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I. Educational Background

College and Medical School

1981-1983	University of Washington		
1983-1986	Stanford University	Bachelor of Science	Electrical Engineering
1987-1988	Stanford University	Master of Science	Electrical Engineering
1992	Stanford University	Doctor of Medicine	

Residency and Fellowship Training

1992-1993	Resident, Department of Medicine Kaiser Medical Center, Santa Clara, CA Program Director: Dr. David Shearn
1994-1998	Resident, Department of Radiology Stanford University, Stanford, CA Program Director: Dr. Robert E. Mindelzun
1995-1997	NCI Cancer Imaging Fellow Stanford University, Stanford, CA Advisor: Dr. Albert Macovski
1998-1999	Osteoradiology Fellow & Clinical Faculty, Department of Radiology University of California, San Diego, CA Advisor: Dr. Donald Resnick

Board Certification and License

1993	National Board of Medical Examiners CA Medical License. G78074. Expires 12/31/2019
1998	American Board of Radiology

II. Professional Appointments

1986	Electrical Engineer, Finnegan Corporation – San Jose, CA
1987	Research Engineer, Metrology Control Corporation – Richland, WA Teaching Assistant, Dept. of Electrical Engineering, Stanford University
1988-89	Teaching & Research Assistant, Departments of Radiology & Electrical Engineering, Stanford University
1990-91	Teaching & Research Assistant, Departments of Physiology & Computer Sciences, Stanford University

1991-1992	Research Assistant, Department of Radiology, Stanford University
1/1/00 – 02/28/03	Assistant Professor, Department of Radiology, Stanford University
3/1/03 – 06/01/06	Assistant Professor, Department of Radiology, Stanford University
06/01/06 – 01/31/12	Associate Professor, Departments of Radiology and (by courtesy) Orthopedics and Bioengineering, Stanford University
02/01/12 – present	Professor, Departments of Radiology and (by courtesy) Orthopedics and Bioengineering, Stanford University
06/01/12 – 8/31/17	Associate Chair for Research, Department of Radiology, Stanford University
09/01/17 – present	Vice Chair for Research and Administration, Department of Radiology, Stanford University

III. Honors & Awards

- 2018 ISMRM-RSNA Co-Provided Workshop on High-Value MRI
Best Scientific and Best Value Category 2nd Place
- 2018 Best Paper Presentation “My Theses in 3 Minutes” Session Recipient,
European Congress of Radiology 2018
“Quantitative MRI for Knee Osteoarthritis: A Rising Star”
- 2018 Best Overall Poster – NVIDIA GPU Technology Conference
- 2018 Best Healthcare Poster – NVIDIA GPU Technology Conference
- 2018 2nd – ‘Best Value’ Presentation - ISMRM Workshop on Value in MRI
- 2018 2nd – ‘Best Scientific’ Presentation - ISMRM Workshop on Value in MRI
- 2017 ISMRM Young Investigator Moore Award Finalist
Kogan F, Fan AP, McWalter EJ, Oei EH, Quon A, **Gold GE**. PET/MRI of
metabolic activity in osteoarthritis: A feasibility study. *J Magn Reson
Imaging*. 2016 Oct 31. PubMed PMID: 27796082.
- 2017 Osteoarthritis Research Society International, Scholarship Recipient.
- 2016 Fellow, American Institute for Medical and Biological Engineering
ISMRM Magna Cum Laude Award – Outstanding Paper:
Monu, U, Kogan F, McWalter EJ, Hargreaves BA, **Gold GE**. A Method to
Quantitatively Compare Bone and Cartilage Changes Post Knee Injury:
Initial Results. *Presented at International Society for Magnetic Resonance
in Medicine, 2016*.
- ISMRM Summa Cum Laude Award – Outstanding Paper:
Sveinsson B, **Gold GE**, Hargreaves BA. Quantification and Artifact
Reduction from Simple Modeling of DESS Signals. *Presented at
International Society for Magnetic Resonance in Medicine, 2016*.
- ISMRM Osteoarthritis Workshop Award of Merit - mentor to Dr. Feliks Kogan
Kogan F, Hargreaves BA, **Gold GE**. Volumetric GagCEST
Imaging: Optimization and Comparison with T1p. *ISMRM
Workshop on Imaging Based Measures of Osteoarthritis*, Pacific
Grove, CA. Sept. 2015.
- ISMRM Osteoarthritis Workshop Award of Merit
Chaudhari A, Moran, CJ, McWalter EJ, **Gold GE**, Hargreaves BA.
Imaging Knee Osteoarthritis with Multiple Contrasts using
Ultrashort Echo-Time Double-Echo Steady-State MRI. *ISMRM
Workshop on Imaging Based Measures of Osteoarthritis*, Pacific
Grove, CA. Sept. 2015.
- ORS New Investigator Award – mentor to Dr. Jang-Hwan Choi
Choi JH, McWalter EJ, Datta S, Mueller K, Maier A, Fahrig R, Levenston
ME, **Gold GE**. In Vivo 3D Measurement of Time-dependent Human Knee
Joint Compression and Cartilage Strain During Static Weight-bearing. *ORS
2016 Annual Meeting*.
- 2015 ISMRM Junior Fellow – mentor to Dr. Valentina Taviani
ISMRM Junior Fellow – mentor to Dr. Feliks Kogan
ISMRM Magna Cum Laude Award – Outstanding Paper:

- Sveinsson B, Moran C, Yoon D,
Gold GE, Hargreaves BA. Quantitative ADC Mapping using DESS with
Decreased T1 and Noise Sensitivity. *Presented at International Society for
Magnetic Resonance in Medicine*, 2015.
- ISMRM Summa Cum Laude Award – Outstanding Paper
Kogan F, Fan A, Brazina S, Holley D, Quon A, **Gold GE**. 18F-FDG and
18F-NaF PET/MR Imaging of Osteoarthritis in the Knee: Considerations
and Initial Results. *Presented at International Society for Magnetic
Resonance in Medicine*, 2015.
- 2014 ISMRM Summa Cum Laude Award – Outstanding Paper
Wentland A, McWalter E, Pal S, Delp S, **Gold GE**. Non-Invasive in vivo
Measurements of Inertial Forces in Muscle using Phase Contrast Magnetic
Resonance Imaging. *Presented at International Society for Magnetic
Resonance in Medicine*, 2014.
- 2013 Faculty of the Year – *Department of Radiology, Stanford University*
Stanford Firestone Medal for Excellence in Undergraduate Research – mentor to
Mr. Stephen Matzat
ISMRM Magna Cum Laude Award – Outstanding Paper
Sveinsson B, Worters PW, **Gold GE**, Hargreaves BA. Fast Imaging of
Metallic Implants by Data Subsampling. *International Society of Magnetic
Resonance in Medicine*, 2013.
- 2012 Society of Computed Body Tomography and Magnetic Resonance - *Cum Laude
Award (Senior Author)*
- Academy of Radiology Research – *Distinguished Investigator*
- 2011 SCBT/MR Young Investigator Award, senior author
Fellow, International Society of Magnetic Resonance in Medicine
Stanford Medal for Faculty Excellence in Fostering Undergraduate Research
Honorable Mention, Educational Electronic Poster at 19th Annual ISMRM
Hargreaves BA, Pauly JM, Butts-Pauly K, **Gold GE**, Koch KM. Metal-
Induced Artifacts in MRI.
Stanford Firestone Medal for Excellence in Undergraduate Research – mentor to
Ms. Lauren Shapiro
Norman Blank Award for Outstanding Radiology Research – mentor to Dr. Jessica
Sin, recipient.
- 2010 SCBT/MR Young Investigator Award
Chen C, Hargreaves B, Chen W, Vasanawala S, Goodman S, Koch K, Brau
A, **Gold GE**. Improved Methods for MR Imaging Around Metallic
Implants: Artifact Assessment and Clinical Impact. *Society of Computed
Body Tomography and MRI*, April 2010.
- 2009 SCBT/MR Cum Laude Award – Outstanding Paper
Gold GE, Koo S, Starosweicki E, Bangerter N, Watkins R, Hargreaves B.
Early Detection of Osteoarthritis in Patients with ACL Injury using Sodium
MRI. *Proceedings of the Society of Computed Body Tomography and
Magnetic Resonance*, April 2009.
SCBT/MR Lauterbur Award – Best MRI Paper

- Vasanawala S, Alley M, Pauly J, **Gold GE**, Herfkens R, Lustig M. Faster Pediatric MRI with Compressed Sensing. *Proceedings of the Society of Computed Body Tomography and Magnetic Resonance*, April 2009.
- GE Healthcare Thought Leadership Award
- American Society of Biomechanics Clinical Young Investigator Award
Draper C, Besier T, Santos J, Fredericson M, Beaupre G, Delp S, **Gold GE**. Patellofemoral Kinematic Differences Exist Between High-load and Low-load conditions in Patients with Patellofemoral Pain. *American Society of Biomechanics*, 2009.
- RSNA Certificate of Merit
Do B, Wu A, Stevens K, Biswal S, Beaulieu C, **Gold GE**, Rubin D. X-RAY HEAD MSK Online: A Radiology Teaching File Based on RSNA's RadLex. *Radiological Society of North America*, 2009.
- 2008 SCBT/MR Lauterbur Award – Best MRI Paper
Hargreaves B, Bangerter N, Staroswiecki E, Gurney P, Grafendorfer T, Nnewihe A, Daniel B, **Gold GE**. Co-Registered Sodium and Proton MRI of Osteoarthritis and Breast Cancer. *Proceedings of the Society of Computed Body Tomography and Magnetic Resonance*, April 2008.
- SCBT/MR Moncada Award – Best Contrast Imaging Paper
Biswal S, Lee S, Kamaya S, Behera D, Graves E, **Gold GE**. Imaging Pain and Nociception with Manganese-Enhanced MRI (MEMRI). *Proceedings of the Society of Computed Body Tomography and Magnetic Resonance*, April 2008.
- 2007 SCBT/MR Cum Laude Award – Outstanding Paper
Gold GE, Busse R, Stevens K, Han E, Brau A, Beatty P, Beaulieu C. Isotropic MRI with 3D-FSE-XETA (eXtended Echo Train Acquisition). *Proceedings of the Society of Computed Body Tomography and Magnetic Resonance*, March 2007.
- International Skeletal Society President's Medal – Outstanding Researcher in MSK Radiology under the age of 45
- ISMRM Outstanding Teacher Award – “Body in Motion” Categorical Course
- 2006 SCBT/MR Moncada Award - Best Contrast Imaging Paper
Reeder S, Faranesh A, Chen I, Gard C, **Gold GE**, Grist T. Positive Contrast MR Imaging of Iron-Oxide Labeled Cells by Off-Resonance Separation. *Proceedings of the SCBT/MR*, April 2006.
- SCBT/MR Lauterbur Award - Best MRI Paper
Gold GE, Besier T, Draper C, Santos J, Fredericson M, Pauly K, Beaupre G, Delp S. Patellofemoral Pain: Analysis with Upright Real-Time MRI and 3D Finite Element Modeling. *Proceedings of the SCBT/MR*, April 2006.
- Cover of *Radiology* – August 2006.
- 2005 Dean's Award for Undergraduate Research – advisor to Jamie Schroeder
- SCBT/MR Lauterbur Award - Best MRI Paper
Reeder S, McKenzie C, Brau A, Hargreaves B, Yu H, Shimakawa A, Brittain J, **Gold GE**, Johnson J, Rofsky N, Herfkens R. Rapid Body Imaging with IDEAL Water-Fat Separation and Parallel Imaging. *Proceedings of the SCBT/MR*, March 2005.

