# Beyond perfusion: measuring water transport across brain barriers with arterial spin labeling MRI

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# LIST OF PUBLICATIONS

## Journal articles

1. Petitclerc, L., Hirschler, L., Václavů, L. & van Osch, M. J. P. Simultaneous measurement of water transport across the blood-brain and blood-CSF barrier in the human brain with Arterial Spin Labeling MRI. (Under Review) (2023).
2. Petitclerc, L., Hirschler, L., Örzsik, B., Asllani, I. & van Osch, M. J. P. Arterial spin labeling signal in the CSF: Implications for partial volume correction and blood–CSF barrier characterization. *NMR Biomed.* **36**, e4852 (2022).
3. Petitclerc, L. *et al.* Ultra-long-TE arterial spin labeling reveals rapid and brain-wide blood-to-CSF water transport in humans. *Neuroimage* **245**, 118755 (2021).
4. Petitclerc, L., Schmid, S., Hirschler, L. & van Osch, M. J. P. Combining T2 measurements and crusher gradients into a single ASL sequence for comparison of the measurement of water transport across the blood–brain barrier. *Magn. Reson. Med.* **85**, 2649–2660 (2021).

## First Author Presentations at International Conferences

1. Petitclerc, L., Hirschler, L., Asllani, I. & van Osch, M. J. P. The Effect of Label-Crossing the Blood-CSF Barrier on Partial Volume Correction : Source of Error or Opportunity for Quantification? (Power Pitch Presentation and Poster) ISMRM Workshop on Perfusion MRI, March 2022.
2. Petitclerc, L., Hirschler, L., Wells, J. A. & van Osch, M. J. P. Blood-CSF Barrier Imaging in the Human Brain with Arterial Spin Labeling. (Oral Presentation) ISMRM Annual Meeting, May 2021. ***Summa Cum Laude***
3. Petitclerc, L., Wells, J. A., Thomas, D. L. & van Osch, M. J. P. Blood-CSF Barrier Imaging in the Human Brain with Arterial Spin Labeling. (Oral Presentation) ISMRM Benelux Annual Meeting, March 2021.
4. Petitclerc, L., Teeuwisse, W. M. & van Osch, M. J. P. Introducing a Protocol for the Characterization and Validation of Perfusion Phantoms for Arterial Spin Labeling. (Oral Presentation) ISMRM Benelux Annual Meeting, January 2020.
5. Petitclerc, L., Teeuwisse, W. M. & van Osch, M. J. P. Characterization and validation protocol for a perfusion phantom used in arterial spin labeling experiments. (Lightning Talk and Electronic Poster) ESMRMB Annual Congress, October 2019.
6. Petitclerc, L., Franklin, S. L., Hirschler, L. & van Osch, M. J. P. Assessing morphology of cerebral macro- and microvasculature using Dynamic Perfusion Tensor Imaging ASL. (Electronic Poster) ISMRM Annual Meeting, May 2019.
7. Petitclerc, L., Franklin, S. L., Hirschler, L. & van Osch, M. J. P. Assessing morphology of cerebral macro- and microvasculature using Dynamic Perfusion Tensor Imaging ASL. (Traditional Poster) ISMRM Benelux Annual Meeting, January 2019.
8. Petitclerc, L., Schmid, S., Teeuwisse, W. M. & van Osch, M. J. P. Investigation into water transport mechanisms in the brain using a combination of T2 measurements and crusher gradients with ASL. (Oral Presentation) ISMRM Annual Meeting, June 2018. ***Summa Cum Laude***
9. Petitclerc, L., Schmid, S., Teeuwisse, W. M. & van Osch, M. J. P. Investigation into water transport mechanisms in the brain using a combination of T2 measurements and crusher gradients with ASL. (Oral Presentation) ISMRM Benelux Annual Meeting, January 2018.

# CURRICULUM VITAE

Léonie Petitclerc was born on the 12th of July 1991 in Gatineau, Canada. Early on in her education, she developed a fascination for the sciences. In 2010, she went on to study Physics at the University of Montréal (UdeM), and in 2013 was awarded a bachelor's degree with a specialization in subatomic Physics and radiation-matter interactions. During that time, she took an introductory course to Medical Physics that sparked her interest for magnetic resonance imaging. She pursued her education as a master's student at the UdeM in the field of Medical Physics. She completed her master's degree in 2015 with the project "Using surgical clips in the tracking of liver tumors applied to CyberKnife SBRT treatments" in collaboration with the radiotherapy department of the University Medical Center of the UdeM (Centre Hospitalier de l'Université de Montréal – CHUM).

Wanting to focus her attention towards the field of MRI, in 2015 Léonie joined the group of Dr An Tang at the CHUM, first as part of an internship and then as a research assistant, until the end of 2016. Under the supervision of Dr Tang and Guillaume Gilbert, she studied an array of MRI methods for imaging of liver fibrosis and liver tumours.

Léonie maintained her interest for MRI but wanted to go deeper in her understanding of the modality by working on programming imaging sequences. She looked for opportunities for PhD projects and was attracted to the thriving MRI research community of the Netherlands. She began her doctoral degree at the C.J. Gorter MRI Center of the Leiden University Medical Center in 2017 under the supervision of Professor Matthias van Osch, with the goal of developing new arterial spin labeling techniques for water exchange imaging in the human brain. As of 2023 Léonie has moved back to Montréal and is looking to work as a Physics teacher at the collegiate level.

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After my time as an expat I now feel I have a family at home as well as abroad. As I am moving on to another chapter in my life, it brings me sadness to say goodbye my European family, but I know we will meet again in our travels.