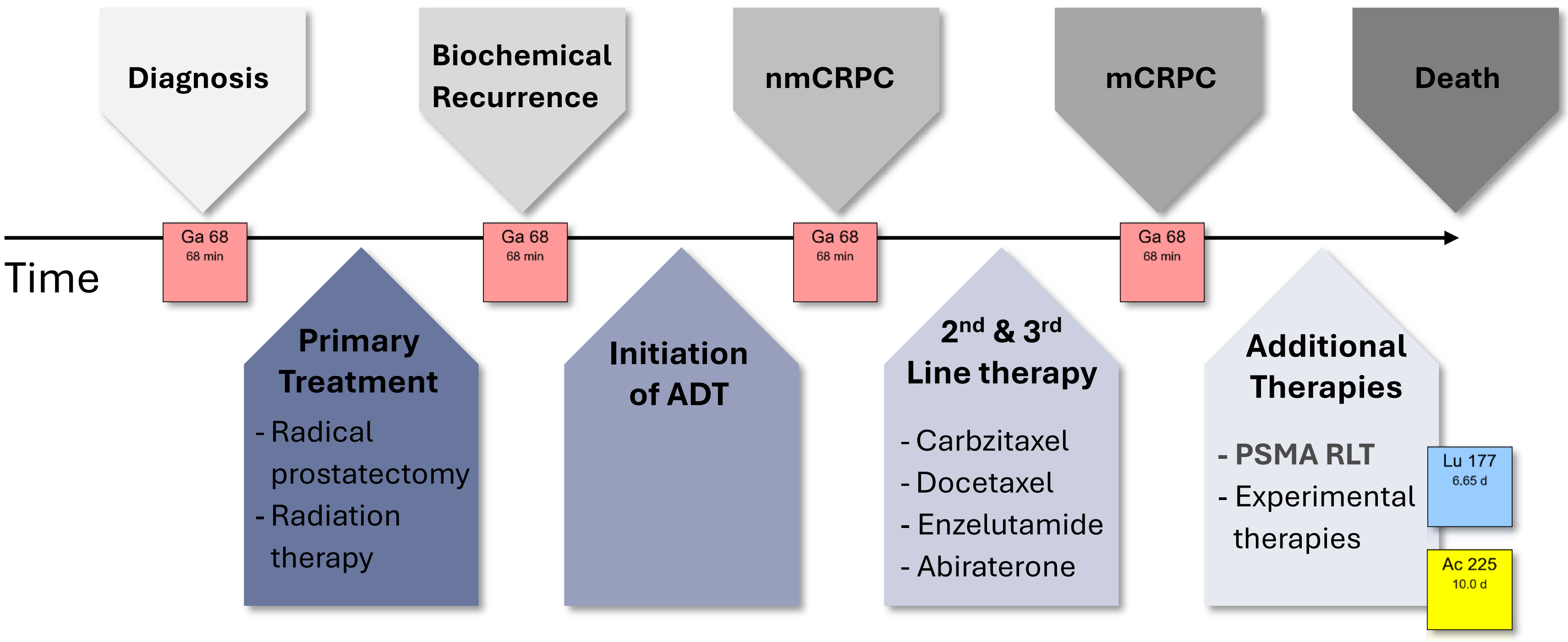


Kratochwil et al. **2016**, J Nucl Med Mol Imaging 57:1941.

➡ *^{225}Ac is effective to eliminate micrometastases but may cause severe side effects.*

Current Application of PSMA Radioligands

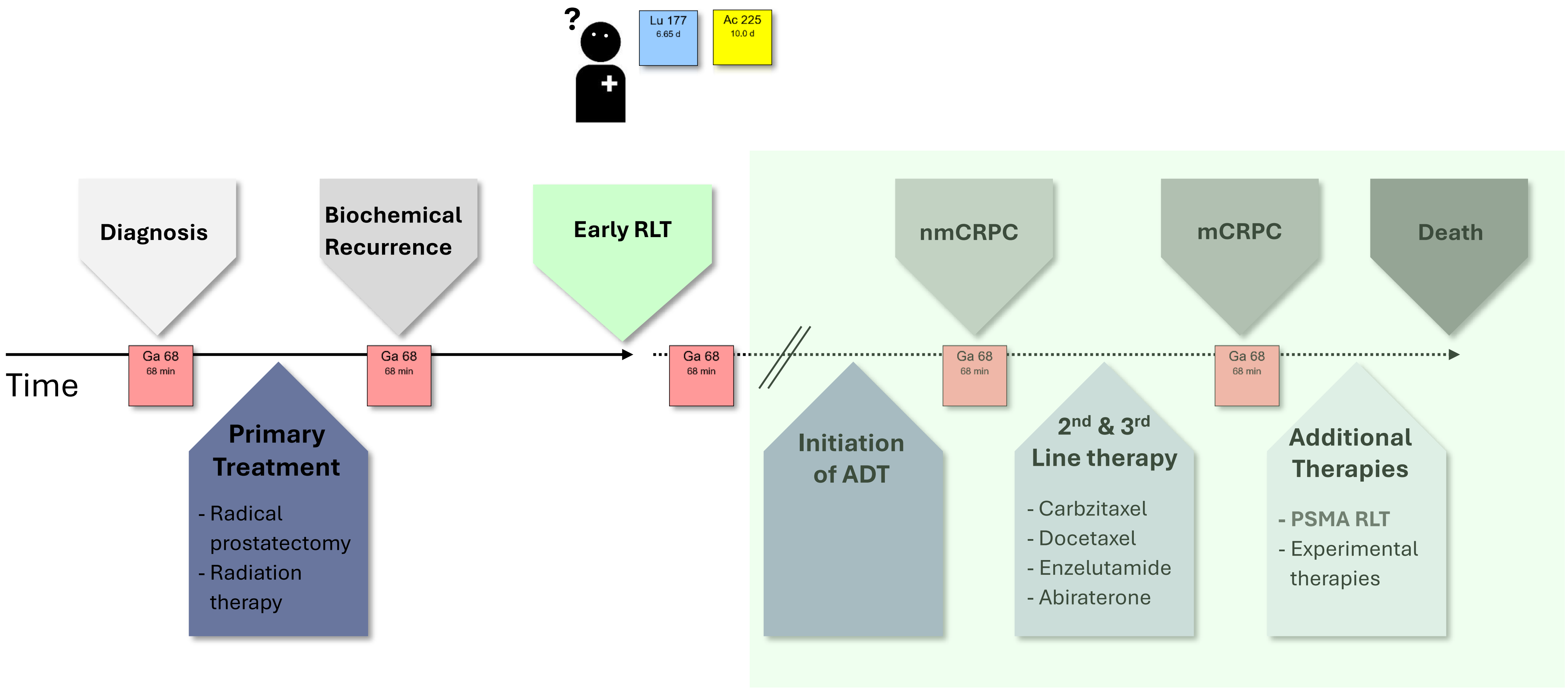
Key clinical events during the course of prostate cancer



Typical treatment Options

Lawhn-Heath et al. **2021** Radiology 299:248.

Application of RLT at an Earlier Disease Stage



Privé et al. **2020** BMC Cancer 20:884.

Lawhn-Heath et al. **2021** Radiology 299:248.

Comparison of ^{161}Tb and ^{177}Lu

Decay characteristics

Nuclide	$T_{1/2}$	β^--energy (mean)	γ radiation; energy (%)	Conversion & Auger electrons
Lu 177 6.65 d	6.65 days	134 keV	54 keV (4%) 113 keV (6%) 208 keV(10%)	No
Tb 161 6.95 d	6.95 days	154 keV	45 keV (18%) 49 keV (17%) 75 keV (10%)	**Yes!**

**Auger electrons: energy: 20 eV-1 keV; tissue range: 2-500 nm; LET: 4-26 keV/µm*

Treatment of Macro- and Micrometastases

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Decay characteristics

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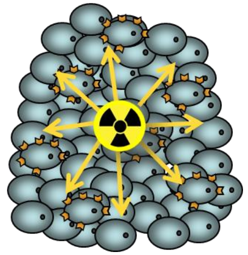
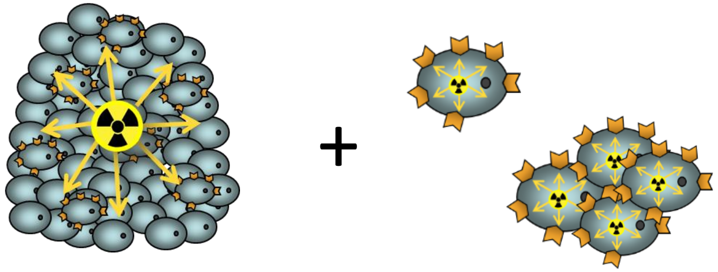
Hypothesis

Macrometastases	Single Cancer Cells & Cancer Cell Clusters





Theoretical Dose Calculations

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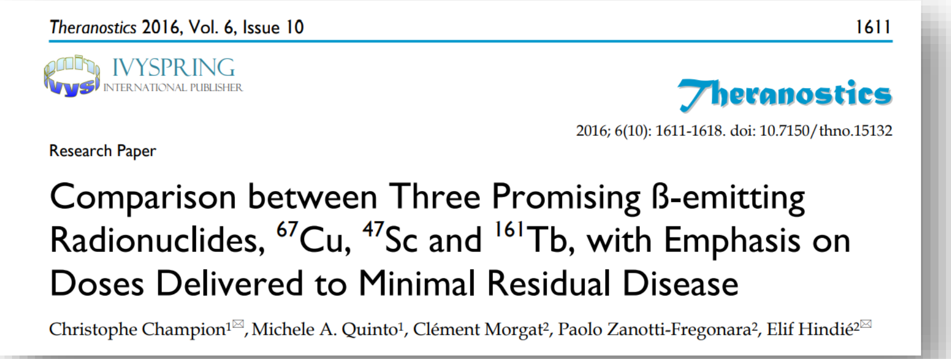
Dose calculations


Theranostics 2016, Vol. 6, Issue 10 1611

IVYSPRING INTERNATIONAL PUBLISHER

Theranostics

2016; 6(10): 1611-1618. doi: 10.7150/thno.15132

Research Paper

Comparison between Three Promising ß-emitting Radionuclides, ^{67}Cu, ^{47}Sc and ^{161}Tb, with Emphasis on Doses Delivered to Minimal Residual Disease

Christophe Champion[1]✉, Michele A. Quinto[1], Clément Morgat[2], Paolo Zanotti-Fregonara[2], Elif Hindié[2]✉

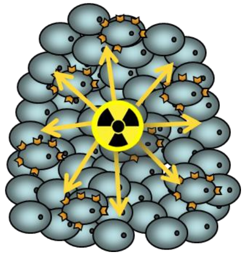
Theoretical dose calculations:

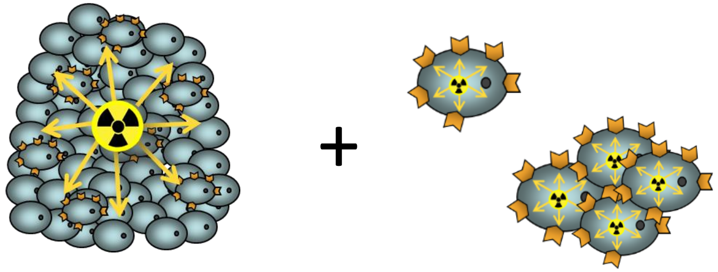
The absorbed dose in single cancer cells or cell monolayers is 3-4-fold increased when using ^{161}Tb as compared to ^{177}Lu.

