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A. Professional Positions

- 2022 – Pres. Adjunct Assistant Professor, C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV, USA.
- 2019 - Pres. Assistant Professor (tenure-track), Department of Pharmaceutical Sciences, School of Pharmacy, West Virginia University, Morgantown, WV, USA.
- 2018 - 2019 Research Assistant Professor, Department of Pharmaceutical Sciences, School of Pharmacy, West Virginia University, Morgantown, WV, USA.
- 2015 - 2018 Research Scholar, Department of Biochemistry, School of Medicine, West Virginia University, Morgantown, WV, USA.
- 2014 - 2015 Postdoctoral Fellow, Dorothy M. Davis Heart & Lung Institute, The Ohio State University, Columbus, OH, USA.
- 2013 - 2014 Postdoctoral Fellow, Louvain Drug Research Institute, Catholic University of Louvain (UCL), Brussels, Belgium.
- 2007 - 2013 Graduate Research and Teaching Assistant, Institute of Condensed Matter and Nano Science & Louvain Drug Research Institute, Catholic University of Louvain (UCL), Louvain-la-Neuve and Brussels, Belgium.

B. Education

- 2013 Ph.D. in Chemistry & Biomedical EPR/MRI, Catholic University of Louvain (UCL), Belgium.
Project: Design, synthesis, characterization, and application of stable trityl organic radicals for biomedical electron paramagnetic resonance applications such as the measurement of oxygen concentration and/or pH in vitro and in vivo.
- 2007 Master of Advanced Studies in Chemistry & Biophysics, Catholic University of Louvain (UCL), Belgium, *Suma Cum Laude*.
- 2005 Master's degree in Chemistry, Catholic University of Louvain (UCL), Belgium, *Magna Cum Laude*.
- 2003 Bachelor's degree in Chemistry, Catholic University of Louvain (UCL), Belgium, *Cum Laude*.

C. Awards and Honors

- 2017 - 2022 NIH/NIBIB K99/R00 Pathway to Independence award.
- 2014 - 2015 Postdoctoral fellowship for my Postdoc research at The Ohio State University, OH, USA, awarded by Catholic University of Louvain, Belgium.
- 2014 Prize for the best Ph.D. thesis defended in 2013, Catholic University of Louvain, Belgium.
- 2009 Best Poster award at the meeting on Condensed Matter and Nano Science, Catholic University of Louvain, Belgium.
- 2006 - 2013 Ph.D. Fellowship, Catholic University of Louvain, Belgium.

D. Scientific Grant and Manuscript Reviews

D1. Grant reviewer

2021	Grant reviewer for the French Research Agency (ANR), France
2020	Grant reviewer for the TME COBRE pilot Fund (internal funding, WVU)
2017	Grant reviewer for the Icelandic Research Fund, Iceland

D2. Reviewer for peer-reviewed journals

Chemistry A European Journal
Frontiers in Oncology
Free Radical Research
Antioxidants and Redox Signaling
JoVE
Analytical Chemistry
Journal of Personalized Medicine
Molecules
Journal of controlled release
Molecular imaging and biology

E. Teaching Activities (Since 2019)

E1. Courses

PHAR 779: Methods in drug discovery (2019, 2020, 2021, 2022)
PHAR 781: Drug metabolism (2020, 2022)
PHAR 824: Oncology (2021)
PHAR 812: Drug Chemistry (2021, 2022, 2023)
BMS 793: Pharmaceutical Sciences Module (2021)

E2. Mentoring and advising

Graduate students (as a thesis mentor)

Megan Holloway, (Ph.D. Program in Pharmaceutical and Pharmacological Sciences, mentor (2022 -))
Misa Shaw, (Clinical and Translational Sciences (CTS) Doctoral program, mentor (2021 -))
Teresa Gluth, (Biomedical Sciences (BMS) Master program, mentor (2020 – 2021))

Current position: MD/Ph.D. student at WVU.

