Message from the President

Dear UF Health and Medical Physics Alumni and Friends,

Welcome to the second installment of Spectrum, a newsletter from the Society of Health and Medical Physics Students (SHMPS) at the University of Florida.

Since the inaugural edition of Spectrum, the Medical Physics program at UF has gone through an exciting change. We are pleased to announce the merger of our program with the J. Crayton Pruitt Family Department of Biomedical Engineering. As one of the few student organizations in this new department, SHMPS plays a vital role in service and academic outreach programs. Through this newsletter, we hope to share many of the activities of SHMPS, as well as the academic and career achievements of its current and past members.

Enjoy!

Message from the Editor

This edition of Spectrum focuses on building new relationships both internally and externally. Foremost, we would like to thank our local Florida chapters of AAPM and HPS for their continued support and opportunities to highlight our academic talents. We would also like to thank our sponsors: Sun Nuclear Corporation, Velocity Medical Solutions, Elekta, and Mittauer and Associates. Their contributions allow students to travel to national conferences and share our research efforts with the medical physics community.

In this issue, we reached out to alumni to tell their stories of progression from being a graduate student to a practicing medical physicist. We find their experiences a testimony to the great education at the University of Florida.
The Medical Physics Graduate Program at the University of Florida – Its Past, Present, and Future

The University of Florida’s Medical Physics Graduate Program has been in continuous existence for 50 years and has produced hundreds of Medical Physics graduates over that time. For the past 30 years, the program has been a joint effort of the multiple departments within the College of Engineering and College of Medicine. This joint effort continues to evolve to allow the program to capitalize on diverse resources to grow strong research programs and optimize clinical training and relevance. The program received initial CAMPEP Accreditation in November of 2001 and was reaccredited in 2006 and in 2011. Since 2006, the program has maintained a relatively constant enrollment of approximately 40 graduate students and stable cadre of faculty. In May of 2011, the program migrated its academic and administrative home to the J. Crayton Pruitt Family Department of Biomedical Engineering (from the Department of Nuclear and Radiological Engineering). Faculty participants and curriculum remain unchanged and the transition has been largely administrative in nature.

A Brief History of the Program

In 1961, the Colleges of Medicine and Engineering jointly sponsored initiation of the medical physics graduate program through the Department of Radiology and the Department of Nuclear Engineering Sciences. The graduate program was initially established as part of a U.S. Public Health Service funded program to train radiation health scientists. In 1966 and 1967, Dr. Emmett Bolch and Dr. Charles Roessler joined the Environmental Engineering and Nuclear Engineering faculty, respectively, and a tri-department program in Medical Health Physics was established, comprised of Environmental Engineering, Nuclear Engineering, and Radiology. Until 1972, the academic home of the Medical Physics program remained in Radiology. In 1972, however, the Chairman of the Radiology Department, Dr. Clyde Williams, felt that medical physics graduate students should have a more rigorous scientific curriculum than Radiology could offer, and the academic home of the program was thus transferred to the Department of Nuclear Engineering Sciences. Although the academic program was administered through the College of Engineering, clinical physics faculty involvement, and student activity in the clinical environment continued within the College of Medicine.
In the late 1970’s, a clear functional separation developed between diagnostic radiology and radiation therapy, which was consistent with the professional distinction that was evolving in these clinical areas. In 1986, Radiation Oncology became a separate department under the direction of Dr. Rod Million, and the Medical Physics program was a joint program of three departments: Radiology, Radiation Oncology, with the academic home for the program in Nuclear Engineering Sciences. In 1995, the Department of Nuclear Engineering Sciences changed its name to the Department of Nuclear and Radiological Engineering to more accurately reflect the department’s areas of emphasis, and in 1999, Dr. David Hintenlang assumed the role of the Medical Physics Academic Program Director. Since its initial Accreditation, the breadth of the program has expanded to four participating departments, to include Neurosurgery, and affiliate faculty at several other institutions, including the Robert Boissenault Oncology Institute, MD Anderson Cancer Center Orlando, and the Mayo Clinic, Jacksonville.

Parting Ways, but Not Saying Goodbye!
In 2010, the faculty and administration of the College of Engineering proposed that the continued development and advancement of the Medical Physics Graduate Program’s goals could best be achieved by moving the academic home of the program to the University’s J. Crayton Pruitt Family Department of Biomedical Engineering. At the same time, the nuclear engineering academic program at UF was moved to the Department of Materials Science and Engineering at UF. The nuclear reactor was maintained and strengthened, and is now fully staffed and completing a long anticipated upgrade to a fully digital control system. Dr. Wes Bolch continues to teach two senior level courses in the nuclear program, and Medical Physics also continues to be a popular graduate destination for UF nuclear engineering students.

