

CURRICULUM VITAE**Gregory J. Metzger****PROFESSIONAL ADDRESS**

Gregory J. Metzger, PhD
 Center for Magnetic Resonance Research (CMRR)
 University of Minnesota Medical School
 2021 Sixth St SE; Minneapolis, MN 55455
 Phone: 612-625-9710, Main 612-626-2001
 Email: gmetzger@umn.edu

IDENTIFYING INFORMATION**Education**

Degree	Institution	Date Degree Granted
B.S	University of Pennsylvania Major: Bioengineering Minor: Mathematics	1992
Ph.D. [Advisor: Xiaoping Hu]	University of Minnesota Major: Biomedical Engineering Minor: Electrical Engineering	1997

Academic Appointments

Full Professor (Tenured) University of Minnesota, Twin Cities Campus, Department of Radiology & Urologic Surgery	(2020 - present)
Associate Professor (Tenured) University of Minnesota, Twin Cities Campus, Department of Radiology & Urologic Surgery	(2013 - 2020)
Graduate Faculty – Medical Physics University of Minnesota, Twin Cities Campus	(2012 – present)
Graduate Faculty – Senior Affiliate Member, Biomedical Engineering University of Minnesota, Twin Cities Campus	(2008 – present)
Associate Professor (Tenure Track) University of Minnesota, Twin Cities Campus, Department of Radiology & Urologic Surgery	(2005 - 2012)
Research Assistant, Biomedical Engineering University of Minnesota, Twin Cities Campus	(1994-1997)

Consulting Positions

Philips Medical Systems, Cleveland OH	(2006-2007)
---------------------------------------	-------------

Restore Medical Inc., Roseville, MN (2000-2003)

Current Membership and Offices in Professional Organizations

Chair, High Field Systems and Applications Study Group (2019-2020)
International Society of Magnetic Resonance in Medicine,

Member of the 2018-19 and 2019-20 Workshop & Study Group (2019)
Review Committees

Vice-Chair, High Field Systems and Applications Study Group (2018-2019)
International Society of Magnetic Resonance in Medicine,

Secretary, High Field Systems and Applications Study Group (2017-2018)
International Society of Magnetic Resonance in Medicine,

Member, Annual Meeting Program Committee, (2016-2018)
International Society of Magnetic Resonance in Medicine,

Member, Institute for Medicine in Engineering, University of Minnesota (2013-present)

Member, Masonic Cancer Center, University of Minnesota (2006-present)

Member, International Society of Magnetic Resonance in Medicine (1996-present)

Other professional employment, including military service

Philips Medical Systems, Bethesda, MD (2002-2005)
Senior Clinical Scientist, National Institutes of Health

Philips Medical Systems, Dallas, Texas (1997-2002)
Clinical Scientist, University of Texas Southwestern

HONORS AND AWARDS FOR RESEARCH WORK, TEACHING, PUBLIC ENGAGEMENT, AND SERVICE

University of Minnesota

- Featured in the article “A better picture of cancer” in the Fall 2011 issue of the Masonic Cancer Center News published by the Minnesota Medical Foundation. (2011)
- Featured in the article “A powerful look at prostate cancer” in the Winter 2009 issue of Healthier Living published by the Minnesota Medical Foundation. (2009)

External Resources

- Included in Magnetic Resonance in Medicine February 2017 Highlights edition. “A 16-channel combined loop-dipole transceiver array for 7 Tesla body MRI”, by M. Arcan Ertürk, Alexander J.E. Raaijmakers, Gregor Adriany, Kâmil Uğurbil and Gregory J. Metzger (<http://www.ismrm.org/qa-with-arcan-erturk-and-greg-metzger/>)

- Biomed Central article designated as “Highly Accessed” - Rizzardi, A. E., Johnson, A. T., Isaksson Vogel, R., Pambuccian, S. E., Henriksen, J., Skubitz, A. P., **Metzger, G. J.** & Schmechel, S. C. Quantitative comparison of immunohistochemical staining measured by digital image analysis versus pathologist visual scoring. 2013.
- Magnetic Resonance in Medicine article designated as “Editor’s Pick” January 2013, **Metzger, G. J.**, Auerbach, E. J., Akgun, C., Simonson, J., Bi, X., Ugurbil, K. & van de Moortele, P. F. Dynamically applied B(1) (+) shimming solutions for non-contrast enhanced renal angiography at 7.0 tesla. (2013) Magn Reson Med 69, 114-126. 2013.
- Distinguished Reviewer Award for the journal Magnetic Resonance in Medicine (2012).
- Best Presentation. “Development of Multigene Expression Signature Maps at the Protein Level from Digitized Immunohistochemistry Slides”, Schmechel, Dankbar, Henriksen, Rosener, Rizzardi, Metzger. Presented at the Pathology Informatics Annual Meeting. (2012).
- Best Poster Award, “Three Dimensional Spectroscopic Imaging in the Prostate with a Surface Combined Endorectal Coil at 7 Tesla”, Presented at the Gleason Conference, October 2011.
- Certificate of Merit Award. “Proton MR spectroscopy of the brain: The nuts, bolts and a few bad seeds”. Fleckenstein JL, Metzger GJ, Scientific exhibit presented at Radiological Society of North America meeting, Chicago, IL, (1998)
- International Society for Magnetic Resonance in Medicine (ISMRM) Student Travel Stipend (1997)
- International Society for Magnetic Resonance in Medicine (ISMRM) Student Travel Stipend (1996)

RESEARCH AND SCHOLARSHIP

Grants and Contracts

External Sources

Current

Role: Co-Principal Investigator (overall center grant)
 P41 EB027061 (Renewal Application PIs: Metzger and Ugurbil)
 NIH, NIBIB
 “Technology to realize the full potential of UHF MRI”
 02/01/2024 – 01/31/2029
 Total Costs: \$6,218,017
 Effort: 10%

Role: Principal Investigator (Translational Research and Development Project 2)
 P41 EB027061
 NIH, NIBIB
 “Technology to realize the full potential of UHF MRI - TRD2 – Mapping of Molecular and Physiological Tissue Properties at UHF”
 02/01/2024 – 01/31/2029
 Total Award Amount: \$1,295,485
 Effort: 15%

Role: **Co-Principal Investigator**
 Project Number: 1 I80 VP000466-01 (PI: Shih, Metzger)
 Uniform Services University
 “Advanced Imaging Platform for Microstructural and Functional Connectivity in Mild TBI”
 08/28/2023 - 08/27/2027

Total Funding: \$3,623,637

Effort: 10%

Role: Co-Principal Investigator

R01 EB032845 (PI: Ellermann / Metzger)

NIH/NIBIB

“Advanced 7 Tesla imaging of the knee for root cause of Osteoarthritis”

Direct Cost per Year: \$440,155

4/1/2023-3/31/2027

Effort: 15%

A1 Submitted 3/1/2022

Role: Co-Investigator

R01 EB033365-01 (PI: Li)

NIH/NIBIB

“Advanced Knee ASL Imaging at 7T”

07/01/2022 – 06/30/2026

Direct Cost per Year: \$460,972

A1 in Revision

Effort: 10%

Role: Principal Investigator

R01 CA241159-01

NIH, NCI

“Computer Aided Diagnostic System for Prostate Cancer Detection Using Quantitative Multiparametric MRI”

9/18/2021-8/31/2026

Direct Cost per Year: \$498,999

Effort: 25%

Role: Principal Investigator

R01 EB029985-01

NIH, NCI

“Development of Enabling Technologies for Clinical Ultrahigh Field Body MRI”

4/15/2021 – 12/31/2024

Direct Cost per Year: \$477,647

Effort: 30%

Role: Principal Investigator of subcontract

R44 HL139184 (PI: Lurie)

NIH/NHLBI

“Phase II, Head Up Cardiopulmonary Resuscitation Device”

9/1/2021-8/30/2023

Direct Cost per Year: \$800,215

Effort: 10%

Role: co-Principal Investigator

Supplement to P41 EB027061 (co-PI: Metzger/Ugurbil)

NIH/NIBIB

“Technology to realize the full potential of UHF MRI: Rotating frame MRI biomarkers to monitor Alzheimer’s disease”

5/24/2021 – 01/31/2022
Direct Cost per year: \$250,000
Effort: 2%

Role: Co-Investigator

R01 EB031787 (PI: Marjanska / Bogner)
NIH/NIBIB
“Novel 10.5 T deuterium-based MRS/I method to measure brain metabolism”
4/1/2022-3/31/2027
Direct Costs per Year: \$495,476
Effort: 5%

Pending

Role: Co-Investigator
R01 AI173799-01 (PI: Li)
NIH, NIBIB
“7T Multi-Parametric MRI for Renal Transplantation”
09/01/2022 – 08/31/2026
Direct Cost per Year: \$431,198
Effort: 8%

Completed

Role: **Co-Principal Investigator** (overall center grant)
P41 EB027061
NIH, NIBIB
“Technology to realize the full potential of UHF MRI”
02/01/2019 – 01/31/2024
Total Cost: \$ 6,333,881
Direct Costs Per Year: \$750,000
Effort: 10%

Role: **Project Lead** (Translational Research and Development Project 2)
P41 EB027061
NIH, NIBIB
“Technology to realize the full potential of UHF MRI - Ultrahigh field molecular imaging and spectroscopy”
02/01/2019 – 01/31/2024
Direct Costs Per Year: \$205,200
Effort: 15%

Role: Co-Principal Investigator

W81XWH-15-1-0478 (PI: Metzger / Koopmieners)
Department of Defense, Prostate Cancer Research Program (DOD-PCRP)
“Development of a multi-parametric model of clinically significant prostate cancer”
09/30/2015 – 9/29/2020
Direct Cost per Year: \$250,000
Effort: 20%

Role: **Project Lead** (TRD4)

P41 EB015894 (PI: Kamil Ugurbil)
NIH NIBIB
“NMR Imaging and Spectroscopy – UHF Body Imaging”
06/01/2013 - 05/31/2018
Total Cost: \$1,349,542
Effort: 15%

Role: **Principal Investigator**
R01 CA155268
NIH, NCI
“Development of an Optimal MRI Platform for Prostate Investigations at 7 Tesla”
09/01/2012 – 12/31/2018
Direct Cost per Year: \$364,470
Effort: 45%

Role: **Project Lead** (Core II)
P41 RR008079 (PI: Kamil Ugurbil)
NIH, NCRR
“NMR Imaging and Localized Spectroscopy – High-Field Body MR Imaging and Spectroscopy “
06/01/2008 - 05/31/2013
Total Cost: \$1,283,500

Role: **Principal Investigator**
R01 CA131013
NIH, NCI
“Multi-parametric MRI Determination of Prostate Cancer Aggressiveness and Extent”
06/16/2008 - 03/31/2013
Direct Cost per Year: \$212,512
Effort: 35%

University Sources

Completed

Role: **Principal Investigator**
MN-REACH mechanism
NIH & UMN
“A Composite Biomarker Score Computer Aided Diagnostic Device (CBS-CAD) for Improved Prostate Cancer Management with Quantitative Multiparametric MRI”
11/08/2016 – 12/31/2018
Total Direct Cost: \$135,000
Effort: 6%

Role: **Principal Investigator**
UM Interdisciplinary Informatics 2010 Seed Grant
“Data Management and Analysis of Whole Organ Pathology for Improved Clinical Diagnostics and Biomarker Discovery”
07/01/2011 - 06/30/2012
Total Cost: \$74,121
Effort: 4%

Role: **Principal Investigator**

TRG #09-08
 AHC Translational Research Grant Program
 "Molecular Enhancement of Cryosurgical Ablation of the Prostate"
 10/1/2009 – 9/29/2011
 Total Cost: \$133,333

Role: Principal Investigator

MMF Equipment Grant
 Minnesota Medical Foundation
 "Local Device to Rapidly and Accurately Assess Kidney Function to Maximize Patient Safety Prior to MRI Contrast Administration"
 4/1/2008 – 3/31/2010
 Total Direct Costs: \$9,000

Role: Principal Investigator

Digital Technology Center
 University of Minnesota
 "Construction of Three-Dimensional Co-Registered Pathology Data as a Gold Standard for the Classification of Magnetic Resonance Imaging of Prostate Cancer"
 6/1/2007 – 5/31/2008
 Total Direct Costs \$27,320

Publications

Impact Analytics Grid - Google Scholar (3/9/2024)

<i>h-index</i>	<i>h(fI)-index</i>	Total Publications	First/Last Author Publications	Total Citations	First/Last Author Citations
34	19	78	29	7,645	1,596

PubMed Search String: ((Metzger G [Author]) AND ("University of Minnesota" OR "Bethesda")) OR (Metzger G J [Author])

JIF: Journal Impact Factor;
 CI: Citation Index (*from UMN Manifesto*)

Peer-Reviewed Publications (Mentee or Trainee Underlined and marked with '*')

1. Zbyn S, Kajabi AW, Nouraei CM, Ludwig KD, Johnson CP, Tompkins MA, Nelson BJ, Zhang L, Moeller S, Marette S, Metzger GJ, Carlson CS, Ellermann JM. Evaluation of lesion and overlying articular cartilage in patients with juvenile osteochondritis dissecans of the knee using quantitative diffusion MRI. J Orthop Res. 2023;41(7):1449-63.
 Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
2. Steensma BR, Sadeghi-Tarakameh A, Meliado EF, van den Berg CAT, Klomp DWJ, Luijten PR, Metzger GJ, Eryaman Y, Raaijmakers AJE. Tier-based formalism for safety assessment of custom-built radio-frequency transmit coils. NMR Biomed. 2023;36(5):e4874
 Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
3. Schmidt S, Erturk MA, He X, Haluptzok T, Eryaman Y, Metzger GJ. Improved (1) H body imaging at 10.5 T: Validation and VOP-enabled imaging in vivo with a 16-channel transceiver dipole array. Magn Reson Med. 2023.

Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

4. Ozutemiz C, White M, Elvendahl W, Eryaman Y, Marjanska M, Metzger GJ, Patriat R, Kulesa J, Harel N, Watanabe Y, Grant A, Genovese G, Cayci Z. Use of a Commercial 7-T MRI Scanner for Clinical Brain Imaging: Indications, Protocols, Challenges, and Solutions-A Single-Center Experience. *AJR Am J Roentgenol*. 2023. Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
5. Masotti M, Zhang L, Leng E, Metzger GJ, Koopmeiners JS. A novel Bayesian functional spatial partitioning method with application to prostate cancer lesion detection using MRI. *Biometrics*. 2023;79(2):604-15. Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
6. Jin J, Zhang L, Leng E, Metzger GJ, Koopmeiners JS. Multi-resolution super learner for voxel-wise classification of prostate cancer using multi-parametric MRI. *J Appl Stat*. 2023;50(3):805-26. Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
7. Armstrong AR, Zbyn S, Kajabi AW, Metzger GJ, Ellermann JM, Carlson CS, Toth F. Naturally occurring osteochondrosis latens lesions identified by quantitative and morphological 10.5 T MRI in pigs. *J Orthop Res*. 2023;41(3):663-73
JIF: 2.266; CI: 1; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
8. Tenbergen CJA, Metzger GJ, Scheenen TWJ. Ultra-high-field MR in Prostate cancer: Feasibility and Potential. *MAGMA*. 2022;35(4):631-44.
Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
9. Schoen N, Seifert F, Petzold J, **Metzger GJ**, Speck O, Ittermann B, Schmitter S. The impact of respiratory motion on electromagnetic fields and specific absorption rate in cardiac imaging at 7T. *Magn Reson Med*. 2022;88(6):2645-61.
Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
10. Jin J, Zhang L, Leng E, **Metzger GJ**, Koopmeiners JS. Bayesian spatial models for voxel-wise prostate cancer classification using multi-parametric magnetic resonance imaging data. *Statistics in medicine*. 2022;41(3):483-99.
Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
11. He X, Schmidt S, Zbyn S, Haluptzok T, Moeller S, **Metzger GJ**. Improved TSE imaging at ultrahigh field using nonlocalized efficiency RF shimming and acquisition modes optimized for refocused echoes (AMORE). *Magn Reson Med*. 2022;88(4):1702-19.
Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
12. Sadeghi-Tarakameh A, Jungst S, Lanagan M, DelaBarre L, Wu X, Adriany G, **Metzger GJ**, Van de Moortele PF, Ugurbil K, Atalar E, Eryaman Y. A nine-channel transmit/receive array for spine imaging at 10.5 T: Introduction to a nonuniform dielectric substrate antenna. *Magn Reson Med*. 2022;87(4):2074-88. Epub

2021/11/27. doi: 10.1002/mrm.29096.