Nicole Mihalik (Immunology and Microbial Pathogenesis (IMP) Doctoral program, co-mentor (2019 –)) (Dr. Timothy D. Eubank as the primary mentor)

Graduate students (as a thesis committee member)

Morgan Dykstra (Ph.D. program in Chemistry, mentor: Dr. V. Geldenhuys, 2023 -)
Rachel Minney (Ph.D. program in Chemistry, mentor: Dr. B. Dolinar, 2022 -)
Blessing Bamisaye (Ph.D. program in Chemistry, mentor: Dr. C. Milsman, 2022 -)
Sajad Sarvari (Ph.D. program in Pharmaceutical Sciences, mentor: Dr. M. Tseytlin, 2021 -)
James Mersch (Ph.D. program in Biochemistry, mentor: Dr. M. Agazie, 2021 -)
Bohe Jeong (Ph.D. program in Biochemistry, mentor: Dr. P. Stoilov, 2020 -)
Randall Koziel (Ph.D. program in Chemistry, mentor: Dr. B. Popp, 2021 -)

Mason Hamilton (Ph.D. program in Chemistry, mentor: Dr. B. Popp, 2021 -)
Jose Rodriguez (Ph.D. program in Chemistry, mentor: Dr. C. Milsman, 2020 -)
Jacob Mosteller (Ph.D. program in Chemistry, mentor: Dr. B. Dolinar, 2020 -2022)

Graduate students (Rotation)

Megan Holloway (2022)
Scott Saylor (2020)
Bishal Misra (2020)
Teresa Gluth (2019)
Gayathri Heenatigala Palliyage (2019)

Researchers

Dr. Virat Pandya, Postdoctoral researcher (2022 -)
Dr. Jose Gabriel Garcia, Research Scientist (2020)
Justin Huffman, Research Assistant (2019)
Martin Poncelet, Research Scholar (2019 – 2020), Research Specialist (2020 –)

PharmD students

Maxwell Schubel (Fall 2021: PHAR749)
Ryan Archer (Spring 2020: PHAR749)
Dakota Sisk (Fall 2019: PHAR749)
Fatime Kassira (Spring 2019: PHAR749, Summer 2019: INTRO Program)
Jackie Turner (Spring 2019: PHAR749)

MD student

Shanan Ashton (Summer 2021: INTRO program)

Undergraduate students

Brooke Strnad (Spring 2022, CHEM497)
Alexandra Timperio (Summer 2021)
Cayleigh Pratt (Spring and Summer 2021)
Justin L. Huffman (Spring 2019, Summer 2019:SURE Program, Fall 2019: CHEM497, Spring 2020)

F. Peer-reviewed publications (41 articles: 15 as a corresponding author (denoted *) and four journal cover pages)

Since 2019: 21 articles, 12 as a corresponding author (denoted *)