- SCBT/MR Fellow
 America Society of Biomechanics Pre-Doctoral Award
 Holzbaaur K, Murray W, **Gold GE**, Delp S. Scaling of Muscle Volumes in the Upper Extremity. *Proceedings of the American Society of Biomechanics*, June 2005.
- 2004 Kaiser Award for Innovative Medical School Education
 SCBT/MR Cum Laude Award
Gold GE, Hargreaves B, Han E, Pauly J, Wright G, Herfkens R, Brittain J, Beaulieu C. Rapid measurement of articular cartilage physiology using MRI. *Twenty-Seventh Annual Course Scientific Session, Society of Computed Body Tomography and Magnetic Resonance*, March 2004.
- ARRS President's Award in Radiology
 Vasanaawala S, Hargreaves B, Nishimura D, Pauly J, Beaulieu C, **Gold GE**. Rapid Musculoskeletal Imaging with phase-sensitive Steady-State Free Precession. *Proceedings of the American Roentgen Ray Society*, May 2004.
- 2003 American Roentgen Ray Society President's Award (Senior Author)
 SCBT/MR Lauterbur Award - Best MRI Paper
Gold GE, Han E, Stainsby J, Wright G, Herfkens R, Brittain J, Beaulieu C. Optimization of Musculoskeletal MR Imaging at 3.0 Tesla. *Proceedings of the Society of Body Computed Tomography and Magnetic Resonance*, March 2003.
- 2002 World Congress of Biomechanics Pre-Doctoral Award
 Asakawa D, Blemker S, **Gold GE**, Delp S. Velocity of the Rectus Femoris Muscle after Tendon Transfer Surgery. *Proceedings of the World Congress of Biomechanics*, June 2002.
- ARRS President's Award in Radiology
 Reeder S, Pelc N, Alley M, **Gold GE**. Rapid Imaging of Articular Cartilage with Steady-State Free Precession and Multi-Point Dixon Fat-Water Separation. *Proceedings of the American Roentgen Ray Society*, May 2002.
- SCBT/MR Lauterbur Award - Best MRI Paper
Gold GE, Hargreaves B, Vasanaawala S, Pauly J, Herfkens R, Beaulieu C. Three-Dimensional Steady-State Free Precession Imaging of Articular Cartilage. *Proceedings of the SCBT/MR*, March 2002.
- RSNA Resident's Research Award
 Reeder S, Wen Z, Alley M, Markl M, **Gold GE**, Pelc N. Multi-Point Dixon Fat-Water Separation and Steady-State Free Precession. *Proceedings of the 88th RSNA*, December 2002.
- 2001 American Society of Biomechanics Young Investigator Paper
 Asakawa D, Blemker S, **Gold GE**, Delp S. In Vivo Motion of the Rectus Femoris Muscle after Tendon Transfer Surgery. *Presented at the American Society of Biomechanics*, August 2001.
- SCBT/MR Lauterbur Award - Best MRI Paper
Gold GE, Beaulieu C, Butts K, Scott G, Pauly J, Herfkens R. Dynamic MR Imaging and Therapy of Glenohumeral Instability. *Proceedings of the SCBT/MR*. Miami, Florida, March 2001.
- Stanford Radiology Resident's Teaching Award

- 2000 Veteran's Affairs VISN 21 Young Investigator Award – February 2000.
- 1999 SCBT/MR Cum Laude Award
Gold GE, Butts K, Hargreaves B, Resnick D, Herfkens R. Imaging of Cartilage with Driven Equilibrium and Diffusion-Weighted MR Imaging. *Proceedings of The Society of Body Computed Tomography and MR*, May 2000.
- Stanford Medical Device Network Invention Challenge Award
- 1997 ARRS President's Award in Radiology
Gold GE, Thedens D, Pauly J, Fechner K, Bergman G, Beaulieu C, Macovski A. New Methods for Short Echo Time Imaging of Cartilage. *Proceedings of the American Roentgen Ray Society, 97th Annual Meeting*, May 1997.
- ISMRM Young Investigator Moore Award Winner
 Brittain J, Olcott E, Szuba A, **Gold GE**, Wright G, Irarrazabal P, Nishimura D. Three-Dimensional Flow-Independent Peripheral Angiography. *Proceedings of the International Society for Magnetic Resonance in Medicine, Fifth Annual Meeting*, April 1997.
- 1996 Radiological Society of North America Roentgen Resident/Fellow Research Award
 Radiological Society of North America Certificate of Merit (co-author)
 K. Li, F. Chan, **Gold GE**, J. Pauly, A. Kerr, and A. Macovski, Real-Time Interactive Magnetic Resonance Imaging of the Small Bowel. *Proceedings of the Radiological Society of North America*, November 1996.
- 1995 ISMRM Young Investigator Moore Award Winner
Gold GE, Pauly J, Macovski A, Herfkens R. MR Spectroscopic Imaging of Collagen: Tendons and Knee Menisci. *Proceedings of the Society of Magnetic Resonance, Third Annual Meeting*, August 1995.
- 1994 NIH Research Festival Resident's Award
- 1993 Kaiser Residency Program Research Award
- 1992 Stanford Medical School Dean's Award for Research
- 1991 Stanford Medical Scholars Research Grant
- 1988 Hewlett Packard Award for Outstanding Engineering Design Project
- 1986 Tau Beta Pi Engineering Honor Society
 Stanford University Bachelor of Science *with distinction*
- 1981 University of Washington Certificate of High Scholarship

IV. Scholarly Publications

A. Peer-reviewed Articles

Published

1. **Gold GE**, Gold R, Roberts J, Preston C. Annealing of Alpha Particle Tracks in Cellulose Nitrate. *Nuclear Tracks and Radiation Measurements*. 1988; 5:49-54.
2. Ash D, **Gold GE**, Seiver A, Hayes-Roth B. Guaranteeing Real-Time Response with Limited Resources. *Artificial Intelligence in Medicine*. 1993; 5:49-57.
3. **Gold GE**, Pauly J, Glover G, Moretto J, Macovski A, Herfkens R. Characterization of Atherosclerosis with a 1.5-T Imaging System. *J Magn Reson Imaging*. 1993 Mar-Apr;3(2):399-407. PMID: 8448403.
4. **Gold GE**, Pauly J, Macovski A, Herfkens R. MR Spectroscopic Imaging of Collagen: Tendons and Knee Menisci. *Magn Reson Med*. 1995 Nov;34(5):647-54. PMID: 8544684.
5. Chan F, Li KC, Shifrin R, Pauly J, Kerr A, **Gold GE**, Hansch E, Mindelzun R, Nino-Murcia M, Olcott E, Ha T. Real-Time Interactive MRI Examination of the Small Bowel. *Radiographics Electronic Journal*. 1997;1:1.
6. Brittain J, Olcott E, Szuba A, **Gold GE**, Wright G, Irrarrazabal P, Nishimura D. Three-Dimensional Flow-Independent Peripheral Angiography. *Magn Res Med*. 1997 Sep;38(3):343-54. PMID: 9339435.
7. **Gold GE**, Thedens D, Pauly J, Fechner K, Bergman G, Beaulieu C, Macovski A. MR Imaging of Articular Cartilage of the Knee: New Methods Using Ultra-Short TE's. *Am J Roentgen*. 1998 May;170(5):1223-6. PMID: 9574589.
8. **Gold GE**, Bergman G, Pauly J, Lang P, Butts K, Beaulieu C, Hargreaves B, Frank L, Boutin R, Macovski A, Resnick D. Magnetic resonance imaging of knee cartilage repair. *Top Magn Reson Imaging*. 1998 Dec;9(6):377-92. PMID: 9894740.
9. Hargreaves B, **Gold GE**, Lang P, Connolly S, Pauly J, Bergman G, Vandevenne J, Nishimura D. MR Imaging of Articular Cartilage Using Driven Equilibrium. *Magn Reson Med*. 1999 Oct;42(4):695-703. PMID: 10502758.
10. Luk-Pat G, **Gold GE**, Olcott E, Hu B, Nishimura D. High-Resolution Three-Dimensional In Vivo Imaging of Atherosclerotic Plaque. *Magn Reson Med*. 1999 Oct;42(4):762-71. PMID: 10502766.
11. Nielsen H, **Gold GE**, Olcott E, Pauly J, Nishimura D. Ultra-Short Echo-Time 2D Time-of-Flight MR Angiography Using a Half-Pulse Excitation. *Magn Reson Med*. 1999 Mar;41(3):591-9. PMID: 10204884.
12. Theodorou D, Theodoru S, Kakitsubata Y, Lektrakul N, **Gold GE**, Roger B, Resnick D. Plantar Fasciitis and Fascial Rupture: MR Imaging Findings in 26 Patients Supplemented with Anatomic Data in Cadavers. *Radiographics*. 2000 Oct;20: S181-97. PMID: 11046170.
13. Star-Lack J, Adalsteinsson E, **Gold GE**, Ikeda D, Spielman D. Motion correction and lipid suppression for 1H magnetic resonance spectroscopy. *Magn Reson Med*. 2000 Mar;43(3):325-30. PMID: 10725872.
14. Hodge D, Beaulieu C, Thabit G, **Gold GE**, Bergman AG, Butts K, Dillingham M, Herfkens R. Dynamic MR imaging and stress testing in glenohumeral instability: comparison with normal shoulders and clinical/surgical findings. *J Magn Reson Imaging*. 2001 May;13(5):748-56. PMID: 11329197.