Champion et al. 2016, Theranostics

Hypothesis

Macrometastases	Single Cancer Cells & Cancer Cell Clusters





More than a Decade of Preclinical Work with ^{161}Tb

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Universitätsspital Basel

Müller et al.
^{149}Tb-, ^{152}Tb-, ^{155}Tb-, ^{161}Tb-folate
JNM 2012

Müller et al.
^{161}Tb-folate & ^{177}Lu-folate: Therapy
EJNMMI 2014

Müller et al.
^{161}Tb-PSMA-617: Therapy
EJNMMI 2019

Baum et al.
^{161}Tb-DOTATOC: First-in-human
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^{161}Tb-DOTA-LM3 Clinical Image
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Busslinger et al.
^{161}Tb-DOTA-LM3 & ^{161}Tb-DOTATATE Tolerability
EJNMMI 2024

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EANM'18 Düsseldorf

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2011 2012 2014 2016 2018 2020 2022 2023 2024

Tb 161
6.95 d

The articles mentioned above are a selection; additional articles about production and preclinical research have been published.

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Marie Curie Award

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2011 | 2012 | 2014 | 2016 | 2018 | 2020 | 2022 | 2023 | 2024

Tb 161
6.95 d

The articles mentioned above are a selection; additional articles about production and preclinical research have been published.

Preclinical Work with ^{161}Tb: Somatostatin Analogues

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Universitätsspital Basel

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Somatostatin Analogues

Application of ^{161}Tb with Somatostatin Analogues

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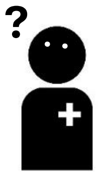
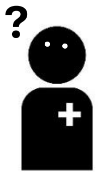


Application of ^{161}Tb in combination with somatostatin analogues?

NET Research Foundation Grant for ^{161}Tb Research



Application of ^{161}Tb in combination with somatostatin analogues?

NETRF Petersen Award 2018 to investigate the utility of ^{161}Tb in combination with DOTATOC

NEUROENDOCRINE TUMOR RESEARCH FOUNDATION

DEDICATED TO CURING NEUROENDOCRINE CANCER

R. Schibli
R.P. Baum
N.P. van der Meulen
C. Müller

Goal: Further development of ^{161}Tb and translation of ^{161}Tb-DOTATOC to a first-in-human application.

First Patient Image of a ^{161}Tb-based Radiopharmaceutical

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"First-in-human" application

Zentralklinik Bad Berka, Germany

R. Baum

P. Bernhardt

Baum & Singh et al. **2021**, J Nucl Med 62:1391.

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Application of ^{161}Tb with Somatostatin Receptor Antagonists?

"First-in-human" application

R. Baum

P. Bernhardt

Zentralklinik Bad Berka, Germany

Baum & Singh et al. **2021**, J Nucl Med 62:1391.

Application of ^{161}Tb in combination with SST receptor **antagonists**?

^{161}Tb Outperforms ^{177}Lu also when Localized at the Membrane

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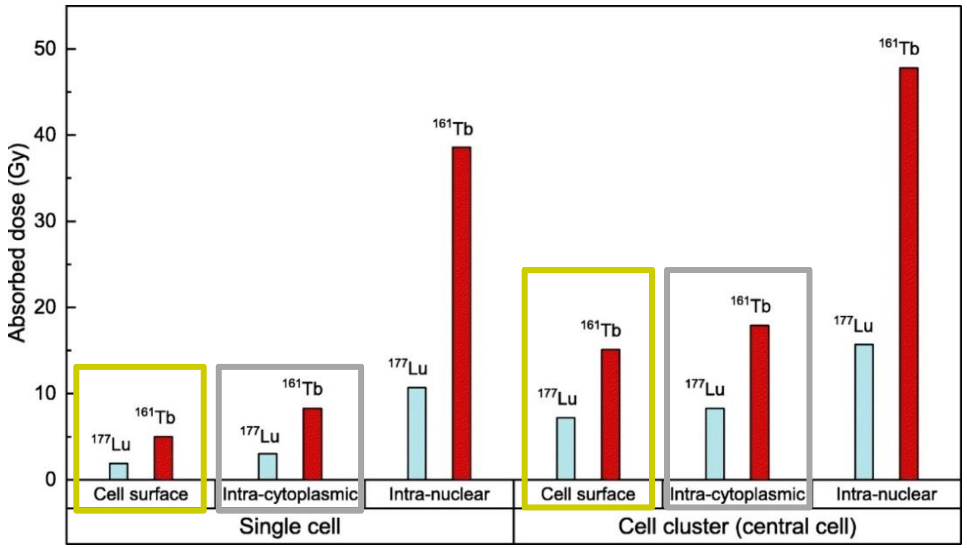
"Dose calculations"



*^{161}Tb should be a better candidate than ^{177}Lu for irradiating single tumor cells and micrometastases, **regardless of the radionuclide distribution.***

Application of ^{161}Tb in combination with SST receptor **antagonists**?

Alcocer-Ávila et al. **2020** EJNMMI Res 7:33

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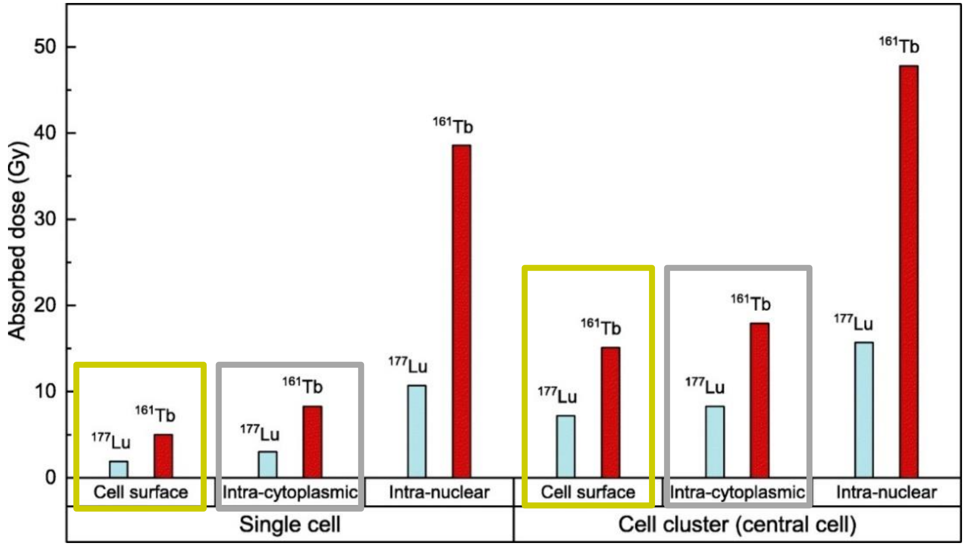

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Alcocer-Ávila et al. **2020** EJNMMI Res 7:33

Enhancement factor (single cell)

	Cell surface	Intra-cyto-plasmatic	Whole cell	Intra-nuclear
^{177}Lu	1.9	3.0	5.8	10.7
^{161}Tb	5.0	8.3	19.5	38.6
^{161}Tb/^{177}Lu	**2.6**	**2.8**	**3.4**	**3.6**

Alcocer-Ávila et al. **2020** EJNMMI Res 7:33

The Use of SSTR Antagonists with ^{161}Tb makes Sense

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Application of ^{161}Tb in combination with SST receptor **antagonists**?

The comparison of SST receptor agonists (internalizing peptide) and SST receptor antagonists (non-internalizing peptide) with terbium-161 makes sense.

Enhancement factor (single cell)

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Comparison of ^{161}Tb and ^{177}Lu with DOTATOC and DOTA-LM3

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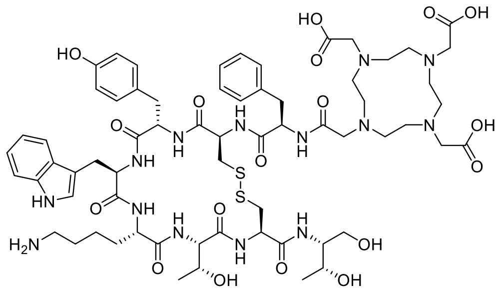
Application of ^{161}Tb in combination with SST receptor **antagonists**?

The comparison of SST receptor agonists (internalizing peptide) and SST receptor antagonists (non-internalizing peptide) with terbium-161 makes sense.

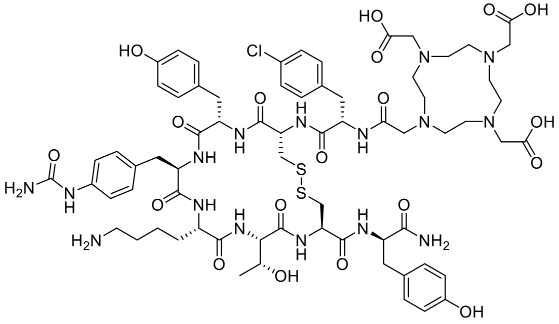
DOTATOC

Cell-internalizing SSTR agonist



DOTA-LM3

Non-internalizing SSTR antagonist



In Vitro Cell Viablity Study: ^{161}Tb *vs.* ^{177}Lu

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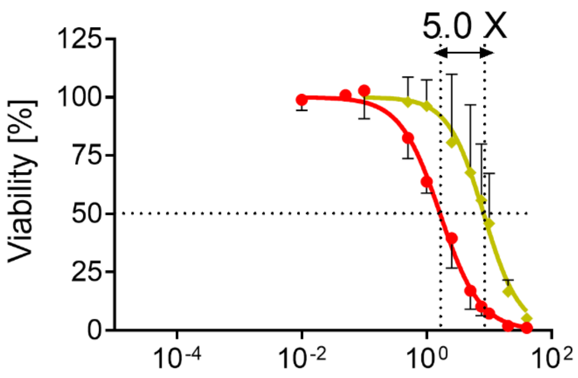
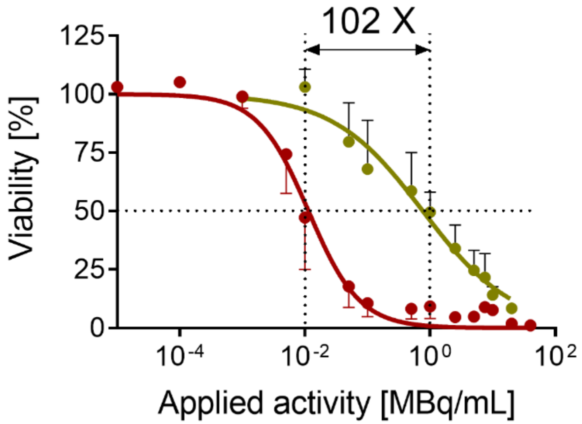
Tumor cell viability (MTT)



AR42J tumor cells

- ^{161}Tb-DOTATOC
- ^{177}Lu-DOTATOC



AR42J tumor cells

- ^{161}Tb-DOTA-LM3
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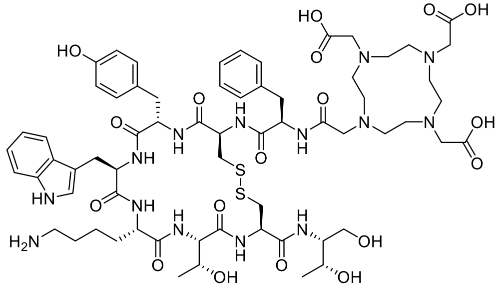
Borgna et al. **2022** Eur J Nucl Med Mol Imaging 49:1113.

