

CURRICULUM VITAE

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Education

- 10/1982 D. Phil. in Physical Chemistry, Oxford University, England
Title: "New Techniques in Fourier Transform Nuclear Magnetic Resonance."
Supervisor; Ray Freeman, D.Phil., FRS
- 08/1979 M.S. in Physics, University of Florida, Gainesville, Florida
Title: "The Radial Distribution Function for Particles Interacting through an
Attractive 1/R Potential." Supervisor; Charles F. Hooper, Jr., Ph.D.
- 06/1972 B.S. in Physics, University of Florida, Gainesville, Florida

Professional Experience

- Since 12/2012 Associate Director, Advanced Magnetic Resonance Imaging and Spectroscopy
Facility, McKnight Brain Institute, University of Florida, Gainesville, Florida
- Since 07/2007 Professor, Department of Biochemistry and Molecular Biology,
University of Florida, Gainesville, Florida
- Since 12/2000 Affiliate Faculty, Department of Biomedical Engineering,
University of Florida, Gainesville, Florida
- 01/1993 - 12/2007 Founder and Director, Center for Structural Biology, College of Medicine
University of Florida, Gainesville, Florida
- 01/1993 - 07/2007 Associate Professor, Department of Biochemistry and Molecular Biology,
University of Florida, Gainesville, Florida
- 01/1992 - 12/1997 Founder and Director, Advanced Magnetic Resonance Imaging and
Spectroscopy Facility, McKnight Brain Institute, University of Florida
- 08/1987 - 12/1992 Associate Professor, Department of Radiology
University of Florida, Gainesville, Florida
- Since 02/1984 Affiliate Faculty, Department of Physics
University of Florida, Gainesville, Florida
- 11/1982 - 08/1987 Assistant Professor, Department of Radiology
University of Florida, Gainesville, Florida
- 10/1979 - 08/1982 Research Assistant, Physical Chemistry Laboratory
Oxford University, Oxford, England
- 12/1978 - 09/1979 Research Physicist, V.A. Medical Center
Gainesville, Florida
- 05/1974 - 09/1979 Assistant in Radiology, Department of Radiology
University of Florida, Gainesville, Florida
- 09/1972 - 04/1974 Laboratory Technician, Department of Radiology
University of Florida, Gainesville, Florida

Membership and Honors

Member, National High Magnetic Field Laboratory
Member, International Society for Magnetic Resonance in Medicine
Exemplary Teacher Award, College of Medicine, University of Florida, 2007-08, 2012-13
University Term Professor, University of Florida, Gainesville, Florida, fall 2017 – spring 2020
Mentor Award (faculty/staff category), National High Magnetic Field Laboratory, 2019

Contribution to Science

As a physicist/physical chemist, I focus on developing magnetic resonance (MR) methods to extract an optimum amount of information from MR measurements to address specific biomedical questions. This requires the development of new data acquisition and processing methods, and occasionally new hardware (magnetic-field-gradient coils and RF resonator coils). As we improve our MR imaging and spectroscopy methods, we apply these developments to studies of the brain and spinal cord, which provided unique and important information on structure and function. The following provides a broad overview of these contributions to science in areas (from over 115 referred publications) for which our work has been selected three times for the cover of scientific journals.

Development of magnetic resonance data acquisition and processing techniques: During a productive period in graduate school (with 6 publications) in the Oxford University laboratory of Ray Freeman, I developed two-dimensional spectroscopic methods for chemical structure determination using spin filtering techniques (for example see Ref. 1 below) to visualize molecular structure connectivity (as shown below, connectivity becomes important later in our studies of the brain). Then as a new faculty member in Florida, my research group developed new pulsed-field gradient methods for spatial localization of spectra measured *in vivo* (2) that we refined and discussed in several related publications over the next few years. Then we introduced the use of the stimulated echo for imaging (3), and developed an improved selective 180-degree excitation pulse (4) that was later incorporated in the Bruker ParaVision software. We continued to refine and publish our methods as we began to apply these to study important biomedical problems.

1. Mareci, T.H., Freeman, R. Echoes and antiechoes in coherence transfer NMR: Determining the signs of double quantum frequencies. *J. Magn. Reson.* 48:158-163 (1982).
2. Mareci, T.H. and Brooker, H.R. High-resolution magnetic resonance spectra from a sensitive region defined with pulsed field gradients. *J. Magn. Reson.* 57:157-163 (1984).
3. Sattin, W., Mareci, T.H. and Scott, K.N. Exploiting the stimulated echo in nuclear magnetic resonance imaging I. Method. *J. Magn. Reson.* 64:177-182 (1985).
4. Mao, J., Mareci, T.H. and Andrew, E.R. Experimental study of the optimized selective 180 degree radiofrequency pulses. *J. Magn. Reson.* 79:1-10 (1988).

Development of magnetic resonance technology: Most of our work has relied on commercially available MR hardware and technologies, but we developed what is necessary for an application when none was available commercially. While studying spinal cord injury and repair, we realized that MR was uniquely suited for the study of the spinal cord, but the sensitivity of MR limited our ability to characterize the tissue. Therefore, we introduced the use of implantable RF coils for improved MR imaging and spectroscopy sensitivity (1) and later extended the use of implantable RF coils to the study of bioartificial tissue transplants (2). In our continuing development of MR for brain and spinal cord studies (see **Studies of the Brain** below), we developed a magnetic-susceptibility matched metal for the fabrication of implantable electrodes and perfected an MR technique for sensitively measuring the relative susceptibility (3). In addition, we developed a sensitive method for characterizing the switched gradient performance (4) needed to optimize our phase-sensitive flow measurements (see **Fluid transport in the Brain** below).

1. Silver XS, Ni-Wu W, Mercer EV, Beck BL, Bossart EL, Inglis BA and Mareci TH. In Vivo 1H Magnetic Resonance Imaging and Spectroscopy of the Rat Spinal Cord using an Inductively Coupled Chronically Implanted RF Coil. *Magn. Reson. Med.* 2001;46:1216-1222.
2. Volland NA, Mareci TH, Constantinidis I and Simpson NE. Development of an Inductively Coupled MR Coil System for Imaging and Spectroscopic Analysis of an Implantable Bioartificial Construct at 11.1 T. *Magn Reson Med*, 2010;63:998-1006.
3. Astarly GW, Peprah MK, Fisher C, Carney PR, Sarntinoranont M, Meisel MW, Manuel M, and Mareci TH. MR Measurement of Alloy Magnetic Susceptibility: Towards Developing Tissue-Susceptibility Matched Metals. *Journal of Magnetic Resonance* 2013;233:49-55.

4. Magdoo KN, Sarntinoranont M and Mareci TH. Fast Imaging Based Switched Gradient Impulse Response Measurement with Uniform Excitation of Eigenmodes. *Journal of Magnetic Resonance*, 2020;313:106720.

Development of diffusion weighted imaging for structure determination: As my group developed MR methods to study spinal cord injury, we began to extend our work to studies in the brain. Using the unique ability of MR to directly measure the rate and direction of water translational self-diffusion, we worked on methods to use diffusion weighted MR images to infer the fibrous structure of white matter in the brain. In order to overcome the limitations of the rank-2 tensor model of diffusion, we introduced the concept of modeling diffusion with a high-rank tensor (1, 2), for which the first of these paper was featured as one of the 300 most cited papers in *Magnetic Resonance in Medicine* (MRM) during the celebration for the 30th anniversary of MRM's publication in 2013. Then with our computer science colleagues, we developed an improved modeling method to calculate the diffusion displacement probability in each image voxel (3) which has provided the basis for our current brain white matter mapping studies (see **Studies of the Brain Structure**). To understand more fully the complex process of diffusion in neural tissue, we introduced a random-walk model of diffusion and measure of entropy to characterize diffusion (4). This paper was featured on the cover of MRM in 2014.

1. Ozarslan E and Mareci TH. Generalized Diffusion Tensor Imaging and Analytical Relationships Between Diffusion Tensor Imaging and High Angular Resolution Diffusion Imaging. *Magn. Reson. Med.* 2003;50:955-965.
2. Ozarslan E, Vemuri BC and Mareci TH. Generalized Scalar Measures for Diffusion MRI Using Trace, Variance and Entropy. *Magn. Reson. Med.*, 2005;53:866-876.
3. Jian B, Vemuri BC, Ozarslan E, Carney P, and Mareci T. A novel tensor distribution model for the diffusion weighted MR signal. *NeuroImage* 2007;37:164-176.
4. Ingo C, Magin R, Colon-Perez L, Triplett, W, and Mareci TH. On random walks and entropy in diffusion-weighted magnetic resonance imaging studies of neural tissue. *Magnetic Resonance in Medicine* 2014;71:7117-627.

Studies of the Brain Structure: We use diffusion weighted MR imaging to characterize brain structure *in vivo*. A significant problem is accurately quantifying the strength of white matter connectivity. To address this problem, we developed normalized, scale invariant measures of white matter connection strength (1-3) between functional gray matter regions to study the brain as a complex network. We apply this network analysis to cognitive decline following surgery, Parkinson's disease, and traumatic brain injury (see full list below). Also, we were the first research group to use MR electric impedance tomography to measure electric current distribution and estimate conductivity during transcranial electric stimulation in the human brain *in vivo* (4).

1. Colon-Perez LM, Spindler C, Goicochea S, Triplett W, Parekh M, Montie E, Carney PR, Price C, and Mareci, TH. Dimensionless, Scale Invariant, Edge Weight Metric for the Study of Complex Structural Networks, *PLoS ONE* 2015;10: e013149.
2. Colon-Perez LM, Couret M, Triplett W, Price CC, Mareci TH. Small Worldness in Dense and Weighted Connectomes. *Front Phys* 2016;4.
3. Colon-Perez, Tanner J, Couret M, Goicochea S, Mareci T, and Price C. Cognition and Connectome in Non-Dementia Idiopathic Parkinson's Disease. *Network Neuroscience*, 2018;2:106-124
4. Kasinadhuni AK, Indahlastari A, Chauhan M, Schär M, Mareci TH, and Sadleir RJ. Three-Dimensional Imaging of Current Flow in the Human Head during Transcranial Electrical Therapy. *Brain Stimulation*, 2017;10:764-772.

Fluid transport in the Brain: We developed MR imaging methods to visualize the distribution the contrast agents into brain following infusion of the contrast agent to provide insight into the brain's bulk transport system. As part of a project to model direct infusion of drugs into the brain parenchyma, we used contrast enhanced MR to examine how a compound distributes in the hippocampus during convection enhanced delivery (1) and followed the dynamics of delivery (2). This approach allows the study of the relationship of brain structure to fluid transport in the brain, where our diffusion weighted imaging methods provide information about white matter tissue structure, and contrast enhanced MR

provides a quantitative measure of transport. To support this work, we developed a unique method to directly measure 3D creeping flow (3), as low as 1 micron/sec, which may allow the measurement of fluid transport in tissue. Also using high-resolution contrast enhanced MR imaging, we successfully visualized perivascular space transport in the rodent glymphatic system (4).

1. Astarly GW, Kantorovich S, Carney PR, Mareci TH, Sarntinoranont M. Regional convection-enhanced delivery of gadolinium-labeled albumin in the rat hippocampus in vivo. *J Neuroscience Methods*, 2010;187:129-37.
2. Kim JH, Astarly GW, Nobrega T, Kantorovich S, Carney PR, Mareci TH, and Sarntinoranont M. Dynamic Contrast-Enhanced MRI of Gd-albumin Delivery to the Rat Hippocampus In Vivo by Convection-Enhanced Delivery, *J. Neurosci. Methods*, 2012;209:62-73.
3. Magdoo KN, Zeinomar A, Lonser RR, Sarntinoranont M, Mareci TH. Phase contrast MRI of creeping flows using stimulated echo. *J. Magn. Reson.* 2019; 299:49-58.
4. Magdoo KN, Brown A, Rey J, Mareci TH, King MA, and Sarntinoranont M. MRI of Whole Rat Brain Perivascular Network Reveals Role for Ventricles in Brain Waste Clearance. *Scientific Reports*, 2019;9:11480.

Peer-Reviewed Journal Publications

1. Scott, K.N., Couch, M.W., **Mareci**, T.H., Williams, C.M. Synthesis and purification of radioactive 6- β -iodomethyl-19-norcholest-5(10)-en-3- β -ol. *Steroids* 28:285-303 (1976).
2. Scott, K.N., Couch, M.W., **Mareci**, T.H., Williams C.M. Purity of the adrenal-scanning agents 19-iodocholesterol and 6-iodomethyl-norcholesterol. (Letter to the Editor). *J. Nucl. Med.* 18:492-493 (1977).
3. Scott, K.N., **Mareci**, T.H., Couch, M.W., Williams, C.M. Chemical and radiochemical stability of the adrenal-scanning agents, 6- β -iodomethyl-19-norcholest-5(10)-en-3- β -ol and 19-iodocholest-5-en-3- β -ol. *Steroids* 30:511-519 (1977).
4. **Mareci**, T.H., Scott, K.N. Quantitative analysis of mixtures by carbon-13 nuclear magnetic resonance spectrometry. *Anal. Chem.* 49:2130-2136 (1977).
5. Couch, M.W., Scott, K.N., Brookeman, V.A., **Mareci**, T.H. The adrenal-scanning agents, 6- β -iodomethyl-19-norcholest-5(10)-en-3- β -ol and 19-iodocholest-5-en-3- β -ol. (Letter to the Editor). *Sem. Nucl. Med.* 8:365 (1978).
6. Scott, K.N., **Mareci**, T.H. ^{13}C and ^1H nuclear magnetic resonance spectroscopy of C-19 and 6- β -methyl substituted steroids: Long-range shift effects in conformation analysis. *Can. J. Chem.* 57:27-37 (1979).
7. Freeman, R., **Mareci**, T.H., Morris, G.A. Weak satellite signals in high-resolution NMR spectra: Separating the wheat from the chaff. *J. Magn. Reson.* 42:341-345 (1981).
8. **Mareci**, T.H., Freeman, R. Nitrogen-15 satellites in proton NMR spectra observed by two-dimensional Fourier transformation. *J. Magn. Reson.* 44:572-576 (1981).
9. Sorenson, O., Freeman, R., Frenkiel, T., **Mareci**, T.H., Schuck, R. Observation of ^{13}C - ^{13}C couplings with enhanced sensitivity. *J. Magn. Reson.* 46:180-184 (1982).
10. **Mareci**, T.H., Freeman, R. Echoes and antiechoes in coherence transfer NMR: Determining the signs of double quantum frequencies. *J. Magn. Reson.* 48:158-163 (1982).
11. **Mareci**, T.H., Freeman, R. Mapping proton-proton coupling via double quantum coherence. *J. Magn. Reson.* 51:531-535 (1983).
12. Bax, A., **Mareci**, T.H. Practical aspects of carbon-13 double quantum NMR. *J. Magn. Reson.* 53:360-363 (1983).
13. Mareci, T.H. and Brooker, H.R. High-resolution magnetic resonance spectra from a sensitive region defined with pulsed field gradients. *J. Magn. Reson.* 57:157-163 (1984).
14. Sattin, W., **Mareci**, T.H. and Scott, K.N. Exploiting the stimulated echo in nuclear magnetic resonance imaging I. Method. *J. Magn. Reson.* 64:177-182 (1985).
15. Sattin, W., **Mareci**, T.H. and Scott, K.N. Exploiting the stimulated echo in nuclear magnetic resonance imaging II. Applications. *J. Magn. Reson.* 65:298-307 (1985).
16. **Mareci**, T.H., Sattin, W., Scott, K.N. and Bax, A. Tip-angle-reduced T1 imaging. *J. Magn. Reson.* 67:55-65 (1986).
17. Mao J., **Mareci**, T.H., Scott, K.N. and Andrew, E.R. Selective inversion radiofrequency pulses by optimum control. *J. Magn. Reson.* 70:310-318 (1986).
18. Brooker, H.R., **Mareci**, T.H. and Mao, J. Selective Fourier transform localization. *Magn. Reson. Med.* 5:417-433 (1987).
19. Mao, J., **Mareci**, T.H. and Andrew, E.R. Experimental study of the optimized selective 180 degree radiofrequency pulses. *J. Magn. Reson.* 79:1-10 (1988).
20. Cockman, M.D. and Mareci, T.H. Convolution spectral imaging. *J. Magn. Reson.* 79:236-254 (1988).
21. **Mareci**, T.H., Donstrup, S. and Rigamonti, A. NMR imaging and relaxation study of polymer swelling and chain dynamics. *J. Mole. Liquids* 38:185-206 (1988).
22. Gaigalas, A.K., Van Orden, A., Robertson, B., **Mareci**, T.H. and Lewis, L.A. Application of magnetic resonance imaging to visualization of flow in porous media. *Nuclear Technology* 84:113-118 (1989).
23. Barker, G.J. and **Mareci**, T.H. Suppression of artifacts in multiple-echo magnetic resonance. *J. Magn. Reson.* 83:11-28 (1989).

