



MEDICAL PHYSICS GRADUATE PROGRAM ALUMNI NEWSLETTER

Volume 6 - 2012

From the Program Director:

There were many changes at MDACC and GSBS during the past year. As a follow-up to some of the searches that I reported as ongoing in last year's newsletter, Dr. Thomas Buchholz was named as the Division Head of Radiation Oncology, Dr. Oliver Bögler was appointed as the new Sr. VP for Academic Affairs (replacing Dr. Tomasovic), Dr. Erik Paulson (formerly at Duke) was appointed as Chair of the Department of Diagnostic Radiology, and Drs. Michelle Barton (MDACC) and Michael Blackburn (UTHealth) were named as the new GSBS Deans (replacing Dr. Stancel). With Dr. Ronald DePinho appointed as the new president of MDACC last summer, the search is now on for the next president of UTHealth.

As you will read later in the newsletter, our faculty and students have continued to be very active this year, resulting in several important appointments and awards. My congratulations to all those mentioned explicitly as well as to any others whose awards or appointments were unknown to us. Please drop Georgeanne a line with any such events and we will make sure to highlight them in future issues of the newsletter!

As always, I wish to express my sincere appreciation to all those who contribute to our ability to maintain such a highly respected educational program.

I hope to see many of you in Charlotte!

Ed Jackson

Number of Students Admitted to the Medical Physics Program:

Year	PhD Program	SMS Program
2002	5	4
2003	4	2
2004	4	2
2005	4	4
2006	6	5
2007	6	4
2008	10	8
2009	9	6
2010	12	7
2011	6	5
2012	6	3

2012 Applicant Data for Students Admitted to the Specialized Masters and PhD Programs:

Program	Verbal GRE	Quantitative GRE	Analytical GRE	GPA
SMS	620	756	3.9	3.7
PhD	551	769	4.4	3.8

Members of the Incoming Class for Fall 2012:

SMS in Medical Physics Program

Jennifer Sierra Irwin / UT-Austin
Ming Jung "Mindy" Hsieh / Purdue University
Dana Lewis / Louisiana State University

PhD Program in Medical Physics

Xenia Favè / Florida Institute of Technology
David Fried / University of North Carolina
Megan Jacobsen / Concordia College
Sarah Joy*/ UTHSC-Houston
James Kerns / UTHSC-Houston
Hannah Lee / Washington University
Wendy Siman / Columbia University

*Started January 2012

Recent Graduates:

The following trainees completed their degree requirements during the 2011-12 academic year:

SMS in Medical Physics Program

- ***Kevin Casey*** – Radiation Oncology Physics Residency Program, MDACC
- ***Jonathan Mueller*** – Medical Physicist, Air Force Medical Support Agency, Biloxi, MS
- ***Emily Neubauer*** – Medical Physicist, Dana Farber - Brigham & Women's Cancer Center, Boston, MA
- ***Jared Ohrt*** – Medical Physicist, Radiation Physics, MDACC
- ***Kiley Pulliam*** – Continuing on for her PhD
- ***Paige Summer*** – Medical Physicist, Radiological Physics Center, MDACC
- ***Roman Repchak*** – Medical Physicist, Air Force Medical Support Agency, Biloxi, MS
- ***Jackie Tonigan*** – Continuing on for her PhD

PhD Program in Medical Physics

- **Richard Castillo** – Postdoctoral Fellow, Radiation Oncology, MDACC
- **Cheukkai Becket Hui** – Postdoctoral Fellow, Medical School, UTHealth-Houston
- **Annelise Giebeler** – Medical Physicist, Scripps Proton Therapy Center, San Diego, CA
- **Vaibhav Juneja** – Postdoctoral Fellow, Medical School, UTHealth-Houston
- **Yoshikazu Tsuanashima** –
- **Yevgeney Vinogradskiy** – Assistant Professor, University of Colorado Denver
- **Rui Zhang** – Academic Medical Physicist, Mary Bird Perkins Cancer Center, Baton Rouge, LA

Feedback from alumni is always welcomed by the Program! Please send all suggestions or comments to gmoore@mdanderson.org.

Honors and Awards during the 2011-12 Academic Year:

Hua Ai (Mentor: Tinsu Pan)

- ❖ 3rd place winner in the Young Investigators Symposium at the Spring Meeting of SW-AAPM

Chad Bircher (Mentor: Yiping Shao)

- ❖ Recipient of the Radiation Instrumentation Travel Grant from the IEEE to attend the Nuclear Science Symposium and Medical Imaging Conference in Valencia, Spain, October 2011

Lawrence Bronk (Mentor: Renata Pasqualini)

- ❖ Recipient of a Schissler Foundation Fellowship in Cancer Research

Kevin Casey (Mentor: David Followill)

- ❖ Poster Finalist at the GSBS Trainee Research Day. Title of poster: *Development and Implementation of a Remote Audit Tool for High Dose Rate (HDR) ¹⁹²Ir Brachytherapy using Optically Stimulated Luminescence Dosimetry.*

Richard Castillo (Mentor: Thomas Guerrero)

- ❖ Recipient of the Aaron Blanchard Award in Medical Physics for 2012

Jongmon Cho (Mentor: Geoffrey Ibbott)

- ❖ 4th place winner in the SNM Young Investigator Symposium

John Eley (Mentor: Rebecca Howell)

- ❖ Recipient of a Rosalie B. Hite Fellowship for 2011-12

Samuel Fahrenholtz (Mentor: Jason Stafford)

- ❖ Finalist for the John Cameron Young Investigator Symposium for 2012

Shane Kraft (Mentor: Mary Martel)

- ❖ Recipient of a 2011-201 CPRIT Training Grant Fellowship
- ❖ Finalist for the John Cameron Young Investigator Symposium for 2012

Jason Matney (Mentor: Radhe Mohan)

- ❖ Poster titled *Effects of Respiratory Motion in Proton vs. Photon for Stage II-III Non-Small Cell Lung Cancer* was chosen for presentation at the poster competition at UTMDACC Trainee Research Day 2012

Jessica Nute (Mentor: Dianna Cody)

- ❖ 1st place winner in the Young Investigators Symposium at the Spring Meeting of SW-AAPM

Sarah Scarboro (Mentor: Stephen Kry)

- ❖ Renewal of a American Legion Auxiliary Fellowship
- ❖ Recipient of a P.E.O. Scholar Award

Daniel Smith (Mentor: Wendy Woodward)

- ❖ Recipient of a Johnson Foundation Graduate Student CSCDB (Center for Stem Cell and Developmental Biology) award.