1. Hasanbasri Z, Poncelet M, Hunter H, **Driesschaert B***, Saxena S. *A new ^{13}C trityl-based spin label enables the use of DEER for distance measurements.* J. Magn. Reson. **2023**, 347, 107363.
2. Poncelet M, Ngendahimana T, Gluth TD, Hoblitzell EH, Eubank TD, Eaton GR, Eaton SS, **Driesschaert B***. *Synthesis and characterization of a biocompatible $^{13}\text{C}_1$ isotopologue of trityl radical OX071 for in vivo EPR viscometry.* Analyst. **2022**;147(24):5643-5648.
3. Gluth TD, Poncelet M, Gencheva M, Hoblitzell EH, Khramtsov VV, Eubank TD, **Driesschaert B***. *Biocompatible Monophosphonated Trityl Spin Probe, HOPE71, for In Vivo Measurement of $p\text{O}_2$, pH, and $[\text{Pi}]$ by Electron Paramagnetic Resonance Spectroscopy,* Anal. Chem. **2023**, 95, 2, 946–954.
4. Tan KO, Yang L, Mardini M, Boon Cheong C, **Driesschaert B**, Dincă M, Griffin RG. *Observing Nearby Nuclei on Paramagnetic Trityls and MOFs via DNP and Electron Decoupling.* Chemistry Eur. J. **2022**;28(68):e202202556.
5. Moore W, Huffman JL, **Driesschaert B**, Eaton SS, Eaton GR. *Impact of Chlorine Substitution on Electron Spin Relaxation of a Trityl Radical.* Appl. Magn. Reson. **2022**;53(3-5):797-808.
6. Huffman JL, Poncelet M, Moore W, Eaton SS, Eaton GR, **Driesschaert B***. *Perchlorinated Triarylmethyl Radical 99% Enriched ^{13}C at the Central Carbon as EPR Spin Probe Highly Sensitive to Molecular Tumbling.* J. Phys. Chem. B **2021**;125, 27, 7380–7387
7. Velayutham M, Poncelet M, Eubank TD, **Driesschaert B***, Khramtsov VV. *Biological Applications of Electron Paramagnetic Resonance Viscometry Using a ^{13}C -Labeled Trityl Spin Probe.* Molecules **2021**;26, 2781.
8. Hasanbasri Z, Singewald K, Gluth TD, **Driesschaert B***, Saxena S. *Cleavage-Resistant Protein Labeling With Hydrophilic Trityl Enables Distance Measurements In-Cell.* J.Phys. Chem. B **2021**;125(20):5265-5274.
9. Mihalik NE, Wen S, **Driesschaert B***, Eubank TD. *Formulation and In Vitro Characterization of PLGA/PLGA-PEG Nanoparticles Loaded with Murine Granulocyte-Macrophage Colony-Stimulating Factor.* AAPS PharmSciTech; **2021**;22(5):191.
10. Gluth TD, Poncelet M, DeVience S, Gencheva M, Hoblitzell EH, Khramtsov VV, Eubank TD, **Driesschaert B***. *Large-scale synthesis of a monophosphonated tetrathiatriarylmethyl spin probe for concurrent in vivo measurement of $p\text{O}_2$, pH and inorganic phosphate by EPR.* RSC Adv., **2021**,11,25951-25954.
11. Dayan N, Ishay Y, Artzi Y, Cristea D, **Driesschaert B**, Aharon Blank A. *Electron spin resonance microfluidics with subnanoliter liquid samples.* J Magn Reson. Open **2020**; 2-3,100005.
12. Moore W, McPeak JE, Poncelet M, **Driesschaert B**, Eaton SS, Eaton GR. *^{13}C isotope enrichment of the central trityl carbon decreases fluid solution electron spin relaxation times.* J Magn Reson. **2020**;318:106797.