24. Duensing, G.R., Cockman, M.D., **Mareci**, T.H. and Fitzsimmons, J.R. A digital phase shifter with 7.5 degree resolution. *J. Magn. Reson.* 84:275-281 (1989).
25. **Mareci**, T.H. and Brooker, H.R. Essential considerations for spectral localization using indirect gradient encoding of spatial information. *J. Magn. Reson.* 92:229-264 (1991).
26. Webb, A.G., Briggs, **Mareci**, T.H., Volume-localized spectroscopy using Selective Fourier Transform with windowing by variable-tip-angle excitation. *J. Magn. Reson.*, 94:174-179 (1991).
27. Anderson, D.G., Reier, P.J., Wirth, E.D. III, Theele, D.P., **Mareci**, T., and Brown, S.A. Delayed grafting of fetal CNS tissue into chronic compression lesions of the adult cat spinal cord. *Restorative Neurology and Neuroscience*, 2:309-325 (1991).
28. Wirth, III, E.D., Theele, D.P., **Mareci**, T.H., Anderson, D.K., Brown, S.A., and Reier, P.J. *In vivo* magnetic resonance imaging of fetal cat neural tissue transplants in the adult spinal cord. *J. Neuro. Surg.*, 76:261-274 (1992).
29. Pavesi L. and **Mareci** TH. High resolution proton relaxation in collapsing polyacrylamide gels. *Istituto Lombardo (Rend. Sc.) B* **126**, 130-148 (1992).
30. Wirth, III, ED, **Mareci** TH, Beck BL, Fitzsimmons JR and Reier PJ. A comparison of an inductively-coupled implanted coil with optimized surface coils for *in vivo* NMR imaging of the spinal cord. *Magn. Reson. Med.*, 30:626-633 (1993).
31. Webb, A.G., **Mareci**, T.H., and Briggs, R.W. Relative efficiencies of weighting methods for phase encode localized NMR. *J. Magn. Reson. B* **103**, 274-277 (1994).
32. Wirth, III, E.D., Theele, D.P., Anderson, D. K., **Mareci**, T.H., and Reier, P.J. Dynamic assessment of intraspinal neural graft survival using magnetic resonance imaging. *Exp. Neurol.* **136**, 64-72 (1995).
33. Brey WW, **Mareci** TH and Dougherty J. A field-gradient coil using concentric return paths. *J. Magn. Reson. B* 1996:112;124-130.
34. Andrew ER, Inglis, B. A., Kempka, M., **Mareci**, T., and Szczesniak, E. Magnetic field gradient system for nuclear magnetic resonance microimaging. *MAGMA* 1996;4;85-91.
35. Inglis, B. A., Yang, L., Wirth, III, E. D., Plant, D., and **Mareci**, T. H. Diffusion Anisotropy in Excised Normal Rat Spinal Cord Measured by NMR Microscopy. *Magn. Reson. Imag* 1997;15;441-450.
36. Bui JD, Nammari DR, Buckley DL, Inglis BA, Silver XA, **Mareci** TH and Phillips MI. *In vivo* dynamics and distribution of intracerebroventricularly administered gadodiamide, visualized by magnetic resonance imaging. *Neuroscience* 1999;90;1115-1122.
37. Inglis BA, Neubauer D, Yang L, Plant D, **Mareci** TH, and Muir D. Diffusion Tensor MR Imaging and Comparative Histology of Glioma Engrafted in the Rat Spinal Cord. *Am. J. Neuro. Rad.* 1999;20;713-716. PMID: 10319987 [PubMed - indexed for MEDLINE] Free full text
38. Grant SC, Aiken NR, Plant DT, Gibbs S, **Mareci** TH, Webb AG and Blackband SJ. NMR Spectroscopy of Single Neurons. *Magn. Reson. Med* 2000;44;19-22. PMID: 10893516 [PubMed - indexed for MEDLINE]
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40. Silver XS, Ni-Wu W, Mercer EV, Beck BL, Bossart EL, Inglis BA and **Mareci** TH. *In Vivo* ¹H Magnetic Resonance Imaging and Spectroscopy of the Rat Spinal Cord using an Inductively Coupled Chronically Implanted RF Coil. *Magn. Reson. Med.* 2001;46:1216-1222. PMID: 11746589 [PubMed - indexed for MEDLINE]
41. Beck B, Plant DH, Grant SC, Thelwall P, Silver X, **Mareci** TH. Benveniste H, Smith M, Collins C, Crozier S, Blackband SJ. Progress in High Field MRI at The University of Florida, *MAGMA* 2002;13:152-157. PMC3363288
42. Ozarslan E and **Mareci** TH. Generalized Diffusion Tensor Imaging and Analytical Relationships Between Diffusion Tensor Imaging and High Angular Resolution Diffusion Imaging. *Magn. Reson. Med.* 2003;50:955-965. PMID: 14587006 [PubMed - indexed for MEDLINE]
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46. Ozarslan E, Vemuri BC and **Mareci** TH. Generalized Scalar Measures for Diffusion MRI Using Trace, Variance and Entropy. *Magn. Reson. Med.*, 2005;53:866-876. PMID: 15799039 [PubMed - indexed for MEDLINE]
47. Berens SA, Colvin DC, Yu C-G, Yeziarski, RP and **Mareci** TH. Evaluation of the Pathological Characteristics of Excitotoxic Spinal Cord Injury with Magnetic Resonance Imaging. *Am. J. Neurorad.* 2005;26:1612-1622. PMID: 16091503 [PubMed - indexed for MEDLINE] Free full text
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51. Shephard TM, Ozarslan E, King MA, **Mareci** TH and Blackband SJ. Structural Insights from High-Resolution Diffusion Tensor Imaging and Tractography of the Isolated Rat Hippocampus. *NeuroImage* 2006; 32:1499-1509. PMID: 16806988 [PubMed - indexed for MEDLINE]
52. Jian B, Vemuri BC, Ozarslan E, Carney P, and **Mareci** T. A novel tensor distribution model for the diffusion weighted MR signal. *NeuroImage* 2007;37:164-176. PMCID: PMC2576290. See also Erratum to "A novel tensor distribution model for the diffusion-weighted MR signal" [*NeuroImage* 37 (2007) 164–176]. *NeuroImage* 2008;42:1045-1046. PMC2576290
53. Ramirez-Manzanares A, Rivera M, Vemuri BC, Carney P, **Mareci** T. Diffusion basis functions decomposition for estimating white matter intra-voxel fiber geometry. *IEEE Transactions on Medical Imaging*, 2007; 26:1091-1102. PMID: 17695129 [PubMed - indexed for MEDLINE]
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60. McGraw T, Vemuri B, Ozarslan E, Chen YM, and Mareci T. Variational Denoising of Diffusion Weighted MRI. *Inverse Problems and Imaging* 2009;3:625-648.
61. Kim JH, Astarly G W, Chen X, **Mareci** TH, and Sarntinoranont M. Voxelized Model of Interstitial Transport in the Rat Spinal Cord Following Direct Infusion into White Matter. *J Biomechanical Eng*, 2009;131:071007-1-071007-8. PMC2906455
62. Lee S-J, Pishko GL, Astarly G, **Mareci** TH, and Sarntinoranont M. Characterization of an Anisotropic Hydrogel Tissue Substrate for Infusion. *J Applied Polymer Science*, 2009;114:1992-2002. PMC2939467
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65. Cadotte AJ, DeMarse TB, **Mareci** TH, Parekh M, Talathi SS, Hwang DU, Ditto WL, Ding M, Carney PR. Granger causality relationships between local field potentials in an animal model of temporal lobe epilepsy. *J Neurosci Methods*, 2010;189:121–129. PMC2867107
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155. Kasinadhuni A, Indahlastari A, Castellano K, Saar C, Weigel C, Mousa B, Schär, M. Chauhan M, Mareci T, Sadleir, R. Current Density Measurements in the Brain Using Magnetic Resonance Electrical Impedance Tomography in Healthy Volunteers. Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, 22-27 April 2017.
156. Gatto RG, Li W, Amin M, Colon-Perez L, Gao J, Mareci TH, Brady ST, Morfini GA, and Magin RL. Spinal Cord MRI Water Diffusion Alterations are Linked to Early Axonal Degeneration in the YFP, G93A-SOD1 mice. Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, 22-27 April 2017.
157. Mousa B, Indahlastari A, Boggess M, Saar C, Castellano K, Kasinadhuni A, Chauhan M, Mareci TH, Sadleir, R. Inter-subject Variability in Healthy TES Recipients: A Computational Study. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, 11-14 October 2017.
158. Amin M, Banan G, Colon-Perez L, Hey M, Price C, and Mareci T. Brain White Matter Fiber Configuration Analysis with Spherical Harmonic (CASH) Expansion of Diffusion Displacement Probability. Poster 203, 59th Experimental NMR Conference, Orlando, FL, April 29 - May 4, 2018.
159. Magdoo KN, Sarntinoranont M, Brey WW, and Mareci TH. Switched Gradient Impulse Response Measurement with Uniform Excitation of Eigenmodes. Meeting of the International Society for Magnetic Resonance in Medicine, Paris, France, 16-21 June 2018.
160. Chauhan M, Indahlastari A, Kasinadhuni AK, Saar C, Mousa B, Castellano K, Mareci TH, Sadleir RJ. In vivo Current density and Conductivity tensor imaging of human brain during TACS using DT-MREIT. Meeting of the International Society for Magnetic Resonance in Medicine, Paris, France, 16-21 June 2018.
161. Amin M, Banan G, Colon-Perez L, Hey M, Price CC, and Mareci TH. White Matter Fiber Configuration Analysis with Spherical Harmonic (CASH) Expansion of Diffusion Displacement

Probability Gordon Research Conference on In Vivo Magnetic Resonance, Proctor Academy, Andover, NH, 15 - 20 July 2018

162. Amin M, Banan G, DeYoung D, Mareci TH. A Novel Multi-shell Acquisition with Increased b-Shells and Sparse Orientations (MAISSOR). 60th Experimental NMR Conference, 7 - 12 April 2019, Asilomar Conference Center, Pacific Grove, California.
163. DeYoung D, Amin M, Price C, and Mareci TH. A Graph Theory and Spectral Graph Theory Approach to Correlating Tractography with Parkinson's Disease. Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
164. Amin M, Banan G, DeYoung D, Mareci TH. A Novel Multi-shell Acquisition with Increased b-Shells and Sparse Orientations (MAISSOR). Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
165. Sajib SZK, Chauhan M, Banan G, Sahu S, Wang L, Mareci T, Sadleir R. Compensation of lead-wire magnetic field contributions in MREIT experiment using image segmentation: a phantom study. Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
166. Chauhan M, Schär M, Sahu S, Mareci T, Sadleir R. Fast MREIT acquisition using Multi-Band and SENSE Techniques. Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
167. Gatto R, Amin M, Finkielstein A, Sumagin R, Mareci T, Magin R. Ultra-High-Resolution Diffusion Tensor MRI Detects Early Axonal Connectivity Anomalies in Hippocampal Regions of ALS Mice. Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
168. Amin M, Banan G, Caruyer E, Thomas H. Mareci TH. A Novel Multi-shell Acquisition with Increased b-Shells and Sparse Orientations. Gordon Research Conference on Tissue Microstructure Imaging, 7 - 12 July 2019, Mount Holyoke College, South Hadley, MA
169. Sarntinoranont M and Mareci TH. Using diffusion tensor imaging to predict transport patterns in brain. Diffusion Fundamentals VIII, 1-5 September 2019. Friedrich-Alexander-University, Erlangen, Germany
170. Magdoo KN, Sarntinoranont M and Mareci TH. A novel gradient pattern for pre-emphasis. Meeting of the International Society for Magnetic Resonance in Medicine (virtual conference), 8-14 August 2020.
171. Crowley SJ, Banan G, Amin M, Tanner JJ, Hize L, Rodriguez K, Ding M, Mareci TH, Price CP. Free Water Fraction Predicts Decline in Mental Flexibility for Individuals with Tremor Dominant Parkinson's Disease. 49th Annual Meeting of the International Neuropsychological Society, San Diego, CA, 3-6 February 2021.
172. Banan G, Chauhan M, Amin M, Ramanna S, Hosseini Z, Yacoub E, Mareci TH, Sadleir. Phase Dispersion from Steady-State Signal Behavior in Phase-Sensitive Multiband Imaging with Application to MREIT, Meeting of the International Society for Magnetic Resonance in Medicine (virtual conference), 16-20 May 2021.

Oral Presentations

1. Invited speaker at the Twentieth Annual Rocky Mountain Conference on Analytical Chemistry, Denver, Colorado, August, 1978.
2. Invited speaker at the Colloquium of the Institut Fur Biophysikalische Chemie, Johann Wolfgang Goethe-Universitat, Frankfurt am Main, Federal Republic of Germany, May, 1981.
3. Invited speaker at the Colloquium of the Department of Physics, University of South Florida, Tampa, Florida, November, 1982.
4. Mareci TH, Thomas RG, Scott KN, Brooker HR. "Combination Pulse Gradient and Surface Coil Localization of Chemical Shift Resolved Spectra". Invited speaker at the Third Annual Scientific Meeting of the Society of Magnetic Resonance in Medicine, New York, New York, August, 1984.
5. Mareci TH, Hoult DI, Cockman MD, Mao J, Scott KN. "Correlated Shift Imaging". Invited speaker at the Fourth Annual Scientific Meeting of the Society of Magnetic Resonance in Medicine, London, England, August, 1985.