JIF: 4.668; CI: 0; Developed study design, Manuscript preparation, Manuscript editing, Manuscript review

13. *Jin J, Zhang L, *Leng E, **Metzger** GJ, Koopmeiners JS. Bayesian spatial models for voxel-wise prostate cancer classification using multi-parametric magnetic resonance imaging data. *Statistics in medicine*. 2022;41(3):483-99. Epub 2021/11/09. doi: 10.1002/sim.9245.
JIF: 2.373; CI: 0; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
14. *Zbyn S, Santiago C, Johnson CP, Ludwig KD, Zhang L, Marette S, Tompkins MA, Nelson BJ, Takahashi T, **Metzger** GJ, Carlson CS, Ellermann JM. Compositional evaluation of lesion and parent bone in patients with juvenile osteochondritis dissecans of the knee using T2 * mapping. *J Orthop Res*. 2021. Epub 2021/10/13. doi: 10.1002/jor.25187.
JIF: 3.14; CI: 0; Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
15. Ugurbil K, Van de Moortele PF, Grant A, Auerbach EJ, Erturk A, Lagore R, Ellermann JM, *He X, Adriany G, **Metzger** GJ. Progress in Imaging the Human Torso at the Ultrahigh Fields of 7 and 10.5 T. *Magn Reson Imaging Clin N Am*. 2021;29(1):e1-e19. Epub 2020/11/26. doi: 10.1016/j.mric.2020.10.001.
JIF: 2.266; CI: 1; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
16. Tkac I, Benneyworth MA, Nichols-Meade T, Steuer EL, Larson SN, **Metzger** GJ, Ugurbil K. Long-term behavioral effects observed in mice chronically exposed to static ultra-high magnetic fields. *Magn Reson Med*. 2021;86(3):1544-59. Epub 2021/04/07. doi: 10.1002/mrm.28799.
JIF: 4.668; CI: 5; Developed study concept, Manuscript preparation, Manuscript editing, Manuscript review
17. *Saunders SL, *Leng E, Spilseth B, Wasserman N, **Metzger** GJ, Bolan PJ. Training Convolutional Networks for Prostate Segmentation With Limited Data. *Ieee Access*. 2021;9:109214-23. Epub 2021/09/17. doi: 10.1109/access.2021.3100585.
JIF: 3.367; CI: 2; Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
18. Masotti M, Zhang L, *Leng E, **Metzger** GJ, Koopmeiners JS. A novel Bayesian functional spatial partitioning method with application to prostate cancer lesion detection using MRI. *Biometrics*. 2021. Epub 2021/11/23. doi: 10.1111/biom.13602.
JIF: 1.711; CI: 0; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, , Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
19. Huang YH, Ozutemiz C, Rubin N, Schat R, **Metzger** GJ, Spilseth B. Impact of 18-French Rectal Tube Placement on Image Quality of Multiparametric Prostate MRI. *AJR Am J Roentgenol*. 2021;217(4):919-20. Epub 2021/04/15. doi: 10.2214/AJR.21.25732.
JIF: 3.959; CI: 3; Developed study concept, Manuscript preparation, Manuscript editing, Manuscript review
20. *He X, Auerbach EJ, Garwood M, Kobayashi N, Wu X, **Metzger** GJ. Parallel transmit optimized 3D composite adiabatic spectral-spatial pulse for spectroscopy. *Magn Reson Med*. 2021;86(1):17-32. Epub 2021/01/27. doi: 10.1002/mrm.28682.
JIF: 4.668; CI: 2; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
21. Steensma B, van de Moortele PF, Erturk A, Grant A, Adriany G, Luijten P, Klomp D, van den Berg N, **Metzger** G, Raaijmakers A. Introduction of the snake antenna array: Geometry optimization of a sinusoidal dipole antenna for 10.5T body imaging with lower peak SAR. *Magn Reson Med*. 2020;84(5):2885-96. Epub

2020/05/06. doi: 10.1002/mrm.28297.

JIF: 4.668; CI: 14; Developed study concept, Developed study design, Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review

22. Sadeghi-Tarakameh A, DelaBarre L, Lagore RL, Torrado-Carvajal A, Wu X, Grant A, Adriany G, **Metzger** GJ, Van de Moortele PF, Ugurbil K, Atalar E, Eryaman Y. In vivo human head MRI at 10.5T: A radiofrequency safety study and preliminary imaging results. *Magn Reson Med*. 2020;84(1):484-96. Epub 2019/11/22. doi: 10.1002/mrm.28093.
JIF: 4.668; CI: 44; Developed study concept, Developed study design, Manuscript preparation, Manuscript editing, Manuscript review
23. Sadeghi-Tarakameh A, Adriany G, **Metzger** GJ, Lagore RL, Jungst S, DelaBarre L, Van de Moortele PF, Ugurbil K, Atalar E, Eryaman Y. Improving radiofrequency power and specific absorption rate management with bumped transmit elements in ultra-high field MRI. *Magn Reson Med*. 2020;84(6):3485-93. Epub 2020/08/09. doi: 10.1002/mrm.28382.
JIF: 4.668; CI: 12; Developed study concept, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
24. Li X, Slinin YX, Zhang L, Dengel DR, Tupper D, **Metzger** GJ, Murray AM. Cerebral blood flow characteristics following hemodialysis initiation in older adults: A prospective longitudinal pilot study using arterial spin labeling imaging. *Neuroimage Clin*. 2020;28:102434. Epub 2020/09/28. doi: 10.1016/j.nicl.2020.102434.
JIF: 4.67; CI: 1; Developed study concept, Developed study design, Manuscript preparation, Manuscript editing, Manuscript review
25. *He X, Erturk MA, Grant A, Wu X, Lagore RL, DelaBarre L, Eryaman Y, Adriany G, Auerbach EJ, Van de Moortele PF, Ugurbil K, **Metzger** GJ. First in-vivo human imaging at 10.5T: Imaging the body at 447 MHz. *Magn Reson Med*. 2020;84(1):289-303. Epub 2019/12/18. doi: 10.1002/mrm.28131.
JIF: 4.082 ; CI: 32; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review ;Senior.
26. Grant A, **Metzger** GJ, Van de Moortele PF, Adriany G, Olman C, Zhang L, Koopermeiners J, Eryaman Y, Koeritzer M, Adams ME, Henry TR, Ugurbil K. 10.5 T MRI static field effects on human cognitive, vestibular, and physiological function. *Magn Reson Imaging*. 2020;73:163-76. Epub 2020/08/22. doi: 10.1016/j.mri.2020.08.004.
JIF: 2.546; CI: 10; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
27. *Leng, E., Henriksen, J. C., Rizzardi, A. E., Jin, J., *Nam, J. W., Brassuer, B. M., Johnson, A. D., Reder, N. P., Koopmeiners, J. S., Schmechel, S. C., & **Metzger**, G. J. (2019). Signature maps for automatic identification of prostate cancer from colorimetric analysis of H&E- and IHC-stained histopathological specimens. *Sci Rep*, 9(1), 6992. doi:10.1038/s41598-019-43486-y
JIF: 4.122 ; CI: 1; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
28. *Erturk, M. A., *Li, X., Van de Moortele, P. F., Ugurbil, K., & **Metzger**, G. J. (2019). Evolution of UHF body imaging in the human torso at 7T: Technology, Applications and Future Directions. *Top Magn Reson Imaging*. 2019;28(3):101-24. doi:10.1097/RMR.000000000000202
JIF: 1.387 ; CI: 0; GIS, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

29. Sathianathen, N. J., Warlick, C. A., Weight, C. J., Ordonez, M. A., Spilseth, B., **Metzger**, G. J., Murugan, P., & Konety, B. R. (2019). A clinical prediction tool to determine the need for concurrent systematic sampling at the time of magnetic resonance imaging-guided biopsy. *BJU Int*, 123(4), 612-617. doi:10.1111/bju.14617
JIF: 4.688; CI: 1; Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
30. Sathianathen, N. J., Warlick, C. A., Soubra, A., Balaji, P., **Metzger**, G. J., Spilseth, B., Murugan, P., Ordonez, M., Weight, C. J., & Konety, B. R. (2019). Difference in MRI-guided biopsy cancer detection rates between individual clinicians. *Urol Oncol*, 37(5), 299 e291-299 e296. doi:10.1016/j.urolonc.2019.01.032
JIF: 3.397 ; CI: 0; Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
31. Keenan, K. E., Biller, J. R., Delfino, J. G., Boss, M. A., Does, M. D., Evelhoch, J. L., Griswold, M. A., Gunter, J. L., Hinks, R. S., Hoffman, S. W., Kim, G., Lattanzi, R., Li, X., Marinelli, L., **Metzger**, G. J., Mukherjee, P., Nordstrom, R. J., Peskin, A. P., Perez, E., Russek, S. E., Sahiner, B., Serkova, N., Shukla-Dave, A., Steckner, M., Stupic, K. F., Wilmes, L. J., Wu, H. H., Zhang, H., Jackson, E. F., & Sullivan, D. C. (2019). Recommendations towards standards for quantitative MRI (qMRI) and outstanding needs. *J Magn Reson Imaging*. doi:10.1002/jmri.26598
JIF:3.612 ; CI: 0; Defined intellectual content, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
32. Ferrazzi, G., Bassenge, J. P., Wink, C., Ruh, A., Markl, M., Moeller, S., **Metzger**, G. J., Ittermann, B., & Schmitter, S. (2019). Autocalibrated multiband CAIPIRINHA with through-time encoding: Proof of principle and application to cardiac tissue phase mapping. *Magn Reson Med*, 81(2), 1016-1030. doi:10.1002/mrm.27460
JIF:4.082 ; CI: 0; Manuscript preparation, Manuscript editing, Manuscript review
33. Sathianathen, N. J., Konety, B. R., Soubra, A., **Metzger**, G. J., Spilseth, B., Murugan, P., Weight, C. J., Ordonez, M. A., & Warlick, C. A. (2018). Which scores need a core? An evaluation of MR-targeted biopsy yield by PIRADS score across different biopsy indications. *Prostate Cancer Prostatic Dis*, 21(4), 573-578. doi:10.1038/s41391-018-0065-6
JIF:3.803 ; CI: 5; Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
34. *Li, X., Auerbach, E. J., Van de Moortele, P. F., Ugurbil, K., & **Metzger**, G. J. (2018). Quantitative single breath-hold renal arterial spin labeling imaging at 7T. *Magn Reson Med*, 79(2), 815-825. doi:10.1002/mrm.26742
JIF:4.082 ; CI: 0; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review
35. *Leng, E., Spilseth, B., Zhang, L., Jin, J., Koopmeiners, J. S., & **Metzger**, G. J. (2018). Development of a measure for evaluating lesion-wise performance of CAD algorithms in the context of mpMRI detection of prostate cancer. *Med Phys*, 45(5), 2076-2088. doi:10.1002/mp.12861
JIF:2.884 ; CI: 0; GIS, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
36. *Jin, J., Zhang, L., *Leng, E., **Metzger**, G. J., & Koopmeiners, J. S. (2018). Detection of prostate cancer with multiparametric MRI utilizing the anatomic structure of the prostate. *Stat Med*, 37(22), 3214-3229. doi:10.1002/sim.7810
JIF:1.932 ; CI: 0; Developed study concept, Developed study design, Defined intellectual content, Conducted

literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

37. Eryaman, Y., Lagore, R. L., *Erturk, M. A., Utecht, L., Zhang, P., Torrado-Carvajal, A., Turk, E. A., DelaBarre, L., Metzger, G. J., Adriany, G., Ugurbil, K., & Vaughan, J. T. (2018). Radiofrequency heating studies on anesthetized swine using fractionated dipole antennas at 10.5 T. *Magn Reson Med*, 79(1), 479-488. doi:10.1002/mrm.26688
JIF:4.082 ; CI: 4 ; Developed study design, Manuscript preparation, Manuscript editing, Manuscript review
38. Weingartner, S., Zimmer, F., Metzger, G. J., Ugurbil, K., Van de Moortele, P. F., & Akcakaya, M. (2017). Motion-robust cardiac B1+ mapping at 3T using interleaved bloch-siegert shifts. *Magn Reson Med*, 78(2), 670-677. doi:10.1002/mrm.26395
JIF:4.082 ; CI:4 ; Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
39. Schmitter, S., Moeller, S., Wu, X., Auerbach, E. J., Metzger, G. J., Van de Moortele, P. F., & Ugurbil, K. (2017). Simultaneous multislice imaging in dynamic cardiac MRI at 7T using parallel transmission. *Magn Reson Med*, 77(3), 1010-1020. doi:10.1002/mrm.26180
JIF:4.082 ; CI:12 ; Defined intellectual content, Manuscript editing, Manuscript review
40. *Erturk, M. A., Wu, X., Eryaman, Y., Van de Moortele, P. F., Auerbach, E. J., Lagore, R. L., DelaBarre, L., Vaughan, J. T., Ugurbil, K., Adriany, G., & Metzger, G. J. (2017). Toward imaging the body at 10.5 tesla. *Magn Reson Med*, 77(1), 434-443. doi:10.1002/mrm.26487
JIF:4.082 ; CI: 21; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
41. *Erturk, M. A., Raaijmakers, A. J., Adriany, G., Ugurbil, K., & Metzger, G. J. (2017). A 16-channel combined loop-dipole transceiver array for 7 Tesla body MRI. *Magn Reson Med*, 77(2), 884-894. doi:10.1002/mrm.26153
JIF:4.082 ; CI: 49; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review
42. Bolan, P. J., Kim, E., Herman, B. A., Newstead, G. M., Rosen, M. A., Schnall, M. D., Pisano, E. D., Weatherall, P. T., Morris, E. A., Lehman, C. D., Garwood, M., Nelson, M. T., Yee, D., Polin, S. M., Esserman, L. J., Gatsonis, C. A., Metzger, G. J., Newitt, D. C., Partridge, S. C., Hylton, N. M., & Investigators, A. T. t. I.-. (2017). MR spectroscopy of breast cancer for assessing early treatment response: Results from the ACRIN 6657 MRS trial. *J Magn Reson Imaging*, 46(1), 290-302. doi:10.1002/jmri.25560
JIF:3.612 ; CI:13 ; Defined intellectual content, Manuscript editing, Manuscript review
43. Metzger, G. J., *Kalavagunta, C., Spilseth, B., Bolan, P. J., Li, X., Hutter, D., Nam, J. W., Johnson, A. D., Henriksen, J. C., Moench, L., Konety, B., Warlick, C. A., Schmechel, S. C., & Koopmeiners, J. S. (2016). Detection of Prostate Cancer: Quantitative Multiparametric MR Imaging Models Developed Using Registered Correlative Histopathology. *Radiology*, 279(3), 805-816. doi:10.1148/radiol.2015151089
JIF: 7.469 ; CI: 25 ; Guarantor of integrity of entire study, Developed study concept, Conducted experimental studies, Data acquisition, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review
44. *Erturk, M. A., Tian, J., Van de Moortele, P. F., Adriany, G., & Metzger, G. J. (2016). Development and evaluation of a multichannel endorectal RF coil for prostate MRI at 7T in combination with an external

surface array. *J Magn Reson Imaging*, 43(6), 1279-1287. doi:10.1002/jmri.25099

JIF: 3.612 ; CI: 7; Guarantor of integrity of entire study, Developed study concept, Conducted experimental studies, Data acquisition, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review

45. de Boer, A., Hoogduin, J. M., Blankestijn, P. J., *Li, X., Luijten, P. R., **Metzger**, G. J., Raaijmakers, A. J., Umutlu, L., Visser, F., & Leiner, T. (2016). 7 T renal MRI: challenges and promises. *MAGMA*, 29(3), 417-433. doi:10.1007/s10334-016-0538-3
JIF:1.832 ; CI: 6; Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
46. Wasserman, N. F., Spilseth, B., Golzarian, J., & **Metzger**, G. J. (2015). Use of MRI for Lobar Classification of Benign Prostatic Hyperplasia: Potential Phenotypic Biomarkers for Research on Treatment Strategies. *AJR Am J Roentgenol*, 205(3), 564-571. doi:10.2214/AJR.14.13602
JIF: 3.125 ; CI: 11 ; Guarantor of integrity of entire study, Developed study design, Defined intellectual content, Conducted experimental studies, Manuscript preparation, Manuscript editing, Manuscript review
47. *Li, X., Wang, D., Auerbach, E. J., Moeller, S., Ugurbil, K., & **Metzger**, G. J. (2015). Theoretical and experimental evaluation of multi-band EPI for high-resolution whole brain pCASL Imaging. *Neuroimage*, 106, 170-181. doi:10.1016/j.neuroimage.2014.10.029
JIF: 5.426 ; CI:15 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
48. *Li, X., Bolan, P. J., Ugurbil, K., & **Metzger**, G. J. (2015). Measuring renal tissue relaxation times at 7 T. *NMR Biomed*, 28(1), 63-69. doi:10.1002/nbm.3195
JIF:3.031 ; CI:7 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Manuscript preparation, Manuscript editing, Manuscript review
49. Kobayashi, N., Goerke, U., Wang, L., Ellermann, J., **Metzger**, G. J., & Garwood, M. (2015). Gradient-Modulated PETRA MRI. *Tomography*, 1(2), 85-90. doi:10.18383/j.tom.2015.00157
JIF: NR ; CI:5 ; Defined intellectual content, Manuscript editing, Manuscript review
50. *Kalavagunta, C., Zhou, X., Schmechel, S. C., & **Metzger**, G. J. (2015). Registration of in vivo prostate MRI and pseudo-whole mount histology using Local Affine Transformations guided by Internal Structures (LATIS). *J Magn Reson Imaging*, 41(4), 1104-1114. doi:10.1002/jmri.24629
JIF:3.25 ; CI:15 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
51. Rizzardi, A. E., Vogel, R. I., Koopmeiners, J. S., Forster, C. L., Marston, L. O., Rosener, N. K., Akentieva, N., Price, M. A., **Metzger**, G. J., Warlick, C. A., Henriksen, J. C., Turley, E. A., McCarthy, J. B., & Schmechel, S. C. (2014). Elevated hyaluronan and hyaluronan-mediated motility receptor are associated with biochemical failure in patients with intermediate-grade prostate tumors. *Cancer*, 120(12), 1800-1809. doi:10.1002/cncr.28646
JIF: 5.649 ; CI:17 ; Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review
52. Rizzardi, A. E., Rosener, N. K., Koopmeiners, J. S., Isaksson Vogel, R., **Metzger**, G. J., Forster, C. L., Marston, L. O., Tiffany, J. R., McCarthy, J. B., Turley, E. A., Warlick, C. A., Henriksen, J. C., & Schmechel, S. C. (2014). Evaluation of protein biomarkers of prostate cancer aggressiveness. *BMC Cancer*, 14, 244.