15. **Gold GE**, Beaulieu CF. Future of MR Imaging of Articular Cartilage. *Semin Musculoskelet Radiol*. 2001 Dec;5(4):313-27. PMID: 11745048.
16. Recht M, Bobic V, Burstein D, Disler D, **Gold GE**, Gray M, Kramer P, Lang P, McCauley T, Winalski C. Magnetic resonance imaging of articular cartilage. *Clin Orthop*. 2001;(391 Suppl): S379-96.
17. Asakawa D, Blemker S, **Gold GE**, Delp S. In Vivo Motion of the Rectus Femoris Muscle after Tendon Transfer Surgery. *J Biomech*. 2002 Aug;35(8):1029-37. PMID: 12126662.
18. **Gold GE**, Pauly J, Leung A, Block W, Meyer C, Sze R, Macovski A, Stark P. Short Echo Time MR Spectroscopic Imaging of the Lung Parenchyma. *J Magn Reson Imaging*. 2002 Jun;15(6):679-84. PMID: 12112518.
19. Vasanawala SS, Pauly J, Nishimura D, **Gold GE**. MR Imaging of Knee Cartilage with FEMR. *Skeletal Radiol*. 2002 Oct;31(10):574-80. PMID: 12324826.
20. Beaulieu CF, **Gold GE**. Interactive and Interventional Sports Medicine Imaging. *Top Magn Reson Imaging*. 2003 Apr;14(2):115-30. PMID: 12777885.
21. Asakawa D, Nayak K, Blemker S, Delp S, Pauly J, Nishimura D, **Gold GE**. Real-time imaging of skeletal muscle velocity. *J Magn Reson Imaging*. 2003 Dec;18(6):734-9. PMID: 14635159.
22. **Gold GE**, McCauley T, Gray M, Disler D. What's new in cartilage? *Radiographics* 2003 Sep-Oct;23(5):1227-42. PMID: 14518449.
23. **Gold GE**, Hargreaves BA, Beaulieu CF. Protocols in sports magnetic resonance imaging. *Top Magn Reson Imaging*. 2003 Feb;14(1):3-23. PMID: 12606866.
24. **Gold GE**. Dynamic and Functional Imaging of the Musculoskeletal System. *Semin Musculoskelet Radiol*. 2003;7(4):245-8. PMID: 14735424.
25. Reeder S, Pelc N, Alley M, **Gold GE**. Rapid MR imaging of articular cartilage with steady-state free precession and multipoint fat-water separation. *AJR Am J Roentgenol*. 2003 Feb;180(2):357-62. PMID: 12540434.
26. Hargreaves BA, **Gold GE**, Beaulieu CF, Vasanawala SS, Nishimura DG, Pauly JM. Comparison of new sequences for high-resolution cartilage imaging. *Magn Reson Med*. 2003 Apr;49(4):700-9. PMID: 12652541.
27. **Gold GE**, Suh B, Sawyer-Glover A, Beaulieu C. Musculoskeletal MR Imaging at 3.0 Tesla: Initial Clinical Experience. *AJR Am J Roentgenol*. 2004 Nov; 183(5):1479-86. PMID: 15505324.
28. **Gold GE**, Asakawa D, Blemker S, Delp S. Magnetic resonance imaging findings after rectus femoris transfer surgery. *Skeletal Radiol*. 2004 Jan;33(1):34-40. PMID: 14605768.
29. **Gold GE**, Han E, Stanisby J, Wright G, Brittain J, Beaulieu C. Musculoskeletal MR Imaging at 3.0 Tesla: Relaxation Times and Image Contrast. *Am J Roentgenol*. 2004 Aug;183(2):343-51. PMID: 15269023.
30. **Gold GE**, Besier T, Draper C, Asakawa D, Delp S, Beaupre G. Weight-bearing MRI of Patellofemoral Cartilage Contact Area. *J Magn Reson Imaging*. 2004 Sept;20:526-30. PMID: 15332263.
31. Bangerter NA, Hargreaves BA, Vasanawala SS, Pauly J, **Gold GE**, Nishimura D. Analysis of Multiple Acquisition SSFP. *Magn Reson Med*. 2004 May;51(5):1038-47. PMID: 15122688.
32. **Gold GE**, Reeder SB, Beaulieu CF. Advanced MR Imaging of the Shoulder: Dedicated Cartilage Techniques. *MR Clinics of North America*. 2004;12(1):143-59, vii. PMID: 15066598.

33. Miller K, Hargreaves B, **Gold GE**, Pauly J. Steady-state diffusion-weighted imaging of in vivo knee cartilage. *Magn Reson Med*. 2004 Feb;51(2):394-8. PMID: 14755666.
34. Fredericson M, Jang K, Bergman G, **Gold GE**. Femoral Diaphyseal Stress Fractures: Results of a Systematic Bone Scan and Magnetic Resonance Imaging Evaluation in 25 Runners. *Physical Therapy in Sport*. 2004 Nov;5:188-193.
35. Reeder S, Wen Z, Yu H, Pineda A, **Gold GE**, Markl M, Pelc N. Multicoil Dixon Chemical Species Separation with an Iterative Least-Squares Estimation Method. *Magn Reson Med*. 2004 Jan;51(1):35-45. PMID: 14705043.
36. Hwang B, Fredericson M, Chung C, Beaulieu C, **Gold GE**. MRI Findings of Femoral Diaphyseal Stress Injuries in Athletes. *Am J Roentgen*. 2005 Jul;185(1):166-73. PMID: 15972418.
37. Besier T, **Gold GE**, Beaupre G, Delp S. A modeling framework to estimate patellofemoral joint cartilage stress in vivo. *Med Sci Sports Exerc*. 2005 Nov;37(11):1924-30. PMID: 16286863.
38. **Gold GE**, Hargreaves BA, Reeder SB, Vasanaawala SS, Beaulieu CF. Controversies in protocol selection for MR imaging of articular cartilage. *Semin Musculoskelet Radiol*. 2005;9(2):161-72. PMID: 16044384.
39. **Gold GE**, Fuller S, Hargreaves B, Stevens K, Beaulieu C. Driven equilibrium magnetic resonance imaging of articular cartilage: Initial clinical experience. *J Magn Reson Imaging*. 2005 Apr;21(4):476-81. PMID: 15779031.
40. Besier T, Draper C, **Gold GE**, Beaupre G, Delp S. Patellofemoral Joint Contact Area Increases with Flexion and Weight Bearing. *J Ortho Res*. 2005 Mar;23(2):345-50. PMID: 15734247.
41. Vidarsson L, Conolly S, Lim K, **Gold GE**, Pauly JM. Echo time optimization for linear combination myelin imaging. *Magn Reson Med*. 2005 Feb;53(2):398-407. PMID: 15678534.
42. Kornaat P, Reeder S, Koo S, Brittain J, Yu H, Andriacchi T, **Gold GE**. MR imaging of articular cartilage at 1.5T and 3.0T: Comparison of SPGR and SSFP sequences. *Osteoarthritis Cartilage*. 2005 Apr;13(4):338-44. PMID: 15780647.
43. Butts RK, Pauly JM, **Gold GE**. Reduction of blurring in view angle tilting MRI. *Magn Reson Med*. 2005 Feb;53(2):418-24. PMID: 15678535.
44. Venook R, Hargreaves B, **Gold GE**, Conolly S, Scott G. Automatic Tuning of Flexible Interventional RF Receiver Coils. *Magn Reson Med*. 2005;54(4):983-93. PMID: 16155871.
45. Vasanaawala SS, Hargreaves BA, Pauly J, Nishimura D, Beaulieu C, **Gold GE**. Rapid musculoskeletal MRI with phase-sensitive steady-state free procession: comparison with routine knee MRI. *AJR Am J Roentgenol*. 2005 May;184(5):1450-5. PMID: 15855095.
46. Koo S, **Gold GE**, Andriacchi T. Considerations in Measuring Cartilage Thickness Using MRI: Factors Influencing Reproducibility and Accuracy. *Osteoarthritis Cartilage*. 2005 Sep;13(9):782-9. PMID: 15961328.
47. Reeder SB, Pineda AR, Wen S, Shimiakawa A, Yu H, Brittain JH, **Gold GE**, Beaulieu CF, Pelc NJ. Iterative Decomposition of Water and Fat with Echo Asymmetry and Least-squares Estimation: Application to Fast Spin-Echo Imaging. *Magn Reson Med*. 2005 Sep;54(3):636-44. PMID: 16092103.
48. Alvarez A, **Gold GE**, Tobin B, Desser T. Software Tools for Interactive Instruction in Radiological Anatomy. *Academic Radiology*. 2006 Apr;13(4):512-7. PMID: 16554232.

49. **Gold GE**, Hargreaves BA, Stevens K, Beaulieu CF. Advanced Magnetic Resonance Imaging of Articular Cartilage. *Orthop Clin North Am.* 2006 Jul;37(3):331-47, vi. PMID: 16846765.
50. Draper C, Besier T, **Gold GE**, Fredericson M, Fiene A, Beaupre G, Delp S. Is cartilage thickness different in young subjects with and without patellofemoral pain? *Osteoarthritis Cartilage.* 2006 Sep;14(9):931-7. PMID: 16647278.
51. Conaghan P, Felson D, **Gold GE**, Lohmander S, Totterman S, Altman R. MRI and non-cartilaginous structures in knee osteoarthritis. *Osteoarthritis and Cartilage.* 2006; 14A:A87-94. PMID: 16713722.
52. Asakawa D, Blemker S, **Gold GE**, Delp S. Dynamic magnetic Resonance Imaging of Muscle Function after surgery. *Skeletal Radiology.* 2006 Dec;35(12):885-6. PMID: 16810541.
53. **Gold GE**, Hargreaves BA, Vasanaawala SS, Webb JD, Shimakawa AS, Brittain JH, Beaulieu CF. Articular cartilage of the knee: evaluation with fluctuating equilibrium MR imaging—initial experience in healthy volunteers. *Radiology.* 2006;238(2):712-8. PMID: 16436826.
54. **Gold GE**, Reeder S, Yu H, Kornaat P, Shimakawa A, Johnson J, Beaulieu C, Brittain J. Articular Cartilage of the Knee: Rapid 3D MR Imaging at 3.0T with IDEAL Balanced Steady-State Free Precession – Initial Experience. *Radiology.* 2006 Aug;240(2):546-51. PMID: 16801369.
55. Pappas G, Blemker S, Beaulieu C, McAdams T, Whalen S, **Gold GE**. In vivo anatomy of the Neer and Hawkins sign positions for shoulder impingement. *J Shoulder Elbow Surg.* 2006; 15:40-9. PMID: 16414467.
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359. Kogan F, Fan A, Quon A, **Gold GE**. PET-MR Imaging of Osseous & Inflammatory Metabolic Activity Post Knee Injury. *ISMRM Workshop on Imaging Based Measures of Osteoarthritis, Pacific Grove, CA. 2015.*
360. Kogan F, Hargreaves BA, **Gold GE**. Volumetric GagCEST Imaging: Optimization and Comparison with T1p. *ISMRM Workshop on Imaging Based Measures of Osteoarthritis, Pacific Grove, CA. 2015.*
361. Avedian R, Bitton R, **Gold GE**, Butts Pauly K, Ghanouni P. Is MR-guided High-intensity Focused Ultrasound a Feasible Treatment Modality for Desmoid Tumors? *Musculoskeletal Tumor Society, 2015.*
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363. Choi JH, McWalter EJ, Fahrig R, **Gold GE**, Levenston M. In Vivo Diffusivity of a Contrast Agent in Articular Cartilage of the Human Knee Joint: a Feasibility Study. *ORS 2016 Annual Meeting.*
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367. Chaudhari A, Sveinsson B, Alley MT, McWalter EJ, **Gold GE**, and Hargreaves BA. Rapid T2 Relaxometry of the Meniscus, Tendons, and Ligaments with an Ultrashort Echo-Time Double-Echo Steady State Sequence. *ISMRM, Singapore 2016*.
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370. Monu U, Kogan F, McWalter EJ, Hargreaves BA, **Gold GE**. A Method to Quantitatively Compare Bone and Cartilage Changes Post Knee Injury: Initial Results. *ISMRM, Singapore 2016*.
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373. Fan A, Fong G, Sveinsson B, McWalter EJ, Oei EH, Robinson WH, Genovese MC, Hargreaves BA, **Gold GE**. Automated, Non-Contrast MRI for Detection of Synovitis using Diffusion-weighted DESS. *Osteoarthritis Research Society International, 2016*.
374. Choi JH, McWalter EJ, Datta S, Mueller K, Maier A, Fahrig R, Levenston ME, **Gold GE**. Tibial Cartilage Creep during Weight-Bearing: In Vivo 3D CT Assessment. *OARSI World Congress on Osteoarthritis, Amsterdam, the Netherlands 2016*.
375. Kogan F, Fan A, McWalter E, Quon A, Oei E, **Gold G**. PET-MR Imaging of Metabolic Bone Activity in Knee Osteoarthritis. *OARSI World Congress on Osteoarthritis, Amsterdam, the Netherlands 2016*.
376. Bier B, Berger M, Maier J, Unberath M, Hsieh S, Bonaretti S, Fahrig R, Levenston ME, **Gold GE**, Maier A. Object Removal in Gradient Domain of Cone-Beam CT Projections. *IEEE Medical Imaging Conference, Strasbourg, France: 2016*.
377. Bier B, Aichert A, Felsner L, Unberath M, Levenston M, **Gold GE**, Fahrig R, Maier A. Epipolar Consistency Conditions for Motion Correction in Weight –Bearing Imaging. *BVM, Heidelberg, Germany 2016*.
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381. Chaudhari A, Sveinsson B, Wood J, Thakur D, Stevens K, Beaulieu C, Alley M, Abercrombie C, **Gold GE**, Hargreaves B.A. *5 Minute Comprehensive Knee MRI with 3D Double-Echo Steady-State (DESS)*. Proceedings of the 25th Annual Meeting of ISMRM, Honolulu 2017.
382. Chaudhari A, Black M, Sveinsson B, **Gold G.E.**, Hargreaves B.A. *Simultaneous T2 Relaxometry and Morphometry of Cartilage and Meniscus with Double-Echo in Steady-State in Five Minutes*. Proceedings of the 25th Annual Meeting of ISMRM, Honolulu 2017.
383. Black M, **Gold G.E.**, Levenston M, Hargreaves B.A. *Circumferential and Radial Variations in T2, T2* and T1rho in the Osteoarthritic Meniscus*. Proceedings of the 25th Annual Meeting of ISMRM, Honolulu 2017.
384. Yoder J, Monu U, **Gold GE**. *Cartilage T2 Relaxation Times in Both Knees of Healthy Individuals*. Proceedings of the 25th Annual Meeting of ISMRM, Honolulu 2017.
385. Baylon E, Gold GE, Levenston M. *Clinical CT Contrast Agents Alter the Mechanical State of Articular Cartilage*. Osteoarthritis Research Society, New Orleans 2018.
386. Kogan F, Fan A, Black M, Hargreaves B. *Imaging of Bone Metabolism and Its Spatial Relationship with Cartilage Matrix Changes in ACL-Injured Patients*. Osteoarthritis Research Society, New Orleans 2018.
387. Kogan F, Chaudhari A, Gold G. *Feasibility of Simultaneous Bilateral Knee Imaging for Enhanced Value Osteoarthritis Studies, ISMRM-RSNA Co-Provided Workshop on High-Value MRI*, Washington, D.C. 2018
388. Chaudhari A, Fang Z, Kogan F, Wood J, Stevens K, Lee J, **Gold GE**, Hargreaves BA. *Super-Resolution Musculoskeletal MRI using Deep Learning*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)
389. Chaudhari A, Sveinsson B, Wood J, Stevens J, Beaulieu C, Oei E, Rosenberg J, Levine E, Kogan F, Alley MT, **Gold GE**, Hargreaves BA. *Diagnostic Comparison of Two Rapid Knee MRI Protocols for Comprehensive Whole-Joint Assessment: A Multi-Reader Feasibility Study*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)
390. Toews A, Fan Z, Black MS, Lee JH, **Gold GE**, Hargreaves BA, Chaudhari A. *Automated Knee Cartilage Segmentation with Very Limited Training Data: Combining Convolutional Neural Networks with Transfer Learning*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)
391. Kogan F, Levine E, Chaudhari A, Monu U, Epperson K, Oei E, **Gold GE**, Hargreaves B. *Simultaneous Bilateral Knee MR Imaging*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)
392. Black MS, Young K, Chaudhari A, Sveinsson B, Kogan F, Monu U, McWalter E, Levenston M, **Gold GE**, Hargreaves BA. *T2-mapping of Femoral Cartilage 3-months Following ACL Reconstruction Surgery*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)