6. Mareci TH, Donstrup S, Rigamonti A. "NMR Imaging and Relaxation Study of Polymer Swelling and Chain Dynamics". Invited speaker at the Twenty-Eighth Rocky Mountain Conference on Analytical Chemistry, Denver, Colorado, August, 1986.
7. Mareci TH, Cockman MD, Fitzsimmons JR, Scott KN. "Nuclear Magnetic Imaging of Spatial and Chemical Information". Invited speaker at the Thirty-Eighth Southeastern Regional Meeting of the American Chemical Society, Louisville, Kentucky, November, 1986.
8. Mareci TH. "New Techniques in Imaging and Localized Spectroscopy". Invited speaker at the St. Louis Award Symposium in honor of Professor Joseph Ackerman, St. Louis, Missouri, March, 1987.
9. Cockman MD, Mareci TH, and Rigamonti A. "Chemical-Shift Imaging of Dynamic Polymer-Solvent Systems". Invited speaker at the Thirty-Ninth Southeastern Regional Meeting of the American Chemical Society, Orlando, FL, November, 1987.
10. Mareci TH, Cockman MD, and Rigamonti A, "Chemical-Shift Imaging of Dynamic Polymer-Solvent Systems". Invited speaker at the Fourth Annual Meeting of the Polymer Processing Society International, Orlando, FL, May, 1988.
11. Mareci TH, and Brooker HR, "Selective Fourier Transformation: A General Method for Spatial Localization by Phase Encoding". Invited speaker at a special workshop on localized *in vivo* NMR spectroscopy held at the National Institutes of Health, Bethesda, MD, June, 1988.
12. Mareci TH, and Brooker HR, "Selective Fourier Transformation: A General Method for Spatial Localization by Phase Encoding". Invited speaker at the Department of Physics "A. Volta", University of Pavia, Italy, July, 1988.
13. Mareci TH, and Brooker HR, "Selective Fourier Transformation: A General Method for Spatial Localization by Phase Encoding". Invited speaker at the Instituto Superiore di Sanita, Rome, Italy, July, 1988.
14. Mareci TH, and Brooker HR, "Selective Fourier Transformation: A General Method for Spatial Localization by Phase Encoding". Invited speaker at the Twenty-Seventh Eastern Analytical Symposium, New York, NY, October, 1988.
15. Mareci TH, Cockman MD, and Brey WS. "Three-Dimensional High-Resolution NMR for Homonuclear Spin Correlations." Invited speaker at the Fortieth Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November, 1988.
16. Mareci TH, Brey WW, Zhou D, and Guillelte LJ, "Microscopic imaging of developing embryos." Invited speaker at the 1990 Pacific Conference on Chemistry and Spectroscopy, San Francisco, CA, November, 1990
17. Mareci TH, "Application of Biological NMR in Biomedical Research." Invited speaker, Radiation Oncology Training Center and the Bioengineering Program, University of Illinois at Urbana Champaign, October 9, 1991.
18. Mareci TH, Brooker HR, and Webb AG, "Optimized Spatial Localization of NMR Spectra." Invited speaker, Biomedical Magnetic Resonance Laboratory, University of Illinois at Urbana Champaign, October 10, 1991.
19. Mareci TH, "NMR Microimaging", 28th Annual Technical Meeting of the Society of Engineering Science, November 6-8, 1991, Gainesville, Florida.
20. Mareci TH, "Nuclear Magnetic Resonance Imaging", Short Course Program on Medical Imaging, IEEE Nuclear Science Symposium, Orlando, Florida, October 27-31, 1992.
21. Mareci TH, Yang L, Inglis BA, Wirth III, ED, and Plant, D, "Translational Diffusion as a Structure Parameter in Magnetic Resonance Imaging", Southeastern Magnetic Resonance Conference, Tallahassee, Florida, Nov. 30 - Dec. 2, 1995, p. 29
22. Andrew, ER, Inglis, BA, Kempka, M, Mareci, TH, and Szczesniak, E, "A compact low inductance transverse gradient system for magnetic resonance microscopy: Application to the human spinal cord", Third International Conference on Magnetic Resonance Microscopy, August 27-31, 1995, Wurzburg, Germany.
23. Inglis, BA, Yang L, Plant, D, Wirth III, ED, and Mareci, TH, "Diffusion Tensor Microimaging of Excised Human Spinal Cord." Proceedings of the International Society of Magnetic Resonance in Medicine, Vancouver, BC, Canada, April 14-18, 1997

24. Wirth III, E. D., Giovanini, M.A., Silver, X.S., Inglis, B.A., Reier, P.J., Mareci, T.H. and Anderson, D.K., "In Vivo MRI and MR Microscopy of Human Fetal Spinal Cord Tissue Xenografts in Rat and Cat Spinal Cords." Proceedings of the International Society of Magnetic Resonance in Medicine, Vancouver, BC, Canada, April 14-18, 1997
25. Mareci, T. H., "Methods for Diffusion-Weighted MR Imaging and Localized Spectroscopy of Spinal Cord Injury and Repair." Krakow-Winnipeg Workshop on Biomedical Applications of Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy, held at the Institute of Nuclear Physics, Krakow, Poland, November 6-8, 1997.
26. E. L. Bossart, E. D. Wirth III, X. S. Silver, T. H. Mareci, S. J. Blackband, and A. J. Freeman, "Current Density Magnetic Resonance Imaging of Excised Normal and Injured Rat Spinal Cord." Proceedings of the International Society of Magnetic Resonance in Medicine, Sydney, Australia, April 18-24, 1998
27. Mareci, T. H. "Methods for Diffusion-Weighted MR Imaging and Localized Spectroscopy of Spinal Cord Injury and Repair." Visiting Scientist Program Research Seminar, Institute for Biodiagnostics, National Research Council Canada, Winnipeg, Manitoba, Canada, May 28, 1998.
28. Mareci, T. H. "Spinal cord injury and repair: Evaluation with Magnetic Resonance." Visiting Scientist Program Research Seminar, Department of Human Anatomy and Cell Science, University of Manitoba, Winnipeg, Manitoba, Canada, May 28, 1998.
29. Bossart, E.L., Inglis, B.A., Buckley, D.L., Wirth, E.D., and Mareci, T.H., "Multiple Component Diffusion Tensor Imaging in Excised Fixed CNS Tissue." Proceedings of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA, May 23-28, 1999.
30. Mareci, T.H., E. L. Bossart, B. A. Inglis, X. S. Silver, E. Mercer, D. K. Anderson, P. J. Reier, and E. D. Wirth, "Molecular translational diffusion as a structural parameter in biological tissue", Southeast Regional Meeting of the American Chemical Society. October 17-20, 1999, Knoxville, Tennessee.
31. E.L. Bossart, B.A. Inglis, X. S. Silver, E. Mercer, and T. H. Mareci, "Multiexponential diffusion imaging of normal and 1-month post injury rat spinal cords", 29th Annual Meeting of the Society for Neuroscience, October 23-28, 1999, Miami Beach, Florida.
32. S. Grant, S. Gibbs, A. Webb, T. Mareci, and S. Blackband, "Multiple component water diffusion in single neurons", 41st Experimental NMR Conference, April 9-14, 2000, Pacific Grove, California.
33. T. H. Mareci, E. Bossart, B. A. Inglis, E. D. Wirth, III, E. Mercer and X. Silver, "Multiple Diffusion-Rate Imaging of Excised Fixed Rat Spinal Cords Normal and 1-month Post-injury", NIH Diffusion Tensor MRI Conference: Bench to Bedside, Bethesda, MD, 6-7 December 2000.
34. Mareci TH, Blackband SJ, Fitzsimmons JR, Beck BL, Inglis BA, Plant DT, Silver XS and Rocca J, "Very high field magnetic resonance imaging and spectroscopy at tissue resolution in small animals". Symposium on Small Animal Non-invasive Imaging of Structure and Function, Experimental Biology 2001, Annual Meeting of the Federation of American Societies of Experimental Biology, March 31-April 5, 2001, Orlando, Florida
35. Mareci TH, "Detection of Iron Overload by MRI; Overview of MRI Methodology." National Institute of Diabetes and Digestive and Kidney Diseases Workshop on Noninvasive Measurement of Iron, 17 April 2001, Bethesda, MD.
36. Mareci TH, Thelwall PE, Grant SC, Sheperd TM and Blackband SJ, "Experimental observation of multiple rates of water self-diffusion and diffusion anisotropy in tissue, intact isolated cells and cell phantoms", Workshop on Diffusion MRI: Biophysical Issues, International Society of Magnetic Resonance in Medicine, 10-12 March, 2002, Saint-Malo, France.
37. Ozarslan E and Mareci TH, " Directional Coherence Tensor Formalism for Diffusion Tensor MRI: Mapping Structure in Spinal Cord Gray Matter." Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, 18-24 May 2002.
38. Mareci, TH "Magnetic Resonance Spectroscopy in the Spinal Cord." Meeting of the American Society of Neuroradiology, Washington, D.C., 26 April – 2 May 2003.
39. Vemuri BC, Chen Y, Rao M, McGraw T, Wang Z and Mareci T. Fiber tract mapping in the CNS using DT-MRI. IEEE Workshop on Variational and Level-set Methods (VLSM)}, July 2001, Vancouver, Canada, pp. 81-88.

40. Vemuri BC, Chen Y, Wang Z, McGraw T, Mareci T, Reier P and Blackband SJ. Fiber tractography from DTI and its validation. Proc. of the IEEE Intl. Symposium on Biomedical Imaging (ISBI), Washington D.C., 2002, pp. 501-504.
41. McGraw T, Wang Z, Vemuri BC, Chen Y, Rao M and Mareci T. LIC for visualization of fiber tract maps. Vth International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)}, Tokyo, Japan, Sept. 2002, pp. 615-622.
42. Perrin, G., Walton, R., Mareci, T. and Muir, D. Using MRI to monitor tumor formation and progression in a mouse model of neurofibromatosis type I plexiform neurofibroma. Society for Neuroscience, 2002
43. Mareci, T. Magnetic Resonance Spectroscopy of the Spinal Cord. Focus Symposium, Annual Meeting of the American Society of Neuroradiology, Washington, D.C., 21 April – 2 May, 2003.
44. Wang Z, Vemuri BC, Chen Y and Mareci T. A constrained variational principle for simultaneous estimation and smoothing of the diffusion tensor field from DWI. Proc. of the Intl. Conf. on Information Processing in Medical Imaging, Ambleside, England, 20 – 25 July 2003.
45. Evren Ozarslan and, Thomas H. Mareci. Anisotropy as a Certainty Measure in Terms of Entropy. Proceedings of the International Society of Magnetic Resonance in Medicine, Toronto, Canada, 10-16 July, 2003.
46. Wang Z., Vemuri BC, Chen Y and Mareci T. Diffusion Tensor MRI Restoration. Fourth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition, Lisbon, Portugal, July 2003.
47. Perrin, G., Lewis, T., Mareci, T. and Muir, D. Using magnetic resonance imaging to monitor tumor angiogenesis and anti-angiogenic treatments in a xenograft model of neurofibromatosis type 1 plexiform neurofibroma, American Assoc. for Cancer Research special meeting on Angiogenesis, Oct. 2003
48. Mareci, T. Diffusion Tensor Imaging of the Spinal Cord, Annual Symposium of the American Society of Spine Radiology, 15 – 19 February, 2004.
49. Mareci, T. MR Spectroscopy of the Spinal Cord, Annual Symposium of the American Society of Spine Radiology, 15 – 19 February, 2004.
50. Ozarslan E, Vemuri BC and Mareci TH, Higher rank tensors in diffusion MRI, Perspectives Workshop No. 04172: Visualization and Image Processing of Tensor Fields, Schloss Dagstuhl, Wadern, Germany, April 18 - 23 (2004)
51. Mareci TH, Ozarslan E and Vemuri BC, Generalized Diffusion Tensor Imaging for Visualizing Highly Structured Materials, Meeting of the Inter. Soc. Magn. Reson., 24-28 October 2004, Jacksonville, Florida.
52. Ram´irez-Manzanares A, Rivera M, Vemuri B and Mareci T. Basis Functions for Estimating Intra-voxel Structure in DW-MRI. Proc. IEEE Medical Imaging Conference 2004, Rome, October 2004
53. Volland, NA, Mareci TH and Constantinidis I. Implanted MR coil system for in vivo imaging and spectroscopy of a bioartificial pancreas, Proc. International Society of Magnetic Resonance in Medicine, Miami, FL, 7-13 May 2005.
54. Sarntinoranont M, Chen X, Morrison PF, Lonser RR and Mareci T, Application of Diffusion Tensor MRI in Finite Element Models of Interstitial Transport in Spinal Cord Matter, Summer Bioengineering Conference, 22-26 June 2005, Vail, Colorado
55. Ozarslan E, Shepherd TM, Vemuri BC, Blackband SJ, and Mareci TH, Fast Orientation Mapping from HARDI, 8th International Conference on Medical Image Computing and Computer Assisted Intervention, Palm Springs, California, Oct 26 to Oct 29, 2005
56. Volland, N, Mareci, TH, Constantinidis, I, Development of an Implantable MR Coil System for *In Vivo* Studies of a Bioartificial Parcreas at 11.1 T. Annual Fall Meeting of the Biomedical Engineering Society, Baltimore, MD, Sept.28 - Oct. 1, 2005.
57. Mareci, TH. Imaging Translational Water Diffusion with Magnetic Resonance for Fiber Mapping in the Central Nervous System. Workshop: New Mathematics and Algorithms for 3-D Image Analysis, Institute for Mathematical Analysis, University of Minnesota, 9-12 January 2006
58. Mareci TH. The Study of Experimental Spinal Cord Injury with Magnetic Resonance Imaging. University of Kentucky, Lexington, KY, 9-10 March 2006.