doi:10.1186/1471-2407-14-244

JIF: 3.362 ; CI: 25; Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review

53. *Kalavagunta, C., Michaeli, S., & Metzger, G. J. (2014). In vitro Gd-DTPA relaxometry studies in oxygenated venous human blood and aqueous solution at 3 and 7 T. *Contrast Media Mol Imaging*, 9(2), 169-176. doi:10.1002/cmml.1568
JIF: 2.923 ; CI: 20 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
54. Iltis, I., Choi, J., Vollmers, M., Shenoi, M., Bischof, J., & **Metzger, G. J. (2014).** In vivo detection of the effects of preconditioning on LNCaP tumors by a TNF-alpha nanoparticle construct using MRI. *NMR Biomed*, 27(9), 1063-1069. doi:10.1002/nbm.3157
JIF:3.031 ; CI:5 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
55. Shenoi, M. M., Iltis, I., Choi, J., Koonce, N. A., **Metzger, G. J.**, Griffin, R. J., & Bischof, J. C. (2013). Nanoparticle delivered vascular disrupting agents (VDAs): use of TNF-alpha conjugated gold nanoparticles for multimodal cancer therapy. *Mol Pharm*, 10(5), 1683-1694. doi:10.1021/mp300505w
JIF: 4.787; CI:44 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Manuscript preparation, Manuscript editing, Manuscript review
56. **Metzger, G. J.**, Auerbach, E. J., Akgun, C., Simonson, J., Bi, X., Ugurbil, K., & van de Moortele, P. F. (2013). Dynamically applied B1+ shimming solutions for non-contrast enhanced renal angiography at 7.0 Tesla. *Magn Reson Med*, 69(1), 114-126. doi:10.1002/mrm.24237
JIF: 3.398; CI:40 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
57. *Li, X., & Metzger, G. J. (2013). Feasibility of measuring prostate perfusion with arterial spin labeling. *NMR Biomed*, 26(1), 51-57. doi:10.1002/nbm.2818
JIF: 3.064 ; CI: 6 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Manuscript preparation, Manuscript editing, Manuscript review
58. Carter, J. S., Koopmeiners, J. S., Kuehn-Hajder, J. E., **Metzger, G. J.**, Lakkadi, N., Downs, L. S., Jr., & Bolan, P. J. (2013). Quantitative multiparametric MRI of ovarian cancer. *J Magn Reson Imaging*, 38(6), 1501-1509. doi:10.1002/jmri.24119
JIF:3.612 ; CI: 23 ; Defined intellectual content, Manuscript editing, Manuscript review
59. Suttie, J. J., Delabarre, L., Pitcher, A., van de Moortele, P. F., Dass, S., Snyder, C. J., Francis, J. M., **Metzger, G. J.**, Weale, P., Ugurbil, K., Neubauer, S., Robson, M., & Vaughan, T. (2012). 7 Tesla (T) human cardiovascular magnetic resonance imaging using FLASH and SSFP to assess cardiac function: validation against 1.5 T and 3 T. *NMR Biomed*, 25(1), 27-34. doi:10.1002/nbm.1708
JIF: 3.064 ; CI:38 ; Defined intellectual content, Manuscript editing, Manuscript review

60. ***Snyder, C. J.**, Delabarre, L., Moeller, S., Tian, J., Akgun, C., Van de Moortele, P. F., Bolan, P. J., Ugurbil, K., Vaughan, J. T., & **Metzger, G. J.** (2012). Comparison between eight- and sixteen-channel TEM transceive arrays for body imaging at 7 T. *Magn Reson Med*, 67(4), 954-964. doi:10.1002/mrm.23070
JIF: 4.082; CI:35 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
61. Rizzardi, A. E., Johnson, A. T., Vogel, R. I., Pambuccian, S. E., Henriksen, J., Skubitz, A. P., **Metzger, G. J.**, & Schmechel, S. C. (2012). Quantitative comparison of immunohistochemical staining measured by digital image analysis versus pathologist visual scoring. *Diagn Pathol*, 7(1), 42. doi:10.1186/1746-1596-7-42
JIF: 3.031 ; CI:160 ; Defined intellectual content, Manuscript editing, Manuscript review
62. **Metzger, G. J.**, ***Dankbar, S. C.**, Henriksen, J., Rizzardi, A. E., Rosener, N. K., & Schmechel, S. C. (2012). Development of multigene expression signature maps at the protein level from digitized immunohistochemistry slides. *Plos ONE*, 7(3), e33520. doi:10.1371/journal.pone.0033520
JIF: 2.766; CI: 16 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Manuscript preparation, Manuscript editing, Manuscript review
63. **Metzger, G. J.**, van de Moortele, P. F., Akgun, C., **Snyder, C. J.**, Moeller, S., Strupp, J., Andersen, P., Shrivastava, D., Vaughan, T., Ugurbil, K., & Adriany, G. (2010). Performance of external and internal coil configurations for prostate investigations at 7 T. *Magn Reson Med*, 64(6), 1625-1639. doi:10.1002/mrm.22552
JIF: 4.082 ; CI: 47; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
64. Zhang, Y., Sweet, R. M., **Metzger, G. J.**, Burke, D., Erdman, A. G., & Timm, G. W. (2009). Advanced finite element mesh model of female SUJ research during physical and daily activities. *Stud Health Technol Inform*, 142, 447-452.
JIF: 0.50 ; CI:16 ; Data acquisition, Manuscript editing, Manuscript review
65. ***Snyder, C. J.**, DelaBarre, L., **Metzger, G. J.**, van de Moortele, P. F., Akgun, C., Ugurbil, K., & Vaughan, J. T. (2009). Initial results of cardiac imaging at 7 Tesla. *Magn Reson Med*, 61(3), 517-524. doi:10.1002/mrm.21895
JIF: 4.082 ; CI: 95 ; Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
66. Singh, A. K., Krieger, A., Lattouf, J. B., Guion, P., Grubb, R. L., 3rd, Albert, P. S., **Metzger, G.**, Ullman, K., Smith, S., Fichtinger, G., Ocak, I., Choyke, P., Menard, C., & Coleman, J. (2008). Patient selection determines the prostate cancer yield of dynamic contrast-enhanced magnetic resonance imaging-guided transrectal biopsies in a closed 3-Tesla scanner. *BJU Int*, 101(2), 181-185. doi:10.1111/j.1464-410X.2007.07219.x
JIF: 4.688; CI: 34; Defined intellectual content, Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
67. **Metzger, G. J.**, ***Snyder, C.**, Akgun, C., Vaughan, T., Ugurbil, K., & Van de Moortele, P. F. (2008). Local B1+ shimming for prostate imaging with transceiver arrays at 7T based on subject-dependent transmit phase measurements. *Magn Reson Med*, 59(2), 396-409. doi:10.1002/mrm.21476
JIF: 4.082; CI:186 ; Guarantor of integrity of entire study, Developed study concept, Developed study design,

Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

68. Jack, C. R., Jr., Bernstein, M. A., Fox, N. C., Thompson, P., Alexander, G., Harvey, D., Borowski, B., Britson, P. J., J. L. W., Ward, C., Dale, A. M., Felmlee, J. P., Gunter, J. L., Hill, D. L., Killiany, R., Schuff, N., Fox-Bosetti, S., Lin, C., Studholme, C., DeCarli, C. S., Krueger, G., Ward, H. A., **Metzger**, G. J., Scott, K. T., Mallozzi, R., Blezek, D., Levy, J., Debbins, J. P., Fleisher, A. S., Albert, M., Green, R., Bartzokis, G., Glover, G., Mugler, J., & Weiner, M. W. (2008). The Alzheimer's Disease Neuroimaging Initiative (ADNI): MRI methods. *J Magn Reson Imaging*, 27(4), 685-691. doi:10.1002/jmri.21049
JIF: 3.612; CI:1192 ; Developed study design, Manuscript editing, Manuscript review
69. Ocak, I., Bernardo, M., **Metzger**, G., Barrett, T., Pinto, P., Albert, P. S., & Choyke, P. L. (2007). Dynamic contrast-enhanced MRI of prostate cancer at 3 T: a study of pharmacokinetic parameters. *AJR Am J Roentgenol*, 189(4), 849. doi:10.2214/AJR.06.1329
JIF: 3.125 ; CI: 201 ; Developed study design, Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
70. Krieger, A., **Metzger**, G., Fichtinger, G., Atalar, E., & Whitcomb, L. L. (2006). A hybrid method for 6-DOF tracking of MRI-compatible robotic interventional devices. 2006 IEEE International Conference on Robotics and Automation (Icra), Vols 1-10, 3844-+. doi:Doi 10.1109/Robot.2006.1642290
JIF: 2.5; CI: 21 ; Developed study design, Data acquisition, Manuscript editing, Manuscript review
71. Rappard, G., **Metzger**, G. J., Weatherall, P. T., & Purdy, P. D. (2004). Interventional MR imaging with an endospinal imaging coil: preliminary results with anatomic imaging of the canine and cadaver spinal cord. *AJNR Am J Neuroradiol*, 25(5), 835-839.
JIF: 3.464 ; CI:5 ; Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
72. Szczepaniak, L. S., Dobbins, R. L., **Metzger**, G. J., Sartoni-D'Ambrosia, G., Arbique, D., Vongpatanasin, W., Unger, R., & Victor, R. G. (2003). Myocardial triglycerides and systolic function in humans: in vivo evaluation by localized proton spectroscopy and cardiac imaging. *Magn Reson Med*, 49(3), 417-423.
doi:10.1002/mrm.10372
JIF: 4.082; CI:308 ; Developed study design, Manuscript editing, Manuscript review
73. Rappard, G., **Metzger**, G. J., Fleckenstein, J. L., Babcock, E. E., Weatherall, P. T., Replogle, R. E., Pride, G. L., Jr., Miller, S. L., Adams, C. E., & Purdy, P. D. (2003). MR-guided catheter navigation of the intracranial subarachnoid space. *AJNR Am J Neuroradiol*, 24(4), 626-629.
JIF:3.653 ; CI: 4; Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review
74. Weatherall, P. T., Evans, G. F., **Metzger**, G. J., Saborrian, M. H., & Leitch, A. M. (2001). MRI vs. histologic measurement of breast cancer following chemotherapy: comparison with x-ray mammography and palpation. *J Magn Reson Imaging*, 13(6), 868-875.
JIF: 3.612; CI:135 ; Manuscript editing, Manuscript review
75. Sarkar, S., Heberlein, K., **Metzger**, G. J., Zhang, X., & Hu, X. (1999). Applications of high-resolution echoplanar spectroscopic imaging for structural imaging. *J Magn Reson Imaging*, 10(1), 1-7.
JIF: 3.612 ; CI: 26 ; Guarantor of integrity of entire study, Developed study concept, Conducted experimental studies, Data acquisition, Manuscript editing, Manuscript review

76. **Metzger**, G., Sarkar, S., Zhang, X., Heberlein, K., Patel, M., & Hu, X. (1999). A hybrid technique for spectroscopic imaging with reduced truncation artifact. *Magn Reson Imaging*, 17(3), 435-443.
JIF: 4.082; CI: 17 ; Guarantor of integrity of entire study, Developed study concept, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
77. **Metzger**, G., & Hu, X. (1997). Application of interlaced Fourier transform to echo-planar spectroscopic imaging. *J Magn Reson*, 125(1), 166-170.
JIF: 2.586; CI: 33 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
78. **Metzger**, G. J., Patel, M., & Hu, X. (1996). Application of genetic algorithms to spectral quantification. *J Magn Reson B*, 110(3), 316-320.
JIF: 2.333; CI: 25 ; Guarantor of integrity of entire study, Developed study concept, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

Non-Peer-Reviewed Publications (*Mentee or Trainee Underlined*)

1. K. Ugurbil, J.T. Vaughan, G.J. **Metzger**, P.-F. van de Moortele, C.J. Snyder, L. DelaBarre, P. Bolan, E Auerbach, P. Weale, S. Zuehlsdorff, S. Nielles-Vallespin, R. Jerecic. Body Imaging at 7 Tesla w/ Multichannel Transmit Capability. (2010) *Magnetom Flash* 1, 60-64.

DIC, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review
2. **Metzger**, G. J. and Weatherall, P. Rapid lipid suppressed breast imaging. (1999) *MedicaMundi* 43, 24-32.
DSC, Developed study design, Defined intellectual content, Conducted literature research, Conducted experimental studies, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review

Articles Submitted for Publication (*Mentee or Trainee Underlined*)

Several in review

Software Development

IHCMap™ software was licensed to Flagship Biosciences, LLC, Flagstaff, Arizona

Patents

1. US-11633146B2: Leng EY, Porter DH, **Metzger** GJ, “Automated Co-registration of prostate MRI data”, 2023-04-25.
2. US-11631171B2: Leng EY, **Metzger** GJ, Koopmeiners JS, Henriksen J, Schmechel SC, “Automated detection and annotation of prostate cancer on histopathology slides”, 2023-04-18.
3. US10613171B2: Li X, **Metzger** GJ, Kamil U, Wang D, “Multi-Banded RF-Pulse Enhanced Magnetization Imaging”, Granted 2020-04-07.
4. US20170214138A1: Erturk, M. A., & **Metzger, G. J.**, “Combined loop-dipole antenna array system and methods”, Granted 2019-11-19.
5. US10061005B2: Li, X., Moeller, S, **Metzger**, G. J., Ugurbil, K., Wang, D. and Deshpande, V. S., “Apparatus And Method For Multi-Band MR Imaging”, Granted 2018-08-28

6. US9911206B2: Li, X., **Metzger**, G.J., Ugurbil, K. and Wang, D., "Time Efficient ASL Imaging with Segmented Multiband Acquisition", Granted 2018-03-06.
7. US9858665B2: **Metzger**, Gregory J, Schmechel, Stephen C, Kalavagunta, Chaitanya, Koopmeiners, Joseph S and Warlick, Christopher A, "Medical imaging device rendering predictive prostate cancer visualizations using quantitative multiparametric mri models", Granted 2018-01-02.
8. US8718350B2: G. **Metzger**, S. Dankbar, J. Henriksen, S. Schmechel. "Computerized methods for tissue analysis using n-gene profiling", Granted 2014-05-06.

Websites

CMRR research highlights: Body imaging: generated content and layout.

<http://www.cmrr.umn.edu/research/body.shtml> - fully developed content.

Presentations

Invited Oral Presentations at International Professional Meetings, Conferences, etc.

