

CURRICULUM VITAE

Mehmet Bilgen, Ph.D.
Radiology and Radiological Science
Medical University of South Carolina
169 Ashley Avenue, Charleston, SC 29425
bilgen@musc.edu
(843) 792-6171

PROFESSIONAL APPOINTMENTS

- 2007 – Present Director, Preclinical Imaging in Translational Research (PITR) and Associate Professor of Radiology and Radiological Science, Medical University of South Carolina, Charleston, SC.
- 2006 - Present Editorial Board Member of Neuroanatomy Online.
- 2006–2007: Director of Bioimaging Track in Bioengineering Program at KU & KUMC, KS.
- 2005–2007: Co-Director, University of Missouri-Kansas City Center for Research on Interfacial Structure & Properties (UMKC-CRISP), Kansas City, MO.
- 2003–2007: Director of High Field MRI Research, KUMC, Kansas City, KS.
Assoc. Prof., Dept. of Molecular and Integrative Physiology, KUMC, Kansas City, KS
Courtesy Assoc. Prof., Physics, KU, Lawrence, KS.
Courtesy Assoc. Prof., Elec. Eng. And Comput. Sci., KU, Lawrence, KS.
Adjunct Assoc. Prof., School of Dentistry, University of Missouri - Kansas City, MO.
- 2001–2002: Adjunct Assistant Professor, Electrical and Computer Eng., University of Houston, Houston.
- 1999–2002: Assistant Professor, Department of Radiology, University of Texas-Houston Medical School, Houston.
- 1997–1998: Instructor, Telecommunication/Technology Dept., Blue River College, Kansas City.
- 1995–1998: Research Associate, Department of Radiology, University of Kansas Medical Center, Kansas City.
- 1988–1994: Research Assistant/Post Doctoral Research Associate, Center for Nondestructive Evaluation and. Biomedical Eng. Dept., Iowa State University, Ames.
- 1987–1988: R&D Engineer, Electronic Warfare and Communication, Aselsan Inc., Ankara.

UNDERGRADUATE/GRADUATE EDUCATION

- B.Sc. in Electrical and Electronics Eng. (1987) Orta Dogu Teknik Universitesi, Gaziantep – Turkey.
Ph.D./M.Sc. in Biomed. Eng., and Elec./Comp. Eng. (1993/1989). Iowa State University, Ames, IO.

PROFESSIONAL ORGANIZATIONS

- IEEE
American Institute of Physics
International Soc. of Magnetic Resonance in Medicine
Institute of Physics
Scientific Advisory Board Member, Journal of Neuroanatomy, <http://www.neuroanatomy.org>
National Neurotrauma Society

HONORS AND INVITED TALKS

- Best Paper Award “High-Resolution MRI of the Human Median Nerve.” Heddings AA, Bilgen M, Nudo R, Toby E, Mciff T and Brooks WM. American Society for Peripheral Nerve Annual Meeting. 2004.
- Invited speaker, "High field Magnetic Resonance Imaging Facility: resource for regional investigators and nanoscientists". Missouri Nanotechnology Alliance Conference, Kansas City, MO. 2005.
- Invited speaker, “MRI in research”, Pharmacology Department University of Missouri Kansas City, MO. 2005.

Invited speaker, and Session Chair, “Gaining new insights on the relationship between structure, property and function in diabetic heart using elastography imaging.” 5th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Snowbird, UT. 2006.

Invited Speaker, “Diffusion Tensor Imaging; What does it mean?”, CRISP, UMKC-Dental School, January 30, 2007.

Invited Speaker, “Preclinical imaging in translational neuroscience research”, Pharmacology, Oxford University, Oxford, England. May 15, 2007.

Invited Speaker, “Preclinical translational imaging in neuroscience”, Neurology/Neurosurgery Grand Rounds, KUMC, July 20, 2007.

Invited Speaker, “Magnetic resonance imaging of spinal cord injury in rodent models”, The 25th Annual National Neurotrauma Meeting, Kansas City, MO. July 30 – August 1, 2007.

Invited speaker, and Session Chair, “Relationship between continuous harmonic phase and discrete homogeneous strain analysis methods and beyond.” The 6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Santa Fe, NW. Nov. 2-5, 2007.

Invited Speaker, Bilgen M. Tagged magnetic resonance imaging for evaluating regional cardiac function: data acquisition and processing approaches. Society for Industrial and Applied Mathematics (SIAM) Conference on Life Sciences. Montreal, Quebec, Canada. Aug. 4-7, 2008.

Invited Speaker, “Magnetic resonance imaging of spinal cord injury in experimental rodent models”, Neuroscience, Georgetown University, August 27, 2008.

PROFESSIONAL/EDUCATIONAL ACTIVITIES

Established high field MRI research laboratories (at four different instances: three times with 7 T BRUKER systems while at the UT-Houston Medical School and the current laboratory, and a 9.4 T VARIAN system while at KUMC) that included design and organization of animal holding, surgery and MR scanner rooms, installation of the MR scanners and purchase of various large and small scale lab equipments.

Started a new interdisciplinary course at KUMC (Fundamentals of Biomedical Imaging, 3hrs/week).

Started a new interdisciplinary course at KUMC (Medical Physics, 3hrs/week).

Lecturer in part of Medical Physics course instituted to Radiology and Cardiology residents at KUMC.

Lecturer in part of Advanced Neuroscience class instituted to neuroscience graduate students at KUMC.

Instituted several workshops on applications of MRI in research.

Established KUMC Nanoscience Research Group (as part of developing novel bioimaging contrast agents)

Established KUMC Cardiovascular Research Network

Advisor to PhD candidate Mohammed D. Alenezy, Physics Dept. (current)

Advisor to PhD candidate Elena Popel, Electrical Eng. Dept. (current)

Supervisor to Research Associate Baraa Al-Hafez, MD, currently a Neurosurgery Resident at The University of Arkansas, Little Rock, Arkansas (2004-2006)

Member of PhD Graduate Committee - Erika Benavides, PhD (2003-2006), currently a Clinical Faculty at Department of Periodontics and Oral Medicine, The University of Michigan, Ann Arbor, MI.

Supervisor to the laboratory neurosurgeon Youn-Yue He, MD (2003-2007)

Supervisor to research associate Jason Huang, PhD (2006-2007)

Mentor to Postdoctorate Fellow Fan Yang, MD-PhD, Translation Scientist (2006-2007)

Mentor to Postdoctorate Fellow Sorin Craciunas, MD, Neurosurgeon (2006-2007)

Member of PhD Graduate Committee - Rajprasad Loganathan, PhD (2003-2007)

Advisor (PhD) to Tareq Alrefae, PhD-(2004-2007), currently an Assistant professor of Physics, The University of Kuwait.

RECENT SERVICES AS REVIEWER FOR GRANTS, MANUSCRIPTS AND ABSTRACTS

Veterans Administration - Rehabilitation Research and Development TBI/Stroke and Neurodegeneration panels, August 28-29, 2008, Washington DC.
Journal of Neuroscience Methods, August, 2008.
Journal of Neurotrauma, July, 2008.