59. McGraw TE., Vemuri BC, Yeziarski R and Mareci TH. Von Mises-Fisher Mixture Model of the Diffusion ODF. In Proceedings of the 3rd IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), pages 65-68, 2006.
60. Ozarslan E, Shepherd TM, Vemuri BC, Blackband SJ, and Mareci, TH. A nonparametric reconstruction and its matrix implementation for the diffusion orientation transform (DOT). In Proceedings of 3rd IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), pages 85-88, 2006.
61. McGraw TE., Vemuri BC, Yeziarski R and Mareci TH. Segmentation of high angular resolution diffusion MRI modeled as a field of von-Mises mixtures. In European Conf. on Computer Vision, pages 461-475, 2006.
62. Bing J, Vemuri BC, Ozarslan E, Carney PR, and Mareci TH. A continuous mixture of tensors model for diffusion-weighted MR signal reconstruction. In IEEE 2007 International Symposium on Biomedical Imaging (ISBI'07), pages 772-775, 2007.
63. Bing J, Vemuri BC, Ozarslan E, Carney PR, and Mareci TH. A Novel Tensor Distribution Model for the Diffusion Weighted MR Signal. Proceeding of the Proc. International Society of Magnetic Resonance in Medicine, Berlin, Germany, 19-25 May 2007.
64. Kim JH, Sarntinoranont M, Mareci T, "Voxelized Model of Interstitial Transport in Nervous Tissue Following Direct Infusion into White Matter", The 29th International Conference of the IEEE Engineering in Medicine and Biology Society (and Biennial Conference of the French Society of Biological and Medical Engineering), Lyon, France, August 23 – 26, 2007.
65. Kim JH, Mareci T, Sarntinoranont M, "Voxelized Model of Interstitial Transport in Nervous Tissue Following Direct Infusion into White Matter", International Brain Mapping and Surgical Planning Society World Congress, Washington, D.C., 6-8 September, 2007.
66. Mareci TH, Ozarslan E, Anderson D, Reier P, Yeziarski R and Carney P. "The Resolution of Complex Spinal Cord and Brain Structures In Vivo and Ex Vivo Using High Angular Resolution Diffusion Magnetic Resonance Imaging." 12th International Symposium on Neural Regeneration, 5-8 December 2007, Asilomar, CA. Neurorehabilitation Neural Repair 2007;21;581
67. Pishko G, Astarly G, Mareci TH, Sarntinoranont S. High Resolution DCE-MRI Vascular Characterization of Murine Sarcoma and Human Renal Cell Carcinoma for Computational Modeling. Summer Bioengineering Conference of the American Society of Mechanical Engineers, 25-29 June 2008.
68. Kim JH, Chen X, Astarly G, Mareci TH, Sarntinoranont M. Computational Model of Direct Injection into the Spinal cord using in vivo Diffusion Tensor Imaging. Summer Bioengineering Conference of the American Society of Mechanical Engineers, 25-29 June 2008.
69. Cadotte A, DeMarse T, Mareci T, Talathi S, Myers S, Winters J, Zafar R, Parekh M, Hwang D, Kantorovich S, Ditto W, and Carney PR. In vivo causal analysis of initiation, propagation and termination of spontaneous temporal lobe seizure. Proceedings of the 2008 Annual Meeting of the American Epilepsy Society, published in Epilepsia 2008;49(S7):477-478.
70. Cadotte A, DeMarse T, Mareci T, Myers S, Winters J, Zafar R, Parekh M, Kantorovich S, Ditto W, and Carney PR. Initiation and termination dynamics of spontaneous temporal lobe seizure via Granger causality. Meeting of the Society for Neuroscience, Washington, DC, 15-19 November 2008.
71. Parekh MB, Sepulveda H, Hoang L, King M, Mareci T, and Carney PR. Diffusion tensor MR imaging of a rat model of temporal lobe epilepsy. Meeting of the Society for Neuroscience, Washington, DC, 15-19 November 2008.
72. Sarntinoranont M, Kim JH, and Mareci TH. Diffusion Tensor Imaging-based Computational Models of Convection-Enhanced Delivery, 6th Annual World Congress of the International Brain Mapping & Intraoperative Surgical Planning Society (IBMISPS), Boston, MA, August 26-29, 2009.
73. Turner WJ, Xiao Z, Wu S. Beck BL, Bashirullah R, Mareci TH. Digitally Controlled μ -Chip Capacitor Array for an Implantable Multiple Frequency Coil. Meeting of the International Society for Magnetic Resonance in Medicine, Stockholm, Sweden, 1-7 May 2010, abstract #424.
74. Mareci, TH, Imaging the white matter structure of the brain with diffusion-weighted magnetic resonance. International Neuropsychological Society 40th Annual Meeting, 15-18 February 2012, Montréal, Canada

75. Mareci, T.H. Astarý, GW, Kantorovich S, Carney, PR, Sarntinoranont M, Convection-Enhanced Delivery of Compounds into the Brain. Seminar at the Center for Diagnostics & Therapeutics, Georgia State University, Atlanta, GA, 9 April 2012.
76. Magin RL, Ingo C, Colon-Perez L, Triplett W, and Mareci TH. Mapping the Phase Diagram for Anomalous Diffusion in the Rat Brain at 17.6 T. Experimental NMR Conference, Miami, Florida, 15-20 April 2012.
77. Colon-Perez L, Spindler C, Goicochea S, Triplett W, Parekh M, Montie EW, Carney PR, and Mareci TH, Brain Network Metric Derived from Dwi: Application to the Limbic System, Meeting of the International Society for Magnetic Resonance in Medicine, p. 686, Melbourne, Australia, 5-11 May 2012.
78. Mareci TH. Inductively coupled implanted coils at high fields. Gordon Research Conference on In Vivo Magnetic Resonance, 29 July – 3 August 2012.
79. Ford AA, Triplett W, Sudhyadhom WA, Gullett J, McGregor K, FitzGerald DB, Mareci T, White K, Crosson B, Thalamus and its connections with Broca's area: A diffusion-MRI tractography study. Meeting of the Society for Neuroscience, 13-17 October 2012, New Orleans, LA.
80. Ingo C, Magin RL, Colon-Perez L, Triplett W, and Mareci TH, Mapping the Phase Diagram for Non-Gaussian Diffusion in the Rat Brain at 17.6 Tesla. Biomedical Engineering Society Annual Meeting, 24-27 October 2012, Atlanta, GA, p.91.
81. Dai W, Astarý GW, Kim JH, Mareci TH, Carney PR and Sarntinoranont M, Voxelized Model of infusion into the Rat Brain Hippocampus that Accounts for Fissures and Fiber Tracks. Biomedical Engineering Society Annual Meeting, 24-27 October 2012, Atlanta, GA, p. 121
82. Astarý GW, Peprah MK, Fisher CR, Carney PR, Sarntinoranont M, Meisel M, Manuel MV and Mareci TH, Method for Magnetic Susceptibility Adjustment of Metal Alloys and Characterization with MRI. Biomedical Engineering Society Annual Meeting, 24-27 October 2012, Atlanta, GA, p. 168.
83. Astarý GW, Kantorovich S, Munson JW, Lee SJ, Carney PR, Sarntinoranont M and Mareci TH, MR Relaxivity of Gd-DTPA-HSA in Brain Tissue: Towards Quantification of Tissue Concentration In Vivo. Biomedical Engineering Society Annual Meeting, 24-27 October 2012, Atlanta, GA, p. 196
84. Mareci, TH, Water translational diffusion and the structure of the brain. Invited seminar at the Department of Bioengineering, University of Illinois Chicago, 10 December 2012.
85. Sarntinoranont M, Carney PR, and Mareci TH, MR-Based Biotransport Models of the Brain and Solid Tumors. 10th Annual World Congress of the Society for Brain Mapping & Therapeutics on Brain-Spinal Cord Mapping & Image Guided Therapy, 12-14 May 2013, Baltimore, MD
86. Mareci TH, The Virtual Brain. 3rd Society for Industrial and Applied Mathematics Gators Conference, March 27-29, 2014, University of Florida, Gainesville, FL
87. Colon-Perez LM, Parekh M, Couret M, Klassen R, King M, Carney P, and Mareci T. Perforant pathway tracking in human temporal lobe ex vivo tissue. Meeting of the International Society for Magnetic Resonance in Medicine, 10-16 May 2014, Milan, Italy
88. Colon-Perez LM, Montie E, Couret M, and Mareci T. Reduced cortical connectivity in excised rat brain with thyroid hormone deficiency. Meeting of the International Society for Magnetic Resonance in Medicine, 10-16 May 2014, Milan, Italy
89. Turner WJ, Astarý GW, Beck BL, Mareci TH, and Bashirullah R. A Wirelessly Programmable Implant Coil for Increased NMR Signal Sensitivity at Multiple Frequencies. Meeting of the International Society for Magnetic Resonance in Medicine, 10-16 May 2014, Milan, Italy
90. Ingo C, Magin RL, Colon-Perez L, and Mareci TH. Fractional order measures of anomalous diffusion in healthy aging of neural tissue. International Conference on Fractional Differentiation and Its Applications (ICFDA), 23-25 June 2014, Catania, Sicily.
91. Mareci TH. Measuring the structural connectivity of the brain. STEM Seminar, Daytona State College, 19 October 2015.
92. Schwab NA, Huang H, Tanner JJ, Hízel L, Crowley SJ, Levy S, Horgas A, Rice M, Mareci T, Parvateneni H, Ding M and Price C. Pre-surgical cognition predicts decline in default mode network after total knee replacement surgery. International Neuropsychological Society, 3-6 February 2016, Boston, MA.

93. Colon-Perez LM, Couret M, Triplett W, Price C, and Mareci TH. Estimating Network Topology in Weighted and Dense Connectomes. Meeting of the International Society for Magnetic Resonance in Medicine, Singapore, 7-13 May 2016.
94. Kasinadhuni AK, Chauhan M, Anderson C, Schär M, Indahlastari A, Carney P, Sadleir R, and Mareci TH. Mapping of magnetic fields due to current injection in the human brain using MREIT: First measurements. Meeting of the International Society for Magnetic Resonance in Medicine, Singapore, 7-13 May 2016.
95. Hey M, Colon-Perez L, Triplett W, Fitzgerald D, and Mareci TH. Thresholding to Improve the Specificity of High Spatial and Angular Resolution In Vivo Diffusion-Weighted Tractography to Estimate Brain Stem Connectivity. Meeting of the International Society for Magnetic Resonance in Medicine, Singapore, 7-13 May 2016.
96. Sarntinoranont M, Magdoo KN, and Mareci TH. MR Imaging and modeling of connected perivascular spaces in rodents. Chiari & Syringomyelia Foundation Hydrodynamics Symposium, Atlanta, Georgia, 19-20 June 2017.
97. Mareci TH. Measurement of stimulated current distribution in the brain with MR electric impedance tomography (Plenary Lecture). 59th Experimental NMR Conference, Orlando, FL, April 29 - May 4, 2018
98. Chauhan M, Magdoo KN, Brown A, Mareci TH, and Sadleir RJ. Ion diffusion measurement using DT-MREIT. International Conference on Biomedical Applications of Electrical Impedance Tomography (EIT 2018) Edinburgh, Scotland, 11th-13th June 2018.
99. Sajib ZKS, Chauhan M, Indahlastari A, Kasinadhuni AK, Magdoo KN, Mareci T, and Sadleir R J. Comparison of reconstructed in-vivo current densities for F3-RS and F4-LS electrode montages. International Conference on Biomedical Applications of Electrical Impedance Tomography (EIT 2018) Edinburgh, Scotland, 11th-13th June 2018.
100. Sajib ZKS, Chauhan M, Indahlastari A, Kasinadhuni AK, Magdoo KN, Mareci T, and Sadleir R J. Comparison of in-vivo DT-MREIT scaling factor images for in- and off-plane current administration of transcranial AC stimulation. International Conference on Biomedical Applications of Electrical Impedance Tomography (EIT 2018) Edinburgh, Scotland, 11th-13th June 2018.
101. Magdoo KN, Delgado F, Bohórquez AC, Brown AC, Carney PR, Rinaldi C, Mareci TH, Ewing JR, and Sarntinoranont M. Tumor Microenvironment of Pontine Glioma Using DCE-MRI and DTI. World Congress of Biomechanics, 8 - 12 July 2018, Dublin, Ireland.
102. Sarntinoranont M, Mareci TH, Magdoo KN, King MA, and Yarrow J. Mapping Perivascular Connectome in Whole Rat Brain in 3D. World Congress of Biomechanics, 8 - 12 July 2018, Dublin, Ireland.
103. Magdoo KN, Zeinomar A, Lonser R, Sarntinoranont M and Mareci T. 3D MR Velocimetry of Very Slow Flows. Power Pitch at Meeting of the International Society for Magnetic Resonance in Medicine, 11-16 May 2019, Montréal, QC, Canada
104. Ray J, Magdoo KN, King MA, Mareci T H and Sarntinoranont M. 17.6 T MRI of the Perivascular Network: Imaging Brain Waste Clearance Paths. 11th Scientific Symposium on Ultrahigh Field Magnetic Resonance: Clinical Needs, Research Promises and Technical Solutions (virtual), 3-4 September 2020.
105. Rey JA, Farid UM, Najjoun CM, Magdoo KM, Mareci TM, and Sarntinoranont M. Whole Brain Perivascular Space Network reduces Mean Transport Distance between Parenchyma and Cerebrospinal Fluid. Summer Biomechanics, Bioengineering and Biotransport Conference (virtual), June 14-18, 2021

Invention Disclosures and Patents

1. D. Zhou, T. H. Mareci, M. Burns, and W. Ruby, "Method for Making an NMR Coil", U. S. Patent No. 5,466,480, 14 November 1995 (filed 12 November 1993).
2. W. W. Brey, J. Dougherty, T. H. Mareci, and E. R. Andrew, "Concentric Return Path Coil", Disclosure to the University of Florida Division of Sponsored Research, 1993.
3. T. H. Mareci, R. Bashirullah, B. Letzen and B. Beck, "Method and apparatus for providing a wireless multiple-frequency MR coil.", U.S. Provisional Patent Application, Docket No. UF-619P, Serial No. 60/975,721, filed September 27, 2007, UF # 12670
4. T. H. Mareci, P.R. Carney, H. Sepulveda, G. Astary, C. Fisher, and M. Manuel. "Magnetic resonance compatible and susceptibility-matched apparatus and method for MR imaging and spectroscopy.", U.S. Provisional Patent Application, Docket No. 450-V0006, Serial No. 61/232,288, filed August 7, 2009, UF # 13230

Grant Awards (Total of 51 awards)

1. National Institutes of Health, Resource Grant, P41 RR02278
Title: "NMR Imaging and Spectroscopy in vivo Resource"
P.I., K. N. Scott
Period 9/30/84 to 12/1/90; Total direct amount funded, \$1,351,017
T. H. Mareci, Co-investigator, 50% effort funded
2. Whitaker Foundation, Camp Hill, Pennsylvania
Title: "Nuclear Magnetic Resonance Microscopic Imaging Spectrometer for the Study of Embryonic Development"
P.I., **T. H. Mareci** (8% effort funded) and L. J. Guillette, Jr.
Period 3/1/89 to 2/28/92; Total direct amount funded, \$164,287
3. Florida High Technology and Industry Council, Applied Research Grant
Title: "Gradient System for Nuclear Magnetic Resonance Microscope"
P.I., **T. H. Mareci**
Period 12/15/89 to 12/31/90; Total direct amount funded, \$18,283
Funding for gradient assistant, consultant, and supplies
4. Division of Sponsored Research, University of Florida, Research Development Award
Title: "NMR Microscopic Imaging System for the Study of Developmental Embryology"
P.I., **T. H. Mareci**
Period 5/1/90 to 4/30/91; Total direct amount funded, \$20,420
Funding for a post-doctoral student
5. American Paralysis Association
Title: "Magnetic Resonance Imaging of Fetal Neural Tissue Transplants in Injured Spinal Cords"
P.I. **T. H. Mareci**
Period 10/1/90 to 4/30/91; Total direct amount funded, \$17,029
15% effort funded with funds for graduate student and supplies
6. National Institutes of Health, Resource Grant, P41 RR02278 (competitive renewal with new P.I.)
Title: "NMR Imaging and Spectroscopy in vivo Resource"
P.I., **T. H. Mareci**, 36.4% effort funded
Period 2/15/91 to 2/14/97; Total direct amount funded, \$1,346,055
7. National Institutes of Health, R01 NS29362
Title: "MRI of Fetal Neural Grafts in Injured Spinal Cords"
P.I., **T. H. Mareci**, 20% effort funded
Period 5/1/91 to 4/30/94; Total direct amount funded, \$257,831
8. Impaired Drivers and Speeders Trust Fund, State of Florida
Title: "Project 9. MR Imaging and Spectroscopy of Spinal Cord Injury"