1. "CMRR 10.5T System: Update and Review", ISMRM Workshop on Ultra-High Field MR, Lisbon, Portugal, March 2022
2. "Progress towards clinical body imaging at 7T and beyond", Australian UHF Network virtual workshop, Queensland, Australia, October 2020.
3. "Future Directions in UHF MR Safety from the Perspective of 10.5T", MR Safety: Ensuring Safety from First Principles to Best Practices, Utrecht, The Netherlands, September 2019.
4. "The potential of high field MRI in Oncology: Beyond Neuro", Translational imaging center symposium, Bern, Switzerland, June 2018.
5. "Path towards in vivo human imaging at 10.5 Tesla", Joint High Field Systems and Applications & MR Safety study group Virtual Meeting, September 2017.
6. "Path towards in vivo human imaging at 10.5 Tesla", Joint High Field Systems and Applications & MR Safety study groups, Honolulu HI, USA; April 2017.
7. "Toward human MRI in vivo at 10.5T", 7th Symposium on ultrahigh field MR, Ultrahigh Field Facility, Berlin Germany, June 2016.
8. "Ultra-high field imaging techniques for MRA", ISMRM Course Lecture: Cardiovascular MRI at 3T & Beyond, Milan Italy. May 2014.
9. "Practical Transmit Array Safety", MR Engineering and MR Safety Joint Study Group Meeting; ISMRM, Salt Lake City, Utah, USA. April 2013.
10. "Dynamic RF Pulse Steering and More", Ultra High Field MRI: What is in Full Bloom & What is Sprouting?: Session 11: Ultra High Field Body MRI Techniques, Noordwijk aan Zee, The Netherlands, March 2013.
11. "Coronary MR Angiography at 7.0 T", ISMRM Course Lecture: Cardiovascular MR Imaging, Melbourne, Australia, May 2012.
12. "Ultrahigh Field Body and Vascular Imaging 7T", Siemens High Field Users Meeting, Minneapolis MN, October 2011.
13. "Non-Contrast Enhanced Renal MRA at 7T", ISMRM Course Lecture: Cardiovascular MRI: Exploring the Boundaries, Ultra High-Field Cardiovascular MRI, Montreal, Canada, May 2011.

Invited Oral Presentations at National Professional Meetings, Conferences, etc.

1. "Human Imaging at 10.5T: Balancing safety and performance", New York, NY, USA. NYU Langone Center. ISMRM Safety Workshop, October 21-23, 2022.

2. "A Perspective on Ultra-High Field Human Imaging", Radiology Grand Rounds, Advanced Imaging Research Center, University of Texas Southwestern Medical Center, June 2021.
3. "Realizing 10.5T Whole-Body MRI: Challenges and Opportunities", SEEING IS BELIEVING: Advances in Medical Imaging, UC Davis, Sacramento, CA, USA, September 2019.
4. "Evolution of Ultrahigh Field MRI in the Body: Applications in Oncology and Beyond", Radiology Grand Rounds, Advanced Imaging Research Center, University of Texas Southwestern Medical Center, March 2019.
5. "Assessment of preconditioning on LNCaP tumors by a TNF- α nanoparticle construct using MRI", Society for Thermal Medicine, Minneapolis, MN, USA, May 2014.
6. "Developing MRI biomarkers of prostate cancer aggressiveness and UHF body imaging", New York University, School of Medicine, Dept. Radiology, June 2013.
7. "Vascular and body imaging at CMRR's 7T", Siemens 3rd UHF User Meeting, Minneapolis, MN, October 2011.
8. "Prostate cancer imaging at high and ultrahigh magnetic fields", Washington University, Barnes-Jewish Hospital, March 2011.
9. "Anatomic and Functional Magnetic Resonance Imaging of Prostate Cancer", Mayo Clinic Biomedical Engineering Seminar series, Department of Physiology and Biomedical Engineering, Mayo Clinic College of Medicine, November 2008.
10. "Anatomic Prostate MRI at 7 Tesla: Endorectal versus Surface Array Comparison", First International Workshop on Focal Therapy and Imaging of Prostate Cancer, Duke University, Durham, North Carolina, February 2008.
11. "Image-guided, minimally invasive diagnosis and treatment of prostate cancer", AdMeTech Foundation Conference –Washington D.C., 2005.
12. "MRI guided prostate biopsies and diagnostic imaging at 3T", University of Texas Health Science Center at San Antonio, March 2005.
13. "Advantages and disadvantages of post-mortem imaging", Non-Invasive Biopsy Workshop, National Institutes of Health, Bethesda, MD, March 2003.

Invited Oral Presentations at Local Professional Meetings, Conferences, etc.

1. "Technologies for improved body imaging at UHF", Minnesota Biennial High Field Workshop, University of Minnesota, October 2023.
2. "Next Generation MRI for improved staging and monitoring of advanced prostate cancer", Donald Gleason Conference, University of Minnesota, September 29, 2023.
3. "The Potential of Body Imaging at UHF: Tools and Applications", Toward the Clinical Translation of Ultra-high Field MR, University of Minnesota, CTSA, November 2019.
4. "Enabling Body Imaging at 7 T and Beyond", Minnesota 12th Biennial High Field Workshop, CMRR, University of Minnesota, November 2019.
5. "Developing Quantitative MRI for the Detection and Characterization of Prostate Cancer", Minnesota Urologic Society, Minneapolis MN, April, 2019.
6. "Exploring Body Applications at High Field", Minnesota Biennial High Field Workshop, University of Minnesota, October 2017.
7. "Development of Quantitative Multi-Parametric MRI Models for Prostate Cancer Detection using Registered Correlative Pathology", Gleason Conference: Lecturer, University of Minnesota, October 2015.
8. "Development of a Computer Aided Diagnosis Model for Prostate Cancer", Radiology Alumni Meeting, University of Minnesota, October 2015.

9. "Development of predictive models for prostate cancer detection from quantitative multiparametric MRI", UMN Biostatistics Lecture, June 2015.
10. "Developing Quantitative MRI for the Detection and Characterization of Prostate Cancer", University of Minnesota, Masonic Cancer Center Seminar, December 2014.
11. "Ultrahigh Field Functional Body Imaging", Minnesota Biennial High Field Workshop, University of Minnesota, October 2013.
12. "Cancer and MRI", 5th annual Institute for Engineering in Medicine (IEM) Symposium at the University of Minnesota, August 2012
13. "Non-Contrast Enhanced Angiography in the Human Torso at 7T", Minnesota Biennial High Field Workshop, University of Minnesota, October 2011.
14. "Anatomic and functional magnetic resonance imaging of prostate cancer", Design of Medical Devices Conference, University of Minnesota, April 2010.
15. "Developing the CMRR as a shared resource for cancer research", Masonic Cancer Center Retreat, February 2009.
16. "Prostate Cancer Imaging Program: Impacting the management and study of prostate cancer", Grand Round Lecture, Department of Radiology, University of Minnesota, March 2009
17. "Torso Imaging at Ultra High Field", Biennial High Field Workshop, University of Minnesota, October 2009.
18. "Magnetic resonance imaging in the management of prostate cancer: Will the role of pathology be marginalized?", Grand Round Lecture, Department of Laboratory Medicine and Pathology, University of Minnesota, March 2008.
19. "Local B1 Shimming for Imaging the Prostate at 7 Tesla", Biennial High Field Workshop: Lecturer. University of Minnesota, October 2007.
20. "Mouse Prostate Imaging", Prostate Cancer Joint Lab Meeting, University of Minnesota, March 2006.
21. "Center for Magnetic Resonance Research Prostate Cancer Program", Prostate Cancer Joint Lab Meeting, University of Minnesota, December 2005.

Peer-reviewed Oral Presentations at Int'l Professional Meetings, Conferences ... (Student Authors Underlined)

1. ZSchmidt S, Metzger GJ. Universal modes: Calibration-free TIAMO for B1+ inhomogeneity mitigation. Proc Intl Soc Mag Reson Med. 2023;32.
2. Moeller S, Johnson CP, Buko EO, Toth F, Metzger GJ, Mangia S, Michaeli S, Ponticorvo S, Canna A, Ugurbil K, Akcakaya M. Locally Low-Rank Denoising In Transform Domains. Proc Intl Soc Mag Reson Med. 2023;32.
3. Kajabi AW, Zbyn S, Smith J, Homan M, Abbasgulyev H, Rodriguez A, Metzger GJ, Laprade R, Ellermann J. Quantitative T2 Mapping Of Articular Cartilage In Patients With Posterior Horn Root Tears Of Medial Meniscus. Proc Intl Soc Mag Reson Med. 2023;32.
4. Zbyn S, Kajabi AW, Rodriguez A, Metzger G, Laprade R, Ellermann J. Evaluation of Meniscus Degeneration in Patients with Posterior Root Tear of Medial Meniscus Using T2* Mapping at 7T – Comparison with Arthroscopy. Proc Intl Soc Mag Reson Med. 2022;31:3396. Oral
5. Schmidt S, Erturk A, Lagore R, Grant A, Nagel A, Zbyn S, Metzger G. First in-vivo ²³Na human imaging at 10.5T using a combined ²³Na-loop 1H-dipole transceiver array. Proc Intl Soc Mag Reson Med. 2022;31:383. Oral – Summa Cum Laude.
6. Saunders SL, Gross MJ, Metzger GJ, Bolan PJ. T2 Mapping of the Prostate with a Convolutional Neural Network. Proc Intl Soc Mag Reson Med. 2022;31:3915. Oral

7. Sadeghi-Tarakameh A, Radder J, Lagore R, Tavaf N, He X, Grant A, DelaBarre L, Vizioli L, Wu X, Auerbach E, Moeller S, Adriany G, Metzger G, van de Moortele P. Safety Assessment of Custom-Built Multi-Channel RF Coils: EM Modeling Uncertainties. Proc Intl Soc Mag Reson Med. 2022;31:583. Oral
8. Li X, Metzger G, Murray A. Longitudinal Changes of White Matter Hyperintensities Following Hemodialysis Initiation in Old Adults: A Prospective Pilot Study. Proc Intl Soc Mag Reson Med. 2022;31:135. Oral
9. He X, Schmidt S, Zbyn S, Haluptzok T, Moeller S, Metzger GJ. Improved TSE imaging at Ultra-High Field using Non-localized Efficiency Shimming and Acquisition of Modes Optimized for Refocused Echo (AMORE). Proc Intl Soc Mag Reson Med. 2022;31:4101. Oral – Summa Cum Laude
10. Kajabi AW, Zbyn S, Nouraei C, Ludwig K, Johnson C, Moeller S, Tompkins M, Bradley N, Metzger GJ, Carlson C, Ellermann J. Analysis of Diffusion Changes in Patients with Juvenile Osteochondritis Dissecans (JOCD) of the Knee at 3T. Proc Intl Soc Mag Reson Med. 2021;29:844. oral.
11. Zbyn S, Ludwig K, Watkins L, Armstrong A, Lagore RL, Nowacki A, Tompkins M, Toth F, Adriany G, Shea K, Gold G, Nagel A, Carlson C, Metzger GJ, Ellermann J. Ex Vivo Evaluation of Sodium Relaxation Times in Pediatric Articular-Epiphyseal Cartilage on a Whole-body 10.5T MR System – Initial Results. Proc Intl Soc Mag Reson Med. 2020;28. oral.
12. Schon N, Petzold J, Siefert F, Aigner C, Metzger GJ, Ittermann B, Schmitter S. Impact of respiration on B1+ field and SAR distribution at 7 T using a novel EM simulation setup. Proc Intl Soc Mag Reson Med. 2020;28:1120. oral.
13. Leng E, Spilseth B, Chauhan A, Gill JR, A., Erturk A, Kobayashi N, He X, Warlick C, Metzger GJ. Prostate cancer multiparametric MRI comparison study of 3T versus 7T: lesion detection and study design considerations. Proc Intl Soc Mag Reson Med. 2020;28:711. oral.
14. Sadeghi-Tarakameh, A., Torrado-Cavajal, A., Lagore, R. L., Moen, S., Wu, X., Adriany, G., Metzger, G. J., DelaBarre, L., Ugurbil, K., Atalar, E., & Eryaman, Y. (2019). Toward Human Head Imaging at 10.5T Using an Eight-Channel Transmit/Receive Array of Bumped Fractionated Dipoles. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 430. Oral
15. Sadeghi-Tarakameh, A., Jungst, S., Wu, X., Lanagan, M., Adriany, G., Metzger, G. J., Van de Moortele, P. F., Ugurbil, K., Atalar, E., & Eryaman, Y. (2019). A New Coil Element for Highly-Dense Transmit Arrays : An Introduction to Non-Uniform Dielectric Substrate (NODES) Antenna. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 732. Oral
16. Metzger, G. J., He X, Grant, A., Erturk, M. A., Lagore, R. L., Adriany, G., DelaBarre, L., Eryaman, Y., Wu, X., Auerbach, E. J., Van de Moortele, P. F., & Ugurbil, K. (2019). First human imaging studies at 10.5 Tesla: body studies at 450 MHz. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 696. Oral
17. Leng, E., Jin, j., Henricksen, J., Koopmeiners, J., Schmechel, S., & Metzger, G. J. (2019). Investigatory usage of a framework for automated cancer annotation of pathology slides of radical prostatectomy specimens: effect on performance of a predictive model for mpMRI detection of prostate cancer. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 874. Oral
18. Lagore, R. L., Auerbach, E. J., Kobayashi, N., Jungst, S., Moeller, S., Metzger, G. J., Ugurbil, K., Garwood, M., & Adriany, G. (2019). Fast transmit/receive switch for SWIFT imaging at 7T. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 573. Oral
19. He X, Auerbach, E. J., Garwood, M., Wu, X., & Metzger, G. J. (2019). Parallel Transmit Optimized Spiral Composite Adiabatic Pulses for 3D Spatial-Spectral Selectivity in Spectroscopy. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 1060. Oral
20. Grant, A., Kulesa, J., He X, Van de Moortele, P. F., Eryaman, Y., Adriany, G., Hartwig, M., Olman, C., Bedell, S., Zhang, L., Koeritzer, M., Adams, M., Henry, T., Metzger, G. J., & Ugurbil, K. (2019). Safety evaluation of human exposure to a 10.5T whole body magnet: protocol design and preliminary results. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 797. Oral

21. Erturk, M. A., Lagore, R. L., Auerbach, E. J., Kobayashi, N., Adriany, G., Ugurbil, K., & Metzger, G. J. (2019). Design and implementation of a combined sodium-loop proton-dipole transceiver array for body imaging at 10.5 Tesla. Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 431. Oral
22. Steensma, B., Van de Moortele, P. F., Erturk, A., Grant, A., Metzger, G. J., & Raaijmakers, A. J. (2018). Optimization and validation of dipole antenna geometry for body imaging at 10.5T. Proc Intl Soc Mag Reson Med, Paris, France; 26, 138.
23. Sadeghi-Tarakameh, A., Torrado-Carvajal, A., Ariyurek, C., Atalar, E., Adriany, G., Metzger, G. J., Lagore, R. L., DelaBarre, L., Grant, A., Van de Moortele, P. F., Ugurbil, K., & Eryaman, Y. (2018). Optimizing the Topography of Transmit Coils for SAR Management. Proc Intl Soc Mag Reson Med, Paris, France; 26, 297.
24. Kobayashi, N., Bolan, P. J., & Metzger, G. J. (2018). Evaluation of UTE for improved contrast enhanced DCE MRI at 7T. Proc Intl Soc Mag Reson Med, Paris, France; 26, 498.
25. Woo, M. K., Lagore, R. L., DelaBarre, L., Lee, B., Eryaman, Y., Metzger, G. J., Van de Moortele, P. F., Ugurbil, K., & Adriany, G. (2017). A Geometrically Adjustable Loop-Dipole (LD) Head Array for 10.5T. Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA; 25, 1051.
26. Erturk, M. A., Wu, X., Adriany, G., Van de Moortele, P. F., Auerbach, E. J., Grant, A., Ugurbil, K., & Metzger, G. J. (2017). A 32-channel loop-dipole transceiver array for body imaging at 7.0 Tesla. Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA; 25, 1222.
27. Li, X., Wang, D., Auerbach, E. J., Moeller, S., Metzger, G. J., & Ugurbil, K. (2016). Time Efficient ASL Imaging with Segmented Multiband-Acquisition (TEASIM). Proc Intl Soc Mag Reson Med, Singapore; 24, 2879.
28. Li, X., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2016). Quantitative Single Breath-Hold Renal ASL Perfusion Imaging at 7T. Proc Intl Soc Mag Reson Med, Singapore; 24, 745.
29. Erturk, A., Raaijmakers, A. J., Adriany, G., Kamil, U., & Metzger, G. J. (2016). Combined Loop-Dipole Transceiver Array for Body Imaging at 7.0 Tesla. Proc Intl Soc Mag Reson Med, Singapore; 24, 392.
30. Erturk, A., Adriany, G., Van de Moortele, P. F., Eryaman, Y., Raaijmakers, A. J., DelaBarre, L., Auerbach, E. J., Vaughan, J. T., Ugurbil, K., & Metzger, G. J. (2016). Towards Imaging the Body at 10.5 Tesla Using a Fractionated Dipole Antenna Array. Proc Intl Soc Mag Reson Med, Singapore; 24, 390.
31. Erturk, A., Adriany, G., Raaijmakers, A. J., Van de Moortele, P. F., Vaughan, J. T., Kamil, U., & Metzger, G. J. (2016). A novel body imaging array at 7.0 Tesla by combining dipole and loop elements. ISMRM Workshop on Ultra High Field MRI, Heidelberg, Germany, Singapore; 24, 392.
32. Metzger, G. J., Kalavagunta, C., Schmechel, S., Bolan, P. J., Konety, B., Spilseth, B., Warlick, C. A., & Koopmeiners, J. S. (2015). Development of Quantitative Multi-Parametric MRI Models for Prostate Cancer Assessment using Registered Correlative Pathology. Proc Intl Soc Mag Reson Med: Cancer Study Group Workshop, Toronto, Ontario, Canada; 23.
33. Li, X., Auerbach, E. J., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2015). Theoretical and experimental comparisons of single breath-hold renal perfusion imaging between 3T and 7T. Proc Intl Soc Mag Reson Med, Toronto, Ontario, Canada; 23, 759.
34. Erturk, M. A., Raaijmakers, A. J. E., Adriany, G., Tian, J., Van de Moortele, P. F., Van den Berg, C. A. T., Klomp, D. W. J., Vaughan, J. T., Ugurbil, K., & Metzger, G. (2015). Comparison of 16-channel Stripline and 10-channel Fractionated Dipole Transceive Arrays for Body Imaging at 7T. Proc Intl Soc Mag Reson Med, Toronto, Ontario, Canada; 23, 3122.
35. Metzger, G. J., Elliott, I., Tian, J., Shrivastava, D., Van de Moortele, P. F., & Adriany, G. (2014). Development and evaluation of a solid endorectal coil for 7 Tesla. Proc Intl Soc Mag Reson Med, Milan, Italy; 22, 626.
36. Li, X., Wang, D., Moeller, S., Ugurbil, K., & Metzger, G. J. (2014). Feasibility of Applying MB EPI pCASL for High-Resolution Whole Brain Perfusion Imaging at 7T. Proc Intl Soc Mag Reson Med, Milan, Italy; 22, 995.