OTHER ACTIVITIES IN THE PAST

- Served as reviewer for various scientific journals.
- Served as reviewer for various federal/state/private grant agencies.
- Lectured part of the Medical Imaging class jointly offered by Rice University, The University of Houston and UT Health Science Center. (1999-2001)
- Designed and developed a general purpose experimental CNS injury device (2005).
- Member of Organization Committee of 2nd annual meeting of the Missouri Nanotechnology Alliance (Nov. 11 and 12, 2005) conference with theme “Nanotechnology at the Interface with Life Sciences Research” Kansas City, MO.
- Participated in organizing KU-KUMC Bioengineering Day, February 3, 2007.
- Developed and implemented -
 - ultrasonic based inspection methods for industrial materials with rough surfaces (1993).
 - an apparatus for tissue bioelasticity measurement and tissue characterization methods based on ultrasonic elastography (1994).
 - optimal strategies for target detection in ultrasonic elastography and for lower bounds in elastography image noise (1995-1998).
 - a pharmacokinetic model for quantifying blood-spinal cord barrier permeability after spinal cord injury in animal models (2000-2002).
 - an externally tunable inductively-overcoupled implantable rf coils for performing MRI on internal body structures at high magnetic field strengths (2005).
 - a generic contusion injury device, currently used by several laboratories internationally to injure central nervous tissue in brain and spinal cord (2005).
 - software programs under IDL, Matlab, Mathematica, Visual Basic to perform image/signal analysis, theoretical calculations, symbolic evaluation, control purposes etc.
 - software program for quantifying global and regional contraction/relaxation in heart (2006).

RESEARCH SUPPORT

Ongoing Research Support

R21 NS052610 Bilgen (PI) 04/01/2006 – 03/31/2009
NIH/NINDS "Detection of live fibers in injured spinal cord"
To establish a new MRI modality to probe the evolution of rat spinal cord injury and map the fiber projections.
Role: PI
Total Award Amount: \$363,825

R21 NS054019 Bilgen (PI) 07/01/06 - 06/30/09
NIH/NINDS "Vascular Plasticity in injured spinal cord – investigations using MRI"
To image the vascular changes in injured rat spinal cord using longitudinal MRI.
Role: PI
Total Award Amount: \$363,825

N/A Bilgen (PI) 08/01/08 - 07/31/09
South Carolina Spinal Cord Injury Research Fund

“MRI evaluation of altered inflammatory response in SCI”

To evaluate the progression of SCI in MCP1 KO mouse with reduced inflammatory response and compare it with normal mouse.

Total Award Amount: \$25,000

Pending

R01 Bilgen (PI, 25%) 12/01/2008 - 11/30/2013

NIH

Drug Screening Using Magnetic Resonance Imaging for Spinal Cord Injury

R01 Bilgen (PI, 25%) 02/01/2009 - 01/31/2014

NIH

Potential treatments for SCI - preclinical testing in mice using MRI

Narayan R. Bhat (PI)

Application of contrast-enhanced MRI to determine cholesterol-induced cerebrovascular damage in AD.

Submitted to NIH in response to NINDS Administrative Supplements for Collaborative Activities to Promote Translational Research (CAPTR) for the funded grant R01NS051575 entitled “Cholesterol-induced neuroinflammation in AD pathogenesis”.

Submitted grants in the past

Lakshmi Thirumangalakudi (PI)

Ellison Medical Foundation “Cerebrovascular changes in cholesterol induced AD pathogenesis”

AFAR Postdoctoral Fellows Grant Application.

Role: Co-Mentor

Principal Investigator (25%) Bilgen (PI)

NIH "MRI of spinal cord injury in mice"

To relate the MR signal patterns to the underlying neuropathology associated with the unique inflammation response seen following spinal cord injury in mouse.

Assignment Number: 1R21NS058425-01. Submission Date: 3/15/07.

Principal Investigator (10%) Bilgen (PI)

NIH "Pathomechanics of inflamed TMJ disc"

To relate quantitative measures of magnetic resonance imaging, diffusion tensor imaging, polarized light microscopy, Fourier transform infrared spectroscopy, scanning acoustic microscopy and histology obtained from inflamed pig TMJ disc implanted and grown in the back of mouse.

Assignment Number: 1R21DE018798-01. Submission Date: 2/13/07

Principal Investigator (8%) Bilgen (PI)

American Heart Association

"Magnetic resonance imaging of diabetic heart"

Assignment Number: Not available yet. Submission Date: 1/9/07

Principal Investigator (10%) Bilgen (PI)

Christopher Reeves Foundation

"MRI evaluation of altered inflammatory response in SCI"

Assignment Number: BB1-0701-2. Submission Date: 12/15/06

Principal Investigator (20%) Bilgen (PI)

NIH "Magnetic resonance imaging of diabetic heart"

To relate the measures from cine, tagged and contrast-enhance MRI to cardiac function and structure of diabetic heart in a rat model of diabetes.

Assignment Number: 1R21 HL089288-01

Co-Investigator (0.6 calendar months) Berman, Nancy (PI)

NIH "Inflammation and Traumatic Brain Injury in the Elderly"

To study the inflammation response to TBI in old mice. Longitudinal MRI will be performed to monitor the lesion development and changes in the blood brain barrier permeability.

Assignment Number: 1R01AG031140-01

Co-Investigator (0.6 calendar months) Ghallager, Philip (PI) 1/1/2008 -- 12/31/2010

National Space Biomedical Research Institute "Heat Treatment and Resistance Exercise: Prevention of Atrophy and Reloading Damage in Humans"

To determine the effects of heat treatment and resistance exercise on skeletal muscle mass and strength with unloading and reloading.

Co-Investigator (2%) Hasan, Wohaib (PI)

NIH "Cardiac parasympathetic neuroplasticity in congestive heart failure"

Assignment Number: 1 R21 HL088179-01

Co-Investigator (5%) Festoff, Barry W. (PI)

NIH "Complementary approaches to thrombin signaling in SCI: genetic and pharmacologic"

Assignment Number: 1 R01 NS054004-01

Co-Investigator (5%) Festoff, Barry W. (PI)

NIH "Translational Studies in CNS Injury: Coagulation, innate, and adaptive immunity"

Assignment number: 1 R21 NS053549-01

Completed Research Support

R21 NS052355 Frost, Shaun (PI)

07/01/07 - 06/30/09

NIH "An Experimental Model of White matter Infarct"

Induce white matter infarct in squirrel monkey model and assess the resulting stroke using longitudinal MRI, behavioral tests and end-point histology.

Role: Co-PI (while at The KU Medical Center)

R21 AG026482 Berman, Nancy (PI)

04/01/2006 – 03/31/2008

NIH/NIA

"Experimental approaches to traumatic brain injury in aging"

To determine the effects of age on cognitive, molecular and cellular outcome following traumatic brain injury.

Role: Co-Investigator

Total Award Amount: \$363,825

Co-Investigator White, Robert (PI)

Kansas City Area Life Sciences Institute

"Transgene Therapy for Cardiomyopathy in DMD Mouse Model"

To characterize morphological and functional changes in hearts of gene treated muscular dystrophic mouse using cardiac MRI.

R13 DK069504 Katz, Larry (PI)

9/20/04 – 7/31/07

NIH

“Dental Science Research Training Program for Engineers”

Train the engineering summer students on MRI applications relevant to the dental science and provide an environment for practice hands on imaging.

Role: Mentor

Total Award Amount: \$648,000

0430236N Smirnova, Irina (PI)

1/1/04 – 12/31/07

American Heart Association

“Can a drug replace exercise to improve the diabetic heart?”

Perform *in vivo* cardiac MRI on normal and diabetic rats to provide structural and functional information from live heart tissue.