Adam Yock (Mentor: Laurence Court)

- ❖ 4th place winner in the Young Investigators Symposium at the Spring Meeting of SW-AAPM

Robert J. Shalek 12th Biennial Fundraiser

Eighty-Five M.S. and Ph.D. students have been supported by fellowships to date. The first round of letters for solicitation of donations for the 12th Biennial Fundraiser went out in October 2011. In the current fundraising cycle, we have received \$21,050 from 28 individuals, and \$800 from corporations and others for a total of \$21,850. If anyone has questions on how to make a donation, they may contact Georgeanne Moore at (713) 563-2548 or by sending an email to: gmoore@mdanderson.org.

Premasters Shalek Fellowship Recipients

Fall 1989

Mike Gazda
Scott Jones

Fall 1990

Maria Graves
John Wallace

Fall 1991

Robert Praeder
Twyla Willoughby

Fall 2002

Earl Gates
Kenneth Homann

Hilary Loupee
Claire Nerbun

Fall 2003

Blake Cannon
Scott Davidson

Fall 2004

Fall 1992

Peter Balter
Kay Jones

Fall 1993

Kyle Antes
Sarah Danielson
Dena McCowan
Donna Reeve
Matthew Vossler

Fall 1994

Victor Howard
Donna Reeve
Steve Thompson
Matthew Vossler

Fall 1995

Jonathan Dugan
Teresa Fischer
Russell Tarver

Fall 1996

Michael Bieda
Tamara Duckworth
Gwendolyn Myron

Fall 1997

Christopher Baird
Michael Lemacks
Luke McLemore

Fall 1998

Christopher Cherry
Dee-Ann Radford

Fall 1999

Laura Butler
Amanda Davis
Nicholas Koch
Jennifer O'Daniel

Fall 2000

Michael Beach

Fall 2001

Melinda Chi
Gary Fisher
Jackeline Santiago
Kelly Kisling
David Zamora

Michael Bligh
Ryan Hecox
Hilary Voss

Fall 2005

Renee Dickinson
Susannah Lazar
Alanna McDermott
Paige Nitsch

Fall 2006

Maria Bellon
Jimmy Jones
Nathan Pung
Yevgeney Vinogradskiy

Fall 2007

Triston Dougall
Georgi Georgiev
Ryan Grant
Katie West

Fall 2008

Joseph Dick
James Kerns

Fall 2009

Sarah Joy
Emily Neubauer
Paige Summers
Jackie Tonigan

Fall 2010

Jennelle Bergene
Kevin Casey
Jared Ohrt
Kevin Vredevoogd

Fall 2011

Olivia Huang
Elizabeth McKenzie
James Neihart
Matthew Wait

Fall 2012

Jennifer Sierra Irwin
Ming Jung Hsieh
Dana Lewis

***New Program Faculty and Associates
2011-12:***

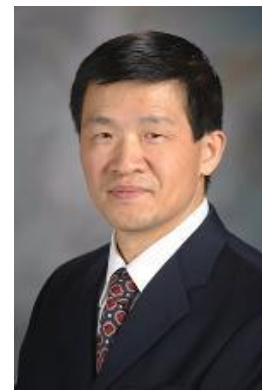
Clearly, the Program cannot succeed without the commitment of its faculty and associates. We are happy to report that the following faculty and program associate members have recently joined our Program.

New Program Faculty

Xinming Liu, PhD, Assistant Professor, Imaging Physics

Research Interests:

- Digital radiography and digital mammography
- Digital imaging detector technique
- Medical image quality measurement and evaluation
- CT radiation dose management
- Biomedical instrumentation



New Program Associates

- *Dustin Gress, MS, Sr. Medical Physicist*
- *Heng Li, PhD, Assistant Professor*
- *Wei Liu, PhD, Assistant Professor*
- *Paige Summers, MS, Medical Physicist*

Predoctoral Shalek Fellowship Recipients

Summer 1991

John Bayouth

Fall 1994

Usman Qazq

Summer 1997

Aaron Blanchard

Summer 1998

Shannon Bragg-Sitton

Summer 1999

Nicholas Zacharopoulos

Fall 2007

Malcolm Heard

Summer 2011

Shuaiping Ge

Fall 2011

Annelise Giebeler

Summer 2012

Justin Mikell

Annual UTMDACC Alumni Luncheon

Please join us for the Annual MDACC Alumni Luncheon at the upcoming AAPM Annual Meeting!

Tuesday, July 31, 2012

Charlotte Convention Center

Room 207AB

12:30 – 2:00 p.m.



**GSBS Medical Physics Program
Trainee Presentation Information
for the Upcoming AAPM Meeting
in Charlotte NC**

**Sunday, July 29, 2012
Biomedical Modeling and Outcome Modeling
Assessment, Therapy Short Oral
1:30 – 2:15 PM, Ballroom B**

Kenneth Homann SU-C-BRB-1	Radiogenic Second Cancer Risk Differences in Female Hodgkin Lymphoma Patients Treated with Proton Versus Photon Radiotherapies
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**Sunday, July 29, 2012
Clinical Dose Calculation Tools and Informatics –
Therapy Short Oral
1:30 – 2:15 PM, Room 213AB**

Jared Ohrt SU-C-213AB-5	IMRT QA Using R&V Data, Treatment Records, and a Second Treatment Planning System
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**Sunday, July 29, 2012
X-Ray Nuclear and PET Imaging–Therapy Short Oral
2:15 – 3:00 PM, Room 217A**

Michael Silosky SU-D-217A-2	Effects of Energy-Window Width and Spectral Effective Energy on Estimation of Gamma Camera Dead time Using the Decay Method
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Hua Ai SU-D-217A-5	Auto-Registration of Cardiac PET/CT Images with a 3D Weighted Gradient Correlation Algorithm
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**Sunday, July 29, 2012
Joint Imaging - Therapy General Poster Discussion
3:00 – 6:00 PM, Exhibit Hall**

Joshua Yung SU-E-J-53	A Phantom Validation Study of a 3D Background Phase Model for MR Thermometry
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Moiz Ahmed SU-E-J-129	Target-Specific Optimization of Four-Dimensional Cone Beam Computed Tomography
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**Sunday, July 29, 2012
Therapy General Poster Discussion
3:00 – 6:00 PM, Exhibit Hall**

