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Biography

My research focuses on vascular MRI. Clinical translation, MRI method and ultrasonic gradient coils development, image analysis. Applications: cerebrovascular diseases, stroke and small vessel disease, and brain physiology on perfusion, oxygen metabolism and neurovascular coupling.

keywords: clinical translation | cerebrovascular disease | functional MRI | ultra-high field | gradient coils

Qualifications

PhD Thesis "Blood flow & brain function – Investigation of neurovascular coupling using BOLD fMRI at 7T, University Medical Center Utrecht
Award Date: 4 Apr 2013

Applied Physics - Biomedical Engineering - (cum laude, Bsc, MSc)
Award Date: 1 May 2008

Employment

Precision Imaging Group
UMC Utrecht
1 Dec 2021 → 31 Dec 9999

Brain

Research UMC Utrecht
Utrecht, Netherlands
1 Sept 2012 → present

Cancer

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Utrecht, Netherlands
1 Jan 2021 → present

Affiliated Associate Professor

1 Jan 2016 → present

Research outputs

A silent echo-planar spectroscopic imaging readout with high spectral bandwidth MRSI using an ultrasonic gradient axis
Versteeg, E., Nam, K. M., Klomp, D. W. J., Bhogal, A. A., Siero, J. C. W. & Wijnen, J. P., Jun 2024, In: Magnetic Resonance in Medicine. 91, 6, p. 2247-2256 10 p.

On the influence of the vascular architecture on Gradient Echo and Spin Echo BOLD fMRI signals across cortical depth: a simulation approach based on realistic 3D vascular networks

Báez-Yáñez, M. G., Siero, J. C. W., Curcic, V., van Osch, M. J. P. & Petridou, N., 30 May 2024, BioRxiv, 33 p. (bioRxiv).

A fully synthetic three-dimensional human cerebrovascular model based on histological characteristics to investigate the hemodynamic fingerprint of the layer BOLD fMRI signal formation

Báez-Yáñez, M. G., Schellekens, W., Bhogal, A. A., Roefs, E. C. A., van Osch, M. J. P., Siero, J. CW. & Petridou, N., 26 May 2024, *BioRxiv*, p. 1-38.

Assessment of Small Vessel Function Using 7T MRI in Patients With Sporadic Cerebral Small Vessel Disease: The ZOOM@SVDs Study

Van Den Brink, H., Pham, S., Siero, J. C., Arts, T., Onkenhout, L., Kuijff, H., Hendrikse, J., Wardlaw, J. M., Dichgans, M., Zwanenburg, J. J. & Biessels, G. J., 12 Mar 2024, In: *Neurology*. 102, 5, 11 p., e209136.

A mechanistic computational framework to investigate the hemodynamic fingerprint of the blood oxygenation level-dependent signal

Báez-Yáñez, M. G., Siero, J. C. W. & Petridou, N., Dec 2023, In: *NMR in Biomedicine*. 36, 12, e5026.

Hemodynamic imaging parameters in brain metastases patients - Agreement between multi-delay ASL and hypercapnic BOLD

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A selection and targeting framework of cortical locations for line-scanning fMRI

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Microvascular Specificity of Spin Echo BOLD fMRI: Impact of EPI Echo Train Length

van Horen, T., Siero, J. C. W., Bhogal, A. A., Petridou, N. & Báez-Yáñez, M. G., 15 Sept 2023, *BioRxiv*, (bioRxiv).

Evaluating Physiological MRI Parameters in Patients with Brain Metastases Undergoing Stereotactic Radiosurgery-A Preliminary Analysis and Case Report

van Grinsven, E. E., de Leeuw, J., for Neuroimaging, Amsterdam, Netherlands, S., Verhoeff, J. J. C., van Zandvoort, M. J. E., Cho, J., Philippens, M. E. P. & Bhogal, A. A., Sept 2023, In: *Cancers*. 15, 17, 26 p., 4298.

Anesthesia Depresses Cerebrovascular Reactivity to Acetazolamide in Pediatric Moyamoya Vasculopathy

Deckers, P. T., Siero, J. CW., Mensink, M. O., Kronenburg, A., Braun, K. P. J., van der Zwan, A. & Bhogal, A. A., Jul 2023, In: *Journal of Clinical medicine*. 12, 13, 4393.

Towards functional spin-echo BOLD line-scanning in humans at 7T

Raimondo, L., Heij, J., Knapen, T., Dumoulin, S. O., van der Zwaag, W. & Siero, J. C. W., Apr 2023, In: *Magnetic Resonance Materials in Physics, Biology and Medicine*. 36, 2, p. 317-327 11 p.

The many layers of BOLD. The effect of hypercapnic and hyperoxic stimuli on macro- and micro-vascular compartments quantified by CVR, M, and CBV across cortical depth.

Schellekens, W., Bhogal, A. A., Roefs, E. C., Báez-Yáñez, M. G., Siero, J. C. & Petridou, N., Mar 2023, In: *Journal of Cerebral Blood Flow and Metabolism*. 43, 3, p. 419-432 14 p.