37. Metzger, G. J., Schmitter, S. S., Li, X., Van de Moortele, P. F., Schmitt, P., & Bi, X. (2013). Four-Dimensional Noncontrast-Enhanced MR Angiography at Ultrahigh Field. Proc SCMR-ISMIRM jointly sponsored workshop: New horizons in high field cardiovascular MR: promises and progress, San Francisco, CA, USA; 21, W 11.
38. Li, X., Snyder, C., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2013). Feasibility of single breath-hold renal perfusion imaging at 7T. Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 30.
39. Johnson, A. D., Rizzardi, A. E., Marston, L. O., Koopmeiners, J. S., Metzger, G. J., Forster, C. L., Vogel, R. I., McCarthy, J. B., Turley, E. A., Tiffany, J. R., Ronai, Z., Warlick, C. A., & Schmechel, S. C. (2013). Validation of Prognostic Biomarkers on Prostate Cancer Tissue Microarrays. Modern Pathology, 26(S2), 495A.
40. Snyder, C. J., DelaBarre, L., Metzger, G., Ugurbil, K., & Vaughan, J. T. (2011). 32-Channel Receive Only Array for Cardiac Imaging at 7T. Proc Intl Soc Mag Reson Med, Montréal, Québec, Canada; 19, 7375.
41. Schmechel, S. C., Dankbar, S. C., Henriksen, J., Rizzardi, A. E., Rosener, N. K., & Metzger, G. J. (2011). Development of Multigene Expression Signature Maps at the Protein Level from Digitized Immunohistochemistry Slides. Pathology Informatics Annual Meeting, Pathology Informatics Annual Meeting; 2, 43.
42. Metzger, G. J., DelaBarre, L., Bi, X., Shah, S., Zuehlsdorff, S., Vaughan, J. T., Ugurbil, K., & Metzger, G. J. (2011). Left Coronary Artery Imaging at 7T: Initial Results using Multiple B1+ Shimming Algorithms and Targets. Proc. Intl. Soc. Mag. Reson. Med., Montréal, Québec, Canada; 19.
43. Li, X., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2011). Dynamically Applied Multiple B1+ Shimming Schemes for Arterial Spin Labeling Studies of the Prostate at 7T. Proc. Intl. Soc. Mag. Reson. Med., Montréal, Québec, Canada; 19.
44. Suttie, J. J., DelaBarre, L., Metzger, G. J., Van de Moortele, P. F., Snyder, C. J., Weale, P., Neubauer, S., Robson, M. D., & Vaughan, J. T. (2010). Clinical cardiac imaging at 7 Tesla: a validation study. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18.
45. Snyder, C. J., DelaBarre, L., Tian, J., Metzger, G. J., Ugurbil, K., & Vaughan, J. T. (2010). 28-Channel Receive-Only Array For Body Imaging at 7T. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18.
46. Metzger, G. J., Simonson, J., Bi, X., Weale, P., Zuehlsdorff, S., Auerbach, E. J., Ugurbil, K., & Van de Moortele, P. F. (2010). Initial Experiences with Non-Contrast Enhanced Renal Angiography at 7.0 Tesla. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18, #403.
47. Metzger, G., Van de Moortele, P. F., Snyder, C., Vaughan, J. T., & Ugurbil, K. (2007). Local B1 Shimming for Imaging the Prostate at 7 Tesla. Proc. Intl. Soc. Mag. Reson. Med., Berlin, Germany; 15, 799.
48. Metzger, G., Ocak, I., Bernardo, M., & Choyke, P. (2007). Quantification of prostate spectra at 3T using LCMoel with a simulated basis set. Proc. Intl. Soc. Mag. Reson. Med., Berlin, Germany; 15, 802.
49. Ocak, I., Bernardo, M., Metzger, G., McKinney, Y., & Choyke, P. (2006). Dynamic Contrast Enhanced Imaging and Quantitative Analysis of Prostate Cancer at 3 Tesla. Proc. Intl. Soc. Mag. Reson. Med., Seattle, Washington, USA; 14, 109.
50. Metzger, G., Thomasson, D., Bernardo, M., & Choyke, P. (2006). Towards the Absolute Quantitation of DCE-MRI Pharmacokinetic Parameters: Addressing the Assumption of Constant Contrast Reagent Relaxivity and its Effect on Ktrans. Proc. Intl. Soc. Mag. Reson. Med., Seattle, Washington, USA; 14, 5062.
51. Bernardo, M., Kogayashi, H., Metzger, G., Koyama, Y., Shaw, C., Thomasson, D., & Choyke, P. (2006). In-Vivo Multiple Mouse MRI using Parallel Receive-Only Coils on a 3.0 T Clinical Scanner for Molecular Imaging Research. Proc. Intl. Soc. Mag. Reson. Med., Seattle, Washington, USA; 14, 2604.
52. Metzger, G., Bernardo, M., Thomasson, D., Gharib, A., & Choyke, P. (2005). Parallel Imaging with a Combined Endorectal-Surface Coil at 3T in Dynamic Contrast Enhanced MRI Studies of the Prostate. Proc. Intl. Soc. Mag. Reson. Med., Miami Beach, FL, USA; 13, 903.

53. Metzger, G., Krieger, A., Guion, P., Ferhanoglu, O., Choyke, P., Menard, C., & Atalar, E. (2004). Predicting true SAR limits for in vivo imaging in MR guided prostate procedures. Proc. Intl. MRI Symposium Boston, MA, 5, 703.
54. Krieger, A., Guion, P., Metzger, G., Li, K., Choyke, P., Whitcomb, L., Menard, C., & Atalar, E. (2004). A system for prostate image guided interventions in a 3t MRI scanner. Proc. Intl. MRI Symposium Boston, MA, 5, 601.
55. Metzger, G., Szczepaniak, L. S., D'Amrosia, G. S., Saborrian, M. H., Sagalowsky, A. I., & Nurenberg, P. (2002). Creatine: The missing link in RCC? Proc. Intl. Soc. Mag. Reson. Med., Honolulu, Hawaii, USA; (10).
56. Metzger, G., Szczepaniak, L. S., Nurenberg, P., & Mollevanger, L. (2000). Respiratory triggered 1H renal spectroscopy in vivo with short echo time PRESS Proc. Intl. Soc. Mag. Reson. Med., Denver, CO, USA; (7).
57. Metzger, G., & Hu, X. (1998). Reduced truncation of high intensity signals in spectroscopic imaging. Proc. Intl. Soc. Mag. Reson. Med., Sydney, Australia; (6), 629.
58. Metzger, G., & Hu, X. (1997). Application of interlaced Fourier transform to echo-planar spectroscopic imaging. Proc. Intl. Soc. Mag. Reson. Med., Vancouver, BC, Canada; (5).

Poster Abstract Presentations at Professional Meetings, Conferences ... (Student Authors Underlined)

1. Wu X, Ugurbil K, Metzger GJ, Li X. Feasibility Of Performing High-Resolution Multi-Delay PCASL Imaging With Intravascular Signal Suppression Within 7 Minutes. Proc Intl Soc Mag Reson Med. 2023;32.
2. Ponticorvo S, Canna A, Moeller S, Akcakaya M, Metzger GJ, Michaeli S, Mangia S. High Resolution Rotating Frame Relaxation Mapping With T-NORDIC. Proc Intl Soc Mag Reson Med. 2023;32.
3. Li X, Ellermann J, Metzger GJ. Evaluation Of Potential Benefits Of 7T For Knee Epiphyseal Bone Marrow ASL Imaging. Proc Intl Soc Mag Reson Med. 2023;32.
4. Kajabi AW, Zbyn S, Smith J, Homan M, Abbasgulyev H, Rodriquez A, Metzger GJ, Laprade R, Ellermann J. Quantitative 3D Assessment Of Meniscus In Patients With Posterior Root Tears And Healthy Controls Using T2* Mapping At 7T. Proc Intl Soc Mag Reson Med. 2023;32.
5. Haluptzok T, Schmidt S, Lagore R, Metzger GJ. A Comparison Between Shielded and Unshielded RF Antennas for 7T Body MRI. Proc Intl Soc Mag Reson Med. 2023;32.
6. Bolan P, Saunders SL, Gross MJ, Kay K, Akcakaya M, Metzger GJ. Training Strategies For Convolutional Neural Networks In Prostate T2 Relaxometry. Proc Intl Soc Mag Reson Med. 2023;32.
7. Schoen N, Seifert F, Metzger G, Speck O, Ittermann B, Schmitter S. Respiratory motion affects peak spatial SAR value and location – impact on safety supervision for 7T cardiac imaging. Proc Intl Soc Mag Reson Med. 2022;31:2547.
8. Schmidt S, Erturk A, He X, Eryaman Y, Metzger GJ. A 16-channel transceiver dipole array for 1H body imaging at 10.5T: Validation and VOP enabled imaging in-vivo. Proc Intl Soc Mag Reson Med. 2022;31:2553.
9. Zbyn S, Santiago C, Johnson C, Ludwig K, Zhang L, Murette S, Tompkins M, Nelson B, Takahashi T, Metzger GJ, Carlson C, Ellermann J. Evaluation of Lesion Tissue Composition in Patients with Juvenile Osteochondritis Dissecans (JOCD) of the Knee Using T2* Mapping at 3T. Proc Intl Soc Mag Reson Med. 2021;29:2957.
10. Schon N, Frank S, Metzger GJ, Ittermann B, Schmitter S. Investigation of respiration-induced changes of the scattering matrix by EM simulations and a breathing body model. Proc Intl Soc Mag Reson Med. 2021;29:3342.
11. Sadeghi-Tarakameh A, Bahram K, Wu X, Metzger GJ, Eryaman Y. Non-Uniform Dielectric Substrate (NODES) Antenna Design for Cardiac Imaging at 7T. Proc Intl Soc Mag Reson Med. 2021;29:1398.
12. Leng E, Koopermeiners J, Zhang L, Metzger GJ. Two-stage classifier for detection of high-grade prostate cancer using quantitative MRI and radiomic features. Proc Intl Soc Mag Reson Med. 2021;29:3898.

13. He X, Auerbach E, Garwood M, Kobayashi N, Sadeghi-Tarakameh A, Eryaman Y, Wu X, Metzger GJ. Double Spin Echo Spectroscopic Imaging Using Optimized 3D Spectral-Spatial Pulses for Brain Studies at 10.5T. *Proc Intl Soc Mag Reson Med.* 2021;29:1984.
14. He X, Kobayashi N, Woo MK, Auerbach E, Wu X, Metzger GJ. 3D Inner Volume MR Fingerprinting with Parallel Transmission. *Proc Intl Soc Mag Reson Med.* 2020;28:3702.
15. Erturk A, Lagore RL, Adriany G, metzger GJ. A 16-channel Combined Shielded-Loop-Resonator and Dipole Transceiver Array Design for Body Imaging at 7.0 Tesla. *Proc Intl Soc Mag Reson Med.* 2020;28:4263.
16. Bolan P, Metzger GJ, Deelchand D, Marjanska M. Using Simultaneous Multi-echo Fitting to Accelerate Magnetic Resonance Spectroscopic Relaxometry. *Proc Intl Soc Mag Reson Med.* 2020;28:2868.
17. Zhang J, Wang D, Zhang X, Eberly L, Metzger GJ, Dengel D, Tupper D, Murray A, Li X. Reproducibility of Simultaneous in vivo Blood T1 and T2 Imaging Method. *Proc Intl Soc Mag Reson Med.* 2019;27:4960.
18. Zbyn S, Metzger GJ, Lagore RL, Kobayashi N, Johnson C, Ludwig K, Toth F, Carlson C, Adriany G, Ellermann J. Sodium MR Imaging of Porcine Articular Cartilage on a Whole-body 10.5T MR System – Initial Results. *Proc Intl Soc Mag Reson Med.* 2019;27:4201.
19. Zhang, J., Wang, D., Zhang, X., Eberly, L., Metzger, G. J., Dengel, D., Tupper, D., Murray, A., & Li, X. (2019). Reproducibility of Simultaneous in vivo Blood T1 and T2 Imaging Method. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 4960.* e-poster
20. Zbyn, S., Metzger, G. J., Lagore, R. L., Kobayashi, N., Johnson, C., Ludwig, K., Toth, F., Carlson, C., Adriany, G., & Ellermann, J. (2019). Sodium MR Imaging of Porcine Articular Cartilage on a Whole-body 10.5T MR System – Initial Results. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 4201.* e-poster
21. McKay, J. S., Metzger, G. J., Moeller, S., Church, A., Nelson, M. T., & Bolan, P. J. (2019). Adaptation of a Computer Vision Blur Metric to Objectively Compare High Resolution DWI Strategies in in vivo Breast Imaging. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 4116.*
22. Li, X., Wang, D., Metzger, G. J., Yacoub, E., & Ugurbil, K. (2019). Alternative Slice Acquisition Orders for High-Resolution MB-EPI PCASL Imaging with Background Suppression. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 4955.* e-poster
23. Erturk, M. A., & Metzger, G. J. (2019). Evaluating 8-independent channel shimming strategies to drive a 16-channel loop-dipole transceiver body imaging array at 7.0 Tesla. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 1509.* e-poster
24. Bratch, A., Radder, J., Jenkins, P., Jungst, S., Metzger, G. J., Ugurbil, K., & Adriany, G. (2019). Overlapped Monolithic Transmission Line Resonator Receiver and B0 Shim Array For Functional Imaging of the Human Temporal Lobe. *Proc Intl Soc Mag Reson Med, Montreal, Quebec, Canada; 27, 1482.* e-poster
25. Zhang, J., Wang, D., Zhang, X., Eberly, L., Metzger, G. J., Dengel, D., Tupper, D., Murray, A., & Li, X. (2018). Evaluation of A Method for Simultaneous in vivo Measurements of Blood T1 and T2. *Proc Intl Soc Mag Reson Med, Paris, France; 26, 2254.*
26. Reddy, R., Kalmoe, R., Metzger, G. J., & Geethanath, S. (2018). Reconstruction of motion affected prostate MRSI data using navigators and compressed sensing. *Proc Intl Soc Mag Reson Med, Paris, France; 26, 1312.*
27. Metzger, G. J., Kalmoe, R., Erturk, A., He, X., Ramanna, S., Leng, E., Warlick, C., & Spilseth, B. (2018). Multiparametric MRI methods development for clinical prostate imaging at 7T. *Proc Intl Soc Mag Reson Med, Paris, France; 26, 2577.*
28. McKay, J. S., Moeller, S., Ramanna, S., Auerbach, E. J., Metzger, G. J., Ryder, J., Ugurbil, K., Yacoub, E., & Bolan, P. J. (2018). Novel Image-based Nyquist Ghost Correction of Diffusion-Weighted Echo Planar Imaging using Ghost/Object Minimization. *Proc Intl Soc Mag Reson Med, Paris, France; 26, 5339.*