Kiley Pulliam SU-E-T-41	2D vs. 3D Gamma Analysis Establishment of Comparable Clinical Action Limits
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Jessie Huang SU-E-T-43	The Effects of Image Resolution and Noise on the Gamma Dose Distribution Comparison Method for IMRT QA
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Kevin Casey SU-E-T-81	Development and Implementation of a Remote Audit Tool for High Dose Rate (HDR) Ir-192 Brachytherapy Using Optically Stimulated Luminescence Dosimetry
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Jennelle Bergene SU-E-T-86	Development and Implementation of the Use of Optically Stimulated Luminescence Detectors in the
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	Radiological Physics Center Anthropomorphic Quality Assurance
Kevin Vredevoogd SU-E-T-103	Three-Dimensional Measurements of Dose and LET from a Proton-Beam via Polymer Gel Dosimetry
Scott Ingram SU-E-T-116	The Water Equivalent of Organic Liquid Scintillators for Proton Dosimetry
Mitchell Carroll SU-E-T-132	Investigation of Photon and Proton Overlapping Fields in PRESAGE-Dosimeters
Yi Pei Chen SU-E-T-394	Comparison of Planned Dose Distribution vs. Delivered Dose Distribution for Both IMRT and Proton Therapy Using Weekly Repeat NDCT Data Sets
Yoshi Tsunashima SU-E-T-395	Achievability and Optimization of Synchrotron-Based Respiratory Gate Spot Scanning Proton Beam Delivery
Justin Mikell SU-E-T-425	Impact of Model Based Dose Calculation Algorithm for Ir-192 Intracavitary Brachytherapy with Shielded Applicator
Roman Repchak SU-E-T-447	Evaluation of the Anisotropic Analytical Algorithm (AAA) Heterogeneity Correction Dose Calculation in Flattened and Flattening-Filter-Free (FFF) Beams for High Energy X-Ray Beams Using the Radiological Physics Center (RPC) Lung Phantom
Jessie Huang SU-E-T-510	Calculation of High Resolution and Material-Specific Photon Energy Deposition Kernels
Mitchell Carroll SU-E-T-560	Inter- and Intra- Fraction Variations in Esophageal Dose for Lung Cancer Patients, and the Impact of Setup Technique and Treatment Modality
Joshua Niedzielski SU-E-T-575	To Analyze the Clinical Impact of Esophageal Sparing on Treatment Plans for Patients with Grade 3 Esophagitis

**Sunday, July 29, 2012
John R. Cameron Young Investigator Symposium
4:00 – 6:00 PM, Ballroom B**

4:48 PM Shane Krafft SU-F-BRB-5	Mean Regional Dose to the Esophagus Predicts Acute Toxicity Rate for Lung Cancer Patients
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5:24 PM Samuel Fahrenholtz SU-F-BRB-8	Uncertainty Quantification by Generalized Polynomial Chaos for MR-Guided Laser Induced Thermal Therapy
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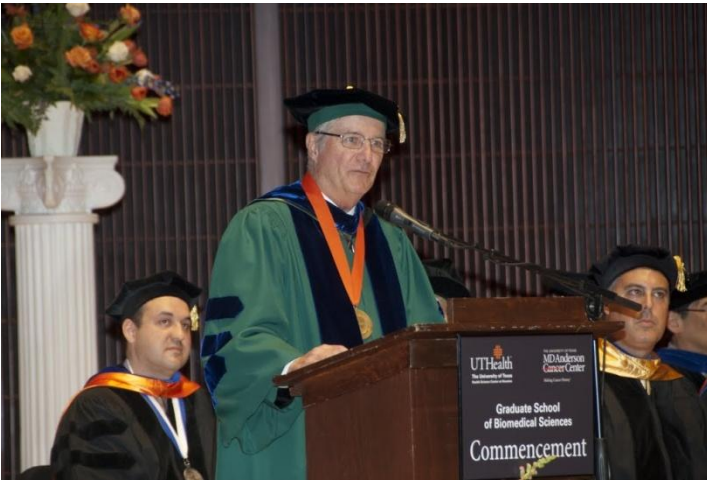
**Monday, July 30, 2012
Therapy Scientific Session – Dosimetry Safety
Procedures
2:00 – 3:50 PM, Ballroom B**

2:40 PM Kiley Pulliam MO-D-BRB-6	An Analysis of 13,000 Patients Specific IMRT QA Results from 13 Different Clinical Treatment Services
Tuesday, July 31, 2012 Joint Imaging – Therapy Scientific Session – IGRT Novel Modalities 8:00 – 9:55 AM, Ballroom A	
8:20 AM Jongmin Cho TU-A-BRA-3	Obtaining Elemental Tissue Composition of Proton Therapy Patients Using Positron Emission Tomography: A pilot Study
Tuesday, July 31, 2012 Therapy Scientific Session – Off-Line Devices and Detectors for Dosimetry I 8:00 – 9:55 AM, Ballroom B	
8:40 AM Daniel Robertson TU-A-BRB-5	A Quenching Correction Method for Volumetric Scintillation Dosimetry of Proton Beams
8:50 AM Landon Wootton TU-A-BRB-6	Characteristics of a Commercial Photodiode Based Plastic Scintillation Detector Prototype
Tuesday, July 31, 2012 Joint Imaging – Therapy Scientific Session – Motion Assessment and Management: CBCT 10:30 – 12:30 PM, Room 213CD	
12:10 PM Henry Yu TU-C-213CD-11	A universal Margin Reconstruction Method for Estimating Anatomy Induced Proton Range Uncertainties
Tuesday, July 31, 2012 Therapy Scientific Session – Basic Radiation Biology and Animal Studies 10:30-12:30 AM, Ballroom B	
12:00 PM Laurence Bronk TU-C-BRB-10	Nanoscaffold-Enhanced Proton Therapy
Tuesday, July 31, 2012 Imaging Scientific Session MRI I 4:30 – 6:00 PM, Room 217A	
4:50 PM Vaibhev Juneja TU-G-217A-3	Validation of Diffusion Spectrum Imaging (DSI) Derived Crossing Fiber Angles Using a Novel Phantom and Post-Processing
5:15 PM Cheukkai Hui TU-G-217A-5	Improved Look-Locker Acquisition Scheme and Curve Fitting Procedure
Tuesday, July 31, 2012 Imaging Scientific Session – CT Dosimetry I 4:30 – 6:00 PM, Room 217BCD	
4:30 PM Sarah Scarboro TU-G-217BCD-1	Investigation of a Commercial OSLD System for CT Dosimetry
Wednesday, August 1, 2012	