13. Sanzhaeva U, Poncelet M, Tseytlin O, Tseytlin M, Gencheva M, Eubank TD, Khramtsov VV, **Driesschaert B***. *Synthesis, Characterization, and Application of a Highly Hydrophilic Triarylmethyl Radical for Biomedical EPR*. *J Org Chem.* **2020**;85(16):10388-10398.
14. Poncelet M, **Driesschaert B***. *A ¹³C-Labeled Triarylmethyl Radical as an EPR Spin Probe Highly Sensitive to Molecular Tumbling*. *Angew Chem Int Ed Engl.* **2020**;10.1002/anie.202006591.
15. Taguchi A, DeVience S, **Driesschaert B**, Khramtsov VV, Hirata H. *In vitro simultaneous mapping of the partial pressure of oxygen, pH, and inorganic phosphate using electron paramagnetic resonance*. *Analyst.* **2020**;145(9):3236-3244.
16. Poncelet M, Huffman JL, Khramtsov VV, Dhimitruka I, **Driesschaert B***. *Synthesis of hydroxyethyl tetrathiatriarylmethyl radicals OX063 and OX071*. *RSC Adv.*, **2019**,9, 35073-35076
17. Tseytlin O, Guggilapu P, Bobko AA, AlAhmad H, Xu X, Epel B, O'Connell R, Hoblitzell EH, Eubank TD, Khramtsov VV, **Driesschaert B**, Kazkaz E, Tseytlin M. *Modular imaging system: Rapid scan EPR at 800 MHz*. *J Magn Reson.* **2019**;305:94-103.
18. Scheinok S, **Driesschaert B**, d'Hose D, Sonveaux P, Robiette R, Gallez B. *Synthesis and characterization of a 5-membered ring cyclic hydroxylamine coupled to triphenylphosphonium to detect mitochondrial superoxide by EPR spectrometry*. *Free Radic Res.* **2019**, (11-12):1135-1143
19. Gorodetskii AA, Eubank TD, **Driesschaert B**, Poncelet M, Ellis E, Khramtsov VV, Bobko AA. *Development of multifunctional Overhauser-enhanced magnetic resonance imaging for concurrent in vivo mapping of tumor interstitial oxygenation, acidosis and inorganic phosphate concentration*. *Sci Rep.* **2019**;9(1):12093
20. Nel J, Desmet CM, **Driesschaert B**, Saulnier P, Lemaire L, Gallez B. *Preparation and evaluation of trityl-loaded lipid nanocapsules as oxygen sensors for electron paramagnetic resonance oximetry*. *Int J Pharm.* **2019**;554:87-92.
21. Poncelet M, **Driesschaert B***, Tseytlin O, Tseytlin M, Eubank TD, Khramtsov VV. *Dextran-conjugated tetrathiatriarylmethyl radicals as biocompatible spin probes for EPR spectroscopy and imaging*. *Bioorg Med Chem Lett.* **2019**;29(14):1756-1760.
22. Sanzhaeva U, Xu X, Guggilapu P, Tseytlin M, Khramtsov VV, **Driesschaert B***. *Imaging of Enzyme Activity by Electron Paramagnetic Resonance: Concept and Experiment Using a Paramagnetic Substrate of Alkaline Phosphatase*, *Angew. Chem. Int. Ed.* **2018**;57(36):11701-11705.
Video abstract: <https://vimeo.com/292981331>
23. Gorodetskii AA, Eubank TD, **Driesschaert B**, Poncelet M, Ellis E, Khramtsov VV, Bobko AA. *Oxygen-induced leakage of spin polarization in Overhauser-enhanced magnetic resonance imaging: Application for oximetry in tumors*, *J. Mag. Reson.* **2018**; 297:42-50.
24. Scheinok S, Leveque P, Sonveaux P, **Driesschaert B**, Gallez B. *Comparison of different methods for measuring the superoxide radical by EPR spectroscopy in buffer, cell lysates and cells*. *Free Radic Res.* **2018**; 52(10):1182-1196.
25. Bobko AA, Eubank TD, **Driesschaert B**, Khramtsov VV. *In Vivo Assessment of pH, pO₂, Redox Status and Concentrations of Phosphate and Glutathione in Tumor Microenvironment by Electron Paramagnetic Resonance Spectroscopy*, *J. Vis. Exp.* **2018**; 133, doi:10.3791/56624.
26. Poncelet M, **Driesschaert B***, Bobko AA, Khramtsov VV. *Triarylmethyl based biradical as a superoxide probe*, *Free Rad. Res.* **2018**; 52(3):373-379.