Merging with Biomedical Engineering
In May 2011, three medical physics faculty (David Hintenlang, David Gilland, and Wes Bolch) transferred their tenure home from Nuclear & Radiological Engineering and the administration of student records and curriculum were transitioned to the J. Crayton Pruitt Family Biomedical Engineering Department. The UF Medical Physics Program has developed what we believe to be an academic program that provides a balance of clinical and research experience to its hundreds of graduates, many of whom have gone on to become recognized leaders in the field. The medical physics faculty recognizes that, in today’s dynamic health care and university systems, it is necessary for the program to continue to evolve and adapt to the changing environment. Continuing CAMPEP review and accreditation of the program provides an excellent independent review regarding the future evolution of the UF Medical Physics program.
A Bright Future of UF Medical Physics

The integration of the UF medical physics program within the UF Department of Biomedical Engineering was a tremendous success and has led to new research collaborations between faculty. For example, Wesley Bolch and his Ph.D. student Amy Geyer have been working jointly with colleagues from Johns Hopkins University on an NCI R01 grant to improve – on a microscopic scale – radiation dose estimates to patients undergoing alpha-particle radionuclide cancer therapy, with the goal of better predictive models of bone marrow and renal toxicity. One aspect of this research is to develop microscopic imaged-based models of the tissues of the kidney nephron (proximal tubules, Bowman’s capsule, etc.) and use these images to look at alpha particle cellular dosimetry. In collaboration with BME faculty member Brandi Ormerod, Ph.D. student Amy Geyer is now looking to perform antibody fluorescent staining of these renal tissues, and image sections of human kidney under a Zeiss 710 confocal laser scanning microscope. In another example, medical physics faculty member David Gilland is working with BME faculty member Huabei Jiang to develop a breast imaging system that couples the best features of SPECT nuclear medicine imaging and fluorescent optical imaging of breast tissue and lesions. In a further sign of our integration, David Hintenlang has now assumed the role of Graduate Coordinator for all BME, while former coordinator Hans Van Oostrom will now focus on the Department’s new undergraduate degree program. Within the UF BME undergraduate program, students select one of four tracks, one of which is medical physics and biomedical imaging. Thus, we hope to expand our medical physics program to the undergraduate level.

Don’t Be A Stranger!

In closing, the medical physics faculty at UF strongly encourages UF alumni to keep us updated on your professional activities and whereabouts. If you are ever in the North Florida area – business or vacation – please give us a call and stop by if you can. Otherwise, we hope to continue to meet alumni at national HPS, AAPM, and RSNA meetings. Go Gators!
Dr. Michael Wayson is a recent UF Medical Physics alumnus graduating from Dr. Wesley Bolch’s Advanced Laboratory for Radiation Dosimetry Studies in 2012 with his doctoral dissertation in “Computational Internal Dosimetry Methods as Applied to the University of Florida Series of Hybrid Phantoms.” Dr. Wayson is finishing his first year at the UF Department of Radiology Diagnostic Imaging Medical Physics Residency program at Shands Hospital and will be graduating in June 2014. After graduating from the residency program, Dr. Wayson plans to stay involved in the clinical setting. “I would like to be a diagnostic imaging physicist who can directly impact patient care,” Dr. Wayson said. Dr. Wayson attributes his current success to the UF Medical Physics program. “My Ph.D. at UF has honed my problem solving and research skills that directly translate to the clinical environment. I feel at ease solving complex problems using the skills and resource utilization that was ingrained in me at UF.”

When not in the clinic, Dr. Wayson enjoys sports, music, traveling, and food. In fact, Dr. Wayson has more talents than computational dosimetry and diagnostic calibrations. In his free time, Dr. Wayson composes music of all genres and enjoys playing the piano and guitar. We wish Dr. Wayson success during the last year of his residency and look forward to the future contributions that he has to offer our field.
Student Awards and Recognition

It is no surprise that our SHMPS members continue to take home some of the most coveted scholastic awards. SHMPS members have achieved recognition at state, national, and international conferences for their outstanding research and presentations, and we proudly highlight some of their recent accomplishments.