Joint Imaging – Therapy Scientific Session – Motion Assessment and Management: Novel Modalities 4:30 – 6:00 PM, Room 213CD	
4:30 PM John Eley WE-G-213CD-1	HD Optimization for Scanned Ion Beam Tracking Therapy for Moving Tumors
Wednesday, August 1, 2012 Therapy Scientific Session - Treatment Planning for External Beam Therapy 4:30 – 6:00 PM, Ballroom CD	
4:40 PM Shuaiping Ge WE-G-BRCD-2	Speed Up Standard Optimization of IMRT Treatment Planning Through the Application of GPU's
Thursday August 2, 2012 Imaging Scientific Session–Breast Imaging/Spectral CT 8:00 – 9:55 AM, Room 217BCD	
8:50 AM Jessica Nute TH-A-217BCD-7	Characterization of Brain Foci of Susceptibility Into Hemorrhagic or Calcific Etiologies Using Gemstone Spectral Imaging-CT
Thursday August 2, 2012 Joint Imaging – Therapy Scientific Session – Uncertainty Assessment 8:00 – 9:55 AM, Ballroom A	
8:50 AM Adam Yock TH-A-BRA-6	Optimal PTV Margin Expansions Along Six Anatomic Directions in Oropharyngeal IGRT
9:20 AM Peter Park TH-A-BRA-9	Statistical Assessment of Plan Robustness Under Uncertainties: IMRT vs. Proton Therapy
Thursday August 2, 2012 Therapy Scientific Session – Treatment Delivery and Verification: Intensity-Modulated Techniques 10:30 – 12:30 PM, Ballroom B	
11:30 AM Joey Cheung TH-C-BRB-7	Feasibility of On-line Range Adaptive Radiation Therapy
12:20 PM Jackie Tonigan TH-C-213AB-6	The Magnitude of H&N IMRT Dose Delivery Errors from Three Possible Failure Modes: Beam Quality, Symmetry, and MLC Position
Thursday August 2, 2012 Therapy Scientific Session – Biological Modeling and Outcome Modeling / Assessment 10:30 – 12:30 PM, Room 213AB	
11:10 AM Christopher Peeler TH-C-213AB-6	Correlating Areas of Radiation Toxicity with Relative Biological Effectiveness-Weighted Dose Distribution in Proton Radiotherapy
Thursday August 2, 2012 Joint Imaging – Therapy Scientific Session – Innovations in Imaging for Therapy 1:00 – 2:50 PM, Room 218	
1:52 PM Jason Matney TH-E-218-6	Dosimetric Effects of Respiratory Motion in Proton vs. Photon Therapy for Stage II-III NSCLC

Selected 2012 GSBS Graduation Highlights

The 2012 GSBS Commencement Ceremony was held at the Rice Campus on Saturday, May 5, 2012.



Dean Stancel opens the ceremony



Commencement Speaker – Mary-Claire King, PhD



Associate Dean Victoria Knutson gives the graduates a pep talk before the ceremony



MDACC President Ronald A. DePinho congratulates a graduate



Associate Dean Eric Solberg and Assistant Dean Michelle Steiger



GSBS Receptionist with PhD graduate, Vaibhav Juneja

Our sincere thanks to our alumni, current students, faculty, and staff for another successful year for the Medical Physics Program!

Medical Physics Program Trainee Corner

Student Faculty Liaison Report

Daniel Robertson

If we have learned anything from our colleagues in the Genetics program, it is that we must adapt or die. In that spirit, this year the student-led aspects of the program continued to evolve to meet the needs of graduate students in an ever-changing world.

The third annual Medical Physics Graduate Student Research Retreat was held on Friday, July 22nd 2011. The main event of the retreat was a research presentation competition between 10 of the students. Dr. Jatinder Palta from the University of Florida was the guest expert researcher. Dr. Palta facilitated discussion during the presentation competition and gave a seminar on “Safety in Medical Physics” and “Developing Research Ideas”. The winners of the competition were Sam Fahrenholtz (1st), Ryan Bosca (2nd), and Henry Yu (3rd). The retreat also featured the 2nd annual *Medical Physics Jeopardy*, a medical physics quiz show game with guest host Dr. Jatinder Palta. The retreat participants also enjoyed food catered by Mo’s BBQ and a dinner with Dr. Palta at Palazzo’s Trattoria. The retreat organizing committee included Daniel Robertson, Ryan Bosca, Jenia Vinogradskiy, Jessica Nute, Adam Yock, and Moiz Ahmad. Special thanks go to Georgeanne Moore and Gloria Mendoza, without whom the retreat would not have happened.

Student-led courses and seminars included a Candidacy Exam Prep seminar and the 3-week short course, “Introduction to Matlab”. The students also led a session of New Student Orientation, featuring an updated “New Student Survival Guide” and presentations from several students on “Things to do in Houston”. Highlights of these presentations included Henry Yu’s comedic report on the state of sports in Houston, and Landon Wootton’s 12-slide presentation on Texas BBQ. We also launched a new program during prospective student interviews, where current students spent an hour mingling with the prospective students before their interviews.

Following the success of our Medical Physics program flag football team, Jackie Tonigan led the effort to secure program Jerseys for intramural sports. The jerseys debuted during intramural soccer season, with our team “Incoherent Scatter.” While the teams didn’t manage to take home the trophy during the football or soccer seasons, the intensity of their play was clearly shown by two torn ACLs and one fractured foot. Go Team!

Perhaps the greatest change in student affairs this year was the introduction of the Medical Physics Program Student Council. The five-member council was formed in an effort to involve more students in program leadership and to share the ever-increasing responsibilities of the Student Faculty Liaison. Elections were held at the Spring student meeting, followed by a peaceful transition of power from Daniel Robertson, the 2011 Student Faculty Liaison, to the new student council, consisting of Austin Faught, Student Faculty Liaison; Jackie Tonigan, Assistant Student Faculty Liaison; John Eley, Education Chair; Scott Ingram, Social Chair; and Katie Dextraze, First-year Representative.

Our program has also been well-represented at the graduate school level of student leadership. Ryan Bosca served as the 2011-2012 GSBS Graduate Student Association vice-president, and he was recently replaced by Adam Yock, who was elected GSA VP for the 2012-2013 term.

Fourth Annual Medical Physics Student Retreat

On Friday, July 13, 2012, the fourth annual Medical Physics Program Graduate Student Research Retreat will be held at the South Campus facility. The retreat will again be funded by the M.D. Anderson Cancer Center Graduate Education Committee (GEC), with the support of the Executive Vice President and Provost, Dr. Raymond DuBois. The goal of the retreat is to encourage program students to organize a day-long retreat that allows them to exchange information about their individual research projects and to interact with an external leader in the field. This year, the external leader is Dr. Charles Coffey, from Vanderbilt University.