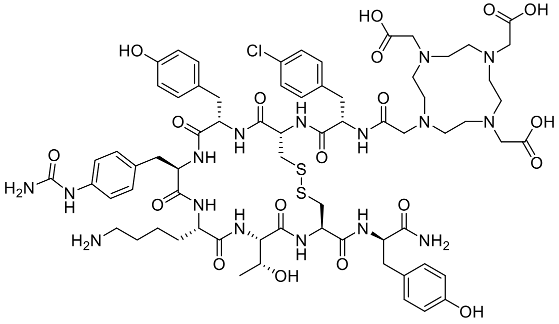
DOTATOC

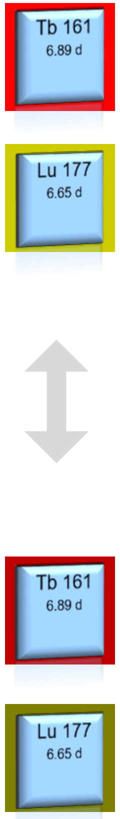
Cell-internalizing SSTR agonist



DOTA-LM3

Non-internalizing SSTR antagonist





In Vitro Cell Uptake Study: Agonist *vs.* Antagonist

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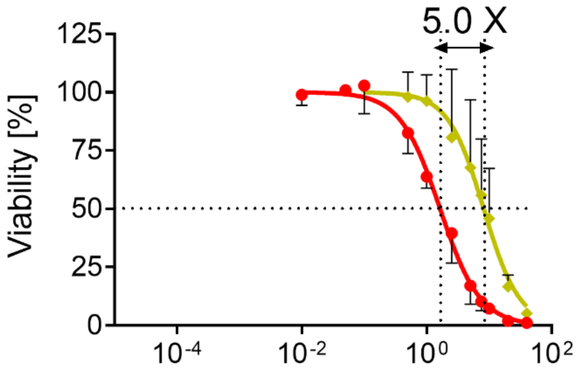
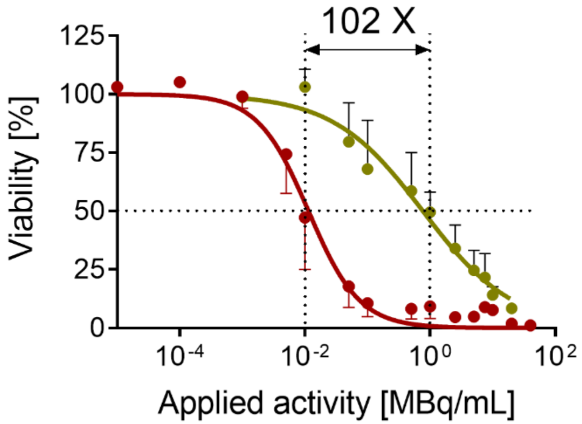
Tumor cell viability (MTT)



AR42J tumor cells

^{161}Tb-DOTATOC

^{177}Lu-DOTATOC

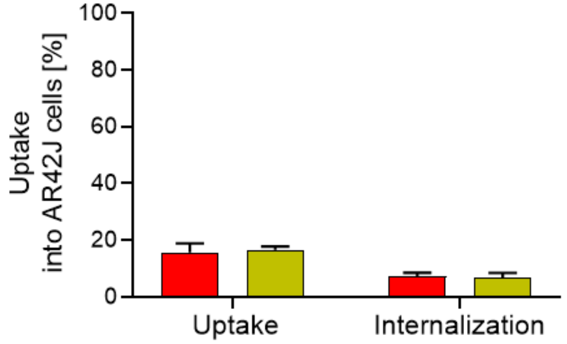


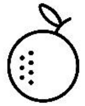
AR42J tumor cells

^{161}Tb-DOTA-LM3

^{177}Lu-DOTA-LM3

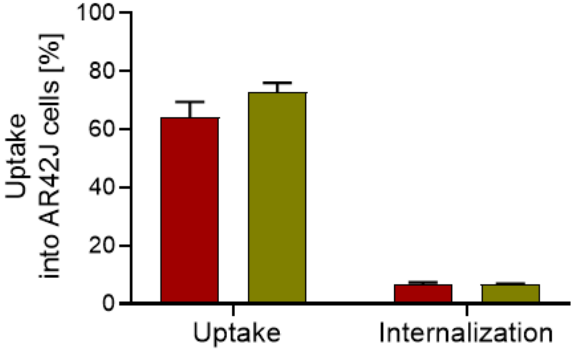
Cell uptake & internalization





^{161}Tb-DOTATOC

^{177}Lu-DOTATOC



^{161}Tb-DOTA-LM3

^{177}Lu-DOTA-LM3

Borgna et al. **2022** Eur J Nucl Med Mol Imaging 49:1113.

Equal Tissue Distribution of ^{161}Tb- & ^{177}Lu-based Radiopeptides

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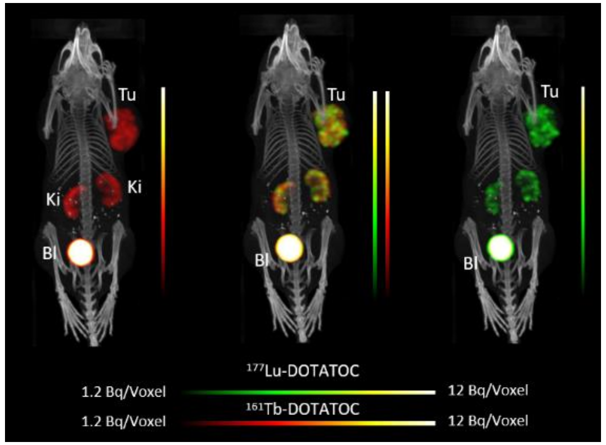
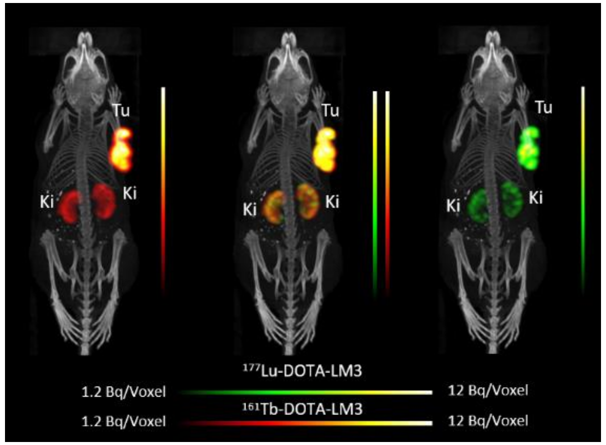
Dual-isotope SPECT imaging



DOTATOC

15 MBq ^{161}Tb
& 15 MBq ^{177}Lu;
1 nmol/mouse



DOTA-LM3

15 MBq ^{161}Tb
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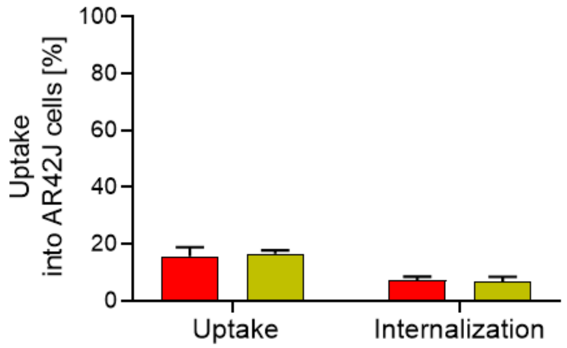
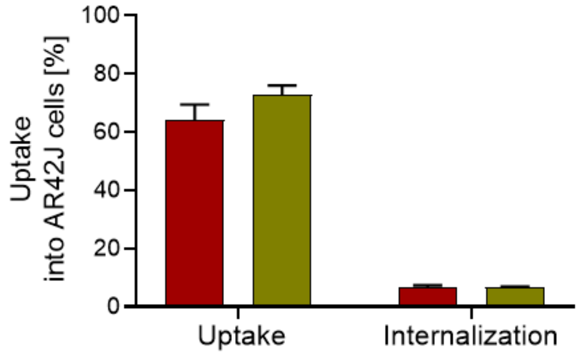
AR42J tumor bearing mice

Borgna et al. **2021** Pharmaceutics 13:536.

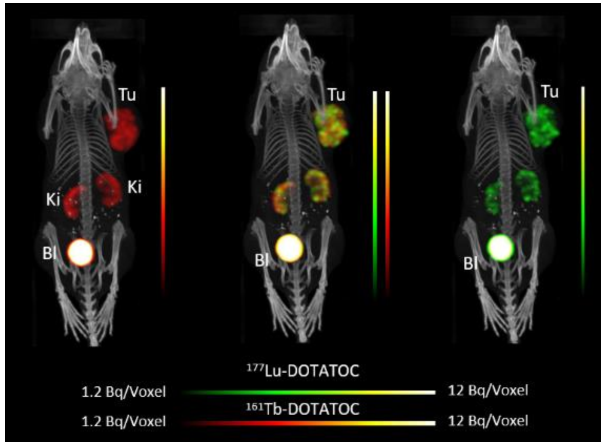
Cell uptake & internalization





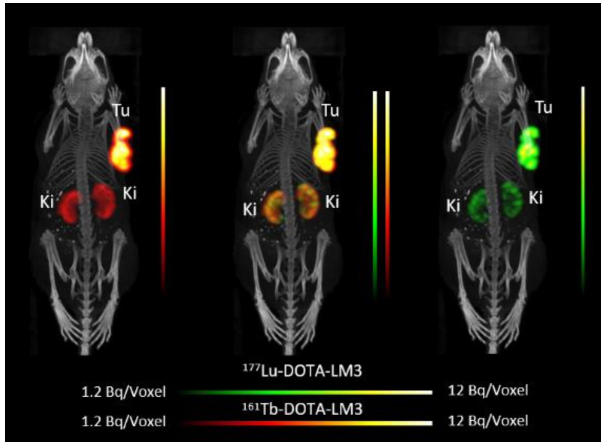
Preclinical Therapy – ^{161}Tb *vs.* ^{177}Lu & Agonist *vs* Antagonist

Dual-isotope SPECT imaging



DOTATOC

15 MBq ^{161}Tb
& 15 MBq ^{177}Lu;
1 nmol/mouse



DOTA-LM3

15 MBq ^{161}Tb
& 15 MBq ^{177}Lu;
1 nmol/mouse

AR42J tumor bearing mice

Borgna et al. **2021** Pharmaceutics 13:536.

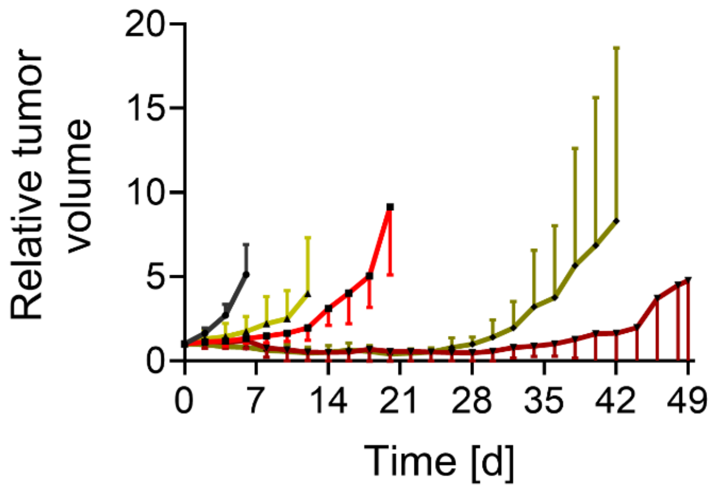
How does ^{161}Tb perform compared to ^{177}Lu for SST receptor targeted therapy?

Preclinical therapy study in AR42J-tumor-bearing mice injected with 2 x 10 MBq of the respective SST analogue.

Preclinical Therapy – Tumor Growth Curves

PSI

Tumor growth curves



- Control (untreated)
- ^{161}Tb-DOTATOC (2 x 10 MBq)
- ^{161}Tb-DOTA-LM3 (2 x 10 MBq)
- ^{177}Lu-DOTATOC (2 x 10 MBq)
- ^{177}Lu-DOTA-LM3 (2 x 10 MBq)

How does ^{161}Tb perform compared to ^{177}Lu for SST receptor targeted therapy?