29. Li, X., Wang, D., Wu, X., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2018). Improve PCASL Brain Imaging at 7T Using Dynamically Applied B1+ Shimming Solutions. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 5604.
30. Li, X., Evanoff, N., Eberly, L., Tupper, D., Murray, A., Metzger, G. J., & Dengel, D. (2018). Improving Cerebrovascular Reactivity Assessment Using High-Resolution MB-EPI Multi-Delay PCASL Imaging. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 4797.
31. Leng, E., Spilseth, B., & Metzger, G. J. (2018). Clinical usage and impact of predictive models of prostate cancer on multiparametric MRI: a single-observer exploratory evaluation. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 4385.
32. Leng, E., Henricksen, J., Jin, j., Schmechel, S., & Metzger, G. J. (2018). Estimation of prostate cancer distribution on pathology slides via image analysis of IHC-stained slides. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 4386.
33. Leng, E., David, P., Larson, A., He, X., Spilseth, B., & Metzger, G. J. (2018). A framework for intensity-based affine registration of multiparametric prostate MRI via mutual information and genetic algorithms. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 2566.
34. Kobayashi, N., Begnaud, A., Allen, T., Metzger, G. J., Kratzke, R., & Garwood, M. (2018). Robust Retrospective Respiratory Gating for Detection of Small Pulmonary Nodules with UTE MRI. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 4350.
35. Kalmoe, R. M., Mirowski, E., & Metzger, G. J. (2018). Body Phantom with Prostate Mimic for Evaluation of Quantitative MRI. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 2762.
36. He, X., Kobayashi, N., Li, X., & Metzger, G. J. (2018). Improved Non-Contrast Renal Angiography Using Respiratory and Cardiac Gating with Dynamically Determined Inversion Times: A Simulation Study. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 2993.
37. Erturk, A., Wu, X., Adriany, G., Lagore, R. L., Ugurbil, K., & Metzger, G. J. (2018). An improved 32-channel loop-dipole transceiver array design for body imaging at 7.0 Tesla: Simulation study. *Proc Intl Soc Mag Reson Med, Paris, France*; 26, 4395.
38. Wang, D., Metzger, G. J., Ugurbil, K., & Li, X. (2017). Improving Multiband EPI PCASL Imaging with Dynamic Frequency Feedback. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25, 4732.
39. Steensma, B., Erturk, A., Ugurbil, K., Luijten, P. R., Klomp, D. W. J., Van den Berg, C. A. T., Metzger, G. J., & Raaijmakers, A. J. (2017). Combining Loops and Dipoles at 7 T and 10.5 T: A Simulation Study. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25.
40. McKay, J. S., Ramanna, S., Moeller, S., Auerbach, E. J., Metzger, G. J., Nelson, M. T., Ugurbil, K., Yacoub, E., & Bolan, P. J. (2017). Comparison of Methods for High Spatial-Resolution Breast Diffusion Imaging. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25, 2115.
41. Li, X., Zhang, J., Elvendahl, W., Wang, D., Ugurbil, K., & Metzger, G. J. (2017). Multi-Band Enhanced Magnetization Transfer Contrast (MBE-MTC) Preparation. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25, 3769.
42. Leng, E., Jin, J., Zhang, L., Warlick, C., Spilseth, B., Koopmeiners, J., & Metzger, G. J. (2017). Spatially-Sensitive Model for Detection of Prostate Cancer on Multiparametric MRI. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25, 4963.
43. Leng, E., Jin, j., Zhang, L., Koopmeiners, J., & Metzger, G. J. (2017). Development of a Lesion-Wise Metric for Evaluation of Predictive Models of Prostate Cancer on Multiparametric MRI. *Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA*; 25, 2061.

44. Kalmoe, R., Auerbach, E. J., Marjanska, M., Bolan, P. J., Tkac, I., Kober, T., & Metzger, G. J. (2017). Motion Detection in Spectroscopy Using FID Navigators. *Proc Intl Soc Mag Reson Med*, Honolulu, Hawaii, USA; 25, 1316.
45. Eryaman, Y., Lagore, R. L., Erturk, A., Utecht, L., Zhang, P., Torrado-Carvajal, A., Abaci-Turk, E., DelaBarre, L., Metzger, G. J., Adriany, G., Ugurbil, K., & Vaughan, J. T. (2017). RF Heating Studies on Anesthetized Swine Using Fractionated Dipole Antennas at 10.5 T. *Proc Intl Soc Mag Reson Med*, Honolulu, Hawaii, USA; 25, 5576.
46. Bolan, P. J., Herman, B. A., Metzger, G. J., Kim, E., Newitt, D. C., Partridge, S. C., Garwood, M., Rosen, M. A., & Hylton, N. M. (2017). Factors Influencing Data Quality in a Multi-Center Breast MR Spectroscopy Trial (ACRIN 6657 Extension). *Proc Intl Soc Mag Reson Med*, Honolulu, Hawaii, USA; 25, 5481.
47. Weingartner, S., Metzger, G. J., Van de Moortele, P. F., & Akcakaya, M. (2016). Cardiac Phase-Resolved B1 Mapping at 3T. *Proc Intl Soc Mag Reson Med*, Singapore; 24, 3105.
48. Li, X., Evanoff, N., Eberly, L., Murray, A., Metzger, G. J., & Dengel, D. (2016). Evaluation of PCASL Imaging and T2* Mapping for the Assessment of Cerebrovascular Reactivity in the Hippocampus. *Proc Intl Soc Mag Reson Med*, Singapore; 24, 3736.
49. Erturk, A., & Metzger, G. J. (2016). Prostate MRI at 7.0 Tesla Using an Actively-Tuned Endorectal Coil. *Proc Intl Soc Mag Reson Med*, Singapore; 24, 3501.
50. Wang, D., Auerbach, E. J., McNeal, G., Kollasch, P., Valeti, U., Deshpande, V., Ugurbil, K., & Metzger, G. J. (2015). Simultaneous Multi-Slice Dark Blood Cardiac Imaging using Multiband Double-Inversion Recovery TSE. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 4567.
51. Raaijmakers, A. J. E., Erturk, M. A., Metzger, G. J., Van den Berg, C. A. T., & Adriany, G. (2015). Short dipole array for enhanced B1 efficiency/sensitivity at the expense of SAR. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 3131.
52. Metzger, G. J., Kalavagunta, C., Schmechel, S., Bolan, P. J., Konety, B., Spilseth, B., Warlick, C. A., & Koopmeiners, J. S. (2015). Development of Quantitative Multi-Parametric MRI Models for Prostate Cancer Assessment using Registered Correlative Pathology. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 3836.
53. Li, X., Auerbach, E. J., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2015). Multi-parametric renal MRI at 7T. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 3155.
54. Kobayashi, N., Pang, J., Moeller, S., Van de Moortele, P. F., Schmitter, S. S., Ugurbil, K., Li, D., Garwood, M., & Metzger, G. J. (2015). Contrast Enhanced Self-Gated Coronary Angiography at 7 Tesla Using Ultra-Short Echo Time Imaging. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 2680.
55. Erturk, M. A., Adriany, G., & Metzger, G. J. (2015). Performance evaluation of 2-channel endorectal coil geometries for imaging the prostate at 7T. *Proc Intl Soc Mag Reson Med*, Toronto, Ontario, Canada; 23, 3169.
56. Warlick, C., Soubra, A., Alishahi, A., Metzger, G. J., Walker, S., Shanley, R., & Konety, B. (2014). MRI-Guided Biopsy in Patients with Previous Negative Transrectal Ultrasound Guided Biopsies, and Active Surveillance Patients. Paper presented at the American Urology Association, San Diego, CA.
57. Metzger, G. J., Fossen, B., Bolan, P. J., Warlick, C. A., Konety, B., Schmechel, S. C., Kalavagunta, C., & Tkac, I. (2014). Detection and grading of prostate cancer using model-based spectral fitting. *Proc Intl Soc Mag Reson Med*, Milan, Italy; 22, 4117.
58. Li, X., Wang, D., Moeller, S., Ugurbil, K., & Metzger, G. J. (2014). Theoretical and Experimental Benefits of Multi-Band (MB) EPI for pCASL Brain Imaging. *Proc Intl Soc Mag Reson Med*, Milan, Italy; 22, 4557.

59. Li, X., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2014). Improved SNR at 7T for Non-Contrast Enhanced Cardiac Perfusion Imaging Using Arterial Spin Labeling. *Proc Intl Soc Mag Reson Med, Milan, Italy; 22, 4921.*
60. Li, X., Eberly, L. E., Oz, G., Seaquist, E. R., & Mangia, S. (2014). Short- and Long-Term Reproducibility of pCASL Brain Perfusion Imaging at 3T. *Proc Intl Soc Mag Reson Med, Milan, Italy; 22, 4570.*
61. Kalavagunta, C., Zhou, X., Schmechel, S., Koopmeiners, J., Warlick, C. A., Konety, B., & Metzger, G. J. (2014). Pixel-Wise Multi-Parametric Assessment of Prostate Cancer from Co-registered regions of Pathologically defined Disease. *Proc Intl Soc Mag Reson Med, Milan, Italy; 22, 1066.*
62. Nam, J. W., Kalavagunta, C., Dankbar, S. C., Henricksen, J., Schmechel, S., & Metzger, G. J. (2013a). JPStitch 2.0: a Software for Pathology Volume Reconstruction and Analysis. Paper presented at the 4th Annual Masonic Cancer Center Research Symposium, Minneapolis, MN.
63. Nam, J. W., Kalavagunta, C., Dankbar, S. C., Henricksen, J., Schmechel, S., & Metzger, G. J. (2013b). JPStitch 2.0: a Software for Volumetric Reconstruction and Analysis of Digitized Pathology. Paper presented at the Donald Gleason Conference on Prostate and Urologic Cancers, Minneapolis, MN.
64. Metzger, G. J., Schmitter, S. S., Li, X., Van de Moortele, P. F., Schmitt, P., & Bi, X. (2013). Noncontrast-Enhanced Four-Dimensional MR Angiography at 7T. *Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 1292.*
65. Li, X., & Metzger, G. J. (2013). Prostate perfusion imaging using velocity-selective ASL. *Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 3402.*
66. Li, X., Kamil, U., & Metzger, G. J. (2013). Theoretical Evaluation of Ultrahigh Field Benefits to Non-contrast Enhanced Renal Perfusion Imaging Using FAIR-EPI. *Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 1540.*
67. Li, X., Bolan, P., Kamil, U., & Metzger, G. (2013). Single breath-hold T1 Imaging at 7T. *Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 716.*
68. Kalavagunta, C., Zhou, X., Henricksen, J., Schmechel, S., & Metzger, G. J. (2013a). Image registration of histopathology and MR in prostate cancer using LATIS. Paper presented at the 4th Annual Masonic Cancer Center Research Symposium, Minneapolis, MN.
69. Kalavagunta, C., Zhou, X., Henricksen, J., Schmechel, S., & Metzger, G. J. (2013b). Improved post-prostatectomy pathology co-registration with in-vivo MRI by a novel deformable registration strategy. Paper presented at the Donald Gleason Conference on Prostate and Urologic Cancers, Minneapolis, MN.
70. Iltis, I., Choi, J., Vollmers, M., Shenoj, M., Bischof, J., & Metzger, G. J. (2013a, 9/23/2013). Detection of the effect of nanoparticle preconditioning in a mouse model of prostate cancer by MRI. Paper presented at the Institute for Engineering in Medicing: annual conference and retreat, Minneapolis, MN.
71. Iltis, I., Choi, J., Vollmers, M., Shenoj, M., Bischof, J., & Metzger, G. J. (2013b). Detection of the effect of nanoparticle preconditioning in a mouse model of prostate cancer by MRI. Paper presented at the Proc. Institute for Engineering in Medicine.
72. Iltis, I., Choi, J., Vollmers, M., Shenoj, M., Bischof, J., & Metzger, G. J. (2013c). Detection of the effect of nanoparticle preconditioning in a mouse model of prostate cancer by MRI. *Proc Intl Soc Mag Reson Med, Salt Lake City, Utah, USA; 21, 3418.*
73. Fossen, B., Kalavagunta, C., & Metzger, G. J. (2013). SI_Tool: A Software Tool for Quantifying Spectroscopy and Visualizing it in a Spatial Framework. Paper presented at the Donald Gleason Conference on Prostate and Urologic Cancers, Minneapolis, MN.
74. Brasseur, B. M., Johnson, A., Henricksen, J., Koopmeiners, J., Daniels, K. B., Metzger, G. J., & Schmechel, S. C. (2013). Colorimetric Detection of Prostate Cancer in Grid Regions utilizing a Ratio of Racemase to High Molecular Weight Keratin (HMWK) and P63. *Modern Pathology, 26(S2), 490A-491A.*

75. Bolan, P., Metzger, G., Moeller, S., & Garwood, M. (2013). Partial Volume SLIM for Separating Water and Lipid Compartmental Signals in Breast MRS. *Proc Intl Soc Mag Reson Med*, Salt Lake City, Utah, USA; 21, 3958.
76. Bolan, P., Li, X., & Metzger, G. J. (2013). Non-Rigid Motion-Corrected Averaging for Improved Pelvic MRI. *Proc Intl Soc Mag Reson Med*, Salt Lake City, Utah, USA; 21, 3767.
77. Skubitz, A., Rizzardi, A., Johnson, A., Isaksson Vogel, R., Pambuccian, S. E., Henricksen, J., Metzger, G. J., & Schmechel, S. (2012). Quantitative Comparison of Immunohistochemical Staining Intensity Measurements on Tissue Microarrays by Computer-aided Digital Imaging Analysis versus Pathologist Visual Scoring. *International Society for Biological and Environmental Repositories Annual Meeting: Biopreservation and Biobanking*, Melbourne, Australia; 10(2), 224.
78. Metzger, G. J., Auerbach, E. J., Warlick, C. A., Hutter, D., Adriany, G., & Tkac, I. (2012). Evaluation of Improved Spatial and Spectral Resolution on Model Based Fitting of Prostate Spectroscopy at 7 Tesla. *Proc Intl Soc Mag Reson Med*, Melbourne, Australia; 20, 4390.
79. Li, X., Snyder, C. J., Van de Moortele, P. F., Ugurbil, K., & Metzger, G. J. (2012). Non-contrast enhanced human renal perfusion imaging using arterial spin labeling at 7T: initial experience. *Proc Intl Soc Mag Reson Med*, Melbourne, Australia; 20, 1310.
80. Kalavagunta, C., Zhou, X., Henricksen, J., Schmechel, S., & Metzger, G. J. (2012). Registration of In-vivo Prostate MRI and Pseudo Whole Mount Histology using Local Affine Transformation with Internal Structures (LATIS). *Proc Intl Soc Mag Reson Med*, Melbourne, Australia; 20, 2997.
81. Kalavagunta, C., Warlick, C. A., Zhou, X., Li, X., Koopmeiners, J., Henricksen, J., Johnson, A. D., Schmechel, S., & Metzger, G. J. (2012). Analysis of Quantitative MRI and Pathology based on Co-registered Regions of Prostate Cancer. *Proc Intl Soc Mag Reson Med*, Melbourne, Australia; 20, 2996.
82. Iltis, I., Choi, J., Colonna, E., Vollmers, M., Shenoi, M., Slaton, J., Bischof, J., & Metzger, G. J. (2012). Detection of the effect of nanoparticle preconditioning in a mouse model of prostate cancer by MRI. *Proc Intl Soc Mag Reson Med*, Melbourne, Australia; 20, 3020.
83. Ganta, V., Rizzardi, A., Marston, L. O., Tiffany, J. R., Isaksson Vogel, R., Rosener, N., Metzger, G., McCarthy, J. B., Turley, E., & Schmechel, S. (2012). Tissue Microarray Analysis of Prostate Cancer Specimens Supports a Positive Feedback Loop Among Molecules Involved in Hyaluronan Synthesis, Degradation and Signaling. *United States and Canadian Academy of Pathology Annual Meeting: Modern Pathology*, 25(S2), 206A.
84. Schmechel, S., Daniel, T., Henricksen, J., Rizzardi, A., Rosener, N., Koopmeiners, J., & Metzger, G. (2011). Software for the Generation of Multigene Expression Signature Maps at the Protein Level from Digitized Immunohistochemistry Slides. *International Society for Biological and Environmental Repositories Annual Meeting: Biopreservation and Biobanking*, 9(1), 88.
85. Rizzardi, A., Johnson, A., Isaksson Vogel, R., Pambuccian, S. E., Henricksen, J., Metzger, G., & Schmechel, S. (2011). Quantitative Comparison of Immunohistochemical Staining Intensity Measurements on Tissue Microarrays by Computer-aided Digital Imaging Analysis versus Pathologist Visual Scoring. *International Society for Biological and Environmental Repositories Annual Meeting: Biopreservation and Biobanking*, 10(2), 224.
86. Metzger, G. J., Auerbach, E. J., Snyder, C. J., & Adriany, G. (2011). Three Dimensional Spectroscopic Imaging in the Prostate with a Surface Combined Endorectal Coil at 7 Tesla. *Proc. Intl. Soc. Mag. Reson. Med.*, Montréal, Québec, Canada; 19.
87. Metzger, G., Dankbar, S. C., Henricksen, J., Rizzardi, A., Rosener, N., & Schmechel, S. (2011). Development of Multigene Expression Signature Maps at the Protein Level from Digitized Immunohistochemistry Slides. *Pathology Visions Annual Meeting of the Digital Pathology Association*.
88. Li, X., Kalavagunta, C., Ugurbil, K., & Metzger, G. J. (2011). Prostate Perfusion Using Arterial Spin Labeling: Initial Experience. *Proc. Intl. Soc. Mag. Reson. Med.*, Montréal, Québec, Canada; 19.