393. Eijgenraam S, Chaudhari A, Reijman M, Oei E, Hargreaves B, **Gold GE**. *T2 Relaxometry of Cartilage and Meniscus and Semi-Quantitative Assessment of the Osteoarthritis Knee using a fast 3D Quantitative DESS Scan*. 26th Annual Meeting of ISMRM, Paris 2018. (accepted)
394. Chaudhari A, Fang Z, Kogan F, Gibbons E, Wood J, Stevens K, Lee JH, **Gold GE**, Hargreaves B. *Deep- Learning-Based Super-Resolution and Segmentation for Clinical and Research Musculoskeletal MRI*. ISMRM Workshop on Machine Learning, Pacific Grove, CA. 2018.
395. Chaudhari A, Fang Z, Kogan F, Gibbons E, Wood J, Stevens K, Lee JH, **Gold GE**, Hargreaves B. *Enhancing MRI Resolution and Fully-Automating Tissue Segmentation Using Deep Learning*. NVIDIA GPU Technology Conference, San Jose, CA. 2018.
396. Eijgenraam S, Chaudhari A, Reijman M, Oei E, Hargreaves B, **Gold GE**. *T2 Relaxometry of Cartilage and Meniscus and Semi-Quantitative Assessment of the Knee using DESS: a 5-Minute MRI Scan*. European Congress of Radiology, Vienna, Austria 2018.
397. Kogan F, Chaudhari A, Levine E, Epperson K, Oei E, **Gold GE**, Hargreaves B. *Feasibility of Simultaneous Bilateral Knee Imaging for Enhanced Value Osteoarthritis Studies*. ISMRM-RSNA Co-Provided Workshop on High-Value MRI, Washington, DC. 2018.
398. Kogan F, Fan A, Black M, Hargreaves B, **Gold GE**. *Imaging of Bone Metabolism and Its Spatial Relation- ship with Cartilage Matrix Changes in ACL-Injured Patients*. Orthopaedic Research Society 2018 Annual Meeting, New Orleans, LA 2018.

V. Editorial Service

A. Editorial board memberships

2001-present	Seminars in Musculoskeletal Radiology
2004-present	Osteoarthritis and Cartilage Journal of Magnetic Resonance Imaging
2006-present	Academic Radiology
2014-present	Quantitative Imaging in Medicine and Surgery Clinical Imaging

B. Manuscript & Abstract Reviewer

American Journal of Roentgenology
Arthritis and Rheumatism
Clinical Imaging
Community Orthopedics and Related Research
Faculty of 1000 Medicine Contributor
ISHA Abstract Reviewer
ISMRM Abstract Review

Journal of Magnetic Resonance Imaging
Journal of Orthopedic Research
Magnetic Resonance in Medicine
Medical Engineering and Physics
NMR in Biomedicine
Osteoarthritis & Cartilage
Radiology
Radiological Society of North America
Skeletal Radiology

VI. Grants

A. Current Funding

Active

1 R01 AR065248-01A1 (PI: Garry Gold, M.D.) NIH /NIAMS Weight-Bearing Imaging of the Knee Using C-Arm CT Development of a new, non-invasive, quantitative, 3-dimensional image-based test that will evaluate the health of cartilage in the knee joint while a subject is standing in a weight-bearing position. Role: Principal Investigator	4/1/15 – 2/28/19 \$334,581	1.20 calendar months
5 R01 EB002524-11 (PI: Garry Gold, M.D.) NIH/NIBIB Osteoarthritis: Quantitative Evaluation of Whole Joint Disease with MRI Role: Principal Investigator	4/01/15-1/31/19 \$341,105	1.20 calendar months
Exhibit A-94 (PI: Garry Gold, M.D.) General Electric Healthcare PET-MRI Advanced Research and Development Project Improve MR Imaging in Body, MSK, Pediatrics, and Interventional MRI Role: Principal Investigator of PET/MR Project, Co-Investigator on Pain Team	9/4/08 –8/31/18 \$3,851,928	.72 calendar months
5 K24 AR062068-05 (PI: Garry Gold, M.D.) NIH/NIAMS Advanced MRI for Early Osteoarthritis This project seeks to build a patient oriented research program focused on imaging in musculoskeletal disease. Role: Principal Investigator	4/1/12-2/28/23 \$143,841	5.88 calendar months
5 R01 AR063643-03 (PI: Brian Hargreaves, Ph.D.) NIH / NIAMS Quantitative 3D Diffusion and Relaxometry MRI of the Knee This work aims to develop a novel magnetic resonance imaging approach that offers three-dimensional imaging of knee structure as well as multiple quantitative measures that can be used to assess joint health. Role: Co-Investigator	9/9/13 -- 7/31/18 \$286,309	1.02 calendar months
Exhibit A-72 (PI: Brian Hargreaves, Ph.D.) Advanced MR Applications Development - Tiger Team Years 7 & 8 General Electric Healthcare Advanced Musculoskeletal MRI The aims of this project are to improve clinical musculoskeletal MRI through improved 3D bright-fluid imaging, sodium MRI of cartilage, imaging near metallic implants, ultrashort echo-time imaging of connective tissue Role: Principal Investigator	4/1/08 –3/31/20 \$492,555	1.2 calendar months
5 R01 EB017739-02 (PI: Brian Hargreaves, Ph.D.) NIH / NIBIB Comprehensive MRI near Total Joint Replacements	7/1/14 - 6/30/19 \$372,121	.48 calendar months

This project seeks to make routine MRI available for patients with total hip replacements and total knee replacements, including fast, high-resolution imaging and temperature mapping.

Role: Co-Investigator

132699 (PI: Garry Gold, M.D.) 9/1/17-08/31/20 .24 calendar months
General Electric \$110,738
Knee and Patellofemoral Overload and Articular Cartilage injuries: The Advanced Imaging Protocol Study
Role: Principal Investigator

Pending Funding

Prior Funding

PI: Garry Gold, M.D. Dates: 6/20/14-4/19/15
Samsung 116536
Title: Fitness Algorithm Evaluation Project
Samsung Advanced Institute of Technology

PI: Gabrielle Bergman, M.D. Dates: 1/1/98-12/31/00
Genzyme Corporation, Cambridge, MA
Title: A Pilot Study: Using MRI to Correlate Subchondral Bone Edema with
Clinical Outcomes in Patients treated with Autologous Cultured Chondrocytes.
Goals: Testing of new cartilage imaging methods in patients with chondrocyte implants.

PI: Gary Beaupre, Ph.D. Dates: 7/1/98 – 7/1/01
VA Merit Review
Title: Imaging of Tendon Injury
Goals: Non-invasive imaging of tendon strain with MRI, Ultrasound

PI: Garry E. Gold, M.D. Dates: 10/1/00 – 10/1/03
Veterans Administration B2376V
Title: Improved MR Imaging Methods for Osteoarthritis
Goals: Improving Diagnosis and Therapy of Osteoarthritis in Veterans
Full salary support for 3 years with 75% research time, which can be applied to other projects.