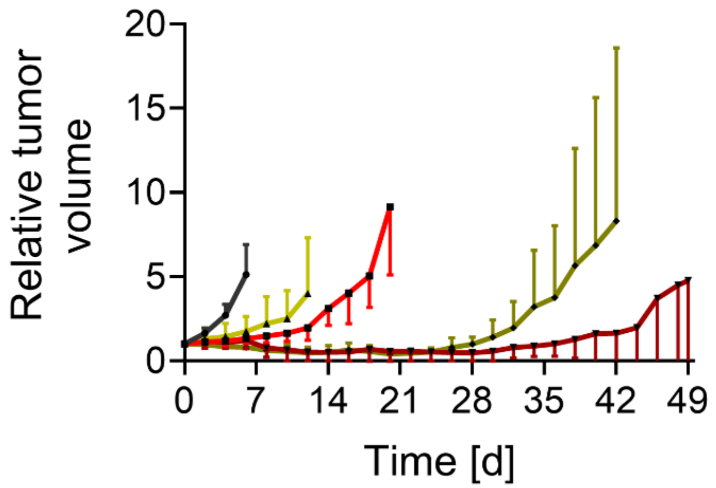
Preclinical therapy study in AR42J-tumor-bearing mice injected with 2 x 10 MBq of the respective SST analogue.

Borgna et al. **2021** Pharmaceutics 13:536.

Preclinical Therapy – Survival Curves

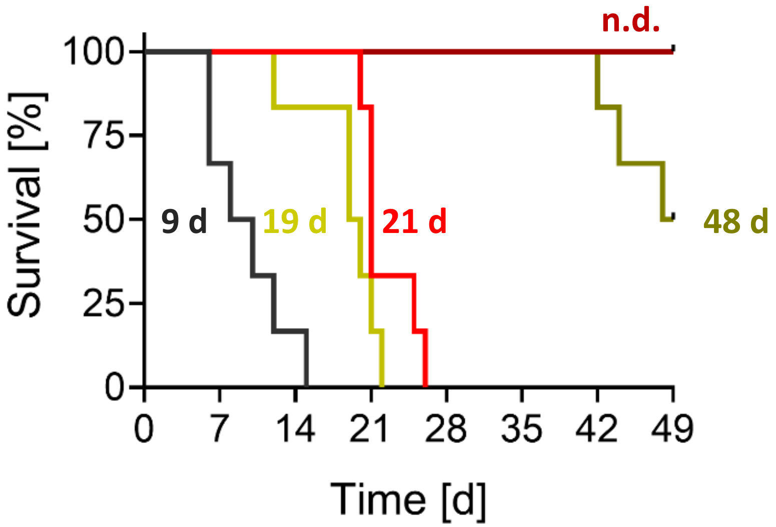
PSI

Tumor growth curves



■ Control (untreated)
■ ^{161}Tb-DOTATOC (2 x 10 MBq)
■ ^{161}Tb-DOTA-LM3 (2 x 10 MBq)
■ ^{177}Lu-DOTATOC (2 x 10 MBq)
■ ^{177}Lu-DOTA-LM3 (2 x 10 MBq)

Survival curves



■ Control (untreated)
■ ^{161}Tb-DOTATOC (2 x 10 MBq)
■ ^{161}Tb-DOTA-LM3 (2 x 10 MBq)
■ ^{177}Lu-DOTATOC (2 x 10 MBq)
■ ^{177}Lu-DOTA-LM3 (2 x 10 MBq)

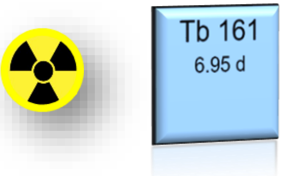
Borgna et al. **2021** Pharmaceutics 13:536.

«BETA PLUS» Clinical Translation of ^{161}Tb-DOTA-LM3

PSI

Combined Beta- Plus Auger Electron Therapy Using a Novel Somatostatin Receptor Subtype 2 Antagonist Labelled with Terbium-161 (**^{161}Tb-DOTA-LM3**)

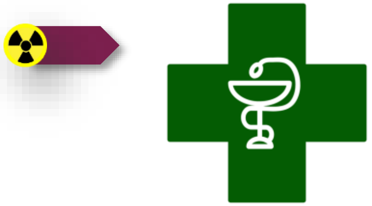
Production of ^{161}Tb



Reactor & Radiochemistry Labs

N. van der Meulen

Radioligand Preparation



GMP Labs, PSI

S. Geistlich

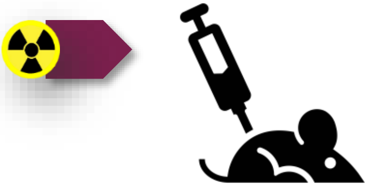
Universitätsspital Basel

R. Schibli D. Wild

PSI

NCT05359146

^{161}Tb-DOTA-LM3



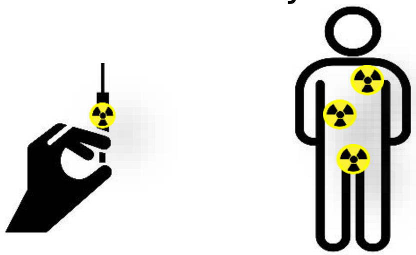
Preclinical Studies, CRS

C. Müller

Tschan et al. **2023** J Nucl Med 00:1.

Swiss National Science Foundation

Clinical Study



University Hospital Basel

J. Fricke

Tolerability Study in Mice (without Tumors)

PSI

Study design

Immuncompetent, female mice (FVB)

Control (untreated)

^{161}Tb-DOTA-LM3 (20 MBq) ^{161}Tb-DOTATATE (20 MBq)

Peptide mass: 0.2 nmol peptide per mouse

- Blood was taken from the sublingual vein to determine blood cell counts and prepare blood smears at: Day 10, Day 28 and Day 56 after application

- At Day 56, full necropsy was performed:
  - Mass of liver, kidneys, spleen and brain and respective ratios
  - blood plasma parameters (BUN, ALP, TBIL, ALB)

Busslinger & Mapanao et al. **2024** Eur J Nucl Med Mol Imaging, ahead of print.

Tolerability Study: Blood Cell Counts

PSI

Study design

Immuncompetent, female mice (FVB)

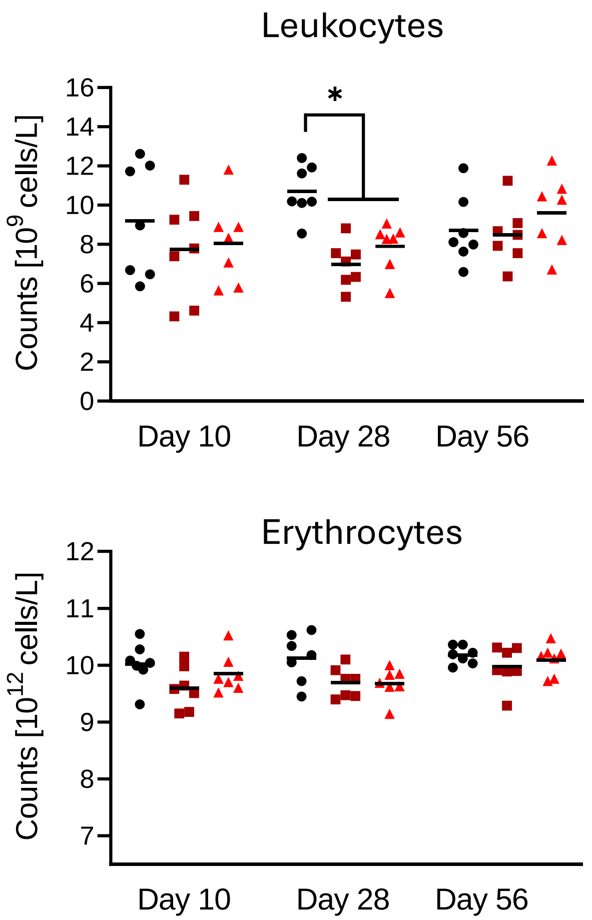
- Control (untreated)
- ^{161}Tb-DOTA-LM3 (20 MBq)
- ^{161}Tb-DOTATATE (20 MBq)

Peptide mass: 0.2 nmol peptide per mouse

- Blood was taken from the sublingual vein to determine blood cell counts and prepare blood smears at: Day 10, Day 28 and Day 56 after application
- At Day 56, full necropsy was performed:
  - Mass of liver, kidneys, spleen and brain and respective ratios
  - blood plasma parameters (BUN, ALP, TBIL, ALB)

Busslinger & Mapanao et al. **2024** Eur J Nucl Med Mol Imaging, ahead of print.

Blood cell counts



Tolerability Study: Blood Cell Counts

PSI

Study design

Immuncompetent, female mice (FVB)

Control (untreated)

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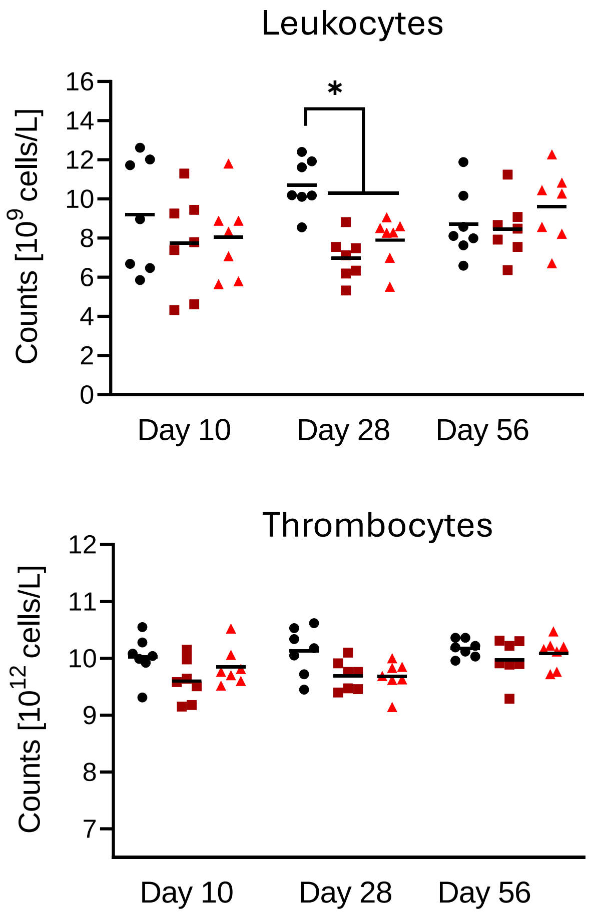
Blood cell counts



Busslinger & Mapanao et al. **2024** Eur J Nucl Med Mol Imaging, ahead of print.