Will Hanson - Recipient of the Marvin M.D. Williams Award

By David Followill

Congratulations to Will

We have always just known him as just “Will”, not Dr. Hanson. In case you haven’t heard, Will is being honored at this year’s AAPM meeting where he will receive the **Marvin M.D. Williams Award** at the AAPM 2012 Awards Ceremony. This award recognizes an AAPM member for an eminent career in medical physics who had a significant influence on the development of the profession of medical physics through professional matters, education of medical physicists, and clinical practice development. Will epitomizes these qualities, dedicating his career to improving the treatment of cancer through the delivery of quality radiotherapy doses within NCI sponsored clinical trials. His dedication to the education of medical physics students, residents, therapists and dosimetrists has always been paramount. Many of us were taught how to calibrate a megavoltage beam by him in MD Anderson’s short courses and medical physics graduate courses.



Will received his B.S. degree in Physics in 1963 and went on to get his Ph.D. degree in Physics in 1971 from the University of Tennessee. He then came to MD Anderson in 1971 to do a Post-doc in the Department of Radiation Physics where Dr. Robert Shalek was chairman. Will is best known as being a part of the Radiological Physics Center from 1972 until he retired in 2001. He became PI of the RPC grant and Director of the RPC in 1985 and directed the RPC during a time that saw an enormous growth in clinical trial participation, and the introduction of computerized treatment planning, 3D conformal therapy, HDR brachytherapy, and IMRT into radiotherapy. He even endured and survived the births of TG-21 and TG-51.

Will’s dedication to education can be seen in the vast number of medical physics graduate students he has mentored while at MD Anderson. In total he served on the graduate committees of 34 students. In addition to the graduate school, Will was instrumental in the various MD Anderson short courses, having taught in the External Beam Dosimetry – Principles and Calibrations course for nearly 15 years. He taught the Introduction to Medical Physics I: Basic Interactions graduate course in the MD Anderson medical physics graduate program for over 15 years.

Will was able to accomplish a lifetime of excellence with a smile on his face, patience, and a calm demeanor. Much of his personality can be traced to his dedication to family, his deep religious faith, and a caring nature. He was an unbelievable person to work for and to learn from. The number of medical physicists who have been helped, guided or have interacted with Will number in the 100s. We should all aspire to be the kind of Medical Physicist, educator and person that Will Hanson is. Congratulations, Will, on a well-deserved honor.

2012 Highlights from the Department of Imaging Physics

New Personnel

Faculty – Newly Appointed and Promotions

- **Richard Bouchard, PhD**, promoted to research track Instructor
- **Dustin Gress, MS**, appointed as Sr. Medical Physicist, Section of Radiological Physics
- **Ping Hou, PhD**, promoted to Associate Professor, Section of MR & Ultrasound Physics

Classified – Newly Appointed and Promotions

- **Victoria Becerra**, Administrative Assistant
- **Stacy Hash**, Medical Imaging Technologist
- **Renjie He, PhD**, Sr. Research Scientist
- **Jerrell Jones**, Medical Imaging Technologist
- **Jessica Martinez**, Administrative Assistant
- **Wilma Mason**, promoted to Sr. Admin. Assist.
- **John A. Moore**, Systems Analyst I
- **Anne Nguyen**, PACS Technologist
- **James Pennington**, Sr. Machinist and Fab Tech
- **Kathy Prentice**, promoted to Sr. Admin Assist.
- **Wolfgang Stefan, PhD**, Research Programmer
- **Phuc “Peter” Truong**, Systems Analyst II
- **Lisa Wetter**, Program Manager, Division Publications
- **Madhuri Sankaranarayanapillai, PhD**, Sr. Research Scientist
- **Douglas Webb**, promoted to Radiological Engineer
- **Brandy Reed**, promoted to Supervisor MIT, Diagnostic Imaging

Honors and Awards

- **John D. Hazle, PhD**
AAPM President Elect 2012, President 2013, and Chairman of Board 2014.
Elected Fellow of the American College of Radiology
- **Richard Bouchard, PhD**, Recipient of an Odyssey Fellowship, which sponsors outstanding postdoctoral fellows who wish to pursue innovative cancer research at M.D. Anderson.
- **Dianna D. Cody, PhD**
Promoted to Director of Clinical Operations, Imaging Physics
Selected to participate in a day long Executive Development Seminar for Aspiring Leaders hosted by the American Association of Medical Colleges in Washington, DC, May 2012. She is one of only 4 participants selected from MDACC.

- **Edward F. Jackson, PhD**
Elected to the University of Texas Academy of Health Science Education and named as a Distinguished Teaching Professor by The University of Texas System. Academy membership is limited to those faculty who have demonstrated excellence and exceptional commitment to education.
Elected chair-elect of the UT System Faculty Advisory Council. He will be the incoming chair-elect, followed by a year as chair, and a year as past chair. The UT FAC is the faculty representative body of the UT System.
Elected Fellow of the American College of Radiology.
- **A. Kyle Jones, PhD**
Elected President of SWAAPM.
- **Osama Mawlawi, PhD**, elected president of ABSNM.
- **Marc Ramirez, PhD**, Recipient of an Odyssey Fellowship, which sponsors outstanding postdoctoral fellows who wish to pursue innovative cancer research at M. D. Anderson.
- **Thomas Nishino, PhD**
Selected as the recipient of the MDACC School of Health Professions RT Program Adjunct Faculty Award.

Research Updates

Funded Grants:

- CPRIT-RP101243-P05 (Project PI: Bankson): Project 5: Fast Imaging Methods for Hyperpolarized Nuclei, 08/01/2010 - 07/31/2013, \$760,757 direct costs
- NIH/Internal Prostate SPORE (Project PI: Bouchard): Development and Optimization of a Photoacoustic- Ultrasonic Transrectal Imaging System for the Improved Visualization of Prostate Brachytherapy Seeds, 04/01/2012-03/31/2013, \$50,000 direct costs
- NIH/NCI-S100D010403 (PI: Hazle): A photo acoustic imaging system for small animals, 05/01/2012 – 04/31/2013, \$697,877 direct costs
- NIH/NCI-U24CA126577A (PI: Hazle): Experimental Cancer Imaging Research Program (ECIRP), 03/29/2007-02/29/2013, \$292,784 direct costs
- CPRIT – RP100934 (PI: Gascoyne): Antibody-Free Microfluidic Isolation and Molecular Analysis of