89. Li, X., Kalavagunta, C., Nelson, M. T., & Metzger, G. J. (2011). Arterial Spin Labeling Perfusion Studies of the Prostate with an ERC. Proc. Intl. Soc. Mag. Reson. Med., Montréal, Québec, Canada; 19.
90. Mraz, N. R., Nelson, M. T., Kuehn-Hajder, J., Metzger, G. J., & Bolan, P. J. (2010). Operator Performance of Voxel Placement for Single-Voxel MRS of Breast Lesions. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18.
91. Metzger, G. J., Moeller, S., Bolan, P., Auerbach, E. J., Park, J.-Y., & Garwood, M. (2010). Ultra Short Gradient Echo Imaging of the Prostate at 7T. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18, #4739.
92. Kalavagunta, C., & Metzger, G. J. (2010). A field comparison of r_1 and r_2^* relaxivities of Gd-DTPA in aqueous solution and whole blood: 3T versus 7T. Proc. Intl. Soc. Mag. Reson. Med., Stockholm, Sweden; 18.
93. Johnson, A., Rosener, N., Rizzardi, A., Isaksson-Vogel, R., Metzger, G., & Schmechel, S. (2010). Validation of Molecular Markers of Aggressiveness in Prostate Cancer. Modern Pathology, 23(1s), 881.
94. Zhang, Y., Timm, G., Sweet, R., Metzger, G., Burke, D., & Erdman, A. (2009). Computer Model Based Dynamic Urethrovaginal Support Assessment for Female Sui. Neurourolgy and Urodynamics, Neurourol Urodynam; 28(7), 849-850.
95. Snyder, C. J., DelaBarre, L., Tian, J., Akgun, C., Metzger, G., Moeller, S., Ugurbil, K., & Vaughan, J. T. (2009). Using separated volume transmit and local receiver arrays for body imaging at 7T. Proc. Intl. Soc. Mag. Reson. Med., Honolulu, Hawaii, USA; 17, #6876.
96. Metzger, G. J., Weale, P., DelaBarre, L., Bolan, P., Zuehlsdorff, S., Nielles-Vallespin, S., Van de Moortele, P. F., Snyder, C. J., Auerbach, E. J., Vaughan, J. T., Ugurbil, K., & Jerecic, R. (2009). Exploring the promised land of 7T for CMR with T-PAT accelerated imaging techniques: First results for real time cardiac functional tagging in volunteers. Proc Soc Cardiac Magn Reson, 12.
97. Metzger, G. J., Moeller, S., Snyder, C. J., Ugurbil, K., Van de Moortele, P. F., & Adriany, G. (2009). Endorectal combined surface array for prostate imaging at 7T. Proc. Intl. Soc. Mag. Reson. Med., Honolulu, Hawaii, USA; 17, #6038.
98. Metzger, G. J., & Bolan, P. (2009). Influence of contrast-dependent T_2^* effects on DCE-MRI of the prostate at 7T. Proc. Intl. Soc. Mag. Reson. Med., Honolulu, Hawaii, USA; 17, #5920.
99. DelaBarre, L., Weale, P., Snyder, C. J., Van de Moortele, P. F., Metzger, G. J., Zuehlsdorff, S., Nielles-Vallespin, S., Bolan, P., Auerbach, E. J., Ugurbil, K., Jerecic, R., & Vaughan, J. T. (2009). Cardiac cine: Advances at 7T. Proc Intl Soc Mag Reson Med, Honolulu, Hawaii, USA; 17, #4186.
100. Snyder, C., DelaBarre, L., Metzger, G. J., Akgun, C., Bolan, P., Ugurbil, K., & Vaughan, J. T. (2008). Separate Transmit and Receive Arrays for 7T Body Imaging. Proc. Intl. Soc. Mag. Reson. Med., Toronto, Ontario, Canada; 16, 1065.
101. Metzger, G. J., Snyder, C. J., Akgun, C., Koeneman, K. S., Warlick, C., & Farber, M. (2008). Anatomic Prostate MRI at 7 Tesla: Endorectal versus Surface Array Comparison. Proc. International Workshop on Focal Therapy and Imaging of Prostate Cancer, 1.
102. Metzger, G. J., Snyder, C. J., Akgun, C., & Adriany, G. (2008). Comparison of Transceive Endorectal and External Surface Array Coils for Prostate Imaging at 7 Tesla. Proc. Intl. Soc. Mag. Reson. Med., Toronto, Ontario, Canada; 16, 171.
103. Akgun, C., Snyder, C. J., Moeller, S., Bolan, P., Vaughan, J. T., Ugurbil, K., Van de Moortele, P. F., & Metzger, G. (2008). Transmit and Receive FDTD Modeling as a Valuable Tool for RF Coil Development: Validation of Simulations with in Vivo Torso Imaging at 7 Tesla. Proc. Intl. Soc. Mag. Reson. Med., Toronto, Ontario, Canada; 16, 1196.
104. Snyder, C. J., DelaBarre, L., Van de Moortele, P. F., Snyder, A., Akgun, C., Jinfeng, T., Metzger, G., Ugurbil, K., & Vaughan, J. T. (2007). Stripline/TEM Transceiver Array for 7T Body Imaging Proc. Intl. Soc. Mag. Reson. Med., Berlin, Germany; 15, 164.

105. Metzger, G., Marjanska, M., & Henry, P. G. (2007). Prostate spectroscopy analysis with LCModel: development of 3T scoring criteria. *Proc. Intl. Soc. Mag. Reson. Med.*, Berlin, Germany; 15, 3668.
106. Thomasson, D., Metzger, G., Swaminathan, S., Bernardo, M., Choyke, P., & Gharib, A. (2005). Improved Characterization of DCE-MRI in Prostate Cancer using MT Derived Relaxivity Correction Maps. *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13, 2123.
107. Reish, A. G., Herzka, D. A., Thomasson, D., Danthi, N. S., Potti, L., Bur, M. J., Burnett, C. A., Gharib, A., Metzger, G., & Li, K. (2005). Characterization of a avB3-Integrin Targeted Gadolinium Chelate-Based Contrast Agent. *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13.
108. Metzger, G., Kozerke, S., Murdoch, J., & El-Sharkawy, A. M. (2005). 3DSI Prostate Spectroscopy at 3T: Comparison of Multi-Element Coil Combinations. *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13.
109. Krieger, A., Guion, P., El-Sharkawy, A. M., Metzger, G., Coleman, J., Grubb, R. L., Qian, D., Gharib, A., Thomasson, D., Singh, A. K., Fichtinger, G., Whitcomb, L., Menard, C., & Atalar, E. (2005). MRI Guided Prostate Interventions in 3T. *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13, 2662.
110. Kam, A. W., Wang, H., Thomasson, D., Metzger, G., & Li, K. (2005). Are multiple phase references needed for phase correction in proton resonance frequency shift thermometry? *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13, 2135.
111. Grubb, R. L., Susil, R., Krieger, A., Guion, P., Ullman, K. L., Metzger, G., Smith, S. L., Singh, A. K., Linehan, W. M., Camphausen, K., Coleman, C. N., Atalar, E., Choyke, P., Menard, C., & Coleman, J. (2005). Biological MRI-guided transrectal prostate biopsy. *Journal of Urology, Journal of Urology*; 173(4), 364-364.
112. Gharib, A., Jung, E., Thomasson, D., Gupta, S. N., Metzger, G., Bernardo, M., McKinney, Y., Coleman, J., Menard, C., & Choyke, P. (2005). T2 and Dynamic Contrast Enhanced MR (DCE-MRI) Imaging of Prostate Cancer at 3T. *Proc. Intl. Soc. Mag. Reson. Med.*, Miami Beach, FL, USA; 13, 2123.
113. Thomasson, D., Bernardo, M., Srikanthana, A., Metzger, G., Swaminathan, S., & Choyke, P. (2004). Improved Quantification of Gadolinium Contrast Agent Concentrations Using MTR Derived Relaxivity Data for DCE-MRI at 3 Tesla. *Proc. RSNA, Chicago, IL, USA*, 4404198.
114. Weatherall, P. T., Peng, Q., Metzger, G., Chia, J., & Wang, J. (2003). Diffusion Imaging of Breast Cancer Using Single-Shot SENSE-EPI: Preliminary Results. *Proc. Intl. Soc. Mag. Reson. Med.*, Toronto, Ontario, Canada; (11), 2604.
115. Thomasson, D., Metzger, G., Choyke, P., Butman, J., & Li, K. (2003). Improved Contrast to Noise per Unit Time .CNR/t. at 3Tesla using Parallel Imaging (SENSE) with 3D Spoiled Gradient Recalled Echo for Dynamic Contrast Enhanced MR Imaging DCE-MRI. *Proc. Intl. Soc. Mag. Reson. Med.*, Toronto, Ontario, Canada; (11), 2650.
116. Rappard, G., Purdy, P. D., Replogle, R. E., Metzger, G., Weatherall, P. T., & Horowitz, M. (2003). SSFP MR-guided Intracranial-Peritoneal Shunting: A Multi-modality Cadaver Feasibility Study for the Treatment of Communicating Hydrocephalus. *Proc. Intl. Soc. Mag. Reson. Med.*, Toronto, Ontario, Canada; (11), 3232.
117. Weatherall, P. T., Payne, J., Metzger, G., Parsons, W., Naftalis, E., & Peters, G. (2002). MRI Evaluation of Breast Cancer Residua Soon After Surgery: Appearance and Accuracy. *Proc. Intl. Soc. Mag. Reson. Med.*, Honolulu, Hawaii, USA; (10).
118. Szczepaniak, L. S., Metzger, G., D'Amrosia, G. S., Arbique, D., Vongpatanasin, W., Unger, R., & Victor, R. G. (2002). Myocardial steatosis contributes to heart dysfunction in obese human. *Proc. Intl. Soc. Mag. Reson. Med.*, Honolulu, Hawaii, USA; (10).
119. Rappard, G., Metzger, G., Pride, G. L., Jr., Fleckenstein, J. L., Replogle, R. E., & Purdy, P. D. (2002). SSFP MR Guided Intracranial Navigation Using a Loopless Antenna/Guidewire Inserted via a Percutaneous Intraspinal Approach: Preliminary Results. *Proc. RSNA, Chicago, IL, USA*.

120. Nurenberg, P., Metzger, G., Jiang, L., McColl, R., & Mason, R. P. (2002). Non invasive evaluation of prostate vasculature in the clinic. Proc. Fourth International Symposium on Anti-Angiogenic Agents, Dallas, TX, (4).
121. Weatherall, P. T., Goodwin, R. S., Evans, G. F., Payne, J., Metzger, G., Saborrian, M. H., Campbell, T., & Peters, G. (2001). MRI Assessment of Breast Cancer Invasion: Skin and Chest Wall. Proc. Intl. Soc. Mag. Reson. Med., Glasgow, Scotland, UK; (9).
122. Weatherall, P. T., Evans, G. F., Metzger, G. J., Saborrian, M. H., & Leitch, A. M. (2001). MRI vs. histologic measurement of breast cancer following chemotherapy: comparison with x-ray mammography and palpation. Proc. Intl. Soc. Mag. Reson. Med., Glasgow, Scotland, UK; (8).
123. Weatherall, P. T. (2001). MRI Assessment of Breast Cancer Invasion: Skin and Chest Wall. Proc. Intl. Soc. Mag. Reson. Med., Glasgow, Scotland, UK; (9).
124. Nurenberg, P., Szczepaniak, L. S., Metzger, G., Ewalt, D. H., & Sagalowsky, A. I. (2001). 1H Magnetic Resonance Spectroscopy of Retroperitoneal Tumors-Preliminary Report. Society of Urologic Oncology/ NCI Urologic Oncology Program, Bethesda, MD,.
125. Metzger, G., Szczepaniak, L. S., Sagalowsky, A. I., Ewalt, D. H., & Nurenberg, P. (2001). Metabolic Classification of Renal Tumors with 1H Magnetic Resonance Spectroscopy: Comparison of Ex Vivo and Localized In Vivo Results. Proc. Intl. Soc. Mag. Reson. Med., Glasgow, Scotland, UK; (9).
126. Silva, A. C., Barbier, E. L., & Metzger, G. (1998). Radial echo-planar imaging (rEPI). Proc. Intl. Soc. Mag. Reson. Med., Sydney, Australia; (6), 1965.
127. Metzger, G., Sharkar, S., & Hu, X. (1998). Use of high resolution echo planar spectroscopic imaging in anatomic studies. Proc. Intl. Soc. Mag. Reson. Med., Sydney, Australia; (6), 623.
128. Fleckenstein, J. L., & Metzger, G. (1998). Proton MR spectroscopy of the brain: The nuts, bolts and a few bad seeds. Proc. RSNA, Chicago, IL, USA.
129. Metzger, G., Kadah, Y. M., & Hu, X. (1997). A regional approach for partial volume correction in spectroscopic imaging. Proc. Intl. Soc. Mag. Reson. Med., Vancouver, BC, Canada; (5).
130. Merkle, H., Cohen, E., Metzger, G., & Hu, X. (1997). Feasibility of 1H MRI and proton decoupled 13C MRS of human liver at 4T. Proc. Intl. Soc. Mag. Reson. Med., Vancouver, BC, Canada; (5), 1212.
131. Patel, M., Metzger, G., & Hu, X. (1995). Application of Genetic Algorithm for Time Domain Fitting of in vivo MRS Data. Proc. Intl. Soc. Mag. Reson. Med., Nice, France; (3), 1947.

TEACHING AND CURRICULUM DEVELOPMENT

University of Minnesota

Course/Lecture List

- Medical Physics 8147: Advanced Physics of MRI: Spring 2019, 2021, 2023. Overall Course Director and Instructor (5 Hours lecturing – 2 weeks course administration).
- Medical Physics 5138: Medical and Health Physics of Imaging II: Course Lectures (2.5 Hours): Fall 2016, 2017, Topic: “Magnetic Resonance Basics: Magnetic Fields, Nuclear Magnetic Characteristics, Tissue Contrast, Image Acquisition”.
- BMEn 160: BME freshmen seminar series: Spring 2016-2019. Developed lab tour with lectures and hands-on demonstrations. Organizer & Lecturer. (3 hours per year).
- Medical Physics 8147, Advanced Physics of MRI. Spring 2014, 2015 & 2017: Course Lecture: “*Chemical Shift Imaging (CSI)*” (1.25 Hours per year)
- Educational Lecture: “*1H Prostate Spectroscopy*”, Minnesota Biennial High Field Workshop: Spectroscopy Hands-on Session Instructor, University of Minnesota, October 2011, 2013, 2015 & 2017 (1 hour per year).

- Educational Lecture: “*Dynamically applied static B1+ shimming*”, Minnesota Biennial High Field Workshop: Multichannel Transmit B1 at High Field Hands-on Session Instructor, University of Minnesota, October 2013, 2015, 2017, 2019.
- Educational Lecturer: Minnesota Biennial High Field Workshop: Multi-channel transmit training course, University of Minnesota, October 2009.

Professional Educational Efforts

- Organized ISMRM Member Initiated Symposium, Montreal, Canada, May, 2019, “Ultrahigh Field MR Safety: Increasing Access & Expanding Applications”, (2 hour program)
- Spectroscopy Workshop: Huntington Medical Research Institute, 2001, 2002 & 2003, faculty & lecturer.
- Philips Advanced Spectroscopy training Course (2 Days), Philips Medical Systems, Cleveland Ohio, December 2003. Developed curriculum, material and lectured.
- Advanced training activities in spectroscopy & cardiac imaging. Developed hands-on training material, educated sites and developed specific research protocols throughout North America for Philips Medical Systems; 1998-2002.