Conference and Presentation Awards:
• UF Biomedical Engineering, October 2012
  Matthew Hoerner - Anthony Stell Award
• UF Pruitt Research Day, November 2012
  Matthew Maynard - Best Student Speaker
• Annual AAPM Spring Clinical Meeting, March 2013
  Anna Mench - 1st place in Young Investigators Symposium
  Lindsay Sinclair - 2nd place in Young Investigators Symposium
• FL AAPM Spring Meeting, April 2013
  Badal Juenja - 1st place in Lawrence T. Fitzgerald Award for outstanding student presentation
  Anna Mench and - 2nd place honors in Fitzgerald Award
  Lindsay Sinclair - 3rd place honors in Fitzgerald Award
• 4th International Workshop on Computational Phantoms, May 2013
  Amy Geyer - 3rd place for Best Student Presentation
• 2nd James E. Turner Memorial Symposium, May 2013
  David Borrego – Best Student Presentation
  Elliott Stepusin – Distinguished Student Presenter
• 55th Annual AAPM Meeting, August 2013
  Olga Gopan - running for John R. Cameron Young Investigator Award

Grants and Fellowship Awards:
• National Institute of Health
  David Borrego - 2011 F31 Predoctoral Fellowship, Ruth L. Kirschstein National Research Service Award
• American College of Medical Physics
  Christopher Tien - 2011 Best Medical Physics Graduated Student Award
  Christopher Tien - 2011 Runner-up Young Investigators Symposium
• Health Physics Society
  Daniel Long - 2011 HPS Fellowship
  Justin Cantley - 2012 Dade Moeller Scholarship
  Amy Geyer - 2012 Richard J. Burk Jr. Fellowship
  Nelia Long - 2013 HPS Fellowship
• UF & Shands
  Kathryn Mittauer - 2013 W. Martin Smith Interdisciplinary Patient Quality and Safety Award
• Florida Education Fund
  Sharon Lebron - 2013 McKnight Doctoral Fellowship
Faculty Awards and Recognition

The medical physics faculty members are continually raising the bar for scholarly achievements as well as their continued service to our field. We would also like to proudly recognize recent faculty achievements.

Dr. Wesley Bolch’s team including UF Alumni, Dr. Matthew Hough, Dr. Perry Johnson, Dr. Didier Rajon, Dr. Derek Jokisch, and Dr. Choonsik Lee received the 2011 Roberts Prize for the best paper published in Physics in Medicine and Biology (PMB). Their paper, “An image-based skeletal dosimetry model for the ICRP reference adult male—internal electron sources” describes a model for assessing the dose to skeletal tissues. This model provides important applications in radiation protection and nuclear medicine as well as dosimetric evaluations following external photon irradiation in medical imaging and radiotherapy.

In 2012, Dr. Bolch was named a Fellow of the Health Physics Society as well as a Fellow of the American Association of Physicists in Medicine. These prestigious nominations honor senior members of the medical physics community for their professional leadership, research accomplishments, and their dedication to education.

The Director of Clinical Radiological Physics at the University of Florida, Dr. Manuel Arreola, was recognized at the FL AAPM Spring meeting for his tenure of service to the organization. Dr. Arreola has dedicated the past three years to the Florida AAPM as their chapter president.
Located just off the University of Florida campus, the American Cancer Society’s Winn-Dixie Hope Lodge provides a home away from home for cancer patients as they go through daily outpatient treatments. Since opening in 1986, the Hope Lodge has housed more than 8,000 patients and their family members. The Hope Lodge plays a vital role in allowing out-of-town and even out-of-country patients the ability to be treated at UF Shands Hospital, as well as provide the camaraderie of hope among fellow cancer fighters and survivors.

Meals are not included in this service, allowing SHMPS the opportunity to provide an annual meal and BINGO night to the residents. Our yearly tradition will continue well into the future at the delight of the residents and SHMPS members alike.
Dr. Arun Gopal, a graduate from both the UF Medical Physics program and the UF Radiation Oncology Therapeutic Medical Physics Residency program, is one alumnus who bleeds orange and blue. Dr. Gopal’s beginnings were, however, orange and white at UT St. Jude Children’s Hospital where he studied under Dr. Sanjiv Samant. In 2003, Dr. Samant’s lab moved to the Gator Nation and the rest is history. “At UF, I got an opportunity to work with some of the leading researchers in radiotherapy physics that helped direct and focus my research goals during my transition from another university,” Dr. Gopal said.

Dr. Gopal’s dissertation, which focused on developing and optimizing image guided radiotherapy techniques, allowed for yet another easy transition to the clinic. “I had opportunities to merge my graduate research with clinical training as a head start towards a formal radiation oncology physics residency at UF, which is one of the most competitive training programs in the world.” Dr. Gopal attributes his clinical skills to the UF residency program, “I benefitted a lot from access to Shands Cancer Center, where I had hands on training with state of the art equipment and technology in modern radiation oncology.”

After graduating from residency in 2012, Dr. Gopal accepted a position as a clinical medical physicist at Columbia University’s New York Presbyterian Hospital in New York, NY. Dr. Gopal enjoys New York pursuits, such as discovering hole in the wall venues and attending activity classes. “I roll my own sushi now! It’s a welcome release after a hectic week in the clinic,” says