- Circulating Cancer Cells, 05/01/2010 – 04/30/2013, \$868,022 direct costs
- NIH/NCI- P30CA016672 (Cancer Center Support Project PI: Hazle) : Small Animal Imaging Facility, 07/01/78-06/30/2013, \$160,420 direct costs
- RSNA-NHLBI-PB-EB-2010-159 (PI: Jackson): Recovery- Quantitative Imaging Biomarker Alliance (QIBA), 04/01/2011-08/31/2012, \$60,347 direct costs
- NIH-T32CA119930 (PI: Jackson) : Medical Physics Training Grant for Image-Guided Therapy Research, 08/04/06-07/31/2012, \$92,214 direct costs
- Siemens, (PI: Kappadath): Optimization of the Yttrium-90 bremsstrahlung SPECT/CT for SymbiaT SPECT/CT scanners, 02/01/2012-01/31/2013, \$25,040 direct costs
- CPRIT- RP110562-P2 (Project PI: Pan): Advanced Volumetric Imaging and Adaptive Radiotherapy for Detecting and Correcting for Inter-fractional Changes, 06/01/2011-05/31/2016, \$295,004 direct costs
- CPRIT-RP120326 (PI: Shao): In-Situ PET Imaging for Adaptive Proton Therapy, 12/01/2011-11/30/2014, \$435,924 direct costs
- MDACC IRG (PI: Shao): Novel PET Imaging for translational Radiation Therapy Research, 06/01/2012-05/31/2014, \$50,000 direct costs
- NIH/NCI-R01CA138502 (PI: Shaw): DTS Imaging with a Digitally Addressable X-Ray Source (DAXS), 05/01/2010 – 02/28/2015, \$2,378,957 direct costs
- NIH/NCI-R01CA103830 (Subcontract PI: Sokolov): Optical Systems for in Vivo Molecular Imaging of Cancer, 09/23/2011-07/31/2013 \$109,899 direct costs
- NIH/NCI-R01EB008101 (Subcontract PI: Sokolov): Acoustic Imaging of Sentinel Mode Metastasis Using Plasmonic Nanosensors, 04/01/2012-02/28/2016, \$77,017 direct cost
- NIH/NCI- R01CA143663 (PI: Sokolov): Biodegradable Plasmonic Nanoparticles for Cancer Imaging and Therapy, 01/01/2010 – 12/31/2014, \$1,367,061 direct costs
- NIH/NCI- R01CA149740 (Subcontract PI: Sokolov): Molecular Photothermal Therapy of Cancer using Targeted Metal Nanoparticles, 07/01/2010 – 05/31/2015, \$125,000 direct costs
- NIH/NCI-R01CA151372 (Subcontract PI: Stafford): Nanoparticle-Directed Photothermal Ablation of Primary Brain Tumors guided by Magnetic Resonance Thermal Imaging, 07/12/2010 – 04/30/2013, \$150,875 direct costs
- NIH/NCI-R21EB010196 (PI: Stafford): Prospective 3D Treatment Planning for MR-Guided

- Laser Induced Thermal Therapy Procedures, 09/01/2010 – 08/31/2012, \$250,000 direct costs
- Alliance for Nanohealth- W81XWH-10-2-0125 (Subcontract PI: Stafford): Project 2:Multimodal Image guided interstitial laser therapy with magnetofluorescent nanostructures, 04/15/2011-04/15/2013, \$30,380 direct costs
- AAPM (PI: Willis), Application for Support of Clinical Residency in Imaging, 07/01/2011-06/30/2013, \$33,500 direct costs

Imaging Physics Residency Program

The program now has a total of five residents.

- Andreea Dohatcu, PhD – Completed the program on September 1, 2011 and is currently working as a Clinical Imaging Physicist for a consulting practice in Ohio.
- James Winslow, PhD – Completed the program, on August 31, 2011 and is currently working as a Radiation Physicist at Duke Medical Center.
- Wendy Siman, MS – Completed the program on January 31, 2012 and has accepted admission to the GSBS Medical Physics PhD Program
- Travis Greene, MS – Completed the program and is currently working with a medical physicist consulting practice in Florida.
- Shannon Fritz, PhD – joined the program in May 2011 and has started her second year.
- Ching-Yi Hsieh, MS – joined the program in August 2010 and is nearing completion of the program.
- Nathan Busse, MS –joined the program in August 2011 and is nearing completion of his first year (from Vanderbilt University).
- Cristina Dodge, MS – joined the program in May 2012 (from Wayne State University).
- Leland Page, PhD – joined the program in May 2012 (from UT-San Antonio).



Imaging Physics Resident Presentation Information for the Upcoming AAPM Meeting in Charlotte, NC

<i>Sunday, July 29, 2012</i>	
<i>Imaging Short Oral – X-Ray and CT Imaging</i>	
<i>1:30 – 2:15 PM, Room 218</i>	
<i>1:55 PM</i>	<i>Evaluation of a CT-Based, Semi-Automated Lung Mass Estimation Method Under Varying Acquisition Conditions</i>
<i>Nathan Busse</i>	
<i>SU-C-218-6</i>	
<i>Sunday, July 29, 2012</i>	
<i>Imaging General Poster Discussion – Imaging Posters</i>	

3:00 – 6:00 PM, Exhibit Hall	
Travis Greene SU-E-1-102	Independent Implementation of AAPM 7G-150 Draft Image Receptor Test Recommendations
Tuesday, July 31, 2012 Imaging Scientific Session – Radiography/Fluoroscopy 8:00 – 9:55 AM, Room 218	
9:00 AM Shannon Fritz TU-A-218-7	Quantifying Patient Thickness for Which An Anti-Scatter Grid is Unnecessary for Digital Radiographic Abdomen Exams

Wednesday, August 1, 2012 Imaging Scientific Session – MRI 2 4:30 – 6:00 PM, Room 217A	
5:50 PM Ching-yi Hsieh WE-G-217A-9	Phase Imaging Measurement of Static Magnetic Field Homogeneity

2012 Highlights from the Department of Radiation Physics

Honors and Awards

- **Radhe Mohan, PhD** – Named Fellow, ASTRO.
- **Patrick Brown, JD** – Finalist for the Institution’s Distinguished Mentor Award.
- **Laurence Court, PhD** – Selected by the JACMP Board of Editors for: the Elekta Award of Excellence for an Outstanding Radiation Oncology Physics Article in 2011 titled *Use of reduced dose rate when treating moving tumors using dynamic IMRT, 12(1) 28-34.*
- **Geoffrey Ibbott, PhD** – has a paper listed in the top 10 most read on the PMB website (www.iop.org/ej/PMB). The list is an all-time list for the journal with papers going back more than 25 years.
- **Wei Liu, PhD** – results published 5 years ago now are termed the Liu Limit by several papers to the plasma astrophysics field.

