

**Curriculum Vitae (project fundamenteel onderzoek): Christophe M. Deroose**  
**(MAX. 4 pages)**

**Research Statement: a narrative on your scientific career in past, present and future**

- **Short CV**

**Christophe M. Deroose** was born in Ghent on August 6th 1976. He obtained his **M.D.** in **2001** at **the KU Leuven** (Belgium) with summa cum laude and started a residency in nuclear medicine (supervisor: Luc Mortelmans). In the framework of this residency, he fulfilled one year of clinical training in internal medicine from 2001 to 2002 (Supervisor: Johan Fevery) in the University Hospital Leuven. From 2002 on he fulfilled a **PhD** training in Medical Sciences. The first 2 years were spent in the Multimodality Gene Imaging Laboratory of the late Sanjiv Sam Gambhir, at the University of California, Los Angeles and at Stanford University. From 2004, he performed research in the Division of Nuclear Medicine and the Division of Molecular Medicine (promotor: Luc Mortelmans; co-promotors Zeger Debyser and Veerle Baekelandt), with successful Ph.D defense in 2007. From 2006 on he resumed his residency in **nuclear medicine** in the University Hospital Leuven which he completed in 2008. From 2008 until now he has been working as a staff member nuclear medicine department of the University Hospital Leuven where he is responsible for **imaging and therapy in cancer** management for the following tumor types: digestive, respiratory, gynaecological and hematological, including neuro-endocrine tumors. He was appointed as assistant professor at the KU Leuven in 2009, as associate professor in 2012 and as **full professor** from October **2021** on. He was the beneficiary of a grant of the Clinical Research fund of the University Hospital Leuven from 2008 to 2014 and is a **Senior Clinical Investigator** of the **F.W.O-Flanders** since 2016 with research focusing on optimizing the theranostic use of the somatostatin receptor (SSTR). This 5-year mandate was prolonged with for a **second period** in 2021 with preclinical and clinical research focusing on the SSTR, norpepinephrin transporter, CXCR' and fibroblast activation protein (FAP).

His research interest are focused on the use of **nuclear medicine** strategies in oncological patients, both for **diagnostic and therapeutic** purposes. These applications include amongst others strategies for early prediction of response to peptide receptor radionuclide therapy (**PRRT**) in patients with **neuroendocrine tumors**, assessment of response to treatment in oncological patients, improvements in dosimetry of patients treated with radionuclide therapy and tumor characterization for selection of treatment and prognostication. He has a particular interest in the development of **novel PET tracers**. He is involved in **clinical radionuclide therapy** (RNT) trials from phase I to phase III and is principal investigator of several ongoing RNT trials.

He has been member of the board of the Belgian society for nuclear medicine (**Belnuc**) from 2012 to 2018, including a period as **Secretary General** (2016-2018). He was responsible for organizing the 17<sup>th</sup> Symposium, of Belnuc in Ghent (May 5-7, 2017).

He is the current and current **Chair** (1<sup>st</sup> Jan 2021- 31<sup>st</sup> Dec 2023) of the **Imaging Group** of the European Organisation for Research and Treatment of Cancer (**EORTC**), of which he previously was Treasurer (2015—17) and Vice-Chair (2017-2020).

He is currently member of the **Advisory Board** of the European Society for Neuroendocrine Tumors (**ENETS**; 2021-24) , member of the **Oncology and Theranostics Committee** of the European Association for Nuclear Medicine (**EANM**; 2021-24) and member of the Scientific Advisory board of the Dutch-Belgian Neuroendocrine Tumor Society (**DB-NETS**).

He was member of Dutch-speaking **Board Commission** for Nuclear Medicine ("Erkenningscommissie"; 2014-2017). He is currently **coordinating supervisor** for nuclear medicine **trainees** at UZ Leuven ("Universitair Stagemester"; since 1<sup>st</sup> May 2023). He is currently deputy member (since 2014) of the **Technical Council for Radio-Isotopes** ("Technische Raad voor Radio-Isotopen" (TRRI)) of the RIZIV/INAMI (Belgian Healthcare Insurance).

He has been thesis director of **9 defended PhD theses** (2013-2022), of which 4 as promotor (all in biomedical sciences) and 5 as co-promotor (4 in biomedical sciences, 1 in pharmaceutical sciences). He is **promotor of 6 ongoing PhD theses**, one as promotor (biomedical sciences; 2022-26) and 4 as co-promotor (3 biomedical sciences, (2020/21 until 2024/25); 1 pharmaceutical sciences (2021-25).