P.I., **T. H. Mareci**, post-doctoral student funding for Doug Wilken to work on implanted RF coils
Period 10/1/92 to 9/30/94; Total direct amount funded, \$43,070

9. Division of Sponsored Research, University of Florida, Special Allocation
Title: "4.7 Tesla magnet upgrade"
P.I., **T. H. Mareci**
Period 3/30/93; Total amount funded, \$30,000
10. Brain and Spinal Cord Injury Research Trust Fund, State of Florida (competitive renewal)
Title: "Project 6. MR Imaging and Spectroscopy of Spinal Cord Injury"
P.I., **T. H. Mareci**, post-doctoral student funding for Mark Hubley to work on implanted RF coils
Period 10/1/94 to 9/30/95; Total amount funded, \$28,136
11. General Revenue Fund, State of Florida
Title: "Functional MRI of Human Spinal Cord Activation"
P.I., E. D. Wirth: Co-P.I., **T. H. Mareci**
Period 10/1/94 to 9/30/95; Total amount funded, \$32,108
Funding of one-year post-doctoral position for Ed Wirth plus supplies
12. Division of Sponsored Research, University of Florida, Graduate Research Assistantship Program
Title: "MR Imaging and Spectroscopy of Spinal Cord Injury"
P.I., **T. H. Mareci**
Period 1/9/95 to 6/30/95; Total amount funded, \$5,643
Funding for Wenhua Xu to develop implanted RF coils
13. Division of Sponsored Research, University of Florida, Graduate Research Assistantship Program
Title: "MR Evaluation of Spinal cord Injury and Repair"
P.I., **T.H. Mareci**
Period 4/1/95 to 4/30/96; Total amount funded, \$17,160
Funding for Ben Inglis and Lei Yang to collect and analyze data from the VIS imaging spectrometer system
14. National Spinal Cord Injury Association
Title: "Magnetic Resonance Microscopy of Human Spinal Cord Injury"
P.I., **T.H. Mareci**, 5% effort funded
Period 6/28/95 to 6/27/96; Total amount funded \$5,500
15. National Institutes of Health, R01 NS29362 (competitive renewal)
Title: "MR Evaluation of Spinal Cord Injury and Repair"
P.I., **T. H. Mareci**, 25% effort funded
Period 7/1/95 to 5/31/99; Direct amount funded, \$625,450
16. International Business Machines, Inc.
University of Florida's 1995 IBM Shared University Research Program Proposal
Title: "Visualization and Imaging Across the Disciplines"
Directors for Biomedical Computing Laboratory: **T.H. Mareci** and E.A. Geiser
Total amount funded, \$199,738; Biomedical Computing Laboratory portion funded, \$32,642
17. State of Florida, Brain and Spinal Cord Injury Rehabilitation Trust Fund, Project 6
Title: "Magnetic Resonance Spectroscopy of Spinal Cord Metabolism after Injury and Fetal Tissue Repair"
P.I., M. Hubley, co-investigator, **T. H. Mareci**, 5% (no salary)
Period 10/1/95 to 9/30/96; Total amount funded \$11,101
18. National Institutes of Health, F32 NS09980
Title: "Study of Spinal Cord Metabolism after Injury and Repair"
P.I., M. Hubley; Mentor, **T. H. Mareci**
Period 1/1/96 to 12/31/96; Total amount funded, \$22,608

19. National Institutes of Health, P01 NS35702
Title: "Cellular Repair of the Injured Spinal Cord"
P.I., P. J. Reier; Core Project Director, **T. H. Mareci**, 15% effort funded
Period 8/1/96 to 7/30/01; Total direct amount funded, \$3,383,998
20. State of Florida, Brain & Spinal Cord Injury Rehabilitation Trust Fund, Project 6 (competitive renewal)
Title: "Magnetic Resonance Spectroscopy of Spinal Cord Metabolism after Injury and Fetal Tissue Repair"
P.I., **T. H. Mareci**, 5% effort funded
Period 10/1/96 to 9/30/97; Total amount funded, \$20,393
21. National High Magnetic Field Laboratory, In-House Research Program
Title: "High Field, High Frequency RF Coils for NMR Spectroscopy and Microscopy of Small Samples"
P.I., **T. H. Mareci**, no salary funded (graduate student and supplies funded)
Period 1/1/97 to 6/30/99; Direct amount funded, \$38,612
22. State of Florida, Brain & Spinal Cord Injury Rehabilitation Trust Fund, Project 5 (competitive renewal)
Title: "Magnetic Resonance Spectroscopy of Spinal Cord Metabolism after Injury and Fetal Tissue Repair"
P.I., **T. H. Mareci**, 5% effort funded
Period 10/1/97 to 9/30/98; Total amount funded, \$23,420
23. State of Florida, Brain & Spinal Cord Injury Rehabilitation Trust Fund, Project 6 (competitive renewal)
Title: "Magnetic Resonance Spectroscopy of Spinal Cord Metabolism after Injury and Fetal Tissue Repair"
P.I., **T. H. Mareci**, no salary funded (post-doctoral student and suppliers funded).
Period 10/1/98 to 9/30/99; Total amount funded, \$25,702
24. National Institutes of Health, R01 NS29362 (infrastructure supplement)
Title: "MR Evaluation of Spinal Cord Injury and Repair"
P.I., **T. H. Mareci**, 25% effort funded
Period 6/1/99 to 5/31/00; Total amount funded, \$25,000
25. State of Florida, Brain & Spinal Cord Injury Rehabilitation Trust Fund
Title: "Assessment of nerve degeneration and regeneration by NMR"
P.I., **T. H. Mareci**, no salary funded (staff scientist and suppliers funded).
Period 7/1/00 to 6/30/02; Total amount funded, \$30,630
26. State of Florida, Brain & Spinal Cord Injury Rehabilitation Trust Fund
Title: "Longitudinal Evaluation of Spinal Cord Injury with MRI: Correlation with Functional Outcomes"
P.I., L. A. Ritz, Co-P.I. **T. H. Mareci**, no salary funded (staff scientist and suppliers funded).
Period 7/1/00 to 6/30/02; Total amount funded, \$25,541
27. U.S. Army Dept of Defense
Title: "NF1 tumor-specific therapeutic modeling"
P.I., David Muir, Collaborator, **T. H. Mareci**, 5% effort (plus staff and supplies)
Period 8/01/00 to 7/31/03; Total amount funded, \$168,026
28. National Institutes of Health, P41 RR16105
Title: "High Field Magnetic Resonance Research and Technology"
P.I. Steve Blackband; Co-investigator, **T. H. Mareci**, 10% effort
Period, 04/01/01 to 03/31/06; Total direct amount \$2,655,177
29. United States Health Resources and Services Administration

Title: "Magnetic Resonance Instrumentation for a National Center for Human Brain Functional Imaging and Image-Guided Surgery"

P.I. William G. Luttge; Co-P.I., **T. H. Mareci**

Period, 04/01/01 to 03/31/02; Direct amount \$960,000

30. National Institutes of Health, R01 NS42075

Title: "Algorithms for Automatic Fiber Tract Mapping in the CNS"

P.I. Baba Vemuri; Co-investigator, **T. H. Mareci**, 18% effort (plus student and supplies)

Period, 04/01/02 to 03/31/06; Total direct amount \$581,154

31. State of Florida, Brain and Spinal Cord Injury Rehabilitation Trust Fund

Title: "In vivo evaluation of blood-spinal-cord barrier disruption, with and without neuroprotection and correlation with lesion morphology following spinal cord injury"

P. I.: **T. H. Mareci**; Co-investigator: Louis Ritz

Period, 07/01/02 to 06/30/03, Direct amount: \$32,321(graduate student and supplies)

32. State of Florida, Brain and Spinal Cord Injury Rehabilitation Trust Fund

Title: "Diffusion tensor imaging predicts diffuse axonal injury and functional outcome following traumatic brain injury in adult and immature rats."

P. I.: **T. H. Mareci**; Co-investigators. Jose Pineda, Floyd Thompson, and Michelle DeFord

Period, 07/01/02 to 06/30/03, Direct amount \$43,000 (graduate student and supplies)

33. Department of Defense, NF020064

Title: "Angiogenesis and Therapeutic Approaches in NF1 Tumors"

P.I. Dave Muir; Co-investigator, **T. H. Mareci**, 15% effort

Period, 07/01/03 to 06/30/07; Total direct amount \$248,387

34. State of Florida, Brain and Spinal Cord Injury Rehabilitation Trust Fund

Title: "Effects of Excitotoxic Injury on Spinal Cord Sensory Pathways."

P. I.: R. P. Yezierski; Co-investigators. **T. H. Mareci** and S. A. Berens

Period, 07/01/04 to 06/30/05, Direct amount \$86,693 (graduate student and supplies)

35. National Institutes of Health, R01 EB004752

Title: "Evolution in Epilepsy"

P.I. William Ditto; Co-investigator, **T. H. Mareci**, 15% effort (plus student and supplies)

Period, 09/01/04 to 06/30/08; Total direct amount \$1,000,000

The major goal of this study is to identify specific differences in brain structure and electrical activity that are characteristic of the evolution of the brain into epilepsy.

36. National Institutes of Health, R21 NS052670

Title: "Convective Drug Transport in the Spinal Cord"

P.I. M. Sarntinoranont, Co-Investigator, **T. H. Mareci**, 10% effort (plus student and supplies)

Period, 04/15/06 to 01/17/08; Total direct amount \$344,023

The major goals of study are to integrate MR diffusion tensor images into models of direct infusion into nerves that enter the spinal cord, develop experimental tools to measure and determine interstitial fluid pressure gradients, then validate predicted macromolecular tracer transport results using in vivo MRI studies.

37. National Institutes of Health, R01 EB007082

Title: "A study of model beta-cells in diabetes treatment"

P.I. Ioannis Constantinidis, Co-investigator, **T. H. Mareci**, 5% effort

Period, 07/01/06 to 06/30/11; Total direct amount \$1,250,000

The major goals of this study are to optimize in vivo NMR signal acquisition with inductively coupled RF-coils, to develop and validate a model of time-dependent oxygen and cell density gradients within constructs, and to non-invasively assess the function of an implanted tissue engineered pancreatic substitute and correlate that to end point physiologic events.

38. National Institutes of Health, R01 EB007082
 Title: "Automatic Prediction of the Onset of Epilepsy via Analysis of High-Angular Resolution Diffusion Weighted MRI"
 P.I. Baba Vemuri; Co-investigator, **T. H. Mareci**, 13% effort (plus student and supplies)
 Period, 08/01/06 to 05/31/10; 1st year direct amount \$225,000

 The major goals of this study are to develop a computationally efficient algorithm for MR high angular resolution diffusion imaging de-noising and estimation of the field of probability densities. Then to develop and validate an atlas-based segmentation scheme that allow computation of fiber tracts and the signature of structural changes, during the period of epileptogenesis, and predict the time of onset of epilepsy.
39. University of Florida, Research and Graduate Programs, Research Opportunity Incentive Fund
 Title: "Computational Tumor Transport Models Based on Dynamic Contrast-Enhanced MRI"
 P.I. M. Sarntinoranont, Co-Investigator, **T. H. Mareci** (funding for students and supplies)
 Period, 08/01/06 to 07/31/07; \$73,846
40. National Institutes of Health, K23 NS060660
 Title: "White Matter and Cognition in in Parkinson's Disease"
 P.I. C. E. Price, Mentor, **T. H. Mareci**
 Period, 01/01/08 to 12/31/13; \$608,783 (total direct and indirect costs)
41. National Institutes of Health, R01 NS063360
 Title: "Computational Transport Models for Convection-Enhanced CNS Delivery"
 P.I. M. Sarntinoranont, Co-Investigator, **T. H. Mareci** (12% effort)
 Period, 09/29/08 to 07/31/13
 \$69,045 current-year direct cost, \$287,974 total direct cost, \$404,365 total cost

 The goal of this study is to provide a fundamental understanding of convection enhanced delivery (CED) of compounds into the hippocampus for the treatment of temporal lobe epilepsy. High-resolution magnetic resonance and diffusion tensor imaging measurements in vivo will guide the development of a three-dimensional computational model that will be used to determine the effects of anatomical boundaries, fluid tissue interactions, and tissue structure on extracellular CED transport.
42. National Institutes of Health, S10 RR025671
 Title: "Upgrade of an 11T/40cm MRI/S System"
 P.I. A. Edison, Co-Investigator, **T. H. Mareci**
 Period, 01/16/09 to 01/15/10; \$500,000 (total direct cost)
43. National Institutes of Health, R21 EB009555
 Title: "Selective Wirelessly-Adjustable Multiple-frequency Probe (SWAMP)"
 P.I. **T. H. Mareci**
 Period, 05/01/2009 to 03/31/11; \$275,000 (total direct cost)

 The goal of this study is to develop a high sensitivity NMR, selective wirelessly-adjustable multiple-frequency probe (SWAMP) system, using an implanted coil to non-invasively monitor the function *in vivo* of a tissue engineered construct, such as a pancreatic substitute. The probe design uses custom microchips fabricated to allow the automatic tuning and matching of the probe to any desired frequency (i.e. NMR frequency).
44. State of Florida, Brain and Spinal Cord Injury Research Trust Fund
 Title: "Correlating Disturbed Sleep and Damaged White Matter Tracts in the Brainstem in Traumatic Brain Injury Using Diffusion Weighted Imaging."
 P.I.'s, D. B. Fitzgerald, B. Crosson, and **T. H. Mareci**
 Period 07/01/2011 to 06/30/2012, \$100,000 (total direct cost)

 The goal of this study is understand the relationship of brain stem damage to sleep disturbance in persons with mild traumatic brain injury. High-resolution magnetic resonance diffusion weighted

imaging *in vivo* will be used to quantify white matter changes in the brain stem and relate the observed changes to sleep disturbance.