27. Marchand V, Levêque P, **Driesschaert B**, Marchand-Brynaert J, Gallez B. *In vivo EPR extracellular pH-metry in tumors using a triphosphonated trityl radical*. Magn. Reson. Med. **2017**;77(6):2438-2443.
28. **Driesschaert B***, Bobko AA, Khramtsov VV, Zweier JL. *Nitro-Triarylmethyl Radical as Dual Oxygen and Superoxide Probe*. Cell. Biochem. Biophys. **2017**;75(2):241-246.
29. Khramtsov VV, Bobko AA, Tseytlin M, **Driesschaert B**. *Exchange Phenomena in the Electron Paramagnetic Resonance Spectra of the Nitroxyl and Trityl Radicals: Multifunctional Spectroscopy and Imaging of Local Chemical Microenvironment*. Anal. Chem. **2017**;89(9):4758-4771. Featured the journal cover picture
30. Bobko AA, Eubank TD, **Driesschaert B**, Dhimitruka I, Evans J, Mohammad R, Tchekneva EE, Dikov MM, Khramtsov VV. *Interstitial Inorganic Phosphate as a Tumor Microenvironment Marker for Tumor Progression*. Sci. Rep. **2017**;7:41233.
31. **Driesschaert B**, Bobko AA, Eubank TD, Samouilov A, Khramtsov VV, Zweier JL. *Poly-arginine conjugated triarylmethyl radical as intracellular spin label*. Bioorg. Med. Chem. Lett. **2016**;26(7):1742-4.
32. **Driesschaert B**, Leveque P, Gallez B, Marchand-Brynaert J. *Tetrathiatriarylmethyl radicals conjugated to an RGD-peptidomimetic*. Eur. J. Org. Chem. **2014**; (36):8077-8084.
33. **Driesschaert B**, Leveque P, Gallez B, Marchand-Brynaert J. *RGD-conjugated triarylmethyl radical as probe for electron paramagnetic imaging*. Tetrahedron Lett. **2013**;54(33):5924-5926.
34. **Driesschaert B**, Robiette R, Le Duff CS, Robeyns K, Gallez B, Marchand-Brynaert J. *Configurationally stable tris(tetrathioaryl)methyl molecular propellers*. Eur. J. Org. Chem. **2012**; 2012(33):6517-6525. Featured the journal cover picture
35. **Driesschaert B**, Marchand V, Levêque P, Gallez B, Marchand-Brynaert J. *A phosphonated triarylmethyl radical as a probe for measurement of pH by EPR*. Chem. Commun. **2012**;48(34):4049-51. Featured the journal cover picture
36. **Driesschaert B**, Robiette R, Lucaccioni F, Gallez B, Marchand-Brynaert J. *Chiral properties of tetrathiatriarylmethyl spin probes*. Chem. Commun. **2011**;47(16):4793-5.
37. Rerat V, Laurent S, Burtéa C, **Driesschaert B**, Pourcelle V, Vander Elst L, Muller RN, Marchand-Brynaert J. *Ultrasmall particle of iron oxide--RGD peptidomimetic conjugate: synthesis and characterisation*. Bioorg Med. Chem. Lett. **2010**;20(6):1861-5.
38. Charlier N, **Driesschaert B**, Wauthoz N, Beghein N, Pr at V, Amighi K, Marchand-Brynaert J, Gallez B. *Nano-emulsions of fluorinated trityl radicals as sensors for EPR oximetry*. J. Magn. Reson. **2009**;197(2):176-80.
39. **Driesschaert B**, Charlier N, Gallez B, Marchand-Brynaert J. *Synthesis of two persistent fluorinated tetrathiatriarylmethyl (TAM) radicals for biomedical EPR applications*. Bioorg. Med. Chem. Lett. **2008**;18(15):4291-3.
40. **Driesschaert B**, Leroy B. *A Convenient and Versatile Preparation of Unsymmetrical Bis-metallic -Isobutene Derivatives*. Synlett; **2006**;(13):2148-2150.

Patent

Driesschaert B, Khramtsov, V. *Synthesizing paramagnetic probe useful for monitoring tumor microenvironment, comprises trityl moiety, alkyne composition and solvent and mixing trityl moiety and alkyne composition in presence of solvent to create reaction mixture.* **2019**, WO2019018655-A1.

G. Oral presentations (Since 2017)

G1. International audience

1. The XIIth International Workshop on EPR in Biology and Medicine, October 2022, Krakow, Poland. (invited)
2. The 61st Rocky Mountain Conference on Magnetic Resonance, July 2022, Copper Mountain, CO, USA. (invited)
3. PACIFICHEM Symposium, December 2021, Honolulu, HI, USA (virtual).
4. International Society of Magnetic Resonance, August 2021, Osaka, Japan (virtual).
5. O₂M Technology webinar, May 2021 (Invited, virtual).
<https://www.youtube.com/watch?v=EWk9P86QUUI>
6. The 60th Rocky Mountain Conference on Magnetic Resonance, July 2019, Denver, CO, USA.
7. The 59th Rocky Mountain Conference on Magnetic Resonance, July 2018, Snowbird, UT, USA.
8. 8th Spin Conference on Nitroxides, September 2017, Padova, Italy
9. EPR2017, July 2017, Morgantown, WV, USA.