He has been the promotor of 14 successful master theses, 12 as promotor and 3 as co-promotor (2021-2022).

- **Career path**

He has published 266 peer-reviewed scientific articles and conference proceedings (Web of Science;WoS), including **180 peer-reviewed articles** (176 on [pubmed](#)) of which 43 as first (co-)author or as supervisor of the main author. His work has been **cited over 5200 times** (WoS), resulting in an **h-index of 33**. He is co-author of 10 book chapters. He is an **internationally recognized leader in the field of oncological nuclear medicine** (both diagnostic and therapeutic) and has co-authored peer-reviewed **international expert recommendations** on imaging in multicenter trials (2017), imaging of oligometastatic prostate cancer (2018; Lancet Oncology), incorporation of radiomics into clinical trials (2021) and selective internal radiation treatment (SIRT; 2021). He is the **chair** of the European Erasmus + “**RLT Academy**”, which aims to launch a multidisciplinary and transnational blended education program for healthcare professionals on the use of radioligand therapies in cancer care. His work has led to **human translation of next generation PET tracers** targeting the SSTR and human norepinephrine transporter. His research has been recognized by 14 different **congress awards** (2003-22), including the awards for best oral abstract at the Belgian Group of Digestive Oncology (BGDO) annual meeting 2015 and Belnuc bi-annual symposium 2019 (“Belnuc Award”), and the European Association for Nuclear Medicine (EANM) Young Authors Award twice (2020 & 22) (promoter last author in all 4 cases). The most prominent award was the “**Marie Curie**” award to his PhD student Elin Pauwels (prize for **best original scientific contribution**) at the **2022 EANM** annual congress (>1500 abstracts selected).

He has been invited 60 times as speaker to national scientific meetings and more than 35 times to **international events**. He has spoken several times at patient-centered initiatives (e.g. VZW NET/MEN, EORTC patient day).

Clear **benefits for patients** have resulted from this work:

- 1) Under his responsibility, UZ Leuven has been able to offer **peptide receptor radionuclide therapy (PRRT)**, one of the most potent systemic therapies in metastatic NET, in an uninterrupted manner since **2009**, first within the scope of a phase II research project. In 2014, we were able to obtain a contribution from the Special Solidarity Fund of the RIZIV/INAMI. Since 1<sup>st</sup> January 2022 we obtained **reimbursement by the RIZIV/INAMI for magistrally prepared <sup>177</sup>Lu-DOTATATE**, not only for gastroenteropancreatic tract (GEP NETs), but also for bronchial NETs, NETs of unknown primary origin (“CUP-NET”) and tumors of the neural crest (phaeochromocytoma and paraganglioma). The dossier was redacted by promoter and Prof. P. Flamen (Institut Jules Bordet). This reimbursement predated the reimbursement in Belgium of commercial <sup>177</sup>Lu-DOTATATE (Lutathera®), which only has a label from the European Medicines Agency (EMA) for GEP-NET, and hence is only reimbursed for GEP-NETs.

- 2) He redacted the **TRRI dossier for gallium-68 labeled PET tracers** for imaging of the somatostatin receptor (SSTR), including some of the work performed in the abovementioned phase II trial. This led to **reimbursement of <sup>68</sup>Ga-DOTA-somatostatin analogues** (<sup>68</sup>Ga-DOTA-SSAs: <sup>68</sup>Ga-DOTA-TOC, <sup>68</sup>Ga-DOTA-TATE and <sup>68</sup>Ga-DOTA-NOC) by the RIZIV/INAMI. These molecules are now in use in most academic PET centers and one non-academic PET centers (AZ Groeninge, Kortrijk).

- 3) We demonstrated the stability, safety and good tumor targeting properties of [<sup>18</sup>F]AIF-NOTA-Octreotide, a next generation fluorine-18 labeled SSTR ligand. Furthermore, we demonstrated that is at least equivalent, and even superior, compared to <sup>68</sup>Ga-DOTA-SSAs detection of NET lesions with PET/CT, in a **prospective multicenter trial** with 85 patients (Pauwels et al., 2022). We recently obtained approval from the Federal Agency for Nuclear Control to use this tracer for routine clinical practice. We will use this data to introduce a **reimbursement dossier** at the TRRI in Q2 2023. This will allow SSTR PET imaging in all PET centers in Flanders/Belgium and will uncouple SSTR PET from the necessity of hosting a gallium-68 generator, the cost of which has recently substantially increased.

### **Career breaks**

No career breaks to mention.