Featured Articles

- **Xiaodong Zhang PhD and Yupeng Li, PhD** – ‘Parameterization of multiple Bragg curves for scanning proton beams using simultaneous fitting of multiple curves’ featured article in *Physics in Medicine and Biology*
- **Kiley B. Pulliam, MS, Rebecca M. Howell, PhD, David Followill, PhD, Dershan Luo, PhD, R. Allen White, PhD and Stephen Kry, PhD** – ‘The clinical impact of the couch top and rails on IMRT and arc therapy’, featured article in *Physics in Medicine and Biology*.
- **Samuel Beddar, PhD** – ‘Liquid scintillator speeds IMPT verification’, featured article in *Physics in Medicine and Biology*.
- **Samuel Beddar, PhD and Francois Therriault-Proulx, PhD** – ‘Advances in scintillation dosimetry’ in *Physics in Medicine and Biology* and as an

exclusive report of the European Society of Therapeutics and Radiation Oncology Conference.

New Personnel

Faculty

- **Mark Garcia, MS**, Medical Physicists, Satellite – Albuquerque, NM
- **Yoshifumi Hojo, PhD**, Assistant Professor
- **Paige Summer, MS., Jr.** Medical Physicist, RPC
- **Zhongxiang George Shao, PhD**, Assistant Professor

Trainees

- **Sandeep Dhanesar**, Proton Fellow
- **Martin Sell**, Graduate Student non-UTHSC
- **Clint Zeringue, PhD**, Postdoctoral Fellow

Classified

- **Scott Drews**, Accelerator Technician II
- **Angela Espinoza**, Clerk
- **Annelise Giebeler, PhD**, Research Intern
- **Charles Holmes, Jr.**, Physics Assistant
- **Tyler Keith**, Radiological Physics Technician I
- **Matthew Kerr**, Physics Assistant
- **Hannah Nguyen**, Research Dosimetrist
- **Keith Schraitle**, Accelerator Technician II
- **Kelly Tharp**, Sr. Machinist & Fabrication Technician
- **Sarah Welch**, Administrative Assistant

Major Achievements in Radiation Physics Research

- Institutional Research Grant (PI: Wei Liu, PhD) *Large scale parallelized 4D worst-case robust optimization for intensity-modulated proton therapy - \$50,000*
- Radiadyne (PI: Samuel Beddar, PhD) *Performance evaluation of the Radiadyne OARtrac system – Phase II - \$49, 275*
- National Cancer Institute (PI: David Followill, PhD) *Radiological Physics Center, \$1,755,577*

- Philips Healthcare (PI: Radhe Mohan, PhD and Xiaodong Zhang) *Evaluate Pinnacle proton dose engine* - \$54,180
- Sister Institution Network Fund (PI: Xiaodong Zhang, Ph.D.) *Using the MDACC Auto Plan System to improve radiotherapy plan quality while reducing cost* - \$100,000.
- AAPM (PI: Laurence Court, PhD) AAPM-IPEM Medical Physics Travel Grant - \$3,372 .
- St. Jude Children's Research Hospital (PI: Marilyn Stovall, Ph.D.) *Expand cohort for the childhood cancer survivor study* - \$37,500
- St. Jude Children's Research Institute (PI: Marilyn Stovall, PhD) Childhood cancer survivor study - \$476,193 (Year 18) - \$476,193
- National Cancer Institute (PI: Marilyn Stovall, PhD) *Support Services for medical radiation dosimetry for epidemiology studies* - \$360,776 (Year 3)
- Institutional Research Grant (PI: Rajat Kudchadker, PhD) *Real-time in-vivo rectal wall dosimetry for prostate radiotherapy using plastic scintillating detectors* - \$50,000.
- Duke University (PI: Geoffrey Ibbott, PhD) *Accurate high resolution 3D dosimetry* - \$18,824 (Year 9)
- NIH-Fogarty International Center (PI: Phillip Taddei, PhD) *Radiotherapy outcomes for children in developing versus developed countries* - \$124,716 (Year 3).

Radiological Physics Center

Section of Outreach Physics

Radiological Physics Center – Funding sources

- The RPC grant was funded for its second year of its current three year grant period. However, the initial funding level was at 73.5% of last year's amount. Without knowing whether the funding would be restored many cost saving actions were taken. We just recently, 6 months into the year, were notified that our funds would be restored to last year's amount. Radiological Physics Center, CA 10952, 2011-2013, \$10,365,915 (\$3,455,305/year includes program income generated under the Additional Cost Alternative).
- Advanced Technology Radiation Therapy Quality Assurance Review Consortium, 2 U24 CA081647, Washington University, 7/1/2007–6/30/2012, \$409,901 (\$81,980/year)
- Veterans Administration, National Medical Physics Peer-Review of Radiation Therapy Quality Assurance Operations, 9/27/2010-9/26/2013, \$740,718 (\$246,906/year)
- The funding from Massachusetts General Hospital was granted a no cost extension to the end of 2012. These funds from MGH/NCI are for Development of Standard Operating

Procedures for Dosimetry Validation and Accreditation of Proton Therapy Centers, 4/1/2011-12/31/2011, \$618,929 (\$618,929/year)

- A total of 1,833 active institutions now being monitored, including 35 in Canada, 210 elsewhere in 41 countries throughout the world. The RPC phantoms have been irradiated over 2200 times we began this program back in 2011. Our experience still shows that still about 10-15% of institutions fail to irradiate the phantoms according to their own treatment plans.
- Geoff Ibbott became the Chairman of the Department of Radiation Physics at MDACC. David Followill became the new PI and Director of the RPC as of October 2010.
- The RPC has audited 10 proton facilities. Ten proton centers have irradiated TLD (including one in Japan) and site visits have been conducted at eight sites and clinical trial credentials have been given to seven sites. Three more site visits are scheduled for this fall.