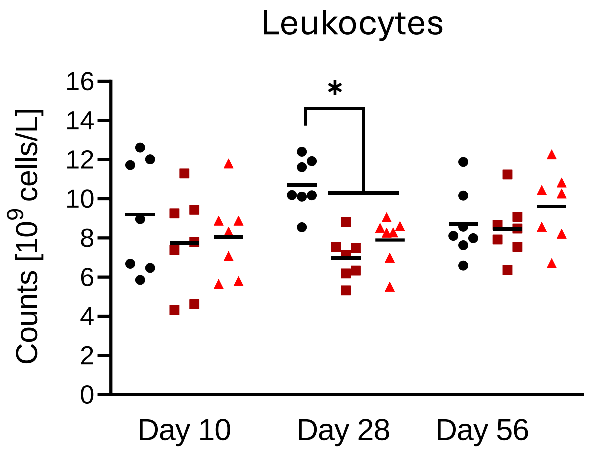
Conclusions of the Tolerability Study

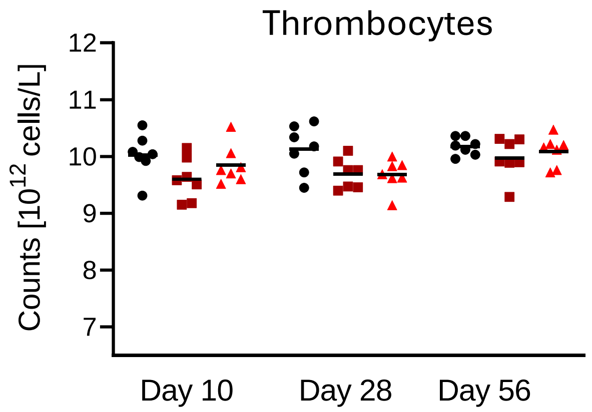
PSI

Conclusion:

- At **20 MBq** radiopeptide per mouse, no changes were determined as compared to control mice.
- At **100 MBq** radiopeptide per mouse, the blood cell counts dropped, but mostly recovered over time.
- The drop was more pronounced for the **antagonist than for the agonist** irrespective of the radionuclide.
- **^{161}Tb-labeled radiopeptides seemed to be well tolerated.**
- Based on this study, it can be assumed that **^{161}Tb-DOTA-LM3 can be used at equal activities as ^{177}Lu-DOTA-LM3** (which is lower than for the agonists)

Blood cell counts





Busslinger & Mapanao et al. **2024** Eur J Nucl Med Mol Imaging, ahead of print.

Preclinical Work with ^{161}Tb: PSMA Ligands

PSI

Zentralklinik Bad Berka

Baum et al.

^{161}Tb-DOTATOC: First-in-human

JNM 2021

Tschan et al.

^{161}Tb-SibuDAB & ^{161}Tb-PSMA-I&T: Therapy

JNM 2023

Universitätsspital Basel

Fricke et al.

^{161}Tb-DOTA-LM3 Clinical Image

EJNMMI 2024

Müller et al.

^{149}Tb-, ^{152}Tb-, ^{155}Tb-, ^{161}Tb-folate

JNM 2012

Müller et al.

^{161}Tb-folate & ^{177}Lu-folate: Therapy

EJNMMI 2014

Marie Curie Award

EANM’18 Düsseldorf

Müller et al.

^{161}Tb-PSMA-617: Therapy

EJNMMI 2019

Borgna et al.

^{161}Tb-DOTA-LM3 & ^{161}Tb-DOTATOC: Therapy

EJNMMI 2022

Busslinger et al.

^{161}Tb-DOTA-LM3 & ^{161}Tb-DOTATATE Tolerability

EJNMMI 2024

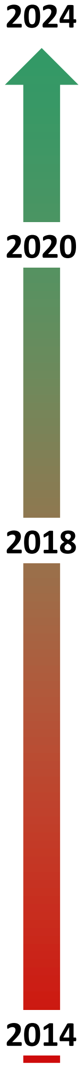
PSI

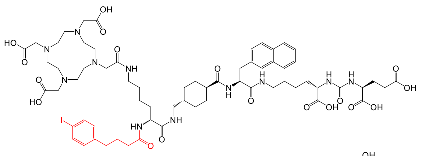
2011 2012 2014 2016 2018 2020 2022 2023 2024

PSMA Ligands

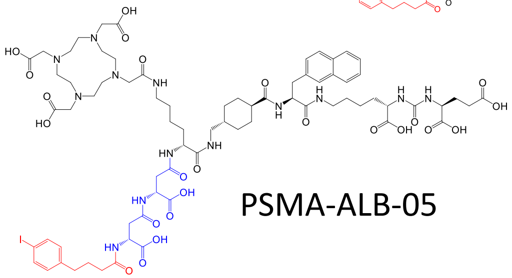
Development of New PSMA Ligands

PSI

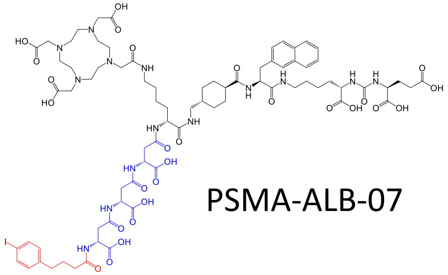




PSMA-ALB-02



PSMA-ALB-05



PSMA-ALB-07

Umbricht et al. **2018**, Mol Pharm 15:2297; Deberle & Benešová et al. **2020**, THNO 10:1678; Deberle & Benešová et al. **2020**, Theranostics 10:1678; Borgna & Deberle et al. **2022** Mol Pharm 19:2105.

Development of New PSMA Ligands

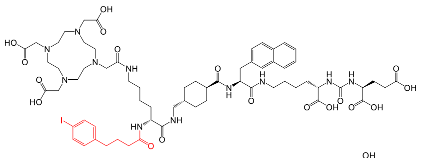
PSI

2024

2020

2018

2014



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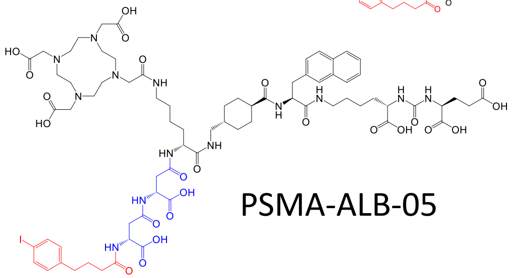

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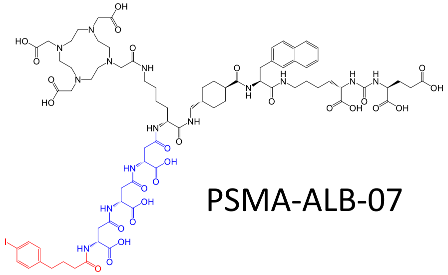

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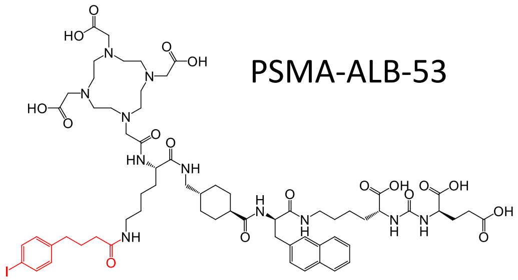
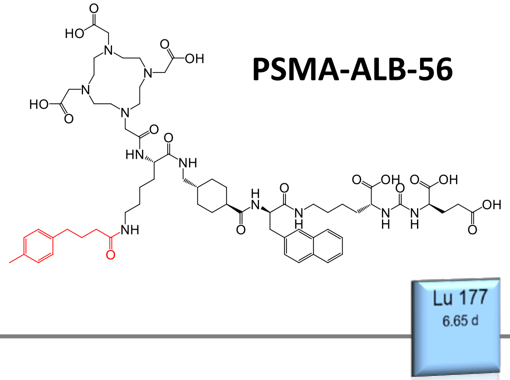


PSMA-ALB-53

Clinical Application in Santiago de Chile

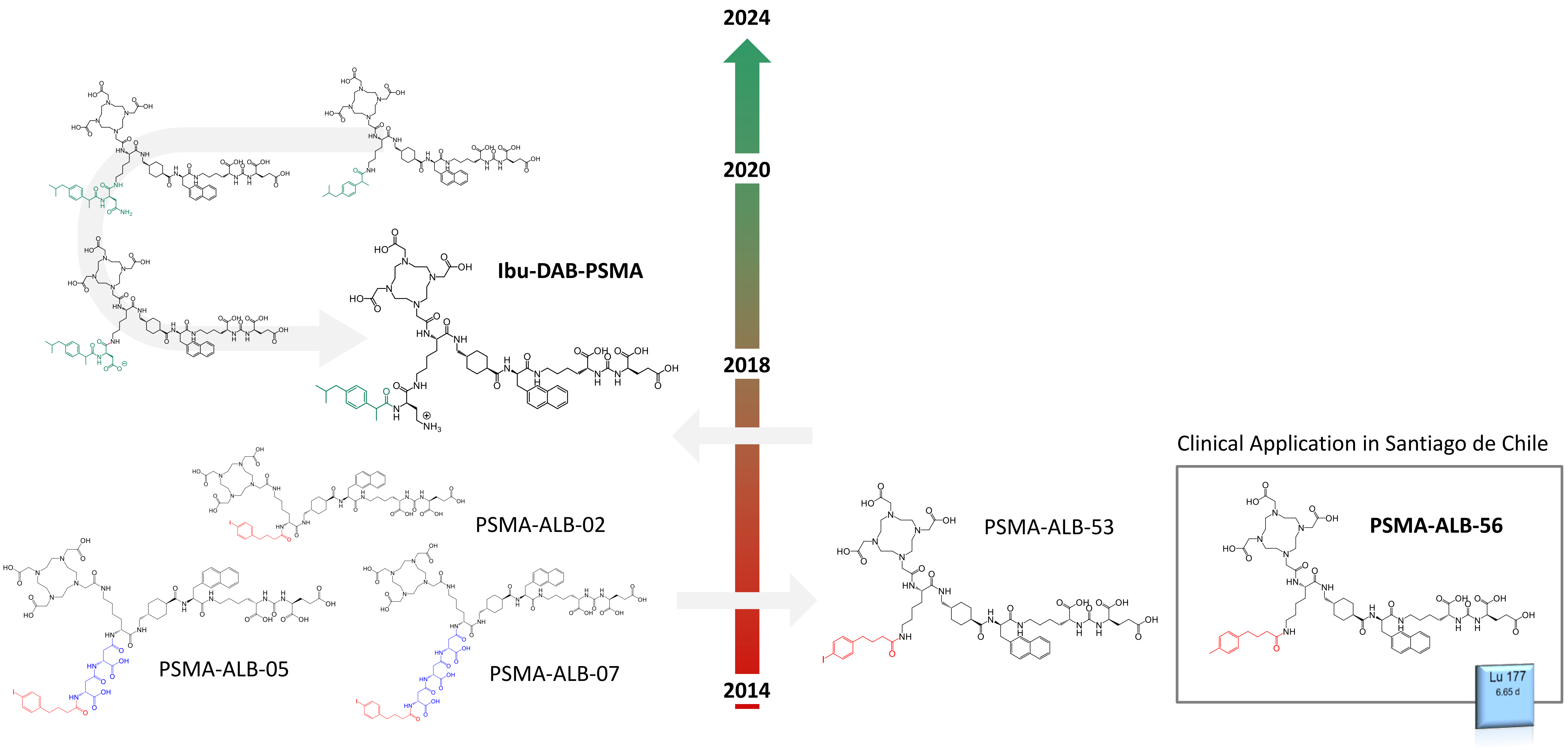


PSMA-ALB-56

Umbricht et al. **2018**, Mol Pharm 15:2297; Deberle & Benešová et al. **2020**, THNO 10:1678; Deberle & Benešová et al. **2020**, Theranostics 10:1678; Borgna & Deberle et al. **2022** Mol Pharm 19:2105.