### **Five main publications and/or achievements**

1. Pauwels E, Cleeren F, Tshibangu T, Koole M, Serdons K, Dekervel J, Van Cutsem E, Verslype C, Van Laere K, Bormans G, **DEROOSE CM**. [<sup>18</sup>F]AIF-NOTA-octreotide PET imaging: biodistribution, dosimetry and first comparison with [<sup>68</sup>Ga]Ga-DOTATATE in neuroendocrine tumour patients. European Journal Nuclear Medicine & Molecular Imaging. December **2020**;47(13):3033-3046. (IF: 9.2. – Web of Science (WoS) Citations: **41**). Peer-reviewed.

“First-in-man”-like study of a novel fluorine-18 labeled somatostatin analogue which has the potential to become the new PET tracer of choice for the SSTR. This work was awarded a top 3 “**EANM Young investigator award**” at the world leading EANM 2020 congress. The publication itself received the **EJNNMMI - EANM Springer Prize Best Paper 2021**.

2. Pauwels E, Cleeren F, Tshibangu T, Koole M, Serdons K, Boeckxstaens L, Dekervel J, Vandamme T, Lybaert W, den Broeck BV, Laenen A, Clement PM, Geboes K, Cutsem EV, Stroobants S, Verslype C, Bormans G, **DEROOSE CM**. <sup>18</sup>F-AIF-NOTA-Octreotide Outperforms <sup>68</sup>Ga-DOTATATE/NOC PET in Neuroendocrine Tumor Patients: Results from a Prospective, Multicenter Study. *Journal of Nuclear Medicine*. **2023** Apr;64(4):632-638. (IF: 11.1. – Web of Science (WoS) Citations: **4**). Peer-reviewed.

Prospective, multicenter study demonstrating both non-inferiority and superiority of a novel fluorine-18 labeled somatostatin analogue in a cohort of 75 patients. This work, together with Pauwels et al. 2020, was the basis for the approval of this novel tracer for routine clinical use in Belgium.

This work was awarded a top 3 “**EANM Young investigator award**” (sic) and the “**Marie Curie**” award for best original scientific contribution (of >1500 selected abstracts) at the world leading EANM 2022 congress.

3. **DEROOSE CM**, Hindie E, Kebebew E, Goichot B, Pacak K, Taieb D, Imperiale A. *Molecular Imaging of Gastroenteropancreatic Neuroendocrine Tumors: Current status and Future Directions*. *Journal of Nuclear Medicine*, **2016**;57(12):1949-56. (IF 5.8; WoS Citations: **101**). Peer-reviewed.

Demonstrates internationally acknowledged expertise in SSTR imaging.

4. Van Binnebeek S, Vanbilloen B, Baete K, Terwinghe C, Koole M, Mottaghy FM, Clement PM, Mortelmans L, Bogaerts K, Haustermans K, Van Cutsem E, Verslype C, Verbruggen A, **DEROOSE CM**. *Comparison of diagnostic accuracy of <sup>111</sup>In-pentetreotide scintigraphy and <sup>68</sup>Ga-DOTATOC PET: a lesion-by-lesion analysis in PRRT-patients*. *European Radiology*. **2016**;26(3):900-9 (IF 4.0; WoS Citations: **66**). Peer-reviewed.

Demonstrates expertise in scientific evaluation of diagnostic performance of PET tracers.

5. **DEROOSE CM**, De A, Loening AM, Chow PL,, Ray P, Chatziioannou AF, Gambhir SS: *Multimodality imaging of tumor xenografts and metastasis in mice with combined microPET, microCT and bioluminescence imaging*, *Journal of Nuclear Medicine*, **2007**;48(2):295-303. (IF 5.8; WoS Citations: **144**).

Demonstrates expertise with preclinical imaging and evaluation of PET tracers.

### **Other scientific output and impact**

He has been an **expert** for the Belgian Superior Health Council (SHC) in 2012 regarding PRRT . He has contributed to the development of Belgian oncological guidelines for lung (2013; KCE Reports 206A), bladder (2015; KCE Reports 247A) and rectal (2016; KCE Reports 260A) cancer and is currently working on guidelines for gynaecological tumors.

CMD has organized 9 seminars and 1 congress (33 invited speakers; 76 abstracts) as Secretary-General of Belnuc (2016-18) and has co-organised a masterclass on NETs (2019) within the scope of the UZ Leuven ENETS CoE.

**List the representative and substantial fellowships, projects and any other kind of research grants you obtained within the five years preceding the submission date of this project application.**