

CURRICULUM VITAE - GRANT ROBERTS

PERSONAL DATA

University of Wisconsin-Madison Tel: (xxx)-xxx-xxxx

Depts. Of Medical Physics and Radiology
1111 Highland Ave. #1005

Email: xxxxxxxx@wisc.edu
Website: gsroberts1.github.io

Madison, WI 53705-2275

EDUCATION

2019–2023 University of Wisconsin – Madison, Madison, WI

PhD, Medical Physics

Advisor: Oliver Wieben, PhD

Co-advisor: Laura Eisenmenger, MD

2017–2019 University of Wisconsin – Madison, Madison, WI

MSc, Medical Physics

Advisor: Oliver Wieben, PhD

2015–2017 University of Missouri – Kansas City, Kansas City, MO

BS, Physics, Summa Cum Laude Advisor: Anthony Caruso, PhD Co-advisor: Fred Leibsle. PhD

2010–2014 University of Missouri – Columbia, Columbia, MO

BHS, Radiologic Science, Summa Cum Laude

Minor, Spanish

PROFESSIONAL EXPERIENCE

2023–present NeoSoft, LLC, Pewaukee, WI

Data Scientist

Role: Software development for cardiac MRI post-processing

2017–2023 University of Wisconsin – Madison, Madison, WI

Graduate Research Assistant, Cardiovascular MRI Research Group Focus: Advanced vascular imaging, post-processing, vascular aging

2016–2017 University of Missouri – Kansas City, Kansas City, MO

Undergraduate Research Assistant, Caruso Research Group Focus: Semiconductor and ferroelectric production and testing

2015–2016 Women's and Children's Hospital, Columbia, MO

Radiologic Technologist & CT Technologist

2014–2015 University of Missouri Hospital, Columbia, MO

Radiologic Technologist

2013–2014 University of Missouri Hospital, Columbia, MO

Radiologic Technologist Intern

CERTIFICATIONS AND LICENSURE

2018–2023 ABR Part 1 Certification

2014–2017 American Registry of Radiologic Technologists (ARRT) License

2013–2017 Advanced Cardiac Life Support (ACLS) Certification

2011–2017 Basic Life Support (BLS) Certification

AWARDS AND HONORS

2022 Magnetic Resonance in Medicine Cover Image, Volume 67, Issue 5.



2022	Trainee Stipend; International Society for Magnetic Resonance in Medicine.
2021	Trainee Stipend; International Society for Magnetic Resonance in Medicine.
2020	Trainee Stipend; International Society for Magnetic Resonance in Medicine.
2020	ASNR Certificate of Merit; Venous Mapping of Vascular Malformations using
	Cranial 4D Flow MRI; ASNR 2020; Educational Exhibit.
2019	RSNA Certificate of Merit; MR Alphabet Soup: Understanding the Principles of
	Common Magnetic Resonance Abbreviations. RSNA 2019; Educational Exhibit
2019	Research Travel Award; Vilas Student Research Grant Competition.
2019	ISMRM Magna Cum Laude Merit Award; Pulsatility and Resistivity Indices in
	Mesenteric Vasculature in Patients Suspected of Chronic Mesenteric Ischemia
	using 4D Flow MRI, ISMRM 2019. Pancreas/GI Poster Session.
2018	ISMRM Summa Cum Laude Merit Award; Non-Invasive Assessment of Mesenteric
	Hemodynamics with 4D flow MRI, ISMRM 2018. Body: Liver Poster Session.

INDEPENDENT FUNDING

2021–2023 National Institute on Aging F31 Predoctoral Fellowship: "Multi-Parametric Imaging of Systemic Cardiovascular and Cerebrovascular Health in Alzheimer's Disease", NIA F31AG071183, \$69,653