VA Rehabilitation R&D Service (Gold) Dates: 10/1/00-2/1/03
Title: Improved MR Imaging of Articular Cartilage
Goals: Improve clinical imaging of cartilage using MRI
Role: Principal investigator

Whitaker Foundation 176W017(Gold) Dates: 12/1/00 – 6/1/04
Title: Intra-articular Coils for Musculoskeletal MRI
Goals: Improving MRI imaging of cartilage and joints with new coil designs
Role: Principal investigator, lead project

NIH R01 AR46904 (Macovski) Dates: 9/1/99 – 8/31/04
Title: Development of Improved MRI Techniques for Cartilage Injury and Repair.
Goals: Design, implementation, and clinical testing of new cartilage imaging methods.
Role: Co-investigator, clinical input and sequence design

NIH 1R33 CA95882 (Macovski) Dates: 9/30/02 – 8/31/05
Title: A Low-Cost High Quality Pre-polarized MRI Head Scanner.
Goals: Design considerations and initial clinical testing of the PMRI system.
Role: Co-investigator, provide clinical feedback on new kind of MRI system

NIH 1R01CA92409 (Macovski) Dates: 9/1/01 – 8/31/05
Title: Development of a Pre-polarized MRI Extremity Scanner.
Goals: Design considerations and initial clinical testing of the PMRI system.
Role: Co-investigator, clinical testing of new kind of MRI system

Stanford Bio-X IIP Program (Gold) Dates: 1/1/03 – 12/31/05
Title: Modeling Muscles in Contact
Goals: Improving musculoskeletal models of muscle using image data
Role: Principal investigator, lead project

VA Merit Review A00-2048RA Dates: 10/1/02-9/30/05
Title: Patellofemoral Joint Biomechanics and Rehabilitation
Role: Co-investigator (design and testing); **PI:** Gary Beaupre, Ph.D.
Goals: Non-invasive imaging of cartilage strain with MRI

VA Merit Review Dates: 1/1/03-12/31/05
Title: Therapeutic Effects on Neuromuscular Function in Post-stroke Hemiplegia
Role: Co-investigator, **PI:**Carolynn Patten, Ph.D.
Goals: Non-invasive imaging of muscle function with MRI

Roche Biomedical Dates: 10/1/04-9/30/05
Title: Imaging of a Rat Model of Rheumatoid Arthritis at High Field
Role: Co-PI; **PI:** Sandip Biswal, M.D.
Goals: Early detection of RA using a 4.7T MRI system

PI: Charles Steele, Ph.D. Dates: 7/1/04-5/1/05
NIH 1R01-DC005960-01A2
Title: Human middle ear imaging, physiology, and biomechanics
Goals: Model middle ear function.
Role: Co-investigator, imaging the temporal bone with CT and MRI

PI: Carolynn Patten, Ph.D. Dates: 10/1/02-9/30/05
VA Merit Review
Title: Muscle Function after Stroke
Goals: Non-invasive imaging of muscle function with MRI

Whitaker Foundation Dates: 5/1/03-4/30/06
Title: Dynamic Cartilage Stain with MRI
Role: Co-investigator; **PI:** Nicholas Giori, M.D., Ph.D.
Goals: Cartilage biomechanics under dynamic load

National Institutes of Health Dates: 12/1/01-11/30/06
Title: Genetic determinants of ankylosing spondylitis severity
Role: Co-Investigator; **PI:** Michael Ward
Goals: Find genetic determinants of AS severity

NIH 1R01-04677401 (Gold) Dates: 7/15/04 – 4/30/08
Title: Biomechanical Modeling of Tendon Transfer in Tetraplegia
Goals: Longitudinal study of osteoarthritis
Role: Principal investigator on imaging sub-contract. **PI:** Wendy Murray, Ph.D.

Wallenberg Global Learning Network Dates: 9/1/05-8/31/08
Title: Learning Radiology in Simulated Environments
PI: Garry E. Gold, M.D. and Terry Desser, M.D.
Goals: Using simulation in radiology education

GlaxoSmithKline, Inc. Dates: 12/1/05-11/30/08
Title: Sodium MRI for Drug Discovery in Osteoarthritis
PI: Garry E. Gold, M.D.
Goals: Develop sodium MRI for imaging OA in the knee at 3.0T

PI: Marc Levenston, Ph.D. Dates: 10/1/08-9/30/10
NIH 3R01AR052861 - 04S1
Title: Detection of Functionally Relevant Meniscal Degeneration via MRI
Goals: Detection of Meniscal Damage with MRI; NIH BIRT supplement
Role: Co-investigator

PI: Brian Hargreaves, Ph.D. Dates: 10/1/08-9/30/10
National Institutes of Health
Title: Improved MRI Imaging around Metallic Implants
Goals: Improve MR Imaging in post-operative patients with metal
Role: Co-investigator

Co-PI: Garry E. Gold, M.D. Dates: 1/1/09-10/31/10
Coulter Foundation
Title: Evaluation of Total Joint Replacements with a Novel MRI Method for Imaging around Metal
Goals: Improve MR imaging around total knee replacements
Role: Co-Principal Investigator with Scott Delp, Brian Hargreaves, Stuart Goodman

Co-PI: Garry E. Gold, M.D. Dates: 1/1/10-12/31/10
Coulter Foundation

Title: Rapid Quantification of Joint Health from MRI
Goals: Allow for automated segmentation from MRI data to reduce CT dose
Role: Co-Principal Investigator with Scott Delp

PI: Garry E. Gold, M.D. Dates: 8/1/05-7/31/11
NIH 1R01 EB005790
Title: Real-Time MRI and 3D Modeling: Development and Application to Patellofemoral Pain
Goals: Understanding the source of patellofemoral pain with MRI and 3D modeling
Role: Project direction, student supervision

PI: Garry E. Gold, M.D. Dates: 10/1/10-9/30/13
Arthritis Foundation
Title: Sodium MRI of Post-Traumatic Arthritis
Goals: Improve imaging in patients with post-traumatic arthritis through sodium MRI.
Role: Principal Investigator

PI: Tom Andriacchi, Ph.D. Dates: 04/01/04 – 11/30/13
NIH 1R01-AR049792-01
Title: Anterior Cruciate Ligament Reconstruction and the Initiation of Osteoarthritis
Goals: Cartilage biomechanics in the knee related to gait
Role: Co-investigator, imaging cartilage at high resolution with MRI

PI: Garry E. Gold, M.D. Dates: 10/1/04 – 9/30/14
NIH 5U01-AG019069-04
Title: The Osteoarthritis Initiative
Goals: Longitudinal Multi-center Study of Osteoarthritis using 3.0T MRI
Role: Principal Investigator on Stanford Sub-contract dealing with MR Safety

PI: Butts-Pauly, Kim, PhD Dates: 9/21/11-5/31/16
NIH 5 PO1 CA159992-05
Title: Image-guided Cancer Interventions
Goals: Improving the imaging and treatment of soft tissue tumors using HIFU.
Role: Project 1 Co-PI: MR-Guided HIFU of Soft Tissue Tumors

B. Patents

1. **G. Gold** and G. Scott, Electrode Probes for MRI, US Patent 9904600, 2001.
2. C. Beaulieu, **G. Gold**, D. Paik, J. Yoon. Portable viewing of medical images, US Patent 9954134, 2001.
3. **G. Gold** and G. Scott. Varactor-tuned flexible coils for interventional MRI, US Patent 10377974, 2003.
4. D. Lau, Y. Samara, V. Yeluri, F. Owen, P. Frederick, C. Beaulieu, R. Barth, **G. Gold**, D. Paik, R. Raman, S. Roehm, R. Herfkens. System and method for anatomy labeling on a PACS. US Patent 7590440, 2009.
5. P. Mahesh, V. Yeluri, D. Lau, S, Roehm, C. Beaulieu, **G. Gold**, S. Biswal, R. Herfkens. Systems and Methods for Synchronized Image Viewing With an Image Atlas. US Patent 7995818, 2011.
6. S. Reeder and **G. Gold**. Positive Contrast MRI Using Positive and Negative Field Inhomogeneity. US Patent 7480525, Jan. 20, 2009.
7. B. Hargreaves, W. Lu, J. Pauly, **G. Gold**, K. Pauly. Distortion-free MRI near metallic Implants. US Patent 12188031, 2008.
8. S. Koo, B. Hargreaves, **G. Gold**. Automatic Segmentation of Articular Cartilage from MRI: A Multi-Contrast and Multi-Dimensional Approach. US Patent 7928729, 2011.
9. S. Koo, B. Hargreaves, **G. Gold**. Automatic Segmentation of Articular Cartilage from MRI. US Patent 8706188, 2014.
10. Christopher Beaulieu, Sandip Biswal, **Garry Gold** and Robert Herfkens. Systems and Methods for Synchronized Image Viewing with an Image Atlas. (Stanford Docket S18-201)

VII. University Administrative Service

A. Committee service

2000-05	Stanford Medical Scholars Committee
2000-06	Stanford University Medical School Faculty Senate
2000-08	Stanford Radiology Education Committee VA Rehabilitation Research and Development Committee
2000-pres.	Radiology Residency Program File Reviewer & Faculty Interviewer Stanford Radiology Resident Mentorship Program Stanford Medical School Admissions Committee Stanford Radiology MSK Fellowship Committee
2002	Stanford Medical School Curriculum Reform Committee
2004-06	Stanford Radiology Education Center Committee Stanford Undergraduate Advising Program
2005-10	Stanford Clinical Research Scholarly Track Committee
2006-pres.	GE Healthcare MSK MRI Medical Advisory Board
2007-pres.	Stanford Radiology Ad-Hoc Committee
2009-pres.	Faculty Affiliate, Stanford Center for Longevity
2010-pres.	Faculty Affiliate, Human Biology Dept.
2010-pres.	Radiology Appointments and Promotions Committee
2012-pres.	Stanford - VA Task Force Committee
2012-pres.	Lucas Service Center Steering Committee
2012-pres.	MR Equipment Selection Committee
2012-pres.	School of Medicine Faculty Fellows Selection Committee
2012-pres.	Bioengineering PhD Student Admissions

B. Leadership roles

2000-03	Chief, VA Radiology Research Committee Chief, VA MSK Radiology
2007	Stanford University School of Medicine Faculty Fellow
2007-09	Chair, GE-Stanford Technical Advisory Board
2007-2013	Chair, Radiology Resident Research Program
2009-2016	PI, Stanford Radiology & GE Healthcare TIGER Team
2010-11	Stanford University Leadership Development Program
2010-2015	Co-Director, Bioengineering Scholarly Concentration
2012-pres.	Associate Chair of Research, Stanford Radiology
2012-13	Stanford Advanced Leadership Development Program
2013-pres.	Chair, Radiology Compensation Committee
2013-2015	Chair, VA Chief Faculty Search Committee
2013-pres.	Chair, Angel Funds Selection Committee
2013-pres.	Chair, Blue Sky Funds Selection Committee

2013-pres. Chair, Student Funds Selection Committee
2013-2015 Radiology Biodesign Program Committee
2015 Acting Chair, Department of Radiology, Stanford Radiology 4/1/15-6/1/15
2018 Vice Chair of Research and Administration, Stanford Radiology

VIII. Service to Professional Organizations

A. Membership

International Society of Magnetic Resonance in Medicine
Radiological Society of North America
American Roentgen Ray Society
International Skeletal Society
Osteoarthritis Society International
Society of Body Computed Tomography and MR
Association of University Radiologists, AFGA Radiology Leadership Program

B. Committee service

2000-03 Scientific Program Committee, ISMRM
 Sports Medicine Course Organizer, ISMRM
2001-04 Education Committee & Course Organizer, ISMRM
2002-09 Imaging Advisory Board of the Osteoarthritis Initiative, NIH
2005-08 Committee on Student Stipends, ISMRM
 Committee for Financial Support, ISMRM
 Research Committee, SCBT/MR
2008-pres. Board of Trustees, ISMRM
2010-pres. Treasurer/Executive Committee, SCBT/MR
2009-10 Committee for Affiliated Sections, ISMRM
2014-pres. RSNA Research Development Committee
2014-pres. Annual Meeting Program Committee
 ISMRM Abstract Reviewer
 ORS Abstract Reviewer
 ISHA Abstract Reviewer