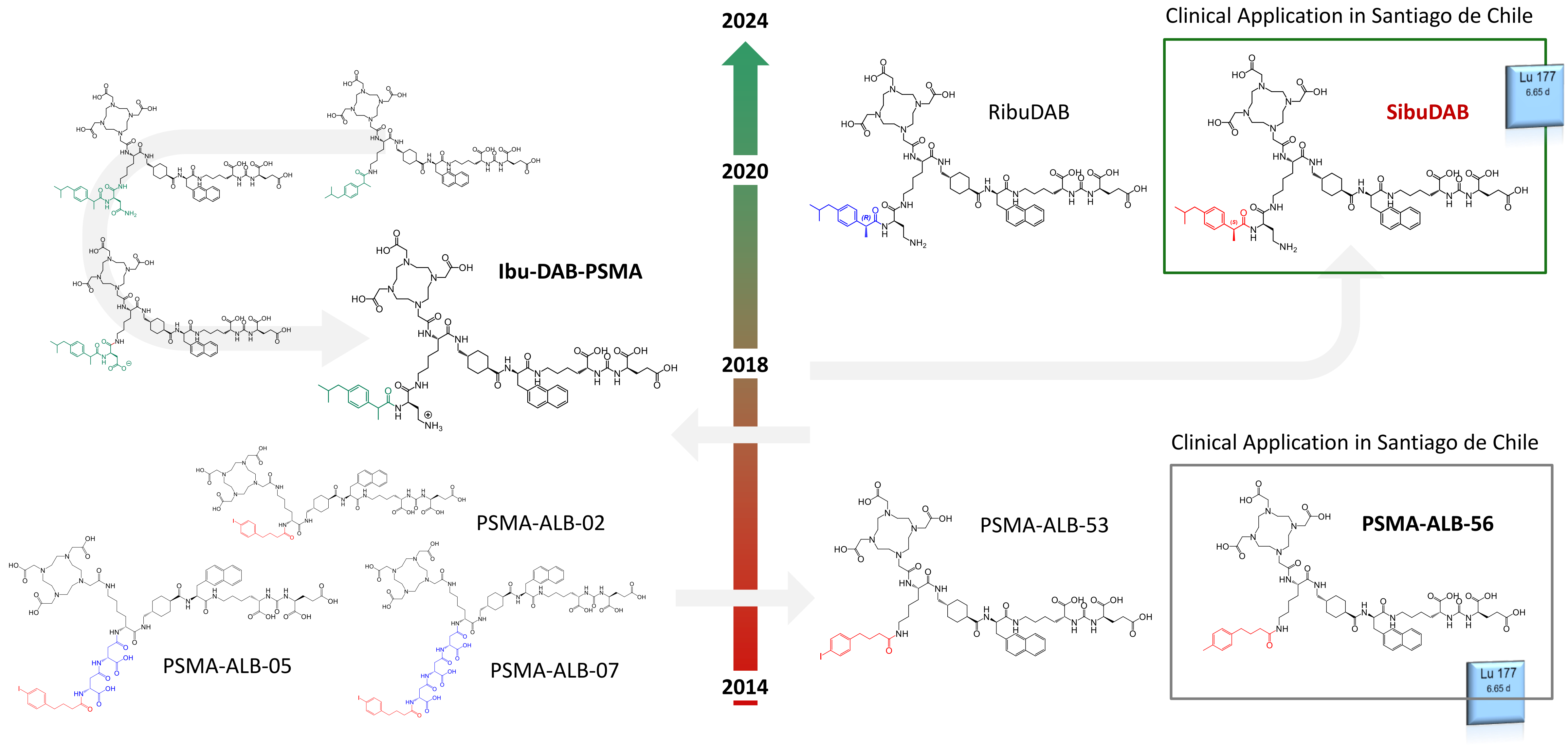
Development of New PSMA Ligands

PSI



Umbricht et al. **2018**, Mol Pharm 15:2297; Deberle & Benešová et al. **2020**, THNO 10:1678; Deberle & Benešová et al. **2020**, Theranostics 10:1678; Borgna & Deberle et al. **2022** Mol Pharm 19:2105.

Development of New PSMA Ligands



Umbricht et al. **2018**, Mol Pharm 15:2297; Deberle & Benešová et al. **2020**, THNO 10:1678; Deberle & Benešová et al. **2020**, Theranostics 10:1678; Borgna & Deberle et al. **2022** Mol Pharm 19:2105.

Development of New PSMA Ligands

PSI

European Journal of Nuclear Medicine and Molecular Imaging (2022) 49:470–480
https://doi.org/10.1007/s00259-021-05446-5

ORIGINAL ARTICLE

Check for updates

Impact of the mouse model and molar amount of injected ligand on the tissue distribution profile of PSMA radioligands

Viviane J. Tschan[1] · Francesca Borgna[1] · Roger Schibli[1,2] · Cristina Müller[1,2]

Theranostics 2020, Vol. 10, Issue 4 1678

IVYSPRING INTERNATIONAL PUBLISHER

Theranostics

2020; 10(4): 1678-1693. doi: 10.7150/thno.40482

Research Paper

Development of a new class of PSMA radioligands comprising ibuprofen as an albumin-binding entity

Luisa M. Deberle[1,2*], Martina Benešová[1,2*], Christoph A. Umbricht[2], Francesca Borgna[2], Manuel Büchler[2], Konstantin Zhernosekov[3], Roger Schibli[1,2], Cristina Müller[1,2]

molecular pharmaceutics

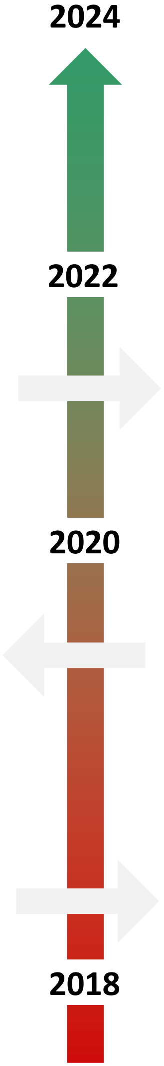
Article

Cite This: *Mol. Pharmaceutics* 2018, 15, 934−946

Albumin-Binding PSMA Ligands: Optimization of the Tissue Distribution Profile

Martina Benešová,[†,‡] Christoph A. Umbricht,[†] Roger Schibli,[†,‡] and Cristina Müller*[,†,‡]

[†]Center for Radiopharmaceutical Sciences ETH-PSI-USZ, Paul Scherrer Institut, 5232 Villigen-PSI, Switzerland
[‡]Department of Chemistry and Applied Biosciences, ETH Zurich, 8093 Zurich, Switzerland



molecular pharmaceutics

pubs.acs.org/molecularpharmaceutics Article

Preclinical Investigations to Explore the Difference between the Diastereomers [^{177}Lu]Lu-SibuDAB and [^{177}Lu]Lu-RibuDAB toward Prostate Cancer Therapy

Francesca Borgna,[§] Luisa M. Deberle,[§] Sarah D. Busslinger, Viviane J. Tschan, Laura M. Walde, Anna E. Becker, Roger Schibli, and Cristina Müller*

European Journal of Nuclear Medicine and Molecular Imaging (2021) 48:893–903
https://doi.org/10.1007/s00259-020-05022-3

ORIGINAL ARTICLE

Check for updates

Biodistribution and dosimetry of a single dose of albumin-binding ligand [^{177}Lu]Lu-PSMA-ALB-56 in patients with mCRPC

Vasko Kramer[1,2] · René Fernández[1] · Wencke Lehnert[3,4] · Luis David Jiménez-Franco[3] · Cristian Soza-Ried[1] · Elisabeth Eppard[2] · Matias Ceballos[1] · Marian Meckel[5] · Martina Benešová[6,7] · Christoph A. Umbricht[6] · Andreas Kluge[3] · Roger Schibli[6,7] · Konstantin Zhernosekov[5] · Horacio Amaral[1,2] · Cristina Müller[6,7]

molecular pharmaceutics

Article

Cite This: *Mol. Pharmaceutics* 2018, 15, 2297−2306

Preclinical Development of Novel PSMA-Targeting Radioligands: Modulation of Albumin-Binding Properties To Improve Prostate Cancer Therapy

Christoph A. Umbricht,[†] Martina Benešová,[†,‡] Roger Schibli,[†,‡] and Cristina Müller*[,†,‡]

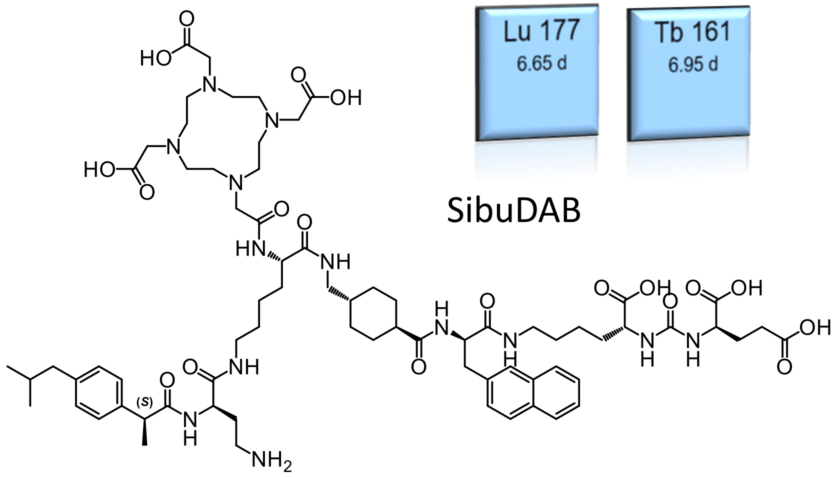
[†]Center for Radiopharmaceutical Sciences ETH-PSI-USZ, Paul Scherrer Institut, 5232 Villigen-PSI, Switzerland
[‡]Department of Chemistry and Applied Biosciences, ETH Zurich, 8093 Zurich, Switzerland

Umbricht et al. **2018**, Mol Pharm 15:2297; Deberle & Benešová et al. **2020**, THNO 10:1678.

SibuDAB in Combination with ^{161}Tb and ^{177}Lu

PSI

SibuDAB



SibuDAB

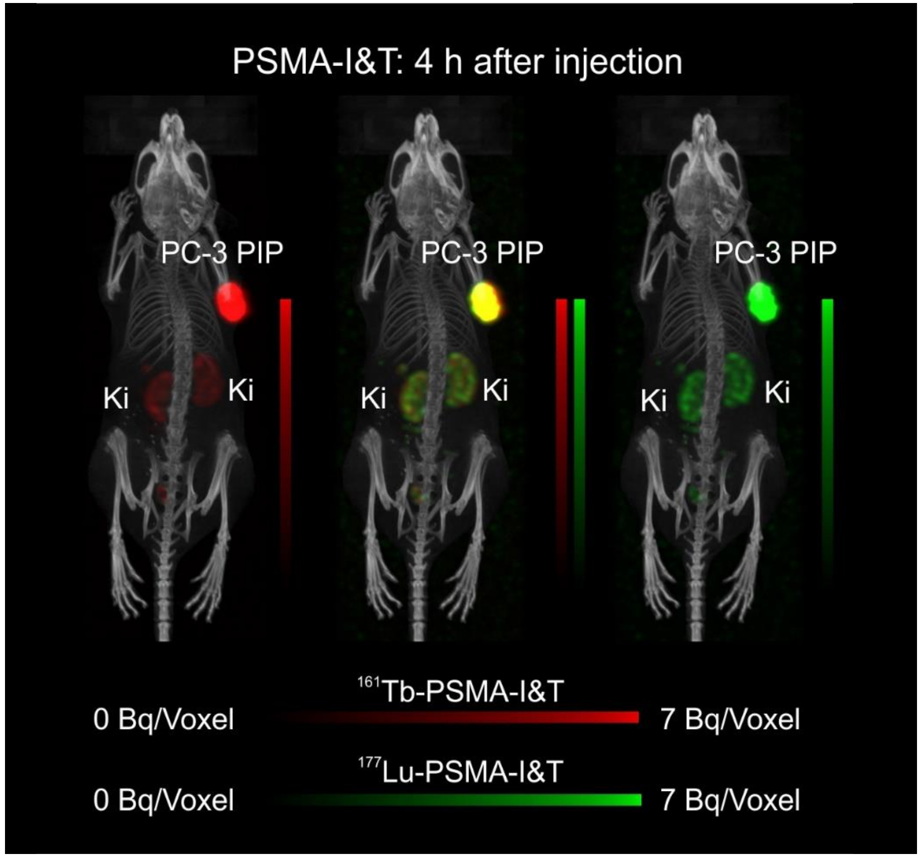
Are ^{161}Tb and ^{177}Lu interchangeable?