PUBLICATIONS

- Rivera-Rivera, L. A., Roberts, G. S., Peret A., Langhough, R., Jonaitis, E. M., Du, L., Field, A., Eisenmenger, L. B., Johnson, S. C., & Johnson, K. M. Unraveling Diurnal and Technical Variability in Cerebral Hemodynamics from Neurovascular 4D-Flow MRI. *Journal of Cerebral Blood Flow and Metabolism.* 10.1177/0271678X241232190.
- Wieben, O., Roberts, G. S., Corrado, P. A., & Johnson, K. M (2023). Four-Dimensional Flow MR Imaging: Technique and Advances. *Magnetic Resonance Imaging Clinics*. 10.1016/j.mric.2023.05.003.
- Huang, A., Roberts, G. S., Reeder, S. B., & Oechtering, T. H. (2023). Reference Values for 4D Flow Magnetic Resonance Imaging of the Portal Venous System. *Abdominal Radiology*. 10.1007/s00261-023-03892-3.
- Carter, K. J., Ward, A. T., Kellawan, J. M., Harrell, J. W., Peltonen, G. L., Roberts, G. S., Al-Subu, A., Hagen, S. A., Serlin, R. C., Eldridge, M., Wieben, O., & Schrage, W. G. (2023). Reduced Resting Macrovascular and Microvascular Cerebral Blood Flow in Young Adults with Metabolic Syndrome: Exploring Mechanisms. *Journal of Applied Physiology*. 10.1113/JP281975
- Roberts, G. S., Peret, A., Koscik, R. L., Jonaitis, E. M., Hoffman, C. A., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Johnson, S. C., Wieben, O., Johnson, K. M., & Eisenmenger, L. B (2023). Normative Cerebral Hemodynamics in Middle-Aged and Older Adults using 4D Flow MRI: Initial Analysis of Vascular Aging. *Radiology*. 10.1148/radiol.222685.
- Roberts, G. S.*, Hoffman, C. A.*, Rivera-Rivera, L. A., Berman, S. E., Eisenmenger, L. B., & Wieben, O. (2023). Automated Hemodynamic Assessment for Cranial 4D Flow MRI.
 Magnetic Resonance Imaging. 10.1016/j.mri.2022.12.016. *Authors contributed equally to this work.
- Eisenmenger, L. B.*, Peret, A.*, Roberts, G. S., Spahic, A., Tang, C., Kuner, A., Grayev, A., Field, A., Rowley, H. A., & Kennedy, T. (2023). When Less is More: FAST MR Protocols for Neuroradiology. *Radiographics*. doi.org/10.1148/rg.220147. *Authors contributed equally to this work.



- Eisenmenger, L. B.*, Peret, A.*, Famakin, B. M., Spahic, A., **Roberts, G. S.**, Bockholt, H. J., Johnson, K. M., & Paulsen, J. S. (2022). Vascular Contributions to Alzheimer's Disease. *Translation Research*, 10.1016/j.trsl.2022.12.003.
- Capel, K. W., Roberts, G. S., Kuner, A. D., Manunga, J., Chang, W., Spahic, A., Peret, A., Wieben, O., Johnson, K. M., & Eisenmenger, L. B. Beyond Time-of-Flight MRA: Review of Flow Imaging Techniques. doi.org/10.3174/ng.2100057
- Oechtering, T. H., Roberts, G. S., Panagiotopoulos, N., Wieben, O., Reeder, S.B., & Roldan-Alzate, A. (2022). Clinical Applications of 4D Flow MRI in the Portal Venous System. Magnetic Resonance in Medical Sciences. 10.2463/mrms.rev.2021-0105
- Roberts, G. S.*, Loecher, M. W.*, Spahic, A., Johnson, K. M., Turski, P. A., Eisenmenger, L. B., & Wieben, O. (2022). Virtual Injections Using 4D Flow MRI with Displacement Corrections and Constrained Probabilistic Streamlines. *Magnetic Resonance in Medicine*. 10.1002/mrm.29134. *Authors contributed equally to this work.
- Oechtering, T. H., Roberts, G. S., Panagiotopoulos, N., Wieben, O., Roldan-Alzate, A., & Reeder, S. B. (2021). Abdominal Applications of Quantitative 4D Flow MRI. *Abdominal Radiology*. 10.1007/s00261-021-03352-w.
- Macdonald, J. A., Roberts, G. S., Corrado, P. A., Beshish, A. G., Barton, G. P., Goss, K. N., Eldridge, M. W., Francois, C. J., & Wieben, O. (2021). Irregular Right Heart Flow Dynamics in Children and Young Adults Born Preterm. *Journal of Cardiovascular Magnetic Resonance*, 10.1186/s12968-021-00816-2.
- Roberts, G. S., François, C. J., Starekova, J., Roldán-Alzate, A., & Wieben, O. (2021). Non-invasive assessment of mesenteric hemodynamics in patients with suspected chronic mesenteric ischemia using 4D flow MRI. *Abdominal Radiology (New York)*, 10.1007/s00261-020-02900-0.