C. Leadership roles

2000 Co-Director, Sports Medicine Categorical Course, ISMRM
 Co-Director, Clinical Bootcamp for Physicists, ISMRM
2002 Co-Director, Sports Medicine Categorical Course, ISMRM
 Co-Director, Clinical Bootcamp for Physicists, ISMRM
2005-07 President, ISMRM Musculoskeletal Study Group
2008-pres. Board of Trustees, ISMRM
2009-10 Chair, ISMRM Clinical Growth Task Force
2009-10 Chairman, SCBT/MR Research Committee
2011-12 Vice-Chair, ISMRM Annual Meeting Program Committee
2012-pres. Executive Committee, SCBT/MR
2012-13 Annual Meeting Program Chair, ISMRM
2014-pres. Executive Committee, ISMRM
2014-15 Workshop and Study Group Committee –Chair, ISMRM

2015-16	RSNA Program Committee
2017-18	ISMRM Past President
2017-18	ISMRM Executive Committee
2017-18	ISMRM Board of Trustees
2017-18	SCBT/MR President Elect
2017-18	SCBT/MR Executive Committee
2017-18	SCBT/MR Program Committee Chair
2017-18	ORS Abstract Reviewer
2017-18	ISHA Abstract Reviewer
2017-18	ISMRM Abstract Reviewer

D. Study Section Service

2005	ZRG1 SBIB-J Bioengineering Research Partnerships Special Emphasis Panel ZRG1 MOSS-K Orthopedics and Skeletal Biomechanics Special Emphasis Panel MCRC Review for NIAMS – Multidisciplinary Clinical Research Center (P60) Review of L243-B15 Monitoring of Autologous Chondrocyte Implantation by 3T-MR for the Austrian Science Fund
2006	ZRG1 SBIB-A 50 S Bioengineering Research Partnerships ZRG1 MOSS-A Skeletal Biology Study Section SBIB-J In Vivo Imaging and Bioengineering Research Study Section
2007	NIH Skeletal Biology and Development and Disease Study Section Canada Foundation for Innovation Research Hospital Fund NIH Special Emphasis Panel on Knee Joint Degeneration Assessment
2008	NIH Skeletal Biology Structure & Regeneration Study Section NIH Special Emphasis Panel on Musculoskeletal Cell and Tissue Biology NIH NAME – Musculoskeletal, Oral, and Skin Sciences
2009	NIH P41 Site Visit – Surgical Sciences, Biomedical Imaging, Bioengineering NIH Skeletal Biology Structural Regeneration Austrian Science Fund
2010	Arthritis Foundation Innovative Research Grants Qatar National Research Foundation Grants
2011	WWTF Life Sciences, Vienna Science & Technology Fund
2012	MEDI NIH October 3-4 2012 Arthritis Foundation Innovative Research Grant Review Panel Leader
2013	NIAMS Special Emphasis Panel March 1 2013 Dutch Arthritis Association Grant Review (Netherlands) NIAMS Special Emphasis Panel June 2013
2015	MEDI NIH Study Section
2015	NBA-GE Strategic Advisory Board Meeting, Las Vegas
2016	MEDI NIH Study Section
2016	Review Burroughs Wellcome Center Grant in London
2016	NIAMS CORT P50 Mail Review

2016	NBA/GE Strategic Advisory Board
2016	NIH Special Emphasis Panel ZRG1 DTCS-A
2017	NIH Special Emphasis Panel ZRG1 DTCS-A
2017	NIAMS RISK for Musculoskeletal Diseases X02
2017-Pres	MEDI NIH Study Section – standing member
2017	NIH Study Section, Boston, MA
2017	NIH Study Section, Denver, CO
2018	NIH MEDI Study Section Charter Member

IX. Presentations

4/97	“New MRI methods for cartilage repair”. Genzyme Corporation. Cambridge, MA.
4/00	“Pulse Sequence Design and Contrast Principles for Cartilage MRI” & “Technical Considerations in MR Imaging of Articular Cartilage”. ISMRM 8 th Scientific Meeting & Exhibition. Denver, CO.
4/00	“Imaging of Stress Injuries in Runners”. 28 th Annual Meeting of the American Medical Athletic Association. Boston, MA.
6/00	“MR of the Elbow” & “MSK MRI Technical Considerations”. Stanford Postgraduate Course. San Francisco, CA.
10/00	“MSK MRI Interesting Cases”. Stanford Postgraduate Course. Monterey, CA.
9/01	“MRI of the Ankle and Foot”, “MRI of the Knee: Ligaments”, “MRI of the Knee: Meniscus and Cartilage” and “MSK MRI: Technical Considerations”. Stanford Postgraduate Course. Yellowstone, WY.
9/01	“Advanced MR Imaging of Articular Cartilage”. UCSF Radiology Grand Rounds
2/01	“Technical Aspects of MSK MR Imaging”, “MR Imaging of the Elbow”, MR of the Knee – Menisci and Ligaments” and “MR of the Knee – Cartilage.” MR Update 2001 Neuroradiology and Musculoskeletal Imaging Advances. Las Vegas, NV.
2/01	“Recent Advances and Unsolved Mysteries in MSK MRI”. Stanford Radiology Grand Rounds. Stanford, CA.
3/01	“MRI of Osteoarthritis”. Drug Information Association. Washington DC.

- 4/01 “Clinical Bootcamp for Physicists”, “Imaging of Stress Injuries in Runners” and “Blurring in FSE Imaging.” ISMRM & ESMRMB Joint Annual Meeting. Glasgow, Scotland.
- 10/01 “Advances in Cartilage Imaging”. European Society of Musculoskeletal Radiologists. Budapest.
- 10/01 “Vascular Imaging in the Body” and “Musculoskeletal Interesting Cases.” 12th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 1/02 “MRI of the Knee: Menisci and Cartilage”, “MRI of the Knee: Ligaments”, “MRI of the Ankle”, “MSK MRI Technical Considerations” and “MRI of the Elbow.” Diagnostic Imaging in Aspen. Snowmass, CO.
- 2/02 “Technical Aspects of MSK MR Imaging”, “MR Imaging of the Knee – Menisci and Cartilage” and “MR of the Elbow.” MR Advances in Neuroradiology and Sports Medicine Imaging. Las Vegas, NV.
- 4/02 “MRI of the Shoulder”, “MRI of the Elbow”, “MRI of the Knee: Ligaments” and “MRI of the Knee: Menisci and Cartilage.” Diagnostic Imaging Update on the Big Island. Kohala Coast, Hawaii.
- 5/02 “MR Arthrography”, “Musculoskeletal MRI: Technical Considerations” and “Dynamic MR Imaging of Glenohumeral Instability”. ISMRM 10th Scientific Meeting & Exhibition. Honolulu, HI.
- 5/02 “MSK MRI of the Knee: Ligaments”, “MSK MRI of the Knee: Menisci” and “Who Wants to be a Millionaire? – Radiology Edition”. UCSF Postgraduate Course. San Francisco, CA.
- 9/02 “Musculoskeletal MR Imaging at High Field.” 1st Annual International Symposium on Clinical High Field MRI. Las Vegas, NV.
- 10/02 “Advanced MR Imaging of Cartilage”. OMERACT/OARSI. New Orleans, LA.
- 10/02 “Vascular Imaging in the Body” and “Musculoskeletal Interesting Cases”. 13th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 12/02 “What’s new in Cartilage?” 88th Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 12/02 “Musculoskeletal MR Imaging at High Field”, “MSK MRI of the Knee: Ligaments”, “MSK MRI of the Knee: Menisci” and “Who Wants to be a Millionaire? – Radiology Edition”. UCSF Postgraduate Course. San Francisco, CA.

- 12/02 “Advanced MR Imaging of Cartilage” and “MRI of Ligaments and Menisci in Osteoarthritis”. Conference for Consensus in Osteoarthritis Imaging. National Institutes of Health, Bethesda, MD.
- 2/03 “Shoulder: Rotator Cuff and Impingement”, “Technical Aspects of Musculoskeletal MR Imaging” and “MSK Cases: Who Wants to be a Millionaire?” 3rd Annual MR Advances in Neuroradiology and Sports medicine Imaging. Las Vegas, NV.
- 4/03 “Advances in Musculoskeletal MRI” and “Advances and Unsolved Mysteries in Musculoskeletal Imaging”. New York University Grand Rounds. New York, NY.
- 4/03 “Interventional Sports Medicine Radiology”. 32nd Annual Meeting of the American Medical Athletic Association. Boston, MA.
- 7/03 “Hot Topics for Clinical Practice: MSK MRI at 3.0T”, “Pulse Sequences and Protocols” and “High Field MRI: Technical Issues.” ISMRM 11th Scientific Meeting & Exhibition. Toronto, ON, Canada.
- 9/03 “Musculoskeletal Imaging at 3T.” 2nd Annual Global Symposium on Clinical High Field MRI. Las Vegas, NV.
- 10/03 “Advanced MR Imaging of Cartilage”. OARSI. Berlin, Germany.
- 10/03 “Musculoskeletal Cases” and “Vascular Imaging in the Body.” 14th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 11/03 “MSK MRI at 3.0T”. 89th Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 1/04 “MSK MRI: Technical Considerations”, “Who Wants to be a Millionaire – Radiology Edition” and “Advanced MR Imaging of Articular Cartilage”. Orange County Radiological Society Grand Rounds. UC Irvine.
- 3/04 “MSK MRI: Technical Considerations”, “MRI of the Shoulder: Rotator Cuff”, “MRI of the Knee: Menisci and Cartilage” and “MRI of the Knee: Ligaments.” Diagnostic Imaging Update in Hawaii. Maui, Hawaii.
- 5/04 “Hot Topics for Clinical Practice: MSK MRI at 3.0T”, “Pulse Sequences and Protocols” and “High-Field MRI: Technical Issues”. ISMRM 12th Scientific Meeting & Exhibition. Kyoto, Japan.
- 5/04 “Advanced Imaging of Arthritis”. ARRS Categorical Course. Miami, FL.
- 6/04 “Orthopedic MDCT.” 6th Annual International Symposium on Multidetector-Row CT. San Francisco, CA.

- 7/04 “MRI of the Ankle”, “MSK MRI: Technical Considerations”, MRI of the Knee: Ligaments” and “MRI of the Knee: Menisci and Cartilage”. Radiology Essentials. Jackson Hole, WY.
- 10/04 “Clinical Perspective” and “Opportunities for Quantitative Cartilage Morphology from MRI”. 1st ACL/OA BioMotion Retreat. Lake Tahoe, CA.
- 10/04 “Advantages of 3T for Musculoskeletal Imaging.” 3rd Annual Global Symposium on Clinical High Field MRI. Las Vegas, NV.
- 10/04 “Musculoskeletal Cases” and “Vascular Imaging in the Body.” 15th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 12/04 “Exploring New Limits – Musculoskeletal MR Imaging on the Fringe – Pushing the Envelope at 3.0T” and “Cartilage Imaging: Current Status and Future Directions.” 90th Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 4/05 “MSK MRI: Technical Considerations” and “MSK MRI: 3.0T Tesla”. UCSF Postgraduate course – MRI: Musculoskeletal Structured Fellowship. San Francisco, CA.
- 5/05 “Advanced Imaging or Arthritis”. ARRS Categorical Course. Vancouver, BC.
- 5/05 “MRI of Articular Cartilage” and “MRI of the Wrist and Hand”. MSK MRI in the Wine Country. Sonoma, CA.
- 5/05 “Techniques for MR Imaging Near Metallic Implants”. ISMRM 14th Scientific Meeting & Exhibition. Seattle, WA.
- 6/05 “MR of Cartilage”, “CT of the Musculoskeletal System”, Musculoskeletal MRI: Technical Considerations” and “3T Magnetic Resonance Imaging”. NYU Summer Radiology Practicum. Boothbay Harbor, ME.
- 6/05 “MDCT of the Bone Lesions: a Serious Competitor to MRI?”, “Important Issues in the Characterization of Hip and Pelvis Fractures”, “Scanning Orthopedic Hardware: How and Why.” 7th Annual International Symposium on Multidetector-Row CT. San Francisco, CA.
- 8/05 “Cross Sectional Anatomy: Abdomen & Pelvis”, “Cross Sectional Anatomy: MSK” and “Cross Sectional Anatomy: Thorax”. Basic CT for Nuclear Medicine. Stanford, CA.
- 9/05 “Advances in MR Imaging of Articular Cartilage”. Grand Rounds at University of Wisconsin Madison. Madison, WI.