G2. Institutional

1. Evening of Science, November 2019, Morgantown.
2. Department of Chemistry, Seminar, November 2020

H. Service

1. HSC Tweak my aims reviewer (2022)
2. SoP Academic and Professional Integrity Committee, committee member, (2022-2023)
3. Poster Judge for the XIIth International Workshop on EPR in Biology and Medicine, October 2022, Krakow, Poland
4. Poster Judge for the International Society of Magnetic Resonance, August 2021, Osaka, Japan (virtual)
5. Poster Judge for the ECAS undergraduate research symposium, August 2021, Morgantown (virtual)
6. SoP Pharmaceutical Sciences Faculty Search (2020-2021)
7. Graduate PhD/MS Admissions Committee for Biomedical Sciences (2020-2021, 2021-2022, 2022-2023)
8. Pharmaceutical and Pharmacological Sciences Graduate Student Performance Review Committee (2020-2021, 2021-2022)
9. SoP Department Faculty Evaluation, PS (2020-2021, 2021-2022, 2022-2023)
10. Experimental Therapeutics Advisory Team (2019 -)
11. PharmD Faculty mentor (2019 -)
12. Biomedical Sciences Ph.D./MS 1st semester advisor (2020)
13. AAPS PSRS 2020 at Duquesne University, abstract selection (2020)
14. HSC Research advisory committee (2022-

I. Extramural Research Support

I.1 Active

1. R00 EB023990 (PI: Driesschaert) 08/01/2019 – 04/30/2024
NIH/NIBIB
Biocompatible Magnetic Resonance Probes for in vivo Concurrent Profiling of Interstitial Oxygenation, Acidosis, and Inorganic Phosphate: Preclinical Application to Cancer.
Role: PI (50% effort, 25% since 05/01/22)
2. R21 EB028553 (PI: Driesschaert) 08/04/2020 – 05/31/2024
NIH/NIBIB
Imaging enzyme activity by Overhauser-enhanced MRI.
Role: PI (15% effort)
3. R01 EB032321 (PI: Driesschaert) 07/01/2022 – 03/31/2026
NIH/NIBIB
Biocompatible triarylmethyl radical-based dendrimers as nonmetallic contrast agents for MRI.
Role: PI (20% effort)
4. R21 GM143595 (MPI: Driesschaert(contact)/Blank) 06/01/2022 – 03/31/2024
NIH/NIGMS
Electron Spin Resonance Microfluidics as a new tool in chemical single-cell population analysis.
Role: MPI (10% effort)
5. R01 CA192064 (MPI: Khramtsov/Eubank) 08/01/2020 – 07/31/2025
NIH/NCI
Profiling chemical tumor microenvironment: Application for diagnostics & therapy.
Role: Co-I (10% effort)
6. R01 CA194013 (MPI: Khramtsov/Eubank) 01/07/2022 – 12/31/2026
NIH/NCI
In vivo monitoring of tumor microenvironment regulation by macrophages.
Role: Co-I (5% effort)

I.3 Completed

- 75N91020C00032-0-9999-1 (PI: Biller) 09/01/2020 – 05/31/2021
NIH/NCI
FY20 SBIR PHASE 1 TOPIC #400 - TDA RADI-SENSE: encapsulated Nanoparticle Oxygen Imaging Agents for Radiotherapy Guidance.

Role: PI of a subcontract (JB.6108.001. WVURC.20.01)

O2M Technology
Large-scale synthesis of Ox071 probe for EPR Oximetry
Role: PI
01/15/2021 – 04/15/2021

K99 EB023990 (PI: Driesschaert)
NIH/NIBIB
Biocompatible Magnetic Resonance Probes for in vivo Concurrent Profiling of Interstitial Oxygenation, Acidosis, and Inorganic Phosphate: Preclinical Application to Cancer.
Role: PI (100% effort)
06/15/2017 – 03/31/2019

J. Intramural Research Support

J1. Active

West Virginia University Startup Funds (PI: Driesschaert)
West Virginia University Health Sciences Center
Role: PI
04/01/2019 – 03/31/2023

J2. Pending
None

J3. Completed

5P20GM121322 (PI: Boone)
National Institute of General Medical Sciences
Tumor Microenvironment TME CoBRE Pilot Project
Impact of Neutrophil Extracellular Traps (NETs) on the Pancreatic Tumor Microenvironment
Role: Co-I
12/01/2019 – 11/30/2020

West Virginia Clinical & Translational Scientific Institute
WV Cancer Institute Open Competition Award
(PI: Eubank)
Regulating tumor hypoxia with GM-CSF via macrophage expression of sVEGFR-1
Role: Co-I
05/01/2019 – 04/31/2021