PUBLICATIONS IN PREPARATION

- Spahic, A., Roberts, G. S., Peret, A., Rivera-Rivera, L. A., Moody, J. F., Dean III, D. C., Alexander, A. L., Johnson, K. M., Johnson, S. C., Wieben, O., & Eisenmenger, L. B. Assessment of Cerebrovascular Disease and White Matter Neurite Density in Alzheimer's Disease. To Submit to Journal of Alzheimer's Disease.
- Peret, A., Spahic, A., Roberts, G. S., Hoffman, C. A., Koscik, R. L., Jonaitis, E. M., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Johnson, S. C., Wieben, O., Johnson, K. M., & Eisenmenger, L. B. 4D Flow Magnetic Resonance Imaging for the Study of Normal Cerebrovascular Aging in a Large Cohort of Cognitively Normal Older Adults. *To Submit to JAMA Neurology*.
- Jolicoeur, B. W., Yardim, Z., **Roberts, G. S.**, Rivera-Rivera, L. A., Eisenmenger, L. B., & Johnson, K. M. Quantifying Physiological Variability and Enhancing Reproducibility in 4D-Flow MRI Cerebrovascular Measurements with Self-Supervised Deep Learning. *To Submit to Magnetic Resonance in Medicine*.

CONFERENCE ABSTRACTS

- Spahic, A., Roberts, G. S., Peret, A., Rivera-Rivera, L. A., Dean, D., Johnson, K. M., Eisenmenger, L. B., & Wieben, O. Cerebrovascular Flow and White Matter Microstructural Integrity in the Presence of Amyloid and Tau Biomarkers. 2024 ISMRM and ISMRT Annual Meeting and Exhibition; 2024 May 4; Singapore.
- Naren, T., Roberts, G. S., Johnson, K. M., Breidenbach, B., Jarchow, M. Lose, S., Pandos,