Deberle & Benešová et al. **2020**, Theranostics 10:1678; Borgna & Deberle et al. **2022** Mol Pharm 19:2105, **Patent** Application (ITM Medical Isotopes/CRS-PSI)

Equal Biodistribution of ^{161}Tb- and ^{177}Lu-based PSMA Ligands

PSI

PSMA-I&T

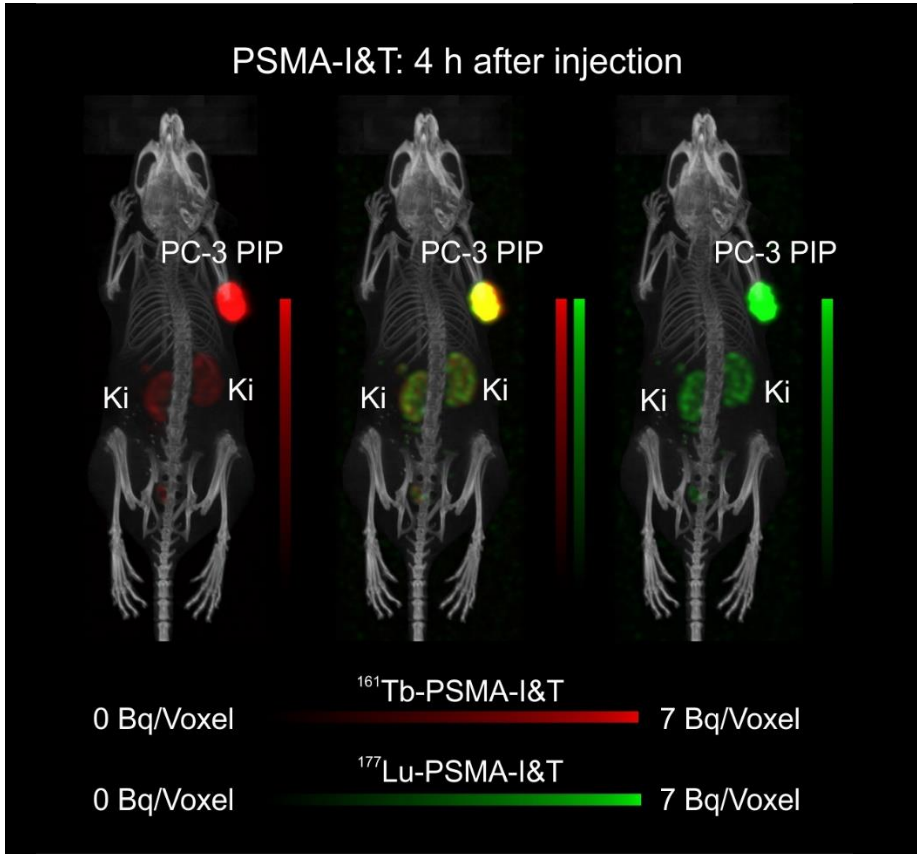


Are ^{161}Tb and ^{177}Lu interchangeable?

Tschan et al. **2023** J Nucl Med, 65:1625.

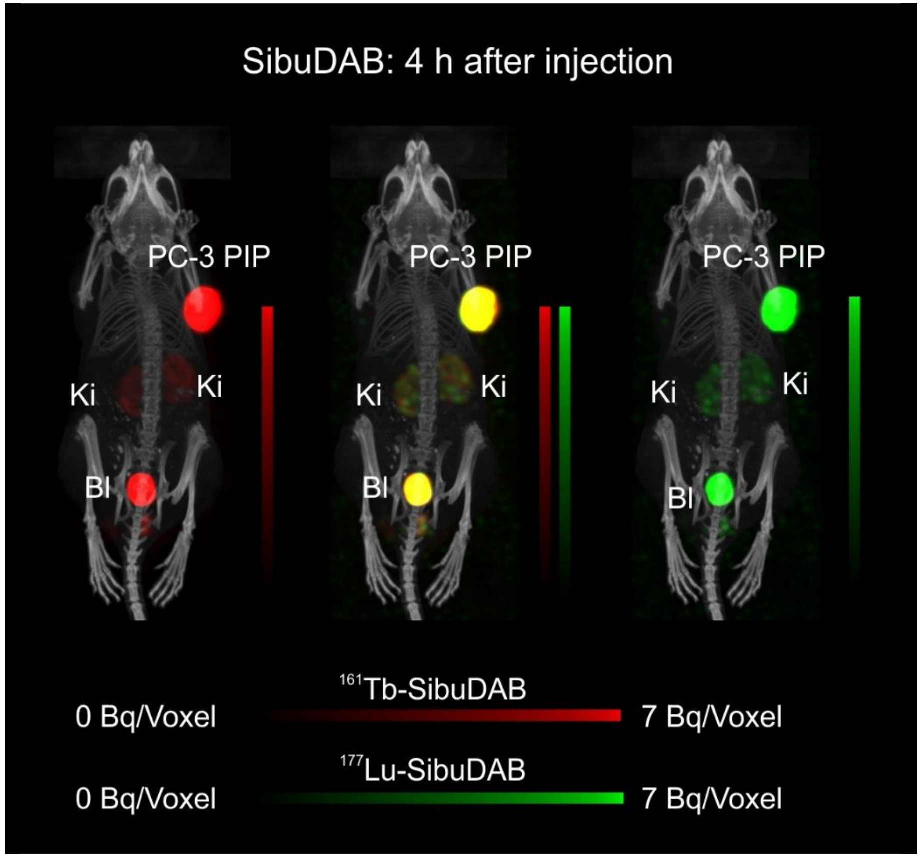
Equal Biodistribution of ^{161}Tb- and ^{177}Lu-based PSMA Ligands

PSMA-I&T



Tschan et al. **2023** J Nucl Med, 65:1625.

SibuDAB



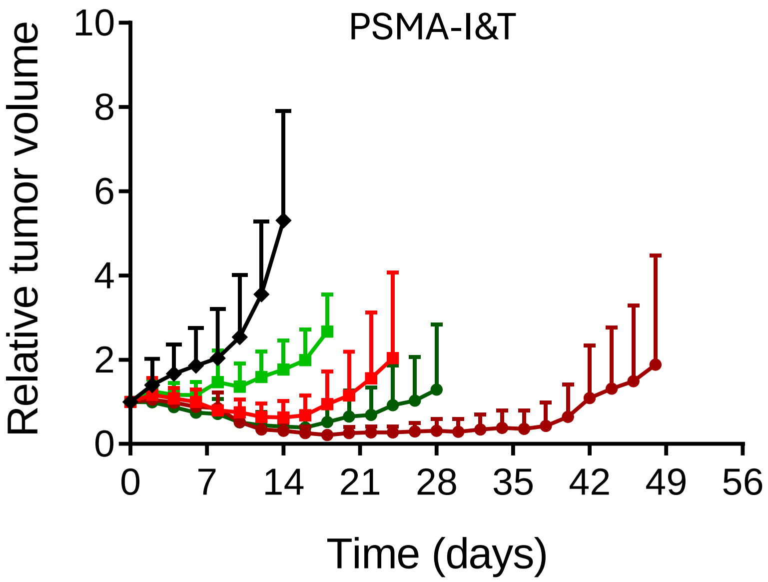
Tschan et al. **2023** J Nucl Med, 65:1625.

PSMA-I&T and SibuDAB: Tumor Growth Curves

PSI

Tumor growth curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-PSMA-I&T (5 MBq)

^{161}Tb-PSMA-I&T (10 MBq)

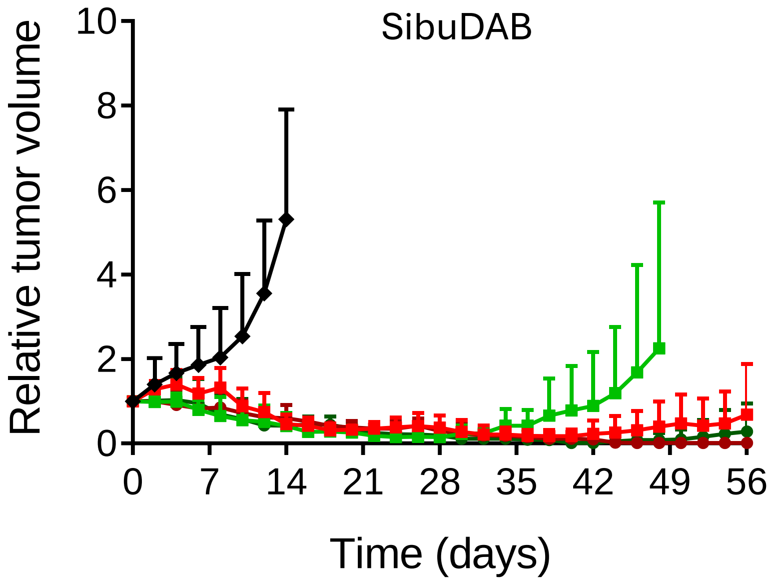
^{177}Lu-PSMA-I&T (5 MBq)

^{177}Lu-PSMA-I&T (10 MBq)

Tschan et al. **2023** J Nucl Med, 65:1625.

Tumor growth curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-SibuDAB (5 MBq)

^{161}Tb-SibuDAB (10 MBq)

^{177}Lu-SibuDAB (5 MBq)

^{177}Lu-SibuDAB (10 MBq)

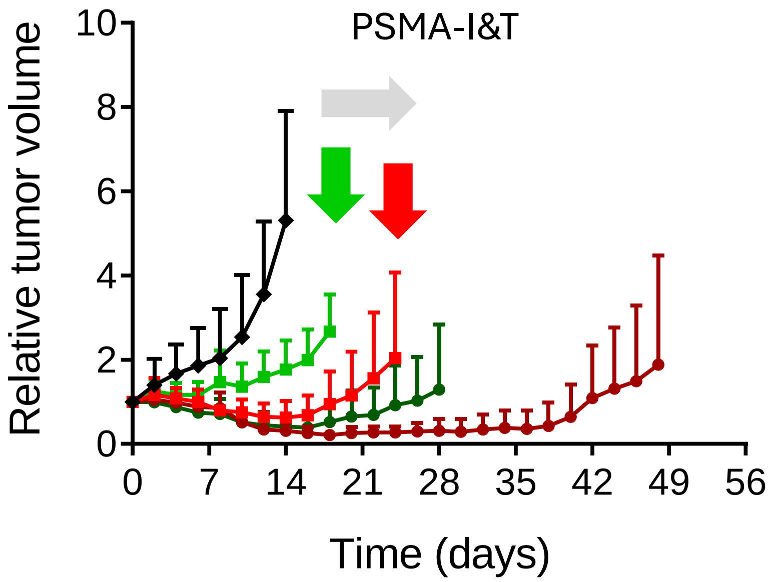
Tschan et al. **2023** J Nucl Med, 65:1625.