Other projects within the RPC

- RPC staff and students are presenting their work on the following 25 topics at this AAPM meeting from proton therapy to brachytherapy. Most projects are collaborations with staff or faculty in the Departments of Radiation Physics and Diagnostic Imaging Physics; seven other academic centers and at several industrial partners:
- The Radiological Physics Center's Quality Audit Program: Where Can We Improve?, *D Followill, J Lowenstein, A Molineu, P Alvarez, J Aguirre, S Kry, P Summers, G Ibbott*
- Investigation of a Commercial OSLD System for CT Dosimetry, *S Scarborough, D Cody, D Followill, P Alvarez, M McNitt-Gray, D Zhang, L Court, S Kry*
- Ion Recombination Correction Factors (Pion) for Varian TrueBeam High Dose Rate Therapy Beams, *S Kry, R Popple, A Molineu, D Followill*
- Second Cancers From Radiation Therapy Procedures, *S Kry, R Howell*
- Three-Dimensional Measurements of Dose and LET From a Proton Beam Via Polymer Gel Dosimetry, *K Vredevoogd, G Ibbott, M Gillin, N Sahoo, S Kry, K Gifford, M Maryanski*
- The Magnitude of H&N IMRT Dose Delivery Errors From Three Possible Failure Modes: Beam Quality, Symmetry, and MLC Position, *J Tonigan, S Kry, P Summers, P Balter, T Diel, D Followill*
- 2D vs. 3D Gamma Analysis: Establishment of Comparable Clinical Action Limits, *K Pulliam, R Bosca, D, J O'Daniel, Followill, S Kry*

- An Analysis of 13,000 Patient-Specific IMRT QA Results From 13 Different Clinical Treatment Services, *K Pulliam, D Followill, L Court, L Dong, M Gillin, K Prado, S Kry*
- High-Energy Photon Standard Dosimetry Data: A Quality Assurance Tool, *J Lowenstein, S Kry, A Molineu, P Alvarez, J Aguirre, P Summers, D Followill*
- Development and Implementation of a Remote Audit Tool for High Dose Rate (HDR) Ir-192 Brachytherapy Using Optically Stimulated Luminescence Dosimetry, *K Casey, P Alvarez, A Lawyer, S Kry, R Howell, S Davidson, D Followill*
- Development and Implementation of the Use of Optically Stimulated Luminescent Detectors in the Radiological Physics Center Anthropomorphic Quality Assurance Phantoms, *J Bergene, S Kry, A Molineu, D Bellezza, L Court, P Alvarez, V Johnson, D Followill*
- Calculation of High Resolution and Material-Specific Photon Energy Deposition Kernels, *J Huang, N Childress, S Kry*
- Design, Development, and Evaluation of a Modified, Anthropomorphic, Head, Quality Assurance Phantom for Use in Stereotactic Radiosurgery, *A Faught, S Kry, D Luo, A Molineu, D Bellezza, R Gerber, S Davidson, W Bosch, J Galvin, R Drzymala, R Timmerman, J Sheehan, M Gillin, G Ibbott, D Followill*
- Evaluation of the Anisotropic Analytical Algorithm (AAA) Heterogeneity Correction Dose Calculation in Flattened and Flattening-Filter-Free (FFF) Beams for High Energy X-Ray Beams Using the Radiological Physics Center (RPC) Lung Phantom, *R Repchak, A Molineu, R Popple, S Kry, R Howell, D Followill*
- The Effects of Image Resolution and Noise On the Gamma Dose Distribution Comparison Method for IMRT QA, *J Huang, K Pulliam, D Followill, S Kry*
- Dosimetry of double scattered proton beam fields used for cranio-spinal irradiation, *X Song, N Sahoo, R Wu, M Taylor, R Georges, X Zhu, P Summers, M Gillin*
- Evaluation of Zebra multi-layer ionization chamber system for patient treatment field and machine QA for spot scanning and passive scattering proton beams, *S Dhanesar, N Sahoo, M Taylor, X Song, F Poenisch, P Summers, H Li, X R Zhu, M Gillin*
- Credentialing results from a spine anthropomorphic phantom, *A Molineu, P Alvarez, N Hernandez, F Yin, D Followill*
- Experimental evaluation of deterministic Acuros XB radiation transport algorithm for

heterogeneity dose calculation using the Radiological Physics Center's lung phantom, *T Han, F Mourtada, R Repchak, J Tonigan, J Mikell, R Howell, M Salehpour, A Molineu, D Followill*

- The Radiological Physics Center's anthropomorphic quality assurance program, *C Amador, N Hernandez, A Molineu, P Alvarez, D Followill*
- The Radiological Physics Center's credentialing dosimetry reviews: their effect on clinical trial deviation rates, *A Hollan, J Lowenstein, H Nguyen, F Hall, J Roll, I Harris, D Followill*
- Investigation of 3D dosimetry for an anthropomorphic spine phantom, *R Grant, G Ibbott, J Yang, J Adamovics, D Followill*
- Comparison of proton therapy institutional data collected by the RPC, *P Summers, G Ibbott, M Moyers, R Grant, D Followill*
- The approval process for the use of proton therapy in NCI-Sponsored clinical trials, *P Summers, G Ibbott, M Moyers, R Grant, D Followill*
- Evaluation of the characteristics of TLD LiF:MgTi -100 powder: a measure of consistency between multiple batches of powder, *P Alvarez, J Aguirre, S Smith, D Followill*

Education (Mohammad Salehpour, Ph.D.)

Postdoctoral Fellows

Since the last report, two postdoctoral fellows have joined the program:

- **Fada Guan**
- **Clint Zeringue**

Radiation Physics Residency Program

The program has a total of five residents:

- **Adam Melancon, PhD** completed the residency program and offered an Assistant Professor position in the Department of Radiation Physics.
- **James Kerns, MS** will be completing the program in August 2012. He will remain in Radiation Physics as a GRA while working on his PhD.
- **Aman Anand, PhD** joined the program in January 2011. He will be completing the program in January 2013.
- **Ming Yang, PhD** joined the program in August 2011.
- **Abbie Wood, PhD** joined the program in August 2011.

Four new radiation physics residents will join the Program this summer: Michelle Quan, PhD (MD Anderson Postdoctoral Program), Kevin Casey, MS (GSBS Medical Physics Program), Rajesh Pridikiti,

MS (UT Southwestern Medical Center), and Xiaoqiang Li, MS (Graduate student- non-UTHSC).

Proton Physics Fellowship Program

The Proton Fellowship Program is under the direction of **Narayan Sahoo, PhD** and **Falk Pönisch, PhD** completed the program in June 2010 and joined the Department of Radiation Physics as an Assistant Professor. **Xiaofei Song, PhD** continued as a second year Fellow. **Zhifei Wen, PhD** joined as a fellow in August 2010. After about nine months in the Fellowship, Dr. Wen joined the Department of Radiation Physics as an Assistant Professor. Ms. **Sandeep Dhanesar, M.Sc.** (Doctoral Candidate, ABD) from Queen's University in Canada has been selected as the new Proton Physics Fellow. **Xiaofei Song, PhD** will continue as a third year Proton Physics Fellow. This program, to our knowledge the first of its kind, is designed to provide specialized clinical training to physicists interested in proton radiation therapy. The clinical physics group and the Proton Therapy Center greatly appreciate the contributions made by our Proton Physics Fellows and wish them the very best of success in their future endeavors.