45. National Science Foundation

FSU# 227000-520-022742/ NSF# DMR-0654118; subcontract R01528

Title: "Unique MR probe for *in vivo* studies of rats and mice in a 17.6 T, 89 mm vertical magnet"

P.I. **T. H. Mareci** (no effort funded, support for post-doctoral student and supplies)

Period 03/01/2012 to 06/30/2014

\$69,826 current-year direct cost, \$131,938 total direct cost, \$181,664 total cost

In this project, we will construct magnetic resonance (MR) hardware for animal studies in a very high-field vertical magnet that will allow high resolution, high sensitivity measurements of MR images and spectra *in vivo*. A rodent MR probe for a 17.6 T, 89 mm bore magnet will be developed with the following features: 1) A high sensitivity quadrature birdcage coil for MR in rat brains and whole mice, with active PIN diode switching to allow transmit-only operation (with a receive-only quadrature surface coil for mouse brain), 2) a quadrature receive-only surface coil for the mouse head, and 3) an animal support system with rat ear bars in the volume coil and a mouse stereotaxic cradle.

46. National Institutes of Health, R01 NR014181

Title: Neuroimaging Biomarkers for Post-Operative Cognitive Decline in Older Adults

P.I., Cate Price, Co-I, **T. H. Mareci** (10% effort)

Period, 09/27/2012 to 06/30/2017

\$36,222 first-year direct cost, \$53,971 total first-year cost (total cost over period, \$2,361,263)

The long-term goals of this study are to identify preoperative variables that increase risk for acute and irreversible cognitive decline after surgery and use this information to design peri-operative interventions for patients with specific neuronal risk profiles. We will conduct a prospective longitudinal study with two groups: older adults (age > 60 years) having total knee replacement (n=80) and non-surgery age and education matched peers with osteoarthritis (n=80). We will acquire baseline diffusion and functional MRI measures to define biomarkers in specific neuronal regions of interest, and complete cognitive testing at a pre-surgery/baseline time point that will be followed longitudinal testing after surgery.

47. US Army Materiel & Medical Command

Contract #W81XH-11-1-0454 subproject #00096463

Telemedicine & Advanced Technology Research Center

P.I. W. Mann

Title: "Correlating Sleep Disturbances and Damaged White Matter Tracts in the Brainstem using Diffusion Weighted Imaging"

Subproject P.I. **T. H. Mareci** (10% effort), Co-investigator, D. B. Fitzgerald

Period 09/01/2011 to 03/02/2015

\$124,463 current-year direct cost, \$178,224 current-year total cost

The major goals of this project: To determine sleep architecture with polysomnography in healthy controls and compare with fractional anisotropy and general anisotropy of the brain stem.

Determine sleep architecture with polysomnography in veterans with mTBI and compare with fractional anisotropy and general anisotropy of the brain stem. Evaluate fiber tracking from sleep nuclei to higher cortical areas in both healthy controls and veterans with mTBI.

48. National Institutes of Health, R01 NS082386

Title: White Matter Connectivity and PD Cognitive Phenotypes

P.I., Cate Price, Co-I, **T. H. Mareci** (10%)

Period, 09/25/2013 to 8/31/2018

\$53,890 first-year direct cost, \$75,019 total first-year cost (total cost over period, \$1,505,597)

The goal of this study is to examine white matter connectivity of cognitive phenotypes of Parkinson's disease (PD) in order to improve understanding of memory and processing speed

impairment in PD. The study will investigate the working hypothesis that entorhinal-hippocampal connectivity and dorsolateral prefrontal cortex to caudate connectivity can validate cognitive phenotype and predict type of cognitive change after two years.

49. National Institutes of Health, R01 NS077004

Title: Direct functional imaging of electrical brain stimulation

P.I., R. Sadleir, Co-I, **T. H. Mareci** (5%)

Period, 03/15/2014 to 02/28/2018

\$29,025 current-year direct cost (total cost over period \$1,819,048)

The goal of this study is to investigate the ability of functional magnetic resonance electrical impedance tomography (fMREIT) to detect activity-related conductivity changes in neural tissue. We are developing fMREIT techniques to image neural activity in vitro, in several standard neural preparations, while progressively refining the methods to detect and locate active cells at high signal-to-noise ratio and using main magnetic field strengths conveniently used in vivo. With optimized methods, we will implement fMREIT in a live animal model, as a precursor to further research in this area.

50. National Institutes of Health, R21 NS081646

Title: In vivo imaging of therapeutic electric current flow

P.I., R. Sadleir, Co-I, **T. H. Mareci** (5%)

Period, 07/01/2014 to 06/30/2016

\$30,266 current-year direct cost (total cost over period \$388,294)

The goal of this study is to develop methods for measuring actual current distributions in the brain during transcranial direct current stimulation in vivo. Specifically, we will use a recently developed MRI-based phase imaging technique to more directly measure current densities in vivo and use diffusion weighted MRI to measure white matter structure within the brain to model the distribution of current.

51. National Institutes of Health, R01 NS080816-01A1

Title: Partnership for Magnetic Resonance Spectroscopy Biomarker Development.

P.I. G. Oz (U. Minnesota), Site Co-PI, **T. H. Mareci** (10%) and S. H. Subramony

Period, 09/01/2015 to 05/31/2020

\$21,039 current-year direct cost (total cost over period, \$3,198,538)

The goal of this project is to build a multi-institute partnership to establish the feasibility of using advanced, quantitative imaging technology in the clinical setting for neurodegenerative diseases. The technology is intended for noninvasive monitoring of pathology and effects of treatments in the brain. A high impact is expected in moving potential therapies for a set of movement disorders, spinocerebellar ataxias, and for Alzheimer's disease from the laboratory to the bedside.

52. National Institutes of Health, S10 NS080816-01A1

Title: Advanced 3T for Structural and Functional Imaging at University of Florida

P.I. J. Long, Co-I., **T. H. Mareci**

Period, 04/01/2017 to 03/31/2018

\$2,000,000 direct

The goal of this project is to increase the capacity for human MR research in the Advanced Magnetic Resonance Imaging and Spectroscopy Facility of the McKnight Brain Institute by adding a new, state-of-the-art 3 T magnet system. This new system will serve a large number of major users who are NIH-funded investigators.

53. National Institutes of Health, RF1 MH114290

Title: Mechanism and dosimetry exploration in transcranial electrical stimulation using magnetic resonance current mapping methods

P.I. R. Sadleir, Co-I., T. H. Mareci
Period: 07/19/2017 to 07/18/2021
\$1,706,273 direct

54. National Institutes of Health, U01 NS104326
Title: Clinical Trial Readiness for SCA1 and SCA3
P.I. T. Ashizawa, Co-I., T. H. Mareci
Period: 01/01/2018 to 12/31/2023
\$21,000 direct 1st year sub-award
55. State of Florida, Department of Health, Ed & Ethel Moore Alzheimer's Disease Research Program
Title: Impact of total knee replacement surgery on trajectory of cognitive decline in individuals with mild cognitive impairment (MCI)
P.I. C. Price, Co-I., T. H. Mareci
Period: 05/06/2019 to 03/31/2021
\$26,527 direct sub-award
56. National Institutes of Health, R56 NS112401
Title: Adoptive Cell Therapies and Translational Neuroimaging in Synucleinopathy: Implications for Dementia with Lewy Body and Parkinson's Disease
P.I. V. Vedam-Mai, Co-I, T. H. Mareci (5%)
Period: 09/23/2019 to 08/31/2021
\$17,277.20 total direct subaward
57. National Science Foundation, National High Magnetic Field Laboratory
Title: Cryo-cooled MR Coils for Low-Gamma NMR Imaging and Spectroscopy at High Magnetic
P.I. T. H. Mareci (no effort funded)
Period: 01/01/2021 to 12/31/2023
\$209,839 total (direct and indirect)
58. National Institutes of Health, R01AG054370 (supplement)
Title: Chronic Pain Severity, Biomarkers of Dementia, and Ethnic/Race Group Differences: Predicting Alzheimer's Disease Vulnerabilities
Co-P.I.s K. Sibille and J. Tanner, Co-I, T. H. Mareci (5%)
Period: 02/01/2012 to 05/31/2022
\$17,449.00 total subaward

Current Grant Applications

59. National Institutes of Health, R01 (not awarded)
Title: Therapeutic Targeting of the Master Regulatory Gene Network in Glioblastoma.
P.I. T. Tran
Co-PI, T. H. Mareci (5%)

Academic Committees and Service

1987 to 1992	Computer Systems Committee, Department of Radiology, University of Florida
1989 to 1992	Basic Science Committee, Department of Radiology, University of Florida
1989 to 1997	Research Computer Initiative Committee, Northeast Regional Data Center, U of Florida
1990 to 1994	National High Magnetic Field Laboratory Planning Committee, U of Florida and Florida State University
1991	Organizing Chairman, NMR Workshop, National High Magnetic Field Laboratory
1991	Research Development Award Committee, Division of Sponsored Research, U of Florida
1991-92	Biotechnology Faculty Advisory Committee, Division of Sponsored Research, U of Florida
1991 to 1992	Chairman, Task Force on Structural Biology, College of Medicine, University of Florida
1993	Advisory Board for the Short Pulse Laser Project, Division of Sponsored Research, University of Florida
1994 to 1999	Internal Faculty Advisory Board, University of Florida Brain Institute
1995	Electron Microscopy Consolidation Working Group, College of Medicine, U of Florida
1995	Search Committee, Chair of the Department of Anatomy and Cell Science, College of Medicine, University of Florida
1995	Executive Committee, Center for Interdisciplinary Magnetic Resonance, National High Magnetic Field Laboratory
1995 to 1999	In-House Research Program Committee, National High Magnetic Field Laboratory, University of Florida, Florida State University, and Los Alamos National Lab
1995 to 1999	Research Advisory Committee, Howard Hughes Medical Institute Research Resource, College of Medicine, University of Florida
1995 to 1996	Administrative Focus Group, Interdisciplinary Graduate Program in Biomedical Sciences, College of Medicine, University of Florida
1995 to 1998	Imaging Science and Technology Center Working Group, Office of Research, Technology, and Graduate Education, University of Florida
1996	Chair, Magnetic Resonance White Paper Writing Committee, Center for Interdisciplinary Magnetic Resonance, National High Magnetic Field Laboratory
1996	Search Committee, Chair of the Dept. of Neuroscience, College of Medicine, U of Florida
1996 to 2000	Material Research Collaborative Access Team Synchrotron Committee, University of Florida
1996	Selection Committee for Pew Scholar Awards and Burroughs Welcome Award Candidates from the College of Medicine, University of Florida
1997 to 1999	Safety Committee, International Society of Magnetic Resonance in Medicine
1998 to 2000	University of Florida Brain Institute, Faculty Advisory Committee for Computers and Information Technology
2002 to 2003	Faculty Search Committee, Dept. of Biomedical Engineering, College of Engineering, University of Florida
2002 to 2004	Member of the University Senate, University of Florida
2004	In House Research Program Committee, National High Magnetic Field Laboratory
2003 to 2005	Young Investigator Awards Committee, International Society for Magnetic Resonance in Medicine
2003, 2005	Chair of scientific session at meetings of the International Society of Magnetic Resonance in Medicine
2010	Chair and Review Panel Member, Research Opportunity Fund for Biomedical/Translational Sciences, Division of Sponsored Research of the University of Florida.

2010	Review abstracts for the Meeting of the International Society of Magnetic Resonance in Medicine
2010	Search Committee Member for Neurology/Engineering Assistant Professor position in the Department of Pediatrics, University of Florida
2012	Chair of Search Committee for the Director of the Human Imaging Core of the Clinical Translational Science Institute of the University of Florida.
2012-2014	Member of the Research Program Committee for the User Collaborative Grants Program of the National High Magnetic Field Laboratory
2016	Member of review panel for the Florida Education Fund, McKnight Doctoral Mid-Year Research and Writing Conference, Safety Harbor, Florida, 26-27 February 2016
2018-present	Member of the Communications Advisory Team for the National High Magnetic Field Laboratory.

Student Supervision, Mentoring, and Committee Membership

Mentor for more junior faculty

Giridhar P. Kalamangalam, Ph.D.

Catherine C. Price, Ph.D.

Mentored Undergraduate Students (Total of 47)

Current:

1. Jonathan Gant, January 2020 – present; Physics major and volunteer lab assistant.
2. Dylan Lee, 2020 – present; Philosophy major and volunteer lab assistant. Sever as mentor for his participation in University Scholars Program.
3. Zachary Player, January 2019 – present; Physics major and volunteer lab assistant. Sever as mentor for his participation in University Scholars Program.
4. Elizabeth Vo, January 2021 – present; Biomedical Engineering major and volunteer lab assistant.

Former:

1. Christy Amwake, June 2004 – June 2005, Supervised research (2004 summer research program of the National High Magnetic Field Laboratory, Research Experience for Undergraduate, funded by the National Science Foundation), electrical engineering major from Florida State University. For 2004-2005, supervised individual senior research in the Department of Electrical Engineering of the University of Florida and supervised employment as an undergraduate student assistant.
2. Thomas Barrett, January 2017 – May 2020; Biomedical Engineering major and volunteer lab assistant, Served as Chair of his Honor Thesis Committee.
3. Alec Brown, August 2015 – May 2017; Physics major and volunteer lab assistant
4. Ty Black, December 2003 to May 2003, computer information science and engineering major; supervised senior reseach project.
5. Kevin Castellano, August 2015 – May 2017; Neurobiology major and volunteer lab assistant.
6. John Chan, May 2016 – July 2016, NSF-funded Research Experience for Undergraduate summer program lab assistant from the University of Texas at Dallas.
7. Michelle Couret, May 2012 – May 2015; IDS Biochemistry major and student research position in my lab funded through Howard Hughes Medical Institute Science for Life intramural research program, 2013-2014.
8. Elizabeth A. Cranston, Summer of 1996; Supervised research (summer research program of the National High Magnetic Field Laboratory, then undergraduate research) in Department of Engineering Sciences, UF
9. Daniel Dominguez, January 2004 – June 2004; Mechanical Engineering, supervise work as student assistant.