Robust high spatio-temporal line-scanning fMRI in humans at 7T using multi-echo readouts, denoising and prospective motion correction

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Assessment of aortic and cerebral haemodynamics and vascular brain injury with 3 and 7 T magnetic resonance imaging in patients with aortic coarctation

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CADASIL Affects Multiple Aspects of Cerebral Small Vessel Function on 7T-MRI

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7T metabolic MRI in focal epilepsy

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Image quality and subject experience of quiet T1-weighted 7-T brain imaging using a silent gradient coil

Jacobs, S. M., Versteeg, E., van der Kolk, A. G., Visser, L. N. C., Oliveira, Í. A. F., van Maren, E., Klomp, D. W. J. & Siero, J. C. W., 31 Aug 2022, In: European radiology experimental. 6, 1, p. 1-9 36.

The effect of endovascular baroreflex amplification on central sympathetic nerve circuits and cerebral blood flow in patients with resistant hypertension: A functional MRI study

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Hemodynamic and metabolic changes during hypercapnia with normoxia and hyperoxia using pCASL and TRUST MRI in healthy adults

Deckers, P. T., Bhogal, A. A., Dijsselhof, M. B. J., Faraco, C. C., Liu, P., Lu, H., Donahue, M. J. & Siero, J. C. W., 1 May 2022, In: Journal of Cerebral Blood Flow and Metabolism. 42, 5, p. 861-875 15 p.

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A resting-state fMRI pattern of spinocerebellar ataxia type 3 and comparison with ¹⁸F-FDG PET

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A line through the brain: implementation of human line-scanning at 7T for ultra-high spatiotemporal resolution fMRI

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Feasibility of the APRICOT-trial: identifying MRI biomarkers for radiation-induced cognitive changes

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A plug-and-play, lightweight, single-axis gradient insert design for increasing spatiotemporal resolution in echo planar imaging-based brain imaging

Versteeg, E., van der Velden, T. A., van Leeuwen, C. C., Borgo, M., Huijting, E. R., Hendriks, A. D., Hendrikse, J., Klomp, D. W. J. & Siero, J. C. W., Jun 2021, In: NMR in Biomedicine. 34, 6, 13 p., e4499.

Velocity and Pulsatility Measures in the Perforating Arteries of the Basal Ganglia at 3T MRI in Reference to 7T MRI

Arts, T., Meijs, T. A., Grotenhuis, H., Voskuil, M., Siero, J., Biessels, G. J. & Zwanenburg, J., 26 Apr 2021, In: Frontiers in Neuroscience. 15, 10 p., 665480.

Comparing hand movement rate dependence of cerebral blood volume and BOLD responses at 7T

Oliveira, Í. A. F., van der Zwaag, W., Raimondo, L., Dumoulin, S. O. & Siero, J. C. W., 1 Feb 2021, In: NeuroImage. 226, p. 1-7 7 p., 117623.

Automated Assessment of Cerebral Arterial Perforator Function on 7T MRI

Arts, T., Siero, J. C. W., Biessels, G. J. & Zwanenburg, J. J. M., Jan 2021, In: Journal of Magnetic Resonance Imaging. 53, 1, p. 234-241 8 p.

Contralateral improvement of cerebrovascular reactivity and TIA frequency after unilateral revascularization surgery in moyamoya vasculopathy

Deckers, P. T., van Hoek, W., Kronenburg, A., Yaqub, M., Siero, J. C. W., Bhogal, A. A., van Berckel, B. N. M., van der Zwan, A. & Braun, K. P. J., Jan 2021, In: NeuroImage: Clinical. 30, 102684.

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Effect sizes of BOLD CVR, resting-state signal fluctuations and time delay measures for the assessment of hemodynamic impairment in carotid occlusion patients

De Vis, J. B., Bhogal, A. A., Hendrikse, J., Petersen, E. T. & Siero, J. C. W., 1 Oct 2018, In: NeuroImage. 179, p. 530-539 10 p.

Variable impact of CSF flow suppression on quantitative 3.0T intracranial vessel wall measurements

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Establishing upper limits on neuronal activity-evoked pH changes with APT-CEST MRI at 7 T

Khlebnikov, V., Siero, J. C. W., Bhogal, A. A., Luijten, P. R., Klomp, D. W. J. & Hoogduin, H., Jul 2018, In: Magnetic Resonance in Medicine. 80, 1, p. 126-136

Comparison of 3T Intracranial Vessel Wall MRI Sequences

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Vascular reactivity in small cerebral perforating arteries with 7T phase contrast MRI – A proof of concept study

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Fast CSF MRI for brain segmentation; Cross-validation by comparison with 3D T1-based brain segmentation methods

van der Kleij, L. A., de Bresser, J., Hendrikse, J., Siero, J. C. W., Petersen, E. T. & De Vis, J. B., 1 Apr 2018, In: PLoS ONE [E]. 13, 4, p. 1-14 e0196119.

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On the transmit field inhomogeneity correction of relaxation-compensated amide and NOE CEST effects at 7 T

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The Cumulative Influence of Hyperoxia and Hypercapnia on Blood Oxygenation and R2

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Plaque characteristics, burden and distribution assessment in an Asian population with high-resolution intracranial vessel wall imaging at 3 Tesla MRI

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Vessel wall imaging at 3.0-Tesla MRI in patients with intracranial vessel disease and in healthy controls

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Vessel Wall Imaging at 3-Tesla in Patients with Symptomatic Intracranial Stenosis and Age-Matched Healthy Controls

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Neuronal activation induced BOLD and CBF responses upon acetazolamide administration in patients with stenotic occlusive artery disease

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