Role: Co-Investigator

Total Award Amount: \$260,000

0610002Z Loganathan, Raj (PI) Predoctoral Fellowship

01/01/06 - 12/31/07

American Heart Association, Heartland Affiliate

“Exercise induced benefits on cardiac performance and protein kinase C beta II in type 1 diabetes.”

This project will examine mechanisms of beneficial effects of physical exercise on diabetic heart performance.

Role: Co-Sponsor

N/A Dhillon (PI) Postdoctoral Fellowship 2007

Parker B. Francis Fellowships in Pulmonary Research

“Nanoparticle-Based Gene Therapy for SHIV Pneumonia in Macaques”

This project will develop and test nanoparticle-based gene therapy for SHIV pneumonia in Macaque monkeys.

Role: Co-Mentor

R01 NS 45624 Bilgen (PI, first submission, then transferred to Pan Narayana to be the PI) 8/3/05– 7/30/10

NIH/NINDS

“MRI of angiogenesis in spinal cord injury”

The goal of this project is to study the role of angiogenesis in recovery from SCI

Role: Bilgen was the PI at first submission then transferred to Narayana when Bilgen moved to KUMC in 2003, and became a consultant on the project.

N/A Berkland (PI)

1/1/06 – 12/31/06

Juvenile Diabetes Research Foundation

“ICAM-1 targeted nanoparticles for *in vivo*, VEGF induced angiogenesis”

To develop ICAM-1 targeted contrast agent to detect angiogenesis in wound healing in diabetic tissue using high resolution molecular MRI.

Role: Co-Investigator

Total Award Amount: \$110,000

Kansas EPSCoR Olafsen (PI)

6/15/05 - 3/31/06

NSF

“Portable MRI Resource for Basic Research in Biomechanical and Living Systems”

This grant is for buying a 0.2 T MRI system to be installed at Kansas University-Lawrence. To provide inductively coupled rf coil for high resolution imaging of sample of interest.

Role: Co-Investigator

Total Award Amount: \$175,000

N/A Fischer (PI)

2005

American Society for Surgery of the Hand

“Validation of MRI-Based Models for Evaluating In Vivo Joint Contact Pressures”

This grant is for performing MRIs on live subjects to construct solid models of hand and use these models to assess the contact pressures at different joints.

Role: Co-investigator

Total Award Amount: \$15,000

N/A Bilgen (PI)

2005

Kansas University Medical Center Research Institute, Inc.

“Equipment for Magnetic Resonance Imaging of Research Animals”

This grant is for buying various rf coils to perform high resolution MRI on small laboratory animals.

Role: PI

Total Award Amount: \$30,000

N/A Festoff (PI)

2003 – 2005

Christopher Reeve Paralysis Foundation

“Functional Recovery by Minocycline and its Mechanism in Acute Spinal Cord Injury” \$150,000

Hypothesis in this project is that dysregulation of apoptotic signaling genes results in irreversible cell death in the spinal cord three days after traumatic SCI. This cell loss may be a therapeutic target of minocycline and related tetracyclines if given early rather than later after injury. Perform *in vivo* MRIs on normal, injured and treated mouse spinal cords to quantify the pathological changes.

Role: Co-Investigator

Total Award Amount: \$150,000

KCALSI-03-08 Bilgen (PI)

2005

Kansas City Area Life Sciences Institute Research Development Grant

“The Role of Angiogenesis in Recovery from Spinal Cord Injury”

This project aims at determining the benefits of promoting or suppressing the angiogenic activities in recovery from spinal cord injury.

Role: PI

Total Award Amount: \$25,000

N/A Bilgen (PI)

2004

Kansas University Medical Center Research Institute, Inc.

“Equipment for Magnetic Resonance Imaging of Research Animals”

This grant is for constructing an infrastructure for performing in vivo MRI on small laboratory animals.

Role: PI

Total Award Amount: \$30,000

N/A Hedding (PI)

2004

Kansas University Endowment

“MRI Studies in Neuronal Regeneration”

The goal of this project is to perform MRIs on peripheral nerves (in particular the median nerve).

Role: Co-Investigator
Total Award Amount: \$20,000

BA1-0001-2 Bilgen (PI) 8/1/00 – 7/32/02

Christopher Reeve Paralysis Foundation

“Hyper-Acute Pathological Changes in Spinal Cord Injury”

This project investigated the early changes in the pathobiology of injured spinal cord using magnetic resonance imaging modalities sensitive to structure and function.

Role: PI

Total Award Amount: \$100,000

R01 NS 30821 Narayana (PI) 4/1/02 – 3/13/07

NIH/NINDS

“Magnetic Resonance of Spinal Cord Injury”

The goal of this project is to study the plasticity of brain after spinal cord injury. Responsibility includes designing/performing functional MRI protocols on rats with spinal cord injury and analyzing the resulting data to determine the brain plasticity upon electrical stimulus of forelimb and hindlimb.

Role: Co-Investigator (while employed at The UT-Houston Medical School)

REFEREED ORIGINAL PUBLICATIONS IN JOURNALS (in a chronologically descending order)

1. Campbell, S.J., Zahid, I., Losey, P., Law, S., Bilgen, M., van Rooijen, N., Davis, A.E.M. and Anthony, D.C. Liver Kupffer cells control the magnitude of the inflammatory response in the injured brain and spinal cord. *Neuropharmacology*. 55(5):780-7. 2008.
2. Alrefae, T., Smirnova, I.V., Cook, L.T., and Bilgen, M. A model-based time-reversal of left ventricular motion improves cardiac motion analysis using tagged MRI data. *BMC Biomed Eng Online*. 7:15, 2008.
3. Chou, P.C., Tatar, I., and Bilgen, M. Multimodal MRI evaluation of acute mild-contusive injury in mouse spinal cord. *Neuroanatomy Online*. In press. 2008.
4. Bilgen, M. and Rumboldt, Z. Neuronal and vascular biomarkers in Syringomyelia: investigations using longitudinal MRI. *Biomarkers in Medicine*. 2:113-24, 2008.
5. Benavides, E., Bilgen, M., Al-Hafez, B., Alrefae, T., Wang, Y. and Spencer, P. High Resolution MRI and DTI of the Porcine TMJ Disc. *Dentomaxillofacial Radiology*. In press 2008.
6. Wallace, D.P., Hou, Y.P., Huang, Z. L., Nivens, E., Savinkova, L., Yamaguchi, T., and Bilgen, M. Temporal Assessment of Polycystic Kidney Disease in pcy/pcy Mice by Magnetic Resonance Imaging. *Kidney Int*. 73(6):778-81, 2008.
7. Huang, M., Huang, Z.L., Bilgen, M. and Berkland, C. MRI Contrast Enhanced Polyelectrolyte Complexes. *Nanomedicine: Nanotechnology, Biology, and Medicine*. 4(1):30-40, 2008.
8. Dufner-Beattie, J., Weaver, B., Geiser, J., Bilgen, M., Larson, M., Xu, W. and Andrews, G.K. The mouse acrodermatitis enteropathica gene *ZIP4* is essential for early development and heterozygosity causes hypersensitivity to zinc deficiency. *Hum Mol Genet*. 16(12):1391-9, 2007.
9. Huang, Z.L., He, Y.Y. and Bilgen, M. In vivo corticospinal tract tracing in mouse using manganese-enhanced contrast. <http://www.jns.dergisi.org> *J Neurol Sci [Turk]* 24:38-44, 2007.
10. Bilgen, M., Al-Hafez, B., Alrefae, T., He, Y.Y., Smirnova, I.V., Aldur, M.M. and Festoff, B.W. Longitudinal magnetic resonance imaging of spinal cord injury in mouse: changes in signal patterns associated with the inflammatory response. *Magn Reson Imaging*. 25(5):657-64, 2007.
11. Loganathan, R., Bilgen, M., Al-Hafez, B., Zhero, S.V., Alenezy, M.D. and Smirnova, I.V. Exercise training improves cardiac performance in diabetes: in vivo demonstration with quantitative cine-MRI analysis. *J Appl Physiol*. 102(2):665-72, 2007.

12. Onyszchuk, G., Al-Hafez, B., He, Y.Y., Bilgen, M., Berman, N.E.J. and Brooks, W.M. A mouse model of sensorimotor controlled cortical impact: characterization using longitudinal magnetic resonance imaging, behavioral assessments and histology. *J. Neuroscience Methods*. 160: 187-196, 2007.
13. Bilgen, M. Magnetic resonance microscopy of spinal cord injury in mouse using a miniaturized implantable rf coil. *J. Neuroscience Methods*. 159(1):93-7, 2007.
14. Wohaib H., W., Jama, A., Donahue, T., Wernli, G., Onyszchuk, G., Al-Hafez, B., Bilgen, M. and Smith, P.G. Sympathetic hyperinnervation and inflammatory cell NGF synthesis following myocardial infarction in rats. *Brain Research*. 1124(1):142-54, 2006.
15. Bilgen, M. Imaging corticospinal tract connectivity in injured rat spinal cord using manganese-enhanced MRI. *BMC Medical Imaging*. 6: 15, 2006.
16. Loganathan, R, Bilgen, M., Al-Hafez, B., Alenezy, M.D. and Smirnova, I.V. Cardiac dysfunction in the diabetic rat: quantitative evaluation using high resolution magnetic resonance imaging. *Cardiovasc Diabetol. Online*. 5:7, 2006.
17. Bilgen, M., Peng, W., Al-Hafez, B., Dancause, N., He, Y.Y. and Cheney, P. Electrical stimulation of cortex improves corticospinal tract tracing in rat spinal cord using manganese-enhanced MRI. *J. Neuroscience Methods*. 156:17-22, 2006.
18. Gaedigk, R., Law, D.J., Fitzgerald-Gustafson, K.M., McNulty, S.G., Nsumu, N.N., Modrcin, A.C., Rinaldi, R.J., Pinson, D., Fowler, S.C., Bilgen, M., Burns, J., Hauschka, S.D. and White, R.A. Conversion of lethal muscular dystrophy to a viable mild myopathy in dystrophin-utrophin null mice via human retinal dystrophin transgene. *Neuromuscular Disord*. 16:192-203, 2006.
19. Loganathan, R, Bilgen, M., Al-Hafez, B. and Smirnova, I.V. Characterization of alterations in diabetic myocardial tissue using high resolution MRI. *Int. Journal of Cardiovascular Imaging*. *Int. Journal of Cardiovascular Imaging*. 22:81-90, 2006.
20. Bilgen, M. and Al-Hafez, B. Comparison of spinal vasculature in mouse and rat: investigations using magnetic resonance angiography. *Neuroanatomy Online*. 5:12-16, 2006.
21. Bilgen, M. Inductively-overcoupled coil design for high resolution magnetic resonance imaging. *BMC Biomedical Engineering Online*. 5:3, 2006.
22. Bilgen, M., Al-Hafez, B., Berman, N.E.J. and Festoff, B.W. Magnetic resonance imaging of mouse spinal cord. *Magn. Reson. Med*. 54:1226-31, 2005.
23. Bilgen, M., Dancause, N., Al-Hafez, B., He, Y.Y. and Malone, T.M. Manganese-enhanced MRI of rat spinal cord injury. *Magn. Reson. Imag*. 23:829-32, 2005.
24. Bilgen, M. A new device for modeling experimental central nervous system injuries. *Neurorehabilitation and Neural Repair* 19: 219-226, 2005.
25. Bilgen, M., Al-Hafez, B., Malone, T.M., and Smirnova, I.V. Ex vivo magnetic resonance imaging of rat spinal cord at 9.4 T. *Magn. Reson. Imag*. 23:601-5, 2005.
26. Bilgen, M., Heddings, A., Al-Hafez, B., Hasan, W., McIff, T., Toby, B., Nudo, R., and Brooks, W.: Microneurography of human median nerve. *Journal of Magnetic Resonance Imaging*. 21:826-30, 2005.
27. Bilgen, M., Al-Hafez, B., He, Y.Y., and Brooks, W.M. Magnetic resonance angiography of rat spinal cord at 9.4 T: a feasibility study. *Magn. Reson. Med*. 53:1459-61, 2005.
28. Heddings, A., Bilgen, M., Nudo, R., Toby, B., McIff, T. and Brooks, W.: High-resolution MRI of the human median nerve. *Neurorehabil Neural Repair* 18(2):80-7, 2004.
29. Bilgen, M.: Simple, low-cost multipurpose rf coil for MR microscopy at 9.4 T. *Magn. Reson. Med*. 52:937-940, 2004.
30. Bilgen, M., Srinivasan, S., Lachman, L. B., and Ophir, J.: Ultrasonic Elastography Imaging of Small Animal Oncology Models: A feasibility study. *Ultrasound. Med. Biol*. 29(9): 1291-96, 2003.
31. Bilgen, M. and Narayana, P.A.: Mohr Diagram interpretation of anisotropic diffusion indices in MRI. *Magn. Reson. Imag*. 21:567-572, 2003.
32. Bilgen, M. and Narayana, P.A.: In vivo assessment of Blood-Spinal Cord Barrier permeability: serial dynamic contrast enhanced MRI of spinal cord injury. *Magn. Reson. Imag*. 20: 337-341, 2002

33. Elshafiey, I., Bilgen, M. and Narayana, P.A.: In vivo diffusion tensor imaging of rat spinal cord at 7 T. *Magn. Reson. Imag.* 20: 243–247, 2002.
34. Bilgen, M., Elshafiey, I. and Narayana, P.A.: Mohr Diagram representation of anisotropic diffusion tensor in MRI. *Magn. Reson. Med.* 47: 823-827, 2002.
35. Bilgen, M., Elshafiey, I. and Narayana, P.A.: In vivo magnetic resonance microscopy of rat spinal cord at 7 T using implantable rf coils. *Magn. Reson. Med.* 46:1250–1253, 2001.
36. Bilgen, M. and Narayana, P.A.: A pharmacokinetic model for quantitative evaluation of spinal cord injury with dynamic contrast enhanced magnetic resonance imaging. *Magn. Reson. Med.* 46:1099–1106, 2001.
37. Bilgen, M., Abbe, R. and Narayana, P.A.: Dynamic contrast enhanced magnetic resonance imaging of experimental spinal cord injury: in vivo serial studies. *Magn. Reson. Med.* 45: 614-622, 2001.
38. Varghese, T., Bilgen, M., and Ophir J.: Phase aberration effects in elastography. *Ultrason. in Med. and Biol.* 27: 819-827, 2001.
39. Varghese, T., Konofagou, E. E., Ophir, J., Alam S. K., and Bilgen, M.: Direct strain estimation in elastography using spectral cross-correlation. *Ultrason. in Med. and Biol.* 26: 1525-1537, 2000.
40. Bilgen, M.: Dynamics of errors in 3D motion estimation and implications for strain-tensor imaging in acoustic elastography. *Physics in Med. Biol.* 45:1565-1579, 2000.
41. Insana, M. F., Cook L. T., Bilgen, M., Chaturvedi, P. and. Zhu, Y.: Maximum-likelihood approach to strain imaging using ultrasound. *J. Acoust. Soc. Am.* 107:1421-1434, 2000.
42. Bilgen, M., Abbe, R., Liu, S-J., Narayana, P.A.: Spatial and temporal evolution of hemorrhage in the hyperacute phase of experimental spinal cord injury: in vivo magnetic resonance imaging. *Magn. Reson. Med.* 43:594-600, 2000.
43. Bilgen, M.: Wavelet transform-based strain estimator for elastography. *IEEE Ultrason., Ferroelect and Freq. Cont.* 46:1407-1415, 1999.
44. Bilgen, M.: Target detectability in acoustic elastography. *IEEE Ultrason. Ferroelect and Freq. Cont.* 46:1128-1133, 1999.
45. Bilgen, M. and Insana, M. F.: Covariance analysis of time delay estimates for strained signals. *IEEE Signal Processing*, 46:2589-2600, 1998.
46. Bilgen, M. and Insana, M. F.: Elastostatics of a spherical inclusion in homogeneous biological media. *Physics Med. Biol.* 43:1-20, 1998.
47. Varghese, T., Bilgen M., and Ophir, J.: Multiresolution strain filter in elastography. *IEEE Ultrason., Ferroelect. and Freq. Cont.* 45:65-67, 1998.
48. Kallel, F., Varghese, T., Ophir J., and Bilgen, M.: Nonstationary strain filter in elastography: Part II. Lateral and elevational decorrelation. *Ultrasound Med. Biol.* 23:1357-69, 1997.
49. Hall, T. J., Bilgen M. and Insana, M. F.: Phantom materials for elastography. *IEEE Ultrason., Ferroelect. and Freq. Cont.* 44:1355-1365, 1997.
50. Bilgen, M., Insana, M. F., Hall, T. J. and Chaturvedi, P.: Statistical analysis of strain images estimated from overlapped and filtered echo signals. *Ultrasonic Imaging.* 19:209-220, 1997.
51. Bilgen, M. and Insana, M. F.: Error analysis in acoustic elastography: II strain estimation and SNR analysis. *J. Acoust. Soc. Am.* 101:1147-1154, 1997.
52. Bilgen, M. and Insana, M. F.: Error analysis in acoustic elastography: I. displacement estimation. *J. Acoust. Soc. Am.* 101:1139-1146, 1997.
53. Bilgen, M. and Insana, M. F.: Effects of phase aberration on tissue heat generation and temperature elevation using therapeutic ultrasound. *IEEE Ultrason., Ferroelect. and Freq. Cont.* 43: 999-1010, 1996.
54. Bilgen, M. and Insana, M. F.: Deformation models and correlation analysis in elastography. *J. Acoust. Soc. Am.* 99: 3212-3224, 1996.
55. Rose, J.H., Bilgen, M., Roux, P., and Fink, M. Time reversal mirrors and rough surfaces: Theory. *J. Acoust. Soc. Am.* 106: 716-723, 1999. *This article was mentioned in *Physics Today*, p. 9, October 1999.
56. Bilgen, M. and Rose, J. H.: Acoustic signal-to-noise ratio for an inclusion beneath a randomly rough surface and in the presence of microstructure. *J. Acoust. Soc. Am.* 101: 272-280, 1997.

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58. Bilgen, M. and Rose, J. H.: Mean and variance of the ultrasonic signal from a scatterer beneath a rough surface: Theory. *J. Acoust. Soc. Am*, 98: 2217-2225, 1995.
59. Bilgen, M. and Rose, J. H.: Effects of one-dimensional random rough surfaces on ultrasonic backscatter: utility of phase-screen and Fresnel approximations. *J. Acoust. Soc. Am*, 96: 2849-2855, 1994.
60. Rose, J. H. and Bilgen, M.: Rough surface effects on incoherent scattering from random volumetric scatterers: Approximate analytic series solution. *J. Acoust. Soc. Am*, 96: 2856-2869, 1994.
61. Rose, J. H., Bilgen, M. and Nagy, P. B.: Acoustic double-reflection and transmission at a rough water-solid interface. *J. Acoust. Soc. Am.*, 95: 3242-3251, 1994.
62. Bilgen, M., and Hung, H. S.: Neural network for restoration of signals blurred by a random, shift-variant impulse response function. *Optic. Eng.*, 33: 2723-2727, 1994.
63. Bilgen, M., and Hung, H. S.: Constrained least-squares filtering of noisy images blurred by random point spread function. *Optic. Eng.*, 33: 2020-2023, 1994.

SUPPLEMENTARY MATERIAL

LIST OF THE *GRADUATE* COURSES TAKEN BETWEEN 1987 AND 1993

Electrical, Electronics and Computer Engineering:

- Neural Networks
- Linear System Theory I
- Linear System Theory II
- Optimization Theory
- Discrete Time Control Systems
- Multivariate Control Systems
- Introduction to Robotics
- Advanced Electromagnetic Theory II
- Antenna Engineering
- Fundamentals of Radar Systems
- Electromagnetic Wave Propagation in Inhomogeneous Media
- Modern Optical Communication
- Digital Signal Processing
- Digital Image Processing
- Digital Speech Processing
- Statistical Communication Theory
- Information Theory and Coding
- Random Signal Analysis and Kalman Filtering
- Semiconductor Device Theory I

Biomedical Engineering:

- Anatomy and Physiology
- Biomedical Instrumentation
- Information Processing in Living Systems
- Single-chip Computer Applications

Mathematics:

- Functional Analysis
- Wavelet Theory
- Applied Mathematics I
- Applied Mathematics II
- Numerical Solution of Integral Equations
- Computational Methods of Linear Algebra

Engineering Mechanics:

- Analytical Methods I
- Analytical Methods II
- Fundamentals of Ultrasonic Nondestructive Evaluation
- Elastic Wave Theory

PHSL 838 Medical Physics Course

(3 Credits, Fall 2006, Friday 3-6pm, Kansas University Medical Center)

Medical physics is a branch of applied physics; which uses concepts and methods of physics to help diagnose and treat human disease. This course is designed to provide in-depth understanding of the medical physics with example applications in biomedical sciences. The course will be offered to graduate as well as undergraduate students from inter- or multi-disciplinary areas including engineering, science, biology, physical therapy and biomedicine. The course will cover

- overview of mathematics and physics of emerging biomedical imaging: wavelet transform, Fourier transform, Radon transform, convolution, transfer function etc.
- formation of biomedical images: principles of operation, reconstruction techniques
- nuclear medicine, radiological physics and dosimetry, radiobiology, ionizing versus non-ionizing radiation: photon, electron, and neutron interactions, spurs, Auger electrons
- X-ray imaging: x-rays, computer tomography, x-ray generators and detectors, digital radiography
- radionuclide imaging: cyclotron, nuclear particles, Generation and Detection. PET, SPECT
- ultrasound/acoustic imaging: generation and detection of ultrasound, diagnostic imaging, acoustic microscopy
- magnetic resonance imaging (MRI): magnetization, angular momentum, relaxation times, pulse sequences, imaging methods, functional MRI (fMRI)
- optical imaging: optical coherent tomography, confocal microscopy, two-photon imaging, orthogonal polarization spectral (OPS) imaging, laser Doppler flow imaging
- infrared imaging, X-ray crystallography, electron microscopy
- spectroscopy principles: nuclear magnetic resonance, Raman
- molecular and cellular imaging with contrast agents and special tags or labeling
- bioinformatics: gene-array imaging and analysis
- functional imaging tools: fMRI and Magnetoencephalography (MEG), patterns of brain activation and brain functions, validation and reliability of brain maps
- image-guided interventional procedures: therapeutic radiology, oncology treatment planning and guidance, radiation therapy, proton therapy, brachytherapy, gamma knife, deep brain stimulation, virtual telemedicine, endoscopic, laparoscopic, robotic surgery
- image processing and quantitative analysis tools: filtering, smoothing, edge detection, segmentation
- visualization: 3-D reconstruction, simulations.

Field trips will also be organized to visit various clinical sites and research labs with the state of the art instrumentations used in medical physics; including optics facilities for molecular and cellular imaging at Stowers Institute, acoustic microscopy, Raman spectroscopy and electron microscopy labs at UMKC-Dental School, MRI, CT, SPECT, PET, MEG, Gene-array and Oncology facilities at KUMC. From these facilities or as invited, speakers who are expert in their fields will give lectures in the class.

For further inquiries on this course please contact

Mehmet Bilgen, PhD
Director of High Field MRI and Associate Professor of
Molecular and Integrative Physiology
mbilgen@kumc.edu
Tlf: 913-588-9079

LIST OF COLLABORATIONS AND THE NATURE OF THE RESEARCH (within the last 6 years)

Since I started my employment at the beginning of 2003 at KUMC, and later 2007 at MUSC, I have provided my imaging and scientific expertise in various collaborative efforts, some of which are listed below.

Spinal cord injury research on rat and transgenic mouse models with Dr. Barry Festoff, Dr. Paul Arnold

Biochemical analysis of spinal cord injury with Dr. Abdulbaki Agbas

Traumatic brain injury on transgenic mouse models with Dr. Nancy Berman, Dr. William Brooks

NeuroAids research on Rhesus monkey with Dr. Paul Cheney

Muscular dystrophy research on transgenic mouse model with Dr. Kathleen Gustafson, Dr. Robert White

Mammalian tumor development on hamster and mouse with Dr. Jonathan Li, Dr. Sara Li

White matter stroke model on Squirrel monkey and rat with Dr. Randolph Nudo, Dr. Shawn Frost

Diabetic cardiomyopathy research with Dr. Irina Smirnova, Dr. Lisa Bittel, Dr. James Vacek

Cardiovascular pulmonary tension research on rat with Dr. Norberto Gonzalez

Cardiovascular infarct research on rat with Dr. Wohaib Hasan, Dr. Peter Smith

Polycystic Kidney research on rat and mouse models with Dr. Darren Wallace, Dr. Jared Grantham

High resolution median nerve imaging with Dr. Archie Hedding, Dr. Bruce Toby

Zinc metabolism research on transgenic mouse with Dr. Glen Andrews

Effects of gravity in spermatogenesis research with Dr. Joseph Tash

Pulmonary imaging with MRI contrast agents with Dr. Shilpa Buch

Biomechanics of hand with Dr. Ken Fischer

Biomechanics of knee with Dr. Lorin Maletsky

Biomechanics of TMJ and MRI of TMJ disk with Dr. Paulette Spencer, Dr. J. Lawrence Katz

Targeted Nanoparticle development with Dr. Cory Berkland and Dr. Teruna Siahaan

Image registration and processing with Dr. John Gauch

Brain development in Hox-1 deficient mouse with Dr. Kieran Pemberton

DIDACTIC TEACHING

| <u>Year</u> | <u>Course</u> | <u>Title</u> | <u>Type</u> | <u>Hours</u> | <u>No</u> | <u>Type</u> |
|-------------|-------------------------------------|-----------------------------------|-------------|--------------------------|-----------|--|
| 2003 | Medical Physics in Radiology | | Lecture | 5 hrs total | | Residents |
| 2003 | Advanced Neuroscience | | Lecture | 2 hrs total | | Graduate Students |
| 2003/fall | Phsl 838 | Fund. Biomedical Imaging | Lecture | 3hrs/week (Total 54 hrs) | 25 | Students and 1 Assist. |
| | | Prof. (Rima Dafer, MD, Neurology) | | | | |
| 2004 | Medical Physics in Radiology | | Lecture | 4 hrs total | | Residents |
| 2004 | Advanced Neuroscience | | Lecture | 2 hrs total | | Graduate Students |
| 2004 | Intro to Biomedical Engineering | | Lecture | 2 hrs total | | KU-Lawrence, Grad. Studs. of Chem. Eng. |
| 2005/spring | Phsl 838 | Fund. Biomedical Imaging | Lecture | 3hrs/week (Total 54 hrs) | 6 | Students and 1 Assist. Prof. (Jeff Burns, MD, Neurology) |
| 2005 | Medical Physics in Radiology | | Lecture | 3 hrs total | | Radiology and Cardiology Residents |
| 2005 | Advanced Neuroscience | | Lecture | 2 hrs total | | Graduate Students (total 6) |
| 2005/fall | Phsl 838 | Fund. Biomed. Imaging | Lecture | 3hrs/week (Total 54 hrs) | 6 | Students and 1 Assist. Prof. (Sandra Hall, PhD, Biostatistics) |
| 2005 | Basic Science of Biomedical Imaging | | Lecture | ½ hr | | KUMC-Neurology Residents |
| 2005 | High Field MRI studies | | Lecture | ½ hr | | New IGPBS students |
| 2005 | High Field MRI studies | | Lecture | ½ hr | | Faculty research series |
| 2005 | High Field MRI studies | | Lecture | ½ hr | | KU Biomed. Eng. Soc. Student Members |
| 2006/spring | Intro to Biomedical Eng. | | Lecture | 2 hrs total | | KU-Lawrence Grad. Studs. of Chemistry Eng. (16 students) |
| 2006 | Medical Physics in Radiology | | Lecture | 3 hrs total | | Radiology and Cardiology Residents (6 residents) |
| 2006 | Advanced Neuroscience | | Lecture | 2 hrs total | | Graduate Students (total 9) |
| 2006 | Cardiac MR Imaging | | Lecture | 1 hr | | KUMC-Cardiology Residents |
| 2006/fall | Phsl 838 | Medical Physics | Lecture | 3hrs/week (Total 54 hrs) | 8 | Students |
| 2007/spring | PTRS 863 | Pathobiology of Human Function II | Lecture | 2 hrs total | | Graduate Students (total 8) |
| 2007/summer | Medical Physics in Radiology | | Lecture | 3 hrs total | | Radiology Residents (6 residents) |

STUDENTS

Master's Theses and PhD. Dissertations (directed or served as a committee member)

- 2001 Bulent Dogan, M.S. Electrical Engineering, University of Houston, Houston, TX.
- 2004 Mery Wijaya, M.S. Electrical Engineering, University of Kansas, Lawrence, KS.
- 2005- PhD candidate Mohammed D. Alenezy, Physics Dept., KU-Lawrence
- 2005- PhD candidate Elena Popel, Electrical Eng. Dept., KU-Lawrence
- 2005-7 Tareq Alrefae, PhD, Physics Dept., KU-Lawrence
- 2005-6 Member of Graduate Committee for Erika Benavides, PhD, UMKC
- 2005-7 Member of Graduate Committee Rajprasad Loganathan, PhD, KUMC
- 2007 External Reviewer, Raman Saggi, PhD, Wolfson College, University of Oxford

Supervisor for postdoctoral fellows, research associates and visiting scientists

- 2004-6 Baraa Al-Hafez, M.D., Postdoc, Magnetic resonance imaging of small animals
- 2006-7 Jason Huang, Ph.D., Research associate, Cardiac magnetic resonance imaging
- 2006-7 Fan Wang, M.D./Ph.D., Neurosurgeon, Postdoc, Spinal Cord Injury
- 2006-7 Sorin Craciunas, M.D., Neurosurgeon, Postdoc, Spinal Cord Injury
- 2003-7 Youn-Yue He, M.D. Neurosurgeon Spinal Cord Injury
- 2008-8 Ilkan Tatar, M.D., Visiting Scientist, Spinal Cord Injury
- 2008- Peter Chou, B.Sc. Spinal Cord Injury
- 2008- Omer Akyol, M.D./Ph.D., Visiting Scientist, Spinal Cord Injury
- 2008- Sadik Sogut, M.D./Ph.D., Visiting Scientist, Spinal Cord Injury

Advising or Mentoring

- 2004 Mentor, Mariam Riazi, Graduate Student, KUMC, Independent Summer study. She was trained how to use the MRI scanner and participated in ongoing MRI studies
- 2003 Mentor, Amanda Roeder, Undergraduate Student, Kansas State University, Wichita. She was a student from a program (biomechanical engineering research experience for undergraduates) at KU-Lawrence. I was a mentor in this program.
- 2005 Mentor, 10 students participated in the Dental Science Research Training Program for Engineers (PI: Dr. Larry Katz, UMKC Dental School). These students were rotated in the lab for one day each and exposed to the MRI procedures and protocols, and explored how the facilities can be used in dental research.
- 2005 Mentor, Warner Peng, 2th year Medical Student at KU-Medical School. He participated in ongoing MRI studies on neuronal fiber tract tracing, and coauthored in one publication.
- 2006 Mentor, 10 students participated in the Dental Science Research Training Program for Engineers (PI: Dr. Paulette Spencer, UMKC Dental School). These students were rotated in the lab for one day each and exposed to the MRI procedures and protocols, and explored how the facilities can be used in dental research.
- 2006 Mentor, Lauren Tice, Undergraduate Student in Chemical Eng. Dept., KU. She was a junior year student at Chemical Eng. Dept., KU-Lawrence. She participated in contrast agent studies in my lab during the summer break.
- 2006 Mentor, You Ping Huo, 4th year Medical Student KU-Medical School. He wanted to get into Radiology Residency Program and did elective rotation with. He participated in ongoing MRI studies during the winter of 2006-2007.
- 2007 Mentor, George Thomas, 4th year Medical Student KU-Medical School. He learned fMRI, DTI and fiber tractography during the spring of 2007.

ABSTRACTS (since 2003)

- Benavides E, Spencer P, Glaros A, Katz JL, Katz JO, Bilgen M, McIff T. "Preliminary Structure and Property Characterization of the Temporomandibular Joint Disc" 54th. Annual Session of the American Academy of Oral and Maxillofacial Radiology. December, 2003. Oral Presentation.
- Benavides E, Spencer P, Glaros AG, Katz JL, Katz JO, Bilgen M, McIff T, Fischer KJ, Wang Y. "Qualitative Characterization of the TMJ Disc Utilizing 9.4 Tesla MRI" 82nd. General Session and Exhibition of the International, American, and Canadian Associations for Dental Research. March, 2004. Oral Presentation.
- Benavides E, Spencer P, Katz JL, Fricke BA, Wang Y, Bilgen M, Gleeson E. "Micro-mechanics of the Porcine TMJ Disc using Scanning Acoustic Microscopy" 83rd. General Session and Exhibition of the International, American, and Canadian Associations for Dental Research. Abstract #1390. March, 2005. Oral Presentation.
- Benavides E, Bilgen M, Al-Hafez B, Spencer P. "Diffusion Tensor MRI: A Potential Tool to Evaluate the TMJ Disc" 56th. Annual Session of the American Academy of Oral and Maxillofacial Radiology. November 17, 2005. Oral Presentation.
- Loganathan, R., Bilgen, M., Al-Hafez, B., Zhero, S., Alenezzy, M., Smirnova, I.V. "Exercise Training Improves Cardiac Function in Diabetic Rats: High Field Magnetic Resonance Imaging Assessment." American Physical Therapy Association Combined Sections Meeting (CSM), San Diego, CA, 2006.
- Rajprasad Loganathan, Mehmet Bilgen, Baraa Al-Hafez, Svyatoslav V Zhero, Mohammed D Alenezzy, Irina V Smirnova. "Exercise Training Improves Cardiac Function in Diabetic Rats: Noninvasive Assessment Using High-Resolution Magnetic Resonance Imaging." 3rd Annual Symposium of the American Heart Association Council on Basic Cardiovascular Sciences - Translation of Basic Insights into Clinical Practice, July 31 - August 3, 2006 at the Keystone Conference Center, Keystone, Colorado.
- Bilgen M, Gauch J, Loganathan R, Alenezzy MD, Popel E, Alrefae T, Smirnova IV: Gaining new insights on the relationship between structure, property and function in diabetic heart using elastography imaging. 5th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Snowbird, UT, October 8-11, 2006.
- Benavides, E., Spencer, P., Glaros, A., Katz, J.L., Katz, J.O., Bilgen, M., and McIff, T. "Preliminary structure and property characterization of the temporomandibular joint." IADR 82nd General Session and Exhibition, AADR 33rd Annual Meeting and Exhibition and CADR 28th Annual Meeting, Honolulu, Hawaii, 2003.
- Benavides, E., Spencer, P., Glaros, A., Katz, J.L., Katz, J.O., Bilgen, M., McIff, T. and Fischer, K.J. "Qualitative characterization of the TMJ disc utilizing 9.4 Tesla MRI." The American Academy of Oral and Maxillofacial Radiology, 54th Annual Session, Chicago, IL, 2003.
- Heddings, A.A., Bilgen, M., Nudo, R., Toby, E., McIff, T. and Brooks, W.M. "High-Resolution MRI of the Human Median Nerve" American Society for Peripheral Nerve Annual Meeting, Sanibel Island, FL, 2004.
- Riazi, M., Marcario, J.K., Brooks, W.M., Bilgen, M., Samson, F., and Cheney, P.D. "Analysis of Neurological Function in a Rhesus Macaque model of drug abuse and neuro-aids: baseline data from multimodal evoked potentials (ep) and magnetic resonance spectroscopy." Society for Neuroscience Meeting, Miami, FL, 2004.
- Benavides E, Spencer P, Glaros AG, Katz JL, Katz JO, Bilgen M, McIff T, Fischer KJ, Wang Y. Qualitative Characterization of the TMJ Disc Utilizing 9.4 Tesla MRI. 82nd. General Session and Exhibition of the International, American, and Canadian Associations for Dental Research, 2004. Abstract #0142.
- Bilgen, M., Al-Hafez, B., Farooque, M., Arnold, P., Berman, N.E.J. and Festoff, B.W. "Magnetic Resonance Imaging of Mouse Spinal Cord Injury" National Neurotrauma Society and 23rd annual Symposium, Washington D.C., 2005.
- Thoomukuntla, B., McIff T.E., Bilgen, M., Toby E.B. and Fischer, K.J. "Initial validation of MRI-based joint contact modeling using high-resolution images" Orthopaedic Research Society 52nd Annual Meeting, Chicago, IL, 2005.

- Onyszchuk, G., Al-Hafez, B., He, Y.Y., Bilgen, M., Berman, N.E.J. and Brooks, W.M. "Development and Implementation of a Controlled Cortical Impact Model of Traumatic Brain Injury: Characterization Based on MRI, Histology and Behavioral Data." Society for Neuroscience Meeting, Washington D.C., 2005.
- Arnold, P.M., Farooque, M., Bilgen, M., Citron, B.A. and Festoff, B.W. "Overexpression of protease nexin I provides neuroprotection and blocks neuroinflammation after spinal cord injury in mice." Society for Neuroscience Meeting, Washington D.C., 2005.
- Bilgen, M., Dancause, N., Al-Hafez, B. and He, Y.Y. "Manganese-enhanced MRI of spinal cord in rat." Int. Soc. for Magnetic Resonance in Medicine 13th Scientific Meeting and Exhibition, Miami Beach, FL, 2005.
- Bilgen, M., Al-Hafez, B., He, Y.Y., Malone, T. and Brooks, W.M. "Magnetic resonance angiography of rat spinal cord at 9.4 T: a feasibility study." Int. Soc. for Magnetic Resonance in Medicine 13th Scientific Meeting and Exhibition, Miami Beach, FL, 2005.
- Benavides E, Spencer P, Bilgen M, Al-Hafez B, Misra A, Wang Y, Katz JL, Weimer KA, McNutt K. Diffusion Tensor MRI of the TMJ Disc. 35th Annual Meeting & Exhibition of the AADR, 30th Annual Meeting of the CADR, 83rd Annual Meeting & Exhibition of ADEA, 2006, Abstract #0715.
- Thoomukuntla, B., Pillai, R.R., McIff, T.E., Bilgen, M., Ateshian, G.A., Fischer, K.J. "Validation of an MRI-based method for in vivo joint contact mechanics analyses." Summer Bioengineering Conference, CO, 2005.
- Fischer, K.J., Thoomukuntla, B., Ateshian, G.A., McIff, T.E., Bilgen, M. and Toby E.B. "Initial validation of MRI-based models for in vivo contact data." American Association for Hand Surgery meeting in Tucson, AZ, 2006.
- Bhaskar Thoomukuntla, Terence McIff, Mehmet Bilgen, Bruce Toby (Co-author), Kenneth Fischer. "Preliminary Validation of MRI-Based Contact Modeling for Analysis of In Vivo Joint Mechanics." 2006 Summer Bioengineering Conference, Amelia Island Plantation, Amelia Island, FL, June 21 - 25, 2006.
- Bilgen M. "Evaluation of spinal cord injury in mouse using longitudinal magnetic resonance imaging." The 24th Annual National Neurotrauma Society Symposium, July 7-9, 2006, St. Louis, MO.
- Bilgen M. Relationship between continuous harmonic phase and discrete homogeneous strain analysis methods and beyond. 6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Santa Fe, NW. Nov. 2-5, 2007
- Alrefae T and Bilgen M. A simple time-dependent model of the left ventricle motion – implementation using tagged mri. 6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Santa Fe, NW. Nov. 2-5, 2007
- Alrefae T and Bilgen M. Time-reversal operation to improve estimation performance of left ventricle motion using tagged mri. 6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, Santa Fe, NW. Nov. 2-5, 2007
- Bilgen M. Imaging Corticospinal Tract Connectivity in Injured Rat spinal Cord Using Manganese-Enhanced MRI. Joint Annual Meeting ISMRM-ESMRMB, Berlin, May 19-25, 2007.
- Bilgen M. Comparison of spinal vasculature in mouse and rat: investigations using magnetic resonance angiography.
- Alenezy MD, Smirnova IV, Loganathan R, Alrefae T and Bilgen, M. Effects of exercise training on the performance of diabetic heart. Joint Annual Meeting ISMRM-ESMRMB, Berlin, May 19-25, 2007.
- Bilgen M. Longitudinal mri of spinal cord injury in mouse: changes in signal patterns associated with the inflammatory response. Joint Annual Meeting ISMRM-ESMRMB, Berlin, May 19-25, 2007.
- Huang ZL, He YY and Bilgen M. Visualization of mouse corticospinal tract by manganese-enhanced magnetic resonance imaging. Joint Annual Meeting ISMRM-ESMRMB, Berlin, May 19-25, 2007.
- Bilgen M. Magnetic resonance imaging of spinal cord injury in rodent models. The 25th Annual National Neurotrauma Meeting, Kansas City, MO. July 30 – August 1, 2007.

- Fischer KJ, Waller AJ and Bilgen M., Toby, E.B., Kunz, M., McIff, T.E., Eckstein, F. Cartilage deformation measured by mri image segmentation validates mri-based modeling results. Proceedings of the ASME 2008 Summer Bioengineering Conference. Marco Island, FL. June 25-29, 2008.
- Tatar I, Chou PC and Bilgen M. Imaging corticospinal tract connectivity in injured rodent spinal cords using manganese-enhanced magnetic resonance imaging. 9th Annual Frontiers in Neuroscience Day, Middleton Place, Charleston, SC. March 14, 2008.
- Chou PC, Tatar I and Bilgen M. Longitudinal MRI of spinal cord injury in mouse: changes in signal patterns associated with the inflammatory response. 9th Annual Frontiers in Neuroscience Day, Middleton Place, Charleston, SC. March 14, 2008.
- Bilgen M. Neuronal and vascular changes in Syringomyelia: investigations using longitudinal MRI. 16th annual scientific meeting and exhibition of ISMRM. Toronto, Canada. May 3-9, 2008.
- Bilgen M. Variations of intensity patterns of manganese-labeled corticospinal tract with spinal levels. 16th annual scientific meeting and exhibition of ISMRM. Toronto, Canada. May 3-9, 2008.
- Bilgen M. Longitudinal dynamic contrast-enhanced (DCE-) MRI of spinal cord injury in mouse. 16th annual scientific meeting and exhibition of ISMRM. Toronto, Canada. May 3-9, 2008.
- Alrefae T and Bilgen M. A model-based time-reversal of left ventricular motion improves cardiac motion analysis using tagged MRI. 16th annual scientific meeting and exhibition of ISMRM. Toronto, Canada. May 3-9, 2008.
- Alrefae T, Alenezy MD, Popel EI and Bilgen M. Tracking motion in tmri data using binary image processing techniques. 16th annual scientific meeting and exhibition of ISMRM. Toronto, Canada. May 3-9, 2008.
- Bilgen M. Longitudinal MRI investigation of neuronal and vascular changes in Syringomyelia induced by contusive trauma. The 26th annual national neurotrauma society symposium. Orlando, FL. July 27-30, 2008.
- Tatar I, Chou PC and Bilgen M. In vivo mapping of blood spinal cord barrier function following spinal cord injury in mouse using dynamic contrast-enhanced mri The 26th annual national neurotrauma society symposium. Orlando, FL. July 27-30, 2008.
- Chou PC, Tatar I, Kindy M and Bilgen M. Multimodal mri evaluation of acute mild-contusive injury in mouse spinal cord. The 26th annual national neurotrauma society symposium. Orlando, FL. July 27-30, 2008.
- (Invited) Bilgen M. Tagged magnetic resonance imaging for evaluating regional cardiac function: data acquisition and processing approaches. Society for Industrial and Applied Mathematics (SIAM) Conference on Life Sciences. Montreal, Quebec, Canada. Aug. 4-7, 2008.