



CURRICULUM VITAE - GRANT ROBERTS

PERSONAL DATA

University of Wisconsin-Madison
Depts. Of Medical Physics and Radiology
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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. *Accepted in JCBFM*.
- 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., Kosciak, 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. *Accepted to Neurographics*.
- 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., Kosciak, 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*.

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. 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., Kosciak, 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)



University of Wisconsin
SCHOOL OF MEDICINE
AND PUBLIC HEALTH

- 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