- 9/05 “Field Strength Considerations in Musculoskeletal MR Imaging” and “Interventional Sports Medicine Imaging”. International Skeletal Society. Singapore.
- 10/05 “Musculoskeletal Cases” and “Vascular Imaging in the Body.” 16th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 10/05 “MSK MRI at 3.0T”, “MRI of the Knee: Ligaments”, “MRI of the Knee: Menisci and Cartilage”, “MRI of the Shoulder”, “MRI of the Ankle” and “MRI of Stress Injuries in Athletes”. 1st Joint Course SMRI & ISMRM in Magnetic Resonance “State of the Art”. Mexico City, Mexico.
- 10/05 “Musculoskeletal Protocols” and “Joints at 3T.” 4th Annual Global Symposium on Clinical High Field MRI. Las Vegas, NV.
- 10/05 “Advanced MR Imaging of Articular Cartilage”, MSK MRI of the Ankle”, “MSK MRI of the Knee: Ligaments and Menisci” and “MSK MRI: Technical Considerations”. Stanford Radiology Diagnostic Imaging Update in Vail. Beaver Creek, CO.
- 11/05 “MR Imaging of Articular Cartilage: Morphologic and Functional Assessment.” 91st Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 11/05 “MRI of the Wrist and Hand” and “MSK MRI: Technical Considerations”. UCSF Postgraduate Course. San Francisco, CA.
- 11/05 “Musculoskeletal MRI: Technical Considerations”. SMRT West Regional Education Seminar. Stanford, CA.
- 1/06 “Advanced MRI of Articular Cartilage”, “MRI of the Knee: Ligaments and Menisci”, “MSK MRI: Technical Considerations” and “MRI of the Ankle.” Diagnostic Imaging Update in Vail, Colorado. Vail, CO.
- 3/06 “Advanced Articular Cartilage Imaging at 3T”, “MSK MRI at 3T” and “Field Strength Considerations in MSK MRI”. 3T MRI: What you Need to Know. Orlando, FL.
- 4/06 “MDCT Trauma”, “MSK MRI at 3T” and “MRI of the Ankle”. SCBT/MR Refresher course. Phoenix, AZ.
- 5/06 “Advanced Imaging of Arthritis” and “MSK MRI at 3.0T”. ARRS Categorical Course. Vancouver, British Columbia.
- 5/06 “MRI of the Wrist and Hand”, “MSK MRI at 3.0T” and “MSK MRI: Technical Considerations”. UCSF Postgraduate Course. San Francisco, CA.

- 5/06 "MSK MR Imaging with IDEAL". GE Medical Advisory Board conference. Las Vegas, NV.
- 6/06 "Important Issues in the Characterization of Hip and Pelvis Fractures." 8th Annual International Symposium on Multidetector-Row CT. San Francisco, CA.
- 9/06 "Advanced MR of Cartilage", "Multicoil and Parallel Imaging" and "Isotropic 3D MSK MR Imaging". International Skeletal Society Meeting Vancouver. Vancouver, Venue-Fairmont Hotel.
- 10/06 "MRI of the Knee: Technical Considerations", "Field Strength Considerations in MSK MRI" and "Musculoskeletal Interesting Cases." 17th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 11/06 "Advanced MRI of Articular Cartilage". Grand Rounds at M.D. Anderson. Houston, TX.
- 11/06 "Who Wants to be a Millionaire? – Difficult Cases" and "MSK MRI at 3.0T". Grand Rounds at University of Wisconsin Madison. Madison, WI.
- 11/06 "Technical Considerations", "Hand & Wrist", "MRI: 3.0T Tesla." University of California, San Francisco – MRI: Musculoskeletal. San Francisco, CA.
- 11/06 "High-Field-Strength (1.5- and 3.0-T) MR Imaging of Cartilage: Technical Considerations at 1.5 versus 3T." 92nd Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 2/07 "Imaging of Arthritis". Stanford Faculty Women's Club. Stanford, CA.
- 2/07 "MRI of the Knee: Menisci and Cartilage", "MRI of the Knee: Ligaments" and "MR of the Hand and Wrist." Snowmass 2007: MRI in Clinical Practice. Snowmass, CO.
- 3/07 "Advanced MR Imaging of Articular Cartilage", "Musculoskeletal MR Imaging at 3.0T" and "Who Wants to be a Millionaire? – Difficult Cases". Grand Rounds at University of Iowa. Iowa City, IA.
- 3/07 "MRI of Articular Cartilage", "MR Imaging of the Ankle", "Case-Based Boot Camp: MSK MRI", "MR Imaging of the Shoulder: Rotator Cuff", "MR Imaging of the Knee: Menisci and Cartilage". 30th Annual SCBT/MR Refresher course. Orlando, FL.
- 3/07 "MSK MRI: Technical Considerations", "MRI of the Knee: Ligaments", "MRI of the Knee: Menisci and Cartilage" and "MRI of the Ankle." 15th Annual Diagnostic Imaging Update on Kauai. Kauai, HI.

- 4/07 “MSK MRI at 3T: How High should We Aim?”, “MSK MRI at 3T: What You Need to Know”, “MRI of the Knee at 1.5 and 3T” and “MRI of the Shoulder at 1.5 and 3T.” 2007 3T MRI Whole Body Imaging in Clinical Practice: Basic Fundamentals – Advanced Applications. New Orleans, LA.
- 5/07 “Kinematic and Real-time MRI” and “MSK Pulse Sequences”. ISMRM Categorical Course. Berlin, Germany.
- 6/07 “Important Issues in the Characterization of Hip and Pelvis Fractures.” 9th Annual International Symposium on Multidetector-Row CT. San Francisco, CA.
- 8/07 “Advanced Imaging of Articular Cartilage”. Stoller’s Current Issues of MRI and Sports Medicine. San Francisco, CA.
- 9/07 “Advanced Imaging of Cartilage” and “Who Wants to be a Millionaire – Radiology Edition”. University of Pittsburgh Grand Rounds. Pittsburgh, PA.
- 10/07 “Future Directions”. 34th Annual International Skeletal Society Radiology Refresher Course. Budapest, Hungary.
- 10/07 “MSK MRI at 3.0T: Routine and Advanced Applications”, “MSK MRI at 3.0T: Protocol Design.” 6th Annual Symposium on High Field MRI: The Impact on Clinical Practice. Las Vegas, NV.
- 10/07 “MRI of the Knee: Technical Considerations”, “Field Strength Considerations in MSK MRI” and “Musculoskeletal Interesting Cases.” 17th Annual Current Concepts of Magnetic Resonance. Monterey, CA.
- 11/07 “MR Imaging of the Hip”, “Interventional Sports Medicine”, “MRI of the Wrist and Hand” and “MSK MRI: Technical Considerations”. UCSF Postgraduate Course. San Francisco, CA.
- 11/07 “Advanced MRI Applications: IDEAL, 3D Dual Echo, and 3D FSE CUBE”. GE Healthcare Advanced Applications. Paris, France.
- 11/07 ”Rapid MRI for Evaluation of Osteoarthritis”. CME Symposium – Osteoarthritis and Synovitis: The Link Between Pathogenesis, Detection and Treatment. American College of Rheumatology. Boston, MA.
- 11/07 “High Field Imaging of Cartilage” and “Cartilage Imaging: Introduction and Overview.” 93rd Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 12/07 “Learning Radiology in Simulated Environments”. CISL Symposium. Stanford, CA.

- 2/08 “MRI of the Shoulder: Rotator Cuff”, “MRI of the Elbow” and “MRI of the Hip.” Vail 2008: MRI in Clinical Practice. Vail, CO.
- 3/08 “MSK MRI at 3.0T – Protocol Design”, 31st Annual SCBT/MR Refresher Course. Charleston, SC.
- 5/08 “Characterization of Hip and Pelvic Fractures” and “Orthopedic Hardware.” 10th Annual International Symposium on Multidetector-Row CT. Las Vegas, NV.
- 8/08 “Advanced Imaging of Cartilage” and “Panel Discussion: Pulse Sequences”. Current Issues of MRI and Sports Medicine. San Francisco, CA.
- 9/08 “Advanced Imaging of Cartilage”. OARSI. Rome, Italy.
- 10/08 “Advanced MRI of Cartilage” and “MSK MRI at 3.0T”. Asian Oceanic Congress of Radiology. Seoul, South Korea.
- 10/08 “Musculoskeletal Cases” and “Field Strength Considerations in Musculoskeletal MRI.” 18th Annual Current Concepts of Magnetic Resonance Imaging. Monterey, CA.
- 10/08 “MSK MRI at 3.0T: Protocol Design” and “MSK MRI at 3.0T: Routine and Advanced Applications.” 7th Annual Symposium on High Field MRI – The Impact on Clinical Practice. Las Vegas, NV.
- 11/08 “High Field Imaging of Cartilage”. 94th Scientific Assembly and Annual meeting of the Radiological Society of North America. Chicago, IL.
- 12/08 “Advanced Imaging of Post-trauma Arthritis”. American Orthopaedic Society for Sports Medicine Post-Joint Injury Osteoarthritis Conference. New Orleans, LA.
- 2/09 “MRI of the Wrist and Hand”, “MRI of the Knee” and “MRI of the Ankle”. MRI in Clinical Practice. Snowmass, CO.
- 2/09 “Diagnostic Imaging of Cartilage, Current Status” and “Structural Imaging of Connective Tissue in vivo: Sequences with New Contrast and High Resolution.” ISMRM Workshop Series 2009: Advances in Musculoskeletal Magnetic Resonance Imaging. San Francisco, CA.
- 3/09 “MRI of the Wrist and Hand”, “MSK MRI at 3.0T”, “MRI of the Shoulder” and “MRI of the Hip.” 17th Annual Diagnostic Imaging Update on Maui. Maui, Hawaii.
- 4/09 “Diagnostic Imaging of Cartilage: Current Status” and “Structural and Connective Tissue In Vivo: Sequences with New Contrast and High Resolution”. 17th ISMRM Scientific Meeting & Exhibition. Honolulu, HI.

- 5/09 “Musculoskeletal Case Conference.” 11th Annual International Symposium on Multidetector-Row CT. San Francisco, CA.
- 10/09 “Advanced MSK MRI.” 19th Annual Current Concepts of Magnetic Resonance Imaging. Monterey, CA.
- 10/09 “Advanced Cartilage Imaging”. Arthritis Foundation’s Segall North American Osteoarthritis Workshop. Chicago, IL.
- 11/09 “Emerging New Techniques in Cartilage MR Imaging.” 95th Scientific Assembly and Annual Meeting of the Radiological Society of North America. Chicago, IL.
- 10/10 “Advanced MSK MRI” and “MSK Cases Workshop.” 20th Annual Current Concepts of Magnetic Resonance Imaging. Monterey, CA.
- 3/10 “Stress Injuries in Athletes” and “Femoracetabular Impingement.” SCBT-MR 33rd Annual Course. San Diego, CA.
- 3/10 “MRI of the Knee”, “MRI of the Shoulder”, “MRI of the Elbow” and “MRI of the Hip.” Park City 2010: MRI in Clinical Practice. Park City, UT.
- 5/10 ISMRM Plenary Lecture “Mechanisms of OA – Imaging Appearance.” 18th ISMRM-ESMRMB Joint Annual Meeting. Stockholm, Sweden.
- 8/10 “Advanced MSK Protocols at 3.0T” and “MRI of the Wrist – TFCC and Ligaments”. SCBT/MR Summer Practicum. Moran, WY.
- 9/10 “Biochemical MR Imaging: Does it have a Future in Routine Clinical Practice”. 37th Annual International Skeletal Society Musculoskeletal Imaging Update. Athens, Greece.
- 2/11 “MRI of the Elbow”, “MRI of the Ankle” & “MRI of the Shoulder”. 15th Annual Snowmass Clinical MRI: New Essentials – What You Need to Know. Snowmass, CO.
- 3/11 “Advanced MRI of Articular Cartilage and Osteoarthritis”. Cornell University Grand Rounds. Ithaca, NY.
- 5/11 “MSK MRI at 3.0T and 7.0T” ISMRM Montreal.
- 6/11 “Advanced MRI of the Musculoskeletal System” ISMRM Outreach Course MRI In the Balkans.
- 9/11 “Advanced MR Imaging of Articular Cartilage” International Skeletal Society, San Diego.

- 10/11 “Advanced MRI in Early Osteoarthritis” Molecular Imaging Conference in Tel Aviv.
- 11/11 “Advanced Imaging of Cartilage in Osteoarthritis” American College of Rheumatology, Chicago, IL.
- 5/12 “Advanced MR Techniques”, “MSK MRI for an Emerging World”. ISMRM. Melbourne, Australia.
- 10/12 “MR Imaging Around Metal”, SCBT/MR. Boston, MA.
- 10/12 “MRI for Multi-Center Trials in OA”, SNOW V, Chicago IL.
- 10/12 “Imaging in Advanced Multi-Center Trials of OA”, NIH, Bethesda, MD.
- 1/13 “Advanced Imaging of Cartilage in Osteoarthritis”. ORS Spotlight Session. San Antonio, TX.
- 3/13 “MSK MRI Tech”, “MRI of the Knee”, “MRI of the Ankle”, “MRI of the Shoulder”. CPEP. Kauai, HI.
- 6/13 “MRI of the Shoulder: Instability”, “Advanced MRI of Articular Cartilage”, “MRI of the Ankle”, “MSK MRI: Technical Considerations”. 30th Annual Magnetic Resonance Imaging National Symposium. Las Vegas, NV.
- 10/13 12th Annual Symposium on High Field MRI. Minneapolis, MN. Advanced Imaging of Articular Cartilage at 3T and 7T
- 10/13 SCBT-MR 36th Annual Course. Tucson, AZ. 3 lectures.
- 2/14 First Annual Radiological Society of South Africa/SAMSIG Advanced MSK Imaging Course. Cape Town, South Africa. 5 lectures.
- 5/14 Functional and Dynamic MSK Imaging - ISMRM. Milan, Italy.
- 7/14 AOSSM MRI-Arthroscopy Correlation: Elbow and Hip MRI.
- 8/14 Ortho Case Conference: Basics of MSK MRI.
- 9/14 Napa Pain Conference: MRI Utilization for Patients with Spinal Cord Stimulators. Napa, CA.
- 9/14 SCBT-MR: Efficient MSK MRI Protocols, MRI of FAI.

10/14 University of Iowa MR Research Facility External Advisory Committee. Iowa City, IA.

10/14 Segall North American Osteoarthritis Workshop VI - Advanced Imaging in Osteoarthritis.

12/14 NANS: MRI Utilization for Patients with Spinal Cord Stimulators. Chicago, IL.

4/15 JPR in Sao Paulo Brazil - Keynote Lecture on MSK MRI around Metal Implants. Sao Paulo, Brazil.

5/15 ISMRM: MRI in Sports Injuries; Functional MSK MRI; PET-MR of MSK Applications. Toronto, CA

6/15 SNMMI: PET-MR Educational Talks

10/15 SCBT-MR Musculoskeletal MRI Technical Considerations

12/15 PET-MR Upsala, Sweden

5/16 ISMRM: MRI Biomarkers: Paradigm Shift or Contradiction in Terms?
ISMRM 2016-2017 President: Young Investigator Awards Presentation

9/16 SCBT-MR, Salt Lake City, Utah: MRI of Femoracetabular Impingement

9/16 ISS Paris: Advanced MRI of Cartilage

9/16 ISHA Meeting Talk: The future of imaging of Femoracetabular Impingement

10/16 Chinese Congress of Radiology: Advanced MRI of Osteoarthritis

1/17 Toshiba: Advanced MSK MRI Protocols

9/17 SCBT-MR Annual Meeting Nashville, TN

9/17 ISMRM Osteoarthritis and Beyond Workshop Hangzhou China

10/17 ISMRM Outreach Course MSK Imaging South Africa

1/18 Cartilage Repair Workshop Madrid, Spain

3/18 ISMRM Workshop New Delhi, India

8/18 ISS New York

X. Teaching and Mentoring Activities

2000-03	Lecturer: weekly VA Rehabilitation Medicine Service Lecturer: VA Podiatry Medicine Service
2000-15	Course instructor: RAD 301A – Radiology Clerkship Course instructor: EE 369A – Electrical Engineering
2002-15	Course co-Director: RAD 220 – Introduction to Imaging
2004-07	Course Director: RAD 221 – Radiological Anatomy
Oct. 2014	Visiting Professor and Lecturer – University of Iowa.
2015-16	Course Co-Director BioE-390 – Introduction to Bioengineering Research

Pre-doctoral

2007-08	Christina Chen – Undergraduate Research Fellow
2007-10	Lauren Shapiro – Undergraduate Research Fellow
2009-10	Alicia Jenkins – Undergraduate Research Fellow
2009-10	Melissa Vogelsong – Undergraduate Research Fellow
2009-10	Hilary Braun – Undergraduate Research Fellow
2009-10	Charles Li – Medical Student Research Fellow
2009-10	Jessica Tellaria – Medical Student Research Fellow
2011-13	Mai Nguyen – Undergraduate Research Fellow
2011-pres.	Stephen Matzat – Undergraduate Research Fellow
2015-pres	Bonnie Samuelson – Undergraduate
2015-pres.	Karlie Samuelson – Undergraduate
2015-pres.	James Yoder - Undergraduate
2015	Sloane Brazina – Undergraduate
2015	Laura Lane – Undergraduate

Doctoral

2000-01	Brian Hargreaves, MS (Electrical Engineering)
2000-01	Krishna Nayak, MS (Electrical Engineering)
2000-01	William Overall, MS (Electrical Engineering)
2000-01	Shreyas Vasanawala, MS (Electrical Engineering and Medicine)
2000-01	Julie Sabataitis, MS (Electrical Engineering)
2000-01	Nate Matter, M.S. (Electrical Engineering)
2001-04	Karla Miller, Electrical Engineering
2001-04	George Pappas, Medical Student
2001-04	Deanna Asakawa, Mechanical Engineering
2001-04	Silvia Salinas, Mechanical Engineering
2002-04	Neal Bangerter, Electrical Engineering
2002-07	Ross Venook Electrical Engineering
2003-04	Kate Saul, Mechanical Engineering
2003-07	Logi Vidarsson, Electrical Engineering
2003-08	Rob Siston, Mechanical Engineering
2003-08	Joshua Webb, Mechanical Engineering
2003-08	Christie Draper, Mechanical Engineering
2003-08	Seungbum Koo, Mechanical Engineering

2003-08 Taek Soo Kim, Electrical Engineering
 2006-07 Ron Gutamark – Human Biology Honors Thesis
 2006-09 Peder Larsson, Electrical Engineering
 2006-10 Edith Arnold, Mechanical Engineering
 2006-07 Paul Briant, Mechanical Engineering
 2006-07 Roger Baratolotta, Medicine
 2006-08 Kate Holzbaur, Mechanical Engineering
 2006-08 Paul Gurney – Electrical Engineering
 2006-10 Rebecca Rackow-Penner, Electrical Engineering
 2006-10 Joelle Barral – Electrical Engineering
 2006-pres. Katy Keenan, Mechanical Engineering
 2007-10 Nikola Stikov, Electrical Engineering
 2007-pres. Jessica Sin – Medicine
 2009-10 Christina Chen – Medical Student Research Fellow
 2009-pres. Min-Sun Son – Mechanical Engineering
 2009-12 Ernesto Starosweicki – Electrical Engineering
 2010-pres. Melissa Vogelsong – Medical Student Research Fellow
 2012-2014 Kristin Granlund - Electrical Engineering Graduate Student
 2014-pres. Marianne Black - Graduate Student
 2013-2017. Bragi Sveinsson - Electrical Engineering Graduate Student
 2013-pres. Uche Monu - Electrical Engineering Graduate Student
 2013-pres. Akshay Chaudhari – Bioengineering Graduate Student
 2013-pres. Evan Levine - Electrical Engineering Graduate Student
 2013-pres. Brady Quist - Electrical Engineering Graduate Student
 2013-pres. Stephanie Liu Perkins - Electrical Engineering Graduate Student
 2013-pres. Xinwei Shi - Electrical Engineering Graduate Student

Post-doctoral

2000-01 George Pappas, PhD
 2001-02 Andreas Hermeth, Radiology
 2001-02 Craig Meyer, Electrical Engineering
 2001-03 Dan Stucker, Radiology
 2001-04 Scott Reeder, Radiology
 2001-04 Brian Hargreaves, Electrical Engineering
 2001-04 Krishna Nayak, Electrical Engineering
 2001-04 Steve Conolly, Electrical Engineering
 2001-08 Greig Scott, Electrical Engineering
 2002-04 J. B. Na, Radiology
 2002-04 K. Jang, Physical Medicine and Rehabilitation
 2002-07 Shreyas Vasanawala, Radiology
 2003-07 Thor Besier, Mechanical Engineering and Orthopedics
 2006-08 Emma Bakes, Medical Student
 2006-08 Neal Bangerter, Radiology
 2006-08 Craig McCormick, Radiology
 2006-08 Rex Newbould, Radiology

2009-10 Christie Draper, Radiology
2006-10 Seungbum Koo, Radiology
2009-15 Saikat Pal, Radiology
2009-10 Noah Epstein, Orthopedic Surgery
2009-12 Peder Larsson, Electrical Engineering
2013-pres. Feliks Kogan, Radiology
2013-pres. Andrew Wentland – MD/PhD Student at UW Madison, Resident
2013-pres. Daehyun Yoon - Postdoctoral Fellow
2013-2017. Hans Weber - Postdoctoral Fellow
2013-pres. Manojkumar Saranathan – Research Associate
2013-pres. Catherine Moran - Research Associate
2013-pres. Valentina Taviani - Research Associate
2013-pres. Amy Beth Silder - Research Associate
2015-2018. Serena Bonaretti – Research Associate
2015-16 Dr. Sung Jun Kim – Visiting Faculty (thru 2/29/2016)
2015-16 Dr. Chengde Liao – Visiting Faculty
2015-16 Dr. Na Ra Kim – Visiting Faculty
2015-16 Dr. Yeo Ju Kim – Visiting Faculty