- A., Okonkwo, O., & Wieben, O. Feasibility of a 2D Radial Simultaneous Multi-Slice Phase Contrast MRI Sequence for Aortic Pulse Wave Velocity Measurements. 2024 ISMRM and ISMRT Annual Meeting and Exhibition; 2024 May 4; Singapore.
- Naren, T., Roberts, G. S., Breidenbach, B., Bernhardt, Z. S., Fondakowski, J., Jarchow, M. Lose, S., Pandos, A., Johnson, K. M., Okonkwo, O., & Wieben, O. Comparing the Robustness of Respiratory-resolved Aortic Pulse Wave Velocity Calculation Methods in 2D Phase Contrast MRI. 10.1016/j.jocmr.2024.100601.
- Naren, T., Roberts, G. S., Breidenbach, B., Bernhardt, Z. S., Fondakowski, J., Jarchow, M. Lose, S., Pandos, A., Johnson, K. M., Okonkwo, O., & Wieben, O. Quantifying Differences in Aortic Pulse Wave Velocity Across the Respiratory Cycle with Retrospectively Gated Radial 2D Phase Contrast MRI. Society for Magnetic Resonance in Angiogram (SMRA) 35th Annual Conference; 2023 October 17; Sendai, Japan.
- Huang, A. P., Roberts, G. S., Roldan-Alzate, A., Wieben, O., Reeder, S. B., & Oechtering, T.
 4D Flow MRI Reference Values of the Portal Venous System. 2023 ISMRM and ISMRT Annual Meeting & Exhibition; 2023 June 3; Toronto, ON, Canada.
- Spahic, A., Roberts, G. S., Peret, A., Koscik, R. L., Jonaitis, E. M., Hoffman, C. A., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Johnson, S. C., Wieben, O., Johnson, K. M., & Eisenmenger, L. B. Sex Differences Between Total Cerebral Blood Flow and Age-Related Changes in the Brain Using 4D Flow MRI. 2023 ISMRM and ISMRT Annual Meeting & Exhibition; 2023 June 3; Toronto, ON, Canada.
- Rivera-Rivera, L. A., Roberts, G. S., Peret, A., Johnson, S. C., Wieben, O., Eisenmenger, L. B., & Johnson, K. M. Diurnal Changes in Cerebrovascular Dynamics Measured from 4D-Flow. 2023 ISMRM and ISMRT Annual Meeting & Exhibition; 2023 June 3; Toronto, ON, Canada.
- Jolicoeur, B. W., Rivera-Rivera, L. A., Roberts, G. S., Eisenmenger, L. B., & Johnson, K. M. Denoising 4D-Flow using Self-Supervised Deep Learning and Its Effect on Test-Retest Reproducibility. 2023 ISMRM and ISMRT Annual Meeting & Exhibition; 2023 June 3; Toronto, ON, Canada.
- Jen, M., Nishant, V., Cheng, K. P., **Roberts, G. S.**, Laluzerne, M., Frank, J., Williams, J., Ludwig, K., & Johnson, K. M. Evaluation of Relationship Between Trigeminal Nerve Stimulation and Hemodynamics using 4D-Flow MRI: A Pilot Study in Swine Model. 2023 ISMRM and ISMRT Annual Meeting & Exhibition; 2023 June 3; Toronto, ON, Canada.
- Rivera-Rivera, L. A., Roberts, G. S., Peret, A., Johnson, S. C., Wieben, O., Eisenmenger, L. B., & Johnson, K. M. Diurnal Changes in Cerebrovascular Dynamics Measured from 4D-Flow. ISMRM Workshop on Neurofluids: Anatomy, Physiology & Imaging. 2022 September 21.
- Peret, A., Roberts, G. S., Hoffman, C. A., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Wieben, O., Johnson, S. C., Johnson, K. M., & Eisenmenger, L. B. 4D Flow MRI for the Study of Cerebrovascular Aging in a Large Cohort of Cognitively Normal Older Adults. ISMRM Workshop on Neurofluids: Anatomy, Physiology & Imaging. 2022 September 21.
- Peret, A., Roberts, G. S., Hoffman, C. A., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Wieben, O., Johnson, S. C., Johnson, K. M., & Eisenmenger, L. B. 4D Flow Magnetic Resonance Imaging for the Study of Normal Cerebrovascular Aging in a Large Cohort of Cognitively Normal Older Adults. American Society of Functional Neuroradiology 15th Annual Meeting. 2022 August 27.
- Roberts, G. S., Peret, A., Rivera-Rivera, L. A., Cody, K. A., Rowley, H. A., Wieben, O., Johnson, S. C., Johnson, K. M., & Eisenmenger, L. B. Defining Normative Cerebral Hemodynamics in Cognitively Healthy Older Adults with 4D Flow MRI. Joint Annual Meeting