PSMA-I&T and SibuDAB: ^{161}Tb versus ^{177}Lu

PSI

Tumor growth curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-PSMA-I&T (5 MBq)

^{161}Tb-PSMA-I&T (10 MBq)

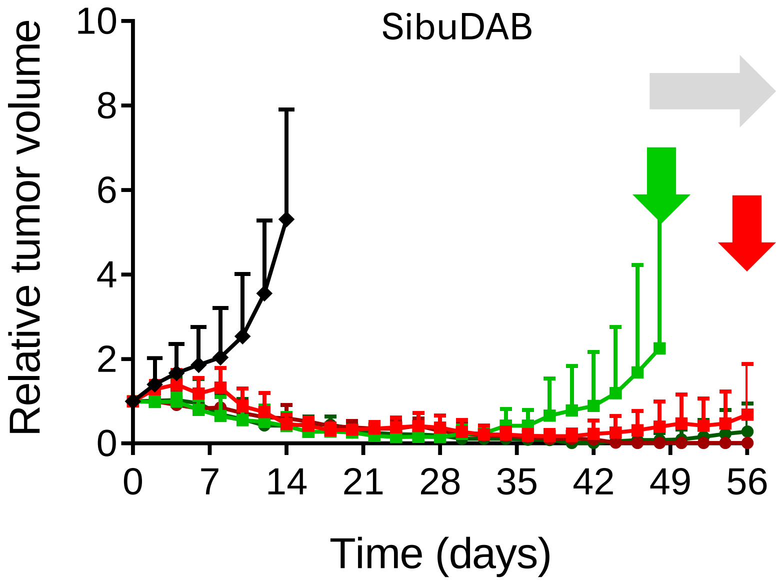
^{177}Lu-PSMA-I&T (5 MBq)

^{177}Lu-PSMA-I&T (10 MBq)

Tschan et al. **2023** J Nucl Med, 65:1625.

Tumor growth curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-SibuDAB (5 MBq)

^{161}Tb-SibuDAB (10 MBq)

^{177}Lu-SibuDAB (5 MBq)

^{177}Lu-SibuDAB (10 MBq)

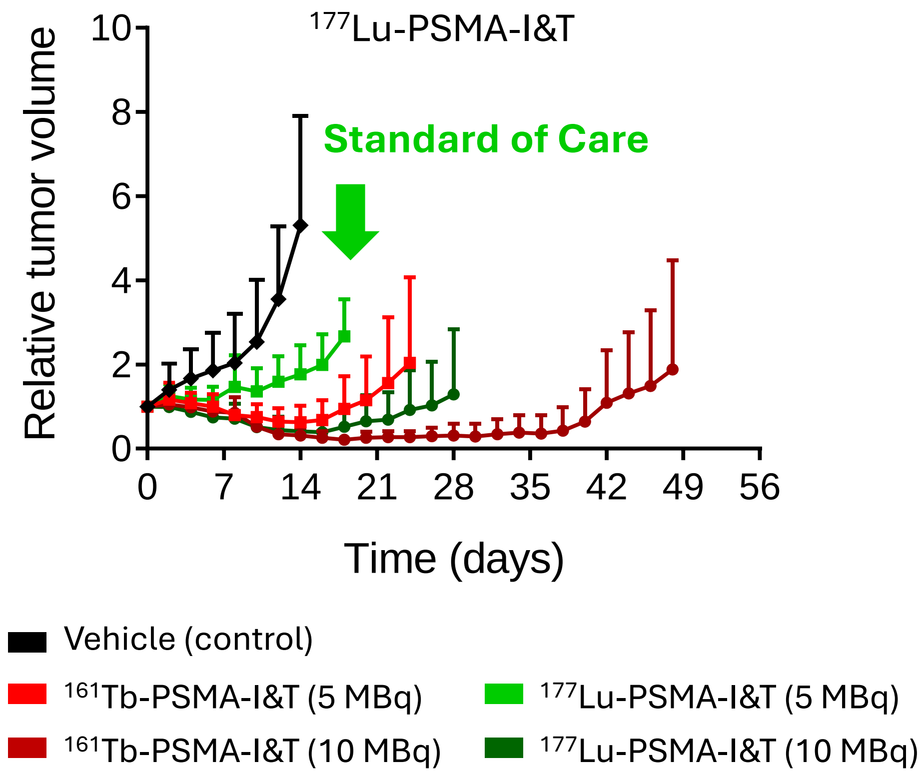
Tschan et al. **2023** J Nucl Med, 65:1625.

^{177}Lu-PSMA-I&T (Standard) versus ^{161}Tb-SibuDAB

PSI

Tumor growth curves

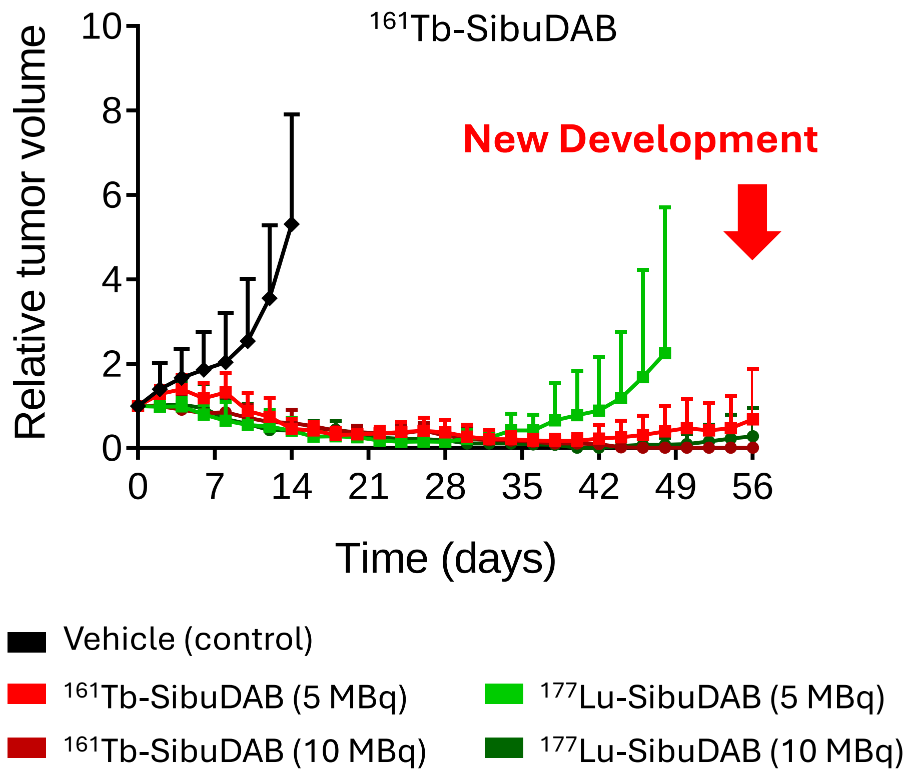
(PC-3 PIP tumor-bearing nude mice)



Tschan et al. **2023** J Nucl Med, 65:1625.

Tumor growth curves

(PC-3 PIP tumor-bearing nude mice)



Tschan et al. **2023** J Nucl Med, 65:1625.

^{177}Lu-PSMA-I&T (Standard) versus ^{161}Tb-SibuDAB

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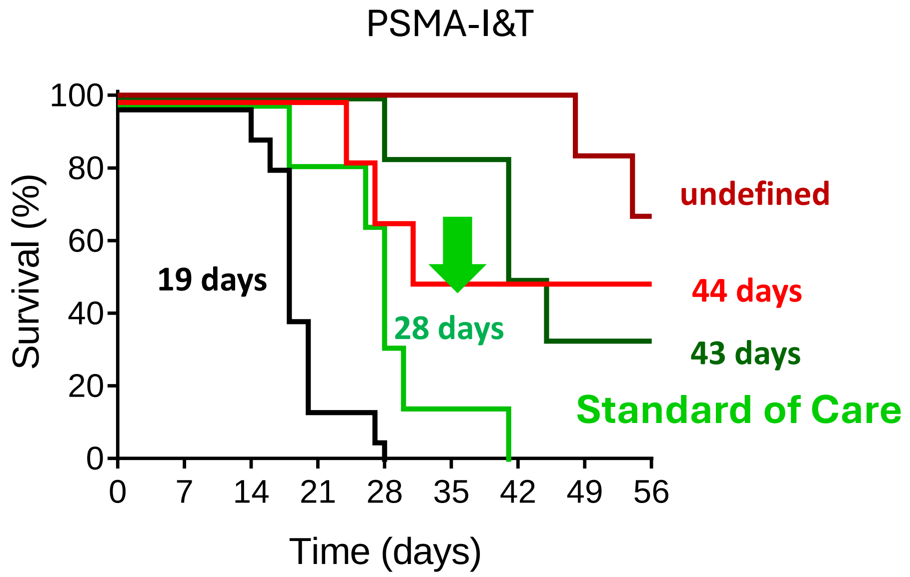
Survival curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-PSMA-I&T (5 MBq)

^{161}Tb-PSMA-I&T (10 MBq)

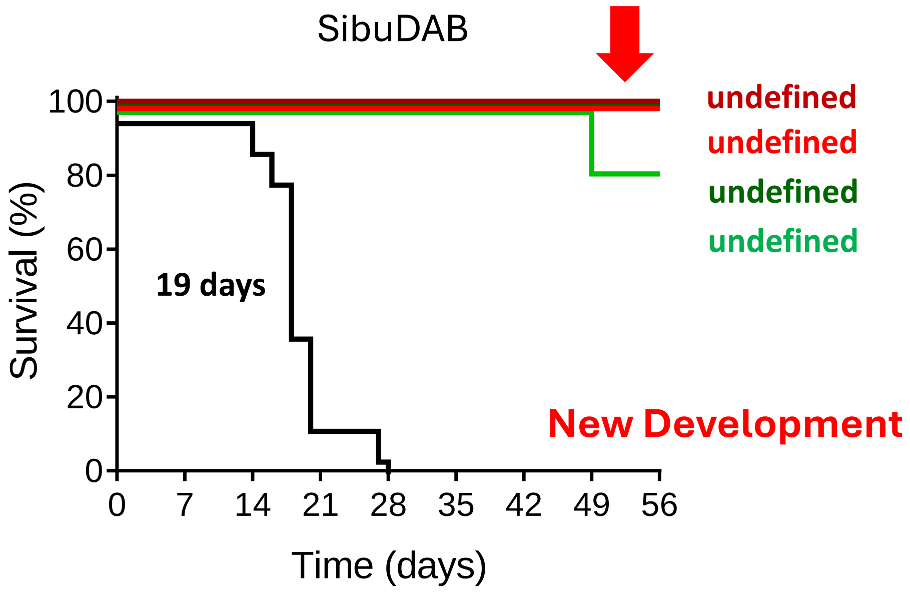
^{177}Lu-PSMA-I&T (5 MBq)

^{177}Lu-PSMA-I&T (10 MBq)

Tschan et al. **2023** J Nucl Med, 65:1625.

Survival curves

(PC-3 PIP tumor-bearing nude mice)



Vehicle (control)

^{161}Tb-SibuDAB (5 MBq)

^{161}Tb-SibuDAB (10 MBq)

^{177}Lu-SibuDAB (5 MBq)

^{177}Lu-SibuDAB (10 MBq)

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«PROGNOSTICS» Clinical Translation of ^{161}Tb-SibuDAB

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ETH Zürich

Universitätsspital Basel

R. Schibli D. Wild N. Aceto

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NCT06343038

Production of ^{161}Tb

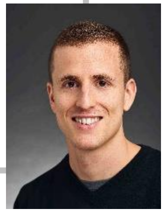
Tb 161
6.95 d

Reactor & Radiochemistry Labs

N. van der Meulen

Radioligand Preparation

GMP Labs, PSI



D. Schmid

^{161}Tb-SibuDAB

Preclinical Studies, CRS

C. Müller

Tschan et al. **2023** J Nucl Med 00:1.

Explorative Investigations

ETH Zurich

Clinical Study

University Hospital Basel

A. Chirindel

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«Nuclide Chemistry» Group

«Radionuclide Development» Group

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krebsforschung schweiz
recherche suisse contre le cancer
ricerca svizzera contro il cancro
swiss cancer research

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Research Fellowship Programme

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Everybody who contributed

Laboratory of Radiochemistry (PSI)
Everybody who contributed

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Necsa, Pelindaba, South Africa
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