International Meeting Course Development / Training

- Co-Organization of ISMRM UHF Workshop Educational Focus Sessions, Dubrovnik, Croatia, March, 2019.
 - “Beyond Commercially Available RF Coils: Development, Evaluation & Use” (5 Hour Course)
 - “UHF Spectroscopy: Addressing Challenges & Achieving Gains”, (5 Hour Course)
- Educational Co-Chair for Molecular Imaging and Spectroscopy Table, 2019 International Society for Magnetic Resonance in Medicine.
- Co-organization of ISMRM educational courses:
 - Weekend Educational Course (4 hours), “Basics of Molecular Dynamic Sensitive MRI; MT, CEST and Rotating Frame Relaxation”, 2019
 - Sunrise Session (1 hour), “Multinuclear Imaging & Spectroscopy: Exploration of Fluorine-19 & Oxygen-17”, 2019
 - Weekday Educational Course (2 hours), “Molecular Imaging and Spectroscopy”, 2018
 - Weekday Educational Course (2 hours), “Primer for Ultrahigh Field MRI”, 2018
 - Weekend Educational Course (2 hours), “Multiparametric Imaging In Cancer - How and Why”, 2017
 - Weekday Educational Course (4 Hours), “Body Spectroscopy”, 2017

ADVISING AND MENTORING

Undergraduate Student Activities

- Jung Who Nam – B.S. Computer Science/University of Minnesota; Directed Research (2011-2012)
- Benjamin Fossen – B.S. Computer Science/University of Minnesota; Directed Research (2011-2012)
- Nicholas Rosener – B.S. Cell Biology and Development/University of Minnesota; Directed Research (2009-2011)
- Judd Smith – B.S. Biochemistry/University of Minnesota; Directed Research (2009-2010)
- Stephen Dankbar – B.S. Computer Science/University of Minnesota; Directed Research (2009-2010)

Graduate Student Activities

Master’s Dissertation Advised/Directed (*Academic advising for all or part of a graduate student’s program*)

- Useong
- Ryan Kalmoe – M.S. Medical Physics/University of Minnesota; Advised & Directed Masters Thesis entitled “Initial Assessment of FID navigators for detecting motion events in prostate spectroscopy”; 2nd place young investigator award at 2017 AAPM meeting, Dells, WI. (2015-2018)
- Andrew Larson – M.S. Medical Physics/University of Minnesota; Advised & Directed Master Thesis entitled “Automated Rigid Body Affine Registration of Multi-Parametric MRI Prostate Cancer Datasets”. (2016-2018)

Master’s Student Committees

- Logan H. Stuck – M.S. Biostatistics/University of Minnesota – “Quantitative Summaries of tumor heterogeneity from digitally annotated whole-slide IHC staining”. Plan “B” Thesis Committee

Doctoral Students Advised/Directed (*Academic advising for all or part of a graduate student’s program*)

- Tobey Haluptzok – Ph.D. Candidate, Biomedical Engineering/University of Minnesota. Advising & Directing Doctoral Dissertation project. (2020-present)
- Xiaoxuan He – Ph.D., Biomedical Engineering/University of Minnesota. Advising & Directing Doctoral Dissertation project entitled (2017-2022) Thesis: “Application of Parallel Transmission to Ultra-High Field Magnetic Resonance Spectroscopy and Imaging”. Graduated: March, 2022
- Sara Saunders – PhD, Biomedical Engineering/University of Minnesota Advised Doctoral Dissertation (2018-2021) Thesis: “Deep Neural Networks for Medical Image Segmentation And Quantitative MR Imaging” Graduated: December, 2021
- Ethan Leng – M.D./Ph.D. Biomedical Engineering/University of Minnesota. Advised & Directed Doctoral Dissertation (2015-2020) Thesis: “Development of computer-aided diagnosis systems for detection of prostate cancer on multiparametric MRI”. Awarded a Doctoral Dissertation Fellowship for the 2018-2019 academic year. Awarded 2019 UMN CTSI TL1 scholarship. Graduated: June, 2020.
- Chaitanya Kalavagunta – Ph.D. Medical Physics/University of Minnesota Advised & Directed Doctoral Dissertation (2009-2014) Thesis: “Development of Multiparametric MRI Models for Prostate Cancer Detection based on Improved Correlative Pathology”. Awarded a Doctoral Dissertation Fellowship for the 2013-2014 academic year. Graduated: June, 2014.

Doctoral Candidate Committees

- Torres, Efrain – Ph.D./University of Minnesota, Biomedical Engineering, Candidate
- Froelich, Taylor – Ph.D./University of Minnesota, Medical Physics, Candidate
- Masotti, Maria – Ph.D./University of Minnesota, Biostatistics, Candidate
- Soon, Soo Han – Ph.D./University of Minnesota, Medical Physics, Candidate
- Saunders, Sara – Ph.D./University of Minnesota, Biomedical Engineering, Candidate
- Wang, Paul – Ph.D./University of Minnesota, Biomedical Engineering, Candidate, “Progress Towards Development of a Desktop Oxygen Scanner for Assessing Macroencapsulated Islet Oxygenation”, Doctoral Committee – graduated August 2021
- Tavaf, Nader – Ph.D./ University of Minnesota, Biomedical Engineering, Candidate “Improving Signal to Noise Ratio in Ultra High Field Magnetic Resonance Imaging”, Doctoral Committee – graduated March 2021.

- Woo, Myung Kyun – Ph.D./University of Minnesota, Medical Physics, “Human head array design for 10.5T MRI”, Doctoral Committee – graduated October 2020.
- McKay, Jessica – Ph.D./University of Minnesota, Biomedical Engineering, “High-resolution Breast DWI”, Doctoral Committee – graduated June 2020.
- Shapovalova, Mariya, – Ph.D./University of Minnesota, Pharmacology, “Molecular Imaging of Prostate Cancer Using Biomarker-Guided Strategies”, Doctoral Committee – graduated August 2019.
- Jin, Jin – Ph.D./University of Minnesota, Biostatistics, “Voxel-wise Classification of Prostate Cancer Using Multi-parametric MRI Data”, Doctoral Committee, graduated June 2019.
- Soren, Johst – Ph.D./Erwin L. Hahn Institute for Magnetic Resonance Imaging, “Acquisition Methods for 7 Tesla MRI from Head to Toe”, Doctoral Committee - graduated December 2016.
- Jinjin Zhang – Ph.D. Physics/University of Minnesota, “Development of Frequency-modulated Techniques for MRI of Fast Relaxing Spins”, Thesis Reader and Committee Member - graduated April 2014.
- Carl J. Snyder – Ph.D. Biomedical Engineering/University of Minnesota- “Automating the tuning and matching process of a sixteen-channel transmit-only TEM array with a thirty-two-channel receive-only loop array for body imaging applications at 7T” – Doctoral Committee - graduated April 2014.
- Can Akgun – Ph.D. Biomedical Engineering/University of Minnesota– “The Design of Microstrip Transceiver Arrays for Ultra-High Field MRI Imaging” – Doctoral Committee - graduated April 2014.

Post-doctoral fellows supervised

- Abdul Wahed Kajabi – Post Doctoral Researcher (2022-Present)
- Stefan Zbyn – Post Doctoral Researcher (2019-2022)
- Simon Schmidt – Post Doctoral Researcher (2021-Present)
- Arcan Erturk – Post Doctoral Researcher – (2014-2016) – K99 Primary Mentor (chose to go into related industry)
- Yingchun Zhang – Ph.D. Biomedical Engineering/University of Minnesota – K99 Mentor Committee “Finite element modeling of incontinence”. (2011-2012)

Residents / Fellows Supervised

- Joshua Simonson – Fellow, Department of Radiology/University of Minnesota: Research Advisor (2008-2009)
- Michael Farber – Resident, Department of Radiology/University of Minnesota: Research Advisor (2007-2008)
- Dr. Marklyn Jones – Fellow, Department of Urology/University of Minnesota: Research Advisor (2006-2007)
- Ihab Haddidin – Fellow, Department of Radiology/University of Minnesota” Research Advisor – (2005-2006)

Other Mentoring Activities

- Dr. Yigitcan Eryaman – faculty advisor team member 2017-present
- Dr. Sebastian Schmitter – faculty advisor team member 2014- 2015
- Dr. Xiufeng Li – Assistant Professor/University of Minnesota – CTSI/KL2 Primary Mentor (2014-2017).
- Dr. Xiufeng Li – Research Associate/University of Minnesota – Mentor (2011-2013)
- Dr. Isabelle Iltis – Research Associate/University of Minnesota – Research Advisor (2010-2012)
- Dr. Christopher Warlick –Assistant Professor, Urologic Surgery/University of Minnesota – K99 and ACS Mentor Committee (2009-2010)
- Vanessa Zavaletta – Biomedical Engineering Graduate/Mayo Clinic – Research Advisor (2007-2008)

PROFESSIONAL SERVICE AND PUBLIC OUTREACH

Editorships/Journal Reviewer Experience

- International Society of Magnetic Resonance in Medicine; Abstract Reviewer (2015-present)
- Physics in Medicine and Biology (2015)

- IEEE Transactions on Biomedical Engineering (2014)
- Journal of Clinical Cancer Research (2014)
- International Society of Magnetic Resonance in Medicine: UHF Body Imaging and Spectroscopy, Prostate Cancer sections (2014)
- SCMR-ISMRM Jointly Sponsored Workshop, Abstract Reviewer, “New Horizons in High Field Cardiovascular MR: Promises and Progress (January 2013)
- NMR in Biomedicine (2012-present)
- Journal of Urology (2009 – present)
- International Society of Magnetic Resonance in Medicine; Abstract Reviewer (2008 – 2009)
- Journal of Magnetic Resonance Imaging (2006 – present)
- Urologic Oncology (2006 – 2012)
- Magnetic Resonance Materials in Physics, Biology and Medicine (2006 – present)
- Magnetic Resonance in Medicine (2005 – present)

Review panels for external funding agencies, foundations, etc.

- NIH ZRG1 SBIB-Q03: Medical imaging proposal review meeting: 11/19/2021
- NIH SBIB-S59 Special Emphasis Panel : Imaging and Biomarkers for Early Detection of Aggressive Cancer (U01)
 - 2019/03
 - 2018/10
- NIH DDK-D 1 Special Emphasis Panel/Scientific Review: NIDDK, Urologic and Hematologic Diseases D Subcommittee, (10/19/2017)
- NIH ZRG1-DTCS-A81: Stage 1 reviewer; 5/17/2016.
- NIH ZRG1-SBIB-S(59)R Special Emphasis Panel: Imaging and Biomarkers for Early Cancer Detection (U01)
 - 2/18/2016
 - 3/22/2016
- NIH NCI study section for PAR-14-166: Early Phase Clinical Trials in Imaging and Image-Guided Interventions, (June, 2015)
- NIH NCI study section for PAR-13-185 “Image-guided Drug Delivery in Cancer” (March 2015)
- Aix-Marseille University, Emergence & Innovation grant mechanism (April 2013)
- Netherlands Organization for Scientific Research (NWO), Innovational Research Incentives Scheme (March, 2013)
- NIH Quantitative Imaging Network mechanisms
 - PAR 16-116 QIN study section, (August, 2014)
 - PAR 11-150 QIN study section, (October, 2012)
 - PAR 08-225 QIN study section, (June, 2011)
- Department of Defense, Prostate Cancer Research Program PCT-1 panel (June 2010)
- Dutch Technology Foundation, Nieuwe Instrumenten in de Gezondheidszorg Programme (July 2009)
- NIH/NCI Cancer Biomarkers Study Section study section, (August 2008)

Organization of conferences, workshops, panels, symposia

- Panel Member “The future of UHF MRI”, Lisbon Portugal, March 2022.
- Co-Chair of “Toward the Clinical Translation of Ultra-High Field MRI”, a Clinical and Translational Science Institute (CTSI) meeting, Minneapolis, MN, USA November 18-19 2019.
- Co-Chair of “ISMRM Workshop on Ultrahigh Field Magnetic Resonance: Technological Advances, Translational Research Promises & Clinical Applications”, Dubrovnik, Croatia. March 31- April 3 2019.
- Organizing Committee Member of the Center for CMRR high field workshop – (2007, 2009, 2011, 2013 & 2015, 2017, 2019, 2021)

Committee memberships

- **7T Translational Alliance in North America:** Executive committee and member of the Ultrahigh Field Body and Safety groups.
- **ISMRM Leadership:** Elected for High Field Applications and Systems Study Group 2017. This will be a 4 year position from 2017-2021. (Chair from 2019-2020)
- **ISMRM Annual Meeting Program Committee: (2015-2018)**
 - Co-Chair of “Molecular Imaging and Spectroscopy” Educational table (January 2018)
 - Chair of “MR of Cancer” scientific Table (January 2017).
- Panel Discussion Member, “How to get high-field custom coils into human research”. High field systems and applications joint study group meeting. ISMRM, April 2013.
- Faculty at the SCMR-ISMRM Jointly Sponsored Workshop, “New Horizons in High Field Cardiovascular MR: Promises and Progress, January 2013.
- International Society of Magnetic Resonance in Medicine – Advances in Oncologic Body and Breast Spectroscopy, Session Co-Chair (May 2005)

Service to the University/Medical School/Department

University-wide service

- Medical Scientist Training Program (MD/PhD) preceptor, (2015-Present)
- Medical Scientist Training Program (MD/PhD) Steering Committee Member, (2015-2019).
- CMRR Education Committee Head (2013-Present)
- Center for Magnetic Resonance Research Operations committee member (2013-Present)
- Center for Magnetic Resonance Research Safety Committee Member (2012-Present)
- Institute of Engineering in Medicine conference poster judge (2014-2016)
- Masonic Comprehensive Cancer Center: Tumor Microenvironment and Biology – executive committee (2015)
- Clinical and Translational Science Institute (CTSI) conference poster judge (2014)
- Clinical and Translational Science Institute (CTSI) Scientific Reviewer on the Human Research Protection Program’s (HRPP) Scientific Assessment Panel of Experts (2013-2016)
- Biomedical Engineering Graduate Selection Committee (2013-2015)
- Masonic Comprehensive Cancer Center: Tumor Microenvironment and Biology – steering committee (2013)
- Lecturer: CMRR presentation for Legislative Staff Visit (September, 2013)
- Lecturer: Boston Scientific Corporation Visit to University of Minnesota (February, 2013).
- Reviewer: Institute for Engineering and Medicine 2013 Exploratory Grants (December 2012)
- Contributed to writing and providing justification for multiple equipment grant proposals:
 - i. MMF grant for pathology processing hardware (April 2012)
 - ii. NIH HEIG for a high throughput pathology digitization system (March 2012)
 - iii. NIH HEIG for a 10.5T multi-transmit RF system (September 2011)
- Masonic Comprehensive Cancer Center: Tumor Microenvironment and Biology – Executive Committee (2011-2012)
- Attended and presented at the BTRC P41 Directors Meeting, Rockville MD (2011, 2012)
- Faculty Financial Report Design review – Discussion Panel (2011)
- Vendor selection and 7 Tesla system configuration – Committee Member – Organized vendor meetings and site visits. (2009)
- General Clinical Research Center (GCRC)– Drafted guidelines for the use of Gadolinium based contrast agents in research (2008)
- Masonic Comprehensive Cancer Center – Faculty Search Committee (2007)

Medical School Service and Intercollegiate Service

- Presented at the Department of Radiology’s “Alumni Meeting”, Minneapolis, MN (October 2015).

- Presented at the UMN Medical School “Scholarship Advisory Committee Meeting”, at the CMRR (May 2013).
- Supported Minnesota Medical Foundation (MMF) fund raising efforts through lecture/discussion sessions with potential donors: (May 2008; December 2008; January 2011 and April 2011).
- MRI-guided prostate biopsy system – Selection Committee (2009)

Community Outreach Activities

- Featured in Big10 Network Research Video on the 10.5T MRI systems at the CMRR, “<http://btn.com/2018/12/08/inside-the-minnesota-machine-that-can-read-your-mind-kinda-btn-livebig/>”, January 2019.
- Contributed to article “Pushing boundaries of medical imaging with 10.5 Tesla MR”, written by Gus Iversen, Editor and Chief for Healthcare Business News Magazine, <https://www.dotmed.com/news/story/44030>, September 10, 2018.
- Lectured to the Saint Croix Valley Chapter of the Lions Club International: “Towards human MRI in vivo at 10.5 Tesla”, Stillwater MN, (February 2017).
- Lectured for the Prostate Cancer Support Group Meeting: “Imaging choices for Prostate Cancer”, Minneapolis, Hope Lodge, (April 2015).
- Participated in Health Talk Blog on “Advanced imaging technology aiding in prostate cancer screenings”, published by the University of Minnesota’s academic Health Center, (July 2014). <http://www.healthtalk.umn.edu/2014/07/09/advanced-imaging-technology-aiding-prostate-cancer-screenings/>
- Lectured for the state legislature on the research at the “Center for Magnetic Resonance Research – CMRR” in an event planned by the University of Minnesota Foundation. (July, 2014)
- Lectured at the Masonic Comprehensive Cancer Center’s community outreach “Cancer U” program, “Prostate Cancer Imaging Program: Impacting the management and study of prostate cancer”, University of Minnesota, (April 2010).
- Lectured at the Center for Prostate Cancer, Support Group Meeting, “Prostate Cancer Imaging Program: Impacting the management and study of prostate cancer”, University of Minnesota, (2009).