- ISMRM-ESMRMB & SMRT 31st Annual Meeting. 2022 May 7.
- Roberts, G. S., Bernhardt, Z. S., Lose, S., Pandos, A., Johnson, K. M., Eisenmenger, L. B., Okonkwo, O., & Wieben, O. Effects of Respiration on Aortic Pulse Wave Velocity using Retrospective Respiratory Gated Radial 2D Phase Contrast MRI. Joint Annual Meeting ISMRM-ESMRMB & SMRT 31st Annual Meeting. 2022 May 7.
- Naren, T., Roberts, G. S., & Wieben, O. Effect of Temporal Resolution on Flow-Area Aortic Pulse Wave Velocity Measures Using Phase Contrast and Balanced SSFP MRI: A Preliminary Study. Joint Annual Meeting ISMRM-ESMRMB & SMRT 31st Annual Meeting. 2022 May 7.
- Spahic, A., Roberts, G. S., Wolfson, T., Harris, D., Panagiotopoulos, N., Roldan-Alzate, A., Johnson, K. M., Wieben, O., Sirlin, C. B., Reeder, S. B., & Oechtering, T. H. Portal Venous 4D Flow MRI in Obese Patients Without Known Liver Disease Undergoing Weight Loss Surgery. Joint Annual Meeting ISMRM-ESMRMB & SMRT 31st Annual Meeting. 2022 May 7.
- Spahic, A., Oechtering, T. H., Roberts, G. S., Roldan-Alzate, A., Reeder, S. B., Wieben, O., & Johnson, K. M. Abdominal 4D Flow MRI in Obese Patients A Pilot Study. Society for Magnetic Resonance Angiography (SMRA) 33rd Annual International Conference. 2021 September.
- Peret, A., Kuner, A. S., Yu, J., Roberts, G. S., Jen, M., Johnson, K. M., & Eisenmenger, L. B. Relationship Between Alzheimer's Disease and Neurovascular Dysfunction. ASNR 59th Annual Meeting; 2021 May 22.
- Peret, A., Kuner, A., Yu, J., Chang, W., Roberts, G. S., Jen, M., Strother, C. M., Johnson, K. M., & Eisenmenger, L. B. Brain Metabolite Clearance: Glymphatic System and IPAD Pathway Hypothesis. ASNR 59th Annual Meeting of the American Society of Neuroradiology; 2021 May 22.
- Capel, K. W., Roberts, G. S., Kuner, A., Manunga, J., Wieben, O., Johnson, K. M., & Eisenmenger, L. B. Beyond 4D MRA: Review of Flow Imaging Techniques. ASNR 59th Annual Meeting of the American Society of Neuroradiology; 2021 May 22.
- Roberts, G. S., Rivera-Rivera, L. A., Johnson, K. M., Johnson, S. C., Dean III, D. C., Alexander, A. L., Wieben, O., & Eisenmenger, L. B. Assessment of Cerebrovascular Disease and White Matter Neurite Density in Alzheimer's Disease. 2021 ISMRM & SMRT Annual Meeting & Exhibition; 2021 May 15; Vancouver, BC, Canada.
- Roberts, G. S., Johnson, K. M., Rivera-Rivera, L. A., Kecskemeti, S. R., Okonkwo, O. C., Eisenmenger, L. B., & Wieben, O. Free-Breathing Radial 2D Phase Contrast MRI for Aortic Pulse Wave Velocity Measurements in Healthy Older Adults. Society for Magnetic Resonance Angiography (SMRA) 32nd Annual International Conference; 2020 September 18.
- Eisenmenger, L. B., **Roberts, G. S.**, Loecher, M. W., Rivera-Rivera, L. A., Turski, P. A., Johnson, K. M., & Wieben, O. Venous Mapping of Vascular Malformations using Cranial 4D Flow MRI with Improved 'Virtual Injections'. 2020 ISMRM & SMRT Virtual Conference & Exhibition; 2020 August 08.
- Roberts, G. S., Johnson, K. M., Kecskemeti, S. R., Okonkwo, O., Lose, S., Eisenmenger, L. B., & Wieben, O. Feasibility of a Free-Breathing 2D Phase Contrast MRI for Aortic Pulse Wave Velocity Measurements. 2020 ISMRM & SMRT Virtual Conference & Exhibition; 2020 August 08.
- Eisenmenger, L. B., Roberts, G. S., Loecher, M. W., Rivera-Rivera, L. A., Turski, P. A., Johnson, K. M., & Wieben, O. 4D flow MRI Characterization of High-Risk Dural Arteriovenous Fistula Features. ASNR 58th Annual Meeting of the American Society of



- Neuroradiology; 2020 May 30; Las Vegas, NV, USA.
- Roberts, G. S., Loecher, M. W., Rivera-Rivera, L. A., Turski, P. A., Johnson, K. M., Wieben, O., & Eisenmenger, L. B. Venous Mapping of Vascular Malformations using Cranial 4D Flow MRI. ASNR 58th Annual Meeting of the American Society of Neuroradiology; 2020 May 30; Las Vegas, NV, USA.
- Rivera-Rivera, L. A., Roberts, G. S., Eisenmenger, L. B., Wieben, O., Johnson, S. C., & Johnson, K. M. Association of Brain Biomechanics and Vascular Dynamics using 4D Flow, MRE and DENSE MRI. ISMRM 28th Annual Meeting & Exhibition; 2020 April 18; Sydney, Australia.
- Hoffman, C. A., Roberts, G. S., Berman, S., Eisenmenger, L. B., & Wieben, O. Automated Cranial 4D Flow MRI Analysis. Alzheimer's Disease and Related Disorders Research Day 2020; 2020 March 5; Madison, WI, USA.
- Hoffman, C. A., Roberts, G. S., Meram, E., Medero, R., Eisenmenger, L. B., Laeseke, P. F., Korosec, F. R., & Wieben, O. MR Alphabet Soup: Understanding the Principles of Common Magnetic Resonance Abbreviations. RSNA 2019; 2019 December 1; Chicago, IL, USA.
- Roberts, G. S., Johnson, K. M., Hoffman, C. A., Eisenmenger, L. B., & Wieben, O. Automating Background Phase Correction in Cranial 4D Flow MRI. Society for Magnetic Resonance Angiography (SMRA) 31st Annual International Conference; 2019 August 27; Nantes, France.
- Hoffman, C. A., Roberts, G. S., Berman, S., Eisenmenger, L. B., & Wieben, O. Towards Automated Cranial 4D Flow Cranial Analysis. Society for Magnetic Resonance Angiography (SMRA) 31st Annual International Conference; 2019 August 27; Nantes, France.
- Roberts, G. S., Francois, C. J., Roldan-Alzate, A., & Wieben, O. Pre and Postprandial Hemodynamics of the Gastroduodenal Artery in Patients Suspected of Chronic Mesenteric Ischemia using 4D Flow MRI. ISMRM 27th Annual Meeting & Exhibition; 2019 May 11; Montreal, QC, Canada.
- Roberts, G. S., Francois, C. J., Roldan-Alzate, A., & Wieben, O. Pulsatility and Resistivity Indices in Mesenteric Vasculature in Patients Suspected of Chronic Mesenteric Ischemia using 4D Flow MRI. ISMRM 27th Annual Meeting & Exhibition; 2019 May 11; Montreal, QC, Canada.
- MacDonald, J. M., Roberts, G. S., & Wieben, O. ECG Characterization and Correction during Exercise Stress Imaging. Joint Annual Meeting ISMRM-ESMRMB; 2018 June 16; Paris, France.s
- Roberts, G. S., Roldan-Alzate, A., Francois, C. J., & Wieben, O. Non-Invasive Assessment of Mesenteric Hemodynamics with 4D Flow MRI. Joint Annual Meeting ISMRM-ESMRMB; 2018 June 16; Paris, France.

INVITED PRESENTATIONS AND PANEL DISCUSSIONS

- "Cranial Hemodynamics Assessed with MRI: An Introduction with Relevance to AD Part I".
 Panelist, Wisconsin Alzheimer's Disease Research Center: Neuroimaging Core Seminar Series. University of Wisconsin Madison, Madison, WI, USA. June 15, 2020.
- "Cranial Hemodynamics Assessed with MRI: An Introduction with Relevance to AD Part II".
 Panelist, Wisconsin Alzheimer's Disease Research Center: Neuroimaging Core Seminar Series. University of Wisconsin Madison, Madison, WI, USA. July 21, 2020.
- "Flow Imaging Scientific Session 5". Moderator, Society for Magnetic Resonance Angiography 2021 Annual Conference. Virtual Conference. September 12, 2021.



PEER REVIEW

Quantitative Imaging in Medicine and Surgery(2), NeuroImage(1)

PROFESSIONAL SOCIETY MEMBERSHIPS

- International Society for Magnetic Resonance in Medicine (ISMRM)
- Society for Magnetic Resonance Angiography (SMRA)
- American Heart Association (AHA)
- Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART)

MENTORSHIP

I served as a secondary research mentor after Dr. Oliver Wieben and Dr. Laura Eisenmenger for the following students:

- Zachary Bernhardt Undergraduate Student in Biology (Okonkwo Lab)
- Jennifer Fondakowski Undergraduate Student in Biology (Okonkwo Lab)
- Mackenzie Jarchow Undergraduate Student in Neurobiology (Okonkwo Lab)
- Tarun Naren Graduate student in Medical Physics
- Alma Spahic Graduate student in Medical Physics
- Daniel Seiter Graduate student in Medical Physics