10. Matthew Feldman, Summer of 2005; Supervised research (University Scholars Program) in the Department of Electrical Engineering.
11. Jason Franqui, Summer of 1995; Supervised summer research program of the National High Magnetic Field Laboratory.
12. Rahul Gandhi, September 2011 – August 2013, chemical engineering major and volunteer lab assistant.
13. Andrew Girard, June 2013 – May 2017; Chemical Engineering major and volunteer lab assistant” Received student research position funding through Howard Hughes Medical Institute Science for Life intramural research program, 2014-15, the University Scholar’s Program, 2016-17.
14. Shelby Goicochea, October 2011 –May 2014, Chemistry major and student research position in my lab funded through the University Scholar Program of the University of Florida, 2012-2013.
15. Nicholas Gomez, May 2017 to December 2017, Biomedical Engineering major and volunteer lab assistant.
16. Chistine Hamaty, April 2002 to June 2004, Engineering Science major; supervise work as student assistant.
17. Bradley Harden, January 2009 – August 2010; Electrical Engineering major, volunteer lab assistant.
18. Eric Henderson, 1997-1998; Supervised research for minor in Physics and supervised employment as an undergraduate student assistant.
19. Matthew Hey, March 2015 – December 2017; Applied Physiology and Kinesiology major and volunteer lab assistant. Received student research position funding through the University Scholar’s Program, 2016-17.
20. Remington Horesh, January 2010 – June 2011; biological engineering major, volunteer lab assistant.
21. Margarita Khariton, June 2013 – May 2015; Chemical engineering major and volunteer lab assistant.
22. Komal Kitikar, May 2002 to December 2002, mechanical engineering major; supervise work as student assistant.
23. Rosemary Klaussen, May 2012 – May 2014, psychology major and student research position in my lab funded through Howard Hughes Medical Institute Science for Life intramural research program, 2012-2013
24. Caroline Lamoutte, August 2017 – May 2020; Microbiology and Cell Science major and volunteer lab assistant. Severed as mentor for her participation in University Scholars Program.
25. Janel LeBelle, 1989 - 1995; Supervised research (summer high school student visitor, then undergraduate research jointly with Doug Anderson of the Department of Neuroscience, UF) as an Interdisciplinary Major in Neurobiological Sciences, UF.
26. Brian Letzen, 2006 – 2008; Supervised research in University Scholar’s Program and supervised work as undergraduate student assistant in my lab.
27. Rachel E. Long, Summer of 1997; Supervised research in the summer research program of the National High Magnetic Field Laboratory.
28. Josecarlos Melgar (undergraduate physics major for USF), summer 2019; Supervised research the UF Summer Undergraduate Research at Florida (SURF) program.
29. Emma V. Mercer, October, 1995 - September, 1996; Supervised work as a “Practical Year” exchange student in Physics with Medical Physics, University of Surrey, England.
30. Jessica Meloy, Spring 2006 – Sprint 2007; supervised work as undergraduate student assistant in my lab.
31. Justin Mills, May 2011 – December 2011; electrical engineering major and volunteer lab assistant.
32. Kevin Monte, September 2014 – 2016; Physics major and volunteer lab assistant.
33. Dia Nammari, September, 1996 - 1997; supervised work as a “Practical Year” exchange student in Physics with Medical Physics, University of Surrey, England.
34. Brain Oswald, May 2003 to December 2003, electrical engineering major; supervised senior research project.

35. Prakash Patel, Fall 2000 to May 2002; chemistry major (Biochemistry Option) supervised senior research and supervised work as student assistant. Also mentored in Undergraduate University Scholars Program.
36. Lee Rivid, Fall 2007 – 2009, biological engineering major, volunteer lab assistant.
37. Nicholas Samlal, May 2017 – July 2017, NSF-funded Research Experience for Undergraduate summer program lab assistant.
38. Priyam Shah, January 2004; biological engineering major, supervise work as student assistant.
39. Caitin Spindler, March 2010 – May 2012; biology major, student research position in my lab funded through the University Scholar Program of the University of Florida 2011-2012. Accepted to study veterinarian medicine at UF.
40. Rachel Stewart, March 2011 – June 2011; Member of her honor thesis committee in Department of Material Science.
41. Joseph Succar, 2012; physics major and volunteer lab assistant.
42. Christopher Taylor, Fall 2005 to Summer 2006; electrical engineering major, worked as lab assistant.
43. Ahmad Zeinomar, May 2017 – May 2019; Biochemistry (CLAS) major and volunteer lab assistant.

Mentored Graduate Students

Supervised research and chaired thesis or dissertation committee (Total of 30)

Current:

1. Daniel DeYoung, May 2016 – present; Supervise research and chair doctoral degree committee in the Department of Physics, UF.

Former (in reverse chronological order of graduation date):

1. Manish Amin, January 2014 – May 2020; Supervised research and chaired doctoral degree committee in the Department of Physics, UF.
2. Guita Banan, August 2011 – May 2020; Supervised research and chaired doctoral degree committee in the Department of Physics, UF.
3. Alec Brown, May 2017 – May 2019; Supervised research and chaired master's degree committee in the Department of Biochemistry and Molecular Biology, UF
4. Magdoo Mohamed Kulam Najmudeen, November 2012 – December 2018; Developments in Magnetic Resonance Imaging with Applications to Transport in Brain. Jointly supervised research with Malisa Sarntinoranont (from December 2015) and co-chair doctoral degree committee in the Department of Mechanical and Aerospace Engineering, UF.
5. Aditya Kumar Kasinadhuni, Ph.D., January 2011 – December 2016; Mapping Current Density Due to Electrical Stimulation using Magnetic Resonance Electrical Impedance Tomography. Supervised research and chair doctoral degree committee in the Department of Biomedical Engineering.
6. Luis Colon Perez, Ph.D., 2009 – 2013: Weighted Networks and the Topology of Brain Networks. Supervise research and chair doctoral degree committee in the Department of Physics, UF
7. Christine Girard, 2011 – 2013: Supervise research and chair master's degree committee in the Department of Biomedical Engineering.
8. Garrett Astarly, Ph.D., 2006 – 2011, MR-Guided Real-Time Convection-Enhanced Delivery. Jointly supervised research and serve on doctoral committee (joint supervision with Malisa Sarntinoranont, who acts as committee chair) in the Department of Biomedical Engineering, UF.
9. Stephen Simpson, 2011 - 2011: Supervise lab work while completing non-thesis master's degree in the Department of Electrical Engineering, UF.
10. Mansi Parekh, Ph.D., 2006 – 2010; jointly supervise research with Paul Carney and serve as chair of doctoral degree committee in the Department of Neuroscience, UF.

11. Sien Wu, 2009 – 2010; Supervised lab work during completion of non-thesis master's degree in the Department of Electrical Engineering, UF.
12. Nelly Volland, Ph.D., 2003 – 2009; Sensitivity Improvement of a Nuclear Magnetic Resonance Method to Monitor a Bioartificial Pancreas. Supervise research and serve as chairman of doctoral degree committee in the Department of Biomedical Engineering, UF.
13. Chad Durgin, 2007 - 2009; Supervise research and serve as chair of master's degree committee in the Department of Biomedical Engineering, UF.
14. William Triplett, 2009; Jointly supervise research with Yunmi Chen and serve on doctoral committee in the Department of Mathematics, UF.
15. Hector Sepulveda, 2005 – 2008; Supervised research and serve as chairman of master's degree committee in the Department of Biomedical Engineering, UF.
16. Gary Blaskowski, 2002 – 2008; Supervise research and serve as chairman of master's degree committee in the Department of Biomedical Engineering.
17. Lan Hoang-Minh, 2005 – 2007; Supervised research and serve as chairman of master's degree committee in the Department of Biomedical Engineering, UF.
18. Sara Berens, Ph.D., Ph.D., 2003 – 2006; Use of MRI to Study Excitotoxic Spinal Cord Injury. Jointly supervised research and served on doctoral committee (joint supervision with Robert Yezierski, who acted as Chair) in the Department of Neuroscience, UF.
19. Evren Ozarslan, Ph.D., 2000 – 2004, Developments in Diffusion weighted Magnetic Resonance Imaging (MRI) with Applications to Neural Tissue. Supervise research and serve as chairman of doctoral degree committee in the Department of Physics, UF.
20. Daniel Colvin, 2002 – 2003; Supervise research and served as chairman of master's degree committee in the Department of Physics, UF.
21. Sean Germain, 1999 – 2002; Supervise research and serve as chairman of master's degree committee in the Department of Biomedical Engineering.
22. Elizabeth L. Bossart, Ph.D., 1994 - 99; Magnetic Resonance Imaging and Spectroscopy for the Study of Translation Diffusion: Application to Nervous Tissue. Supervised research and serve as committee chair for doctoral degree committee in the Department of Physics, UF.
23. Lei Yang, 1992 - 1998; Jointly supervised research and serve as co-chair of doctoral degree committee (joint supervision with Raymond Andrew) in the Department of Physics, UF.
24. Wenhua Xu Ni, Ph.D., 1993 - 1997; Designs of Novel RF Coils for Signal-to-Noise Ratio Improvement in NMR. Supervised research and serve as committee chair for doctoral degree program in the Department of Physics, UF.
25. William W. Brey, Ph.D., 1987 - 93; Supervised research and served on doctoral degree committee (joint supervision with E. Raymond Andrew, who acted as Chair) in the Department of Physics, UF.
26. Edward D. Wirth, III, Ph.D., 1986 - 1992; Jointly supervised research and served on doctoral degree committee (joint supervision with Paul Reier, who acted as Chair) in the Department of Neuroscience, UF.
27. Michael Cockman, Ph.D., 1984 - 88; Jointly supervised research and served on doctoral degree committee (joint supervision with Wallace Brey, who acted as Chair) in the Department of Chemistry, UF.
28. Jin-Tong Mao, Ph.D., 1983 - 87; Jointly supervised research and served on doctoral degree committee (joint supervision with E. Raymond Andrew, who acted as Chair) in the Department of Physics, UF.
29. William Sattin, Ph.D., 1980 - 85; Jointly supervised research Served on doctoral degree committee (joint supervision with Katherine Scott, Chair) in the Department of Nuclear Engineering Sciences, UF.

Supervised summer research program for UF medical students

1. Chad Durgan, 2009
2. YeonJung Park, 2010 (jointly with Paul Carney)

Supervised master degree thesis work of exchange graduate students from the Royal Institute of Technology, Stockholm, Sweden

1. Ulf Hedhammer, 2000
2. Anders Ohlstenius, 2000
3. Gustav Persson, 2001
4. Henrik Jonsson, 2001
5. John Wiklund, 2002
6. Carl Kistenmacher, 2002
7. Par Windahl, 2003
8. Diana Du Rietz, 2003
9. Erik Englund, 2004
10. Mikael Fahlgren, 2004
11. Faraz Azima, 2004
12. Rami Lahdo, 2005
13. Rashid Jawday, 2005
14. Dario Nazemson, 2005
15. Allan Elfstrom, 2006
16. Stefan Stark, 2006
17. Nicholas Rydje, 2006
18. Alireza Vasseghi, 2007
19. Amirreza Vasseghi, 2007
20. Yunus Erdal, 2007
21. Amin Shirkhanloo, 2007

Serve on thesis or dissertation committee (Total of 52)

Current:

1. Alan Carter, 2018 – present; Serve on master's degree committee (Matt Merritt, Chair) in the Department of Biochemistry and Molecular Biology, UF.
2. Mario Chang, 2021 – present: Serve on doctoral degree committee (Matt Merritt, Chair) in the Department of Biochemistry and Molecular Biology, UF.
3. Alex Kahn, 2020 – present; Serve on master's degree committee (Lakiesha Williams, Chair) in the Department of Biomedical Engineering, UF
4. Marc Mcleod, 2019 – present: Serve on doctoral degree committee (Matt Merritt, Chair) in the Department of Biochemistry and Molecular Biology, UF.
5. Gregory O'Brien, 2017 – present: Serve on doctoral degree committee (Stephen Hagen, Chair) in the Department of Physics, UF.
6. Julian Rey, 2018 – present: Serve on doctoral degree committee (Malisa Sarntinoranont, Chair) in the Department of Mechanical and Aerospace Engineering, UF.
7. Anna Rushin, 2021 – present: Serve on doctoral degree committee (Matt Merritt, Chair) in the Department of Biochemistry and Molecular Biology, UF.

Former:

1. Chris Akel, 2010 – 2012: Served on doctoral degree committee (Russ Bowers, Chair) in the Department of Chemistry, UF.
2. Jung-ha An, 2002 – 2005: Served on doctoral degree committee (Yunmei Chen, Chair) in the Department of Mathematics, UF.
3. Boltyun An Hartmann, 2003: Served on master's degree committee (Chris Batich, Chair) in the Department of Biomedical Engineering, UF.

4. Hrishikesh P. Bhase, 2012 – 2014; Serve on doctoral degree committee (Russ Bowers, Chair) in the Department of Chemistry, UF.
5. Jonathan D. Bui, 1996 – 2000: Served on doctoral degree committee (Ian Phillips, Chair) in the Department of Physiology, UF. After graduation, Dr. Bui continued his medical training (M.D./Ph.D.)
6. Saurav Chandra, 2006 – 2012: Served on doctoral degree committee (John Forder, Chair) in the Department of Biomedical Engineering, UF.
7. Xiaoming Chen, 2004 – 2008: Served on doctoral degree committee (Malisa Sarntinoranont, Chair) in the Department of Mechanical and Aerospace Engineering, UF.
8. Chi-Yuan Cheng, 2004 – 2008: Served on doctoral degree committee (Russ Bowers, Chair) in the Department of Chemistry, UF.
9. Jui-Hong (Vic) Chien, 2009 – 2011; Serve on doctoral degree committee (Panos Pardalos, Chair) in the Department of Biomedical Engineering, UF.
10. Wei Dai, 2011 – 2015; serve on doctoral committee (Malisa Sarntinoranant, chair) in the Department of Mechanical and Aerospace Engineering, UF.
11. Michael DeTure, 1994 – 1998: Served on doctoral degree committee (Daniel Purich, Chair) in the Department of Biochemistry and Molecular Biology, UF.
12. Daniel Downes, 2013 - 2017; Served on doctoral degree committee (Joanna Long, Chair) in the Department of Biochemistry and Molecular Biology, UF.
13. George R. Duensing, 1990 – 94: Served on doctoral degree committee (E. Raymond Andrew, Chair) in the Department of Physics, UF.
14. Janice N. Earnhardt, 1993 – 1998: From July, 1996 served on doctoral degree committee (David Silverman, Chair) in the Department of Biochemistry and Molecular Biology, UF.
15. Charles Fisher, 2013: Serve on doctoral degree committee (Michelle Manual, Chair) in the Department of Materials Science and Engineering, UF.
16. Lawrence Fomundam, 2015 – 2017; Served on doctoral degree committee (Jenshan Lin, Chair) in the Department of Electrical Engineering.
17. Anastasia Ford, 2011 – 2013: Served on doctoral degree committee (Keith White, Chair) in the Department of Psychology.
18. Joseph Gullett, 2013 – 2016; Served on doctoral degree committee (Rus Bauer, Chair) in the Department of Clinical and Health Psychology.
19. Brian Hatcher, 2002 – 2004: Served on doctoral degree committee (Tony Brennan, Chair) in the Department of Biomedical Engineering, UF.
20. Asha M. Huisden-Brunings, 1997 – 2003: Served on doctoral degree committee (Dean Gabriel, Chair) in the Department of Plant Molecular and Cellular Biology, Institute of Food and Agricultural Sciences, UF.
21. Carson Ingo, 2012 – 2013: Served on doctoral degree committee (Richard Magin, Chair) in the Department of Bioengineering, University of Illinois, Chicago.
22. Ivan Ishkov, 2017 – 2021: Served on doctoral degree committee (Stephen Hagen, Chair) in the Department of Physics, UF.
23. Zhenxue Jing, 1995 – 1997: Served on doctoral degree committee (James Tulenko, Chair) in the Department of Nuclear Engineering Sciences, UF.
24. Haejin Kang, 1989 – 92: Served on doctoral degree committee (Katherine N. Scott, Chair) in the Department of Nuclear Engineering Sciences, UF.
25. Jung Hwan Kim, 2007 – 2010: Served on doctoral degree committee (Malisa Sarntinoranont, Chair) in the Department of Mechanical and Aerospace Engineering, UF.
26. Wei-Peng Kuan, 1986 – 87: Served on doctoral degree committee (Katherine N. Scott, Chair) in the Department of Nuclear Engineering Sciences, UF.
27. Jessica Lowry, 2003: Served on doctoral degree committee (Anthony Brennan, Chair) in the Department of Materials Science and Engineering, UF.
28. Desiree Lussier, 2016 – 2018: Served on master's degree committee (Natalie Ebner, Chair) in the Department of Psychology, UF.

29. Kathy A. McGovern, 1979 – 83: Served on doctoral degree committee (Ray Bergeron, Chair) in the Department of Medicinal Chemistry, UF.
30. Tim McGraw, 2003 – 2005: Served on doctoral degree committee (Baba Vemuri, Chair) in the Department of Computer Information Science and Engineering, UF.
31. Andrew Mitchell, 1993 – 96: Served on master's degree committee (Jose Principe, Chair) in the Department of Electrical and Computer Engineering, UF.
32. Nicole A. Morgan, 2000 – 2003: Served on doctoral degree committee (Mark Meisel, Chair) in the Department of Physics, UF.
33. Srujana Neelam, 2011; Served on master's degree committee (Nickolas Simpson, Chair) in the Department of Biomedical Engineering, UF.
34. Peter Nguyen, 2011 – 2015; Server on doctoral degree committee (Catherine Price, Chair) in the Department of Clinical and Health Psychology.
35. Yuyuan Ouyang, 2009 – 2013: Served on doctoral degree committee (Yunmei Chen, Chair) in the Department of Mathematics, UF.
36. Sersita Suzette Atienza Pabit, 2001 – 2004: Served on doctoral degree committee (Steven Hagen, Chair) in the Department of Physics, UF.
37. Carlos Jose Pichardo, 2008 – 2010: Served on doctoral degree committee (Wesley Bolch, Chair) in the Department of Nuclear & Radiological Engineering, UF.
38. Daniel Plant, 1985-1987: Served on master's degree committee (Wallace Brey, Chair) in the Department of Chemistry, UF.
39. Steven L. Ponder, 1995 – 96: Served as external reader for the doctoral dissertation, Department of Biomedical Engineering, School of Engineering, University of Alabama, Birmingham.
40. Vijaykumar Ramaswamy, 2010 – 2011: Served on master's degree committee (Art Edison, Chair) in the Department of Biomedical Engineering, UF.
41. Vijaykumar Ramaswamy, 2013 – 2015: Served on doctoral committee (Art Edison, Chair) in the Department of Biomedical Engineering, UF.
42. Timothy Shepherd, 1998 – 2003: Served on doctoral degree committee (Ed Wirth, Chair) in the Advanced Neuroscience Program of the Interdisciplinary Graduate Program of the College of Medicine, UF.
43. Jared Tanner, 2010 – 2013: Served on doctoral degree committee (Catherine Price, Chair) in the Department of Clinical and Health Psychology.
44. Walter Turner, 2013 – 2015; Served on doctoral degree committee (Rizwan Bashirullah, Chair) in the Department of Electrical Engineering.
45. Simon Underhill, 2016 – 2018: Serve on doctoral degree committee (Stephen Hagen, Chair) in the Department of Physics, UF.
46. John West, 1988 – 96: Served on doctoral degree committee (Wallace Brey, Chair) in the Department of Chemistry, UF.
47. Bradley J. Willenberg, 2002 – 2005: Served on doctoral degree committee (Chris Batich, Chair) in the Biomedical Engineering Program, UF.
48. Ryan Wolf, 2013 - 2015: Served on doctoral degree committee (Russ Bowers, Chair) in the Department of Chemistry, UF. Ryan Wolf changed this focus and no longer in Dr. Bowers' research group.
49. Yan Zhang, 2005 – 2008: Server on doctoral degree committee (Mingzhou Ding, Chair) in the Department of Biomedical Engineering.
50. Aasrith Ganti, 2017 – 2020: Served on doctoral degree committee (Jenshan Lin, Chair) in the Department of Electrical and Computer Engineering, UF.

Post-Doctoral Students

1. Manish Amin, Ph.D. September 2020 to present
2. Garrett Astary, Ph.D., 2012-2013
3. Gareth J. Barker, Ph.D., 1986-88
4. Luis Colon-Perez, Ph.D., 2013-2016
5. Sune Donstruup, Ph.D. 1985-86

6. Mark J. Hubley, Ph.D., 1994-1996
7. Ben Inglis, Ph.D., 1992-1995
8. Douglas Wilkin, Ph.D., 1993-94
9. Edward D. Wirth, III, M.D., Ph.D., 1994-96
10. Dawei Zhou, Ph.D., 1990-92

Teaching

1. Advanced Topics in Experimental Physics (PHY 7098, UF); Semester course in fall term 1988, "Nuclear Magnetic Resonance".
2. Advanced Physical Biochemistry (BCH 6740, UF); 8 lectures in spring term 1991-98, "An introduction to nuclear magnetic resonance spectroscopy and its application to molecular structure determination".
3. Advanced Topics in NMR (CHM 6934, UF); 4 lectures in spring term 1995. "Diffusion and magnetic field gradient techniques in magnetic resonance imaging".
4. Interdisciplinary Graduate Program in BioMedical Sciences, Lab Rotation (GMS 6910, UF); student lab rotations.
5. Introduction to Biochemistry and Molecular Biology (BCH 4024, UF); 8 lectures on protein structure and function in the summer term of 1997, 2000-2004, then spring term from 2005 – present.
6. Structural Biology: Macromolecular Structure, Spectroscopy and Hydrodynamics (BCH 6746, UF); spring term 1997, 1999, 2000, 2002; Function as Course Coordinator and deliver 7 lectures.
7. Bioethics and Research Integrity (GMS 6931), 1 hours in 2004
8. Clinical Correlations in Biochemistry (GMS 6204), 10 hours, 2002 - present.
9. Magnetic Resonance Imaging and Spectroscopy in Living Systems (BCH 6741, UF); fall terms 2001- present; Created this 3-hour weekly course (30 lectures, 15 lab hours).
10. Advanced Physical Biochemistry, Biophysical Methods (BCH 6747, UF); 3 lectures in spring term 2007-present, "Molecular Size, Weight, and Separation". Course Coordinator.

Institutional Research Seminars

1. T. H. Mareci, "Imaging Techniques", Introductory Seminar in MRI, Department of Radiology, University of Florida, January 7, 1989.
2. "Three dimensional NMR Spectroscopy", research seminar to the Division of Physical Chemistry, Department of Chemistry, University of Florida, March 7, 1989.
3. T. H. Mareci (with Jack Crow and Neil Sullivan), "Science at the Extremes of Magnetic Fields", Frontiers of Science, University Lecture Series, University of Florida, October 10, 1990.
4. T. H. Mareci, 'Magnetic Resonance Evaluation of Spinal Cord Injury and Repair', research seminar to the Division of Nephrology, Department of Medicine, University of Florida, September 26, 1996
5. T. H. Mareci, "The use of magnetic resonance to evaluate spinal cord injury and repair." Research Seminar, Division of Nephrology, Hypertension, and Transplantation, Department of Medicine, University of Florida, Gainesville, January 29, 1998.
6. T. H. Mareci, "The History of Nuclear Magnetic Resonance: From the Thoughts of Humans to Human Thought", Research Seminar, Department of Biochemistry and Molecular Biology, University of Florida, Gainesville, 27 November 2001.

Grant Proposal Review Committees

1. National Cancer Institute, Scientific Review and Evaluation Groups; Site visit and evaluate a grant proposal from the Department of Radiology, University of Pennsylvania, October 23-25, 1983.
2. National Cancer Institute, Scientific Review and Evaluation Groups; Site visit and evaluate a grant proposal from the Department of Radiology, University of California at San Francisco, June 19- 20, 1985.
3. National Institute of Mental Health as a member of a special study section to evaluate grant proposals to the Small Business Innovative Research Program, New York, NY, August 19, 1987.
4. Division of Research Resources, the National Institutes of Health, as a member of a special study section to evaluate grant proposals to the Shared Instrument Grant Program, Rockville, MD, July 7-8, 1987.
5. National Institute of Neurological and Communicative Disorders and Stroke as a member of a special study section to evaluate grant proposals to the Small Business Innovative Research Program, Bethesda, MD, March 18, 1988.
6. Division of Research Resources, the National Institutes of Health, as a member of a special study section to evaluate grant proposals to the Shared Instrument Grant Program, San Francisco, CA, August 26-27, 1988.
7. Division of Research Resources, the National Institutes of Health, as an ad hoc member of the Biomedical Research Technology Committee to evaluate grant proposals to the Special Grants for Innovative Technology program, Bethesda, MD, April 17-18, 1989.
8. National Cancer Institute, Scientific Review and Evaluation Groups; Site visit and evaluate a grant proposal from the Department of Radiology, Columbia University, New York, NY, July 17-19, 1989.
9. National Cancer Institute, Scientific Review and Evaluation Groups to site visit and evaluate a grant proposal from the Department of Radiology, Johns Hopkins University, Baltimore, MD, November 1- 3, 1989.
10. National Institute of Diabetes and Digestive and Kidney Diseases, Scientific Review and Evaluation Group to site visit and evaluate a grant proposal from the Department of Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, April 11-12, 1990.
11. National Cancer Institute, Scientific Review and Evaluation Group; Site visit and evaluate a grant proposal from the Department of Radiology, Johns Hopkins University, Baltimore, MD, July 30-31, 1990.
12. National Center for Research Resources, Scientific Review and Evaluation Group; Site visit and evaluate a grant proposal from the Center for NMR Research and Development, University of Alabama at Birmingham, Birmingham, AL, March, 1991.
13. National Science Foundation, Directorate for Biological Sciences, as a member of the Advisory Panel to review proposals for Instrumentation and Instrument Development Program, Arlington, Virginia, November 18-19, 1993.
14. National Science Foundation, Directorate for Biological Sciences, as a member of the Advisory Panel to review proposals for Instrumentation and Instrument Development Program, and the Academic Research Infrastructure Program, Arlington, Virginia, June 14-15, 1994.
15. National Science Foundation, Directorate for Biological Sciences, as a member of the Advisory Panel to review proposals for Instrumentation and Instrument Development Program, and the Academic Research Infrastructure Program, Arlington, Virginia, November 17-18, 1994.
16. National Institutes of Health, Biophysical Chemistry Study Section, as a special reviewer, San Francisco, California, February 9-11, 1995.
17. National Cancer Institute, Scientific Review and Evaluation Group; Site visit and evaluate a grant proposal from the Department of NMR of the Fox Chase Cancer Center, Philadelphia, PA, March 6-8, 1996.
18. National Cancer Institute, Cancer Centers and Research Programs Review Committee, ad hoc member of Subcommittee E, Rockville, MD, April 17, 1996.

19. National Institutes of Health, Chemistry and Related Sciences Special Emphasis Panel, to evaluate a grant proposal from the Department of Radiology, Dartmouth Medical School. Review held in Bethesda, MD, August 1-3, 1996
20. National Cancer Institute, Scientific Review and Evaluation Group to evaluate a grant proposal from the Department of NMR of the Fox Chase Cancer Center, Philadelphia, PA, November 7, 1996.
21. National Institutes of Health, Biophysical Chemistry Study Section, as a special reviewer, Georgetown, Maryland, February 18-19, 1999.
22. National Center for Research Resources, Scientific Review and Evaluation Group; Site visit and evaluate a grant proposal from the Univ. of Pennsylvania, Philadelphia, PA, March 15-17, 1999.
23. National Center for Research Resources, Scientific Review and Evaluation Group to review shared instrumentation grants, June 20, 2002.
24. National Institutes of Health Scientific Review Group: ZRG1 F05 (50); Cellular and Molecular Imaging Study Section, 10-11 July 2003, Washington, DC
25. National Institutes of Health Scientific Review Group: ZRG1_DIG-C_51_S; Special Emphasis Panel, 28 March 2005.
26. National Institutes of Health Scientific Review Group: CNNT; Ad-hoc reviewer during meeting on 27-28 October 2005.
27. National Institutes of Health Scientific Review Group: ZRG1-BDCN-K-10/50; Special Emphasis Panel, Clinical Neurophysiology, Devices and Neuroprosthetics, 28 February 2006.
28. National Institutes of Health Scientific Review Group: ZRG1-BDCN-K-10/50; Special Emphasis Panel, Clinical Neurophysiology, Devices and Neuroprosthetics, 2 November 2006
29. National Institutes of Health Scientific Review Group: ZRG1-BDCN-K-10; Special Emphasis Panel, Clinical Neurophysiology, Devices and Neuroprosthetics, 26-27 February 2007
30. National High Magnetic Field Lab, Research Program Committee, 2012-2013.
31. National Institutes of Health, Peer Review Panel, Enabling Bioanalytical and Imaging Technologies, ad hoc member, 6-7 June 2013, Washington, D.C.
32. National Institutes of Health, Peer Review Panel, National Cancer Institute, Provocative Questions- Group C, ad hoc member, 30 October 2013, Washington, D.C
33. National Institutes of Health, Peer Review Panel, Enabling Bioanalytical and Imaging Technologies, ad hoc member, 10-11 June 2014, Washington, D.C.
34. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 24 June 2014, Washington, D.C.
35. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 12-13 July 2015, Washington, D.C.
36. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 23 June 2016, Washington, D.C.
37. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 24 March 2017, Washington, D.C.
38. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 23 February 2018, phone conference call.
39. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 29 August 2019, conference call.
40. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 23 January 2020, video conference.
41. National Institutes of Health, Peer Review Panel, BRAIN Initiative, ad hoc member, 17 August 2020, video conference.

Consultations

1. Consultation with the Technicare Corporation of Solon, Ohio on the design of a new nuclear magnetic resonance imaging system, December 11-12, 1985.

2. Consultation with the Technicare Corporation of Solon, Ohio on magnetic field gradient requirements for nuclear magnetic resonance imaging, April 6-7, 1986.
3. Consultation with George Washington University as member of an ad hoc committee to advise the Animal Use Committee of GWU, April 16, 1992.
4. Consultation with the Committee on High Magnetic Field Science, National Research Council, 8 December 2003, Tallahassee, Florida
5. Consultation with the University of Texas Southwestern Medical Center on Advanced Structural Imaging Methods, Dallas, TX, 1 April 2009 to 31 March 2010.
6. Consultation with Emory University, Atlanta, Georgia, 14-15 April 2014.

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Acta Biomaterials
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Magnetic Resonance Materials in Physics, Biology and Medicine
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NMR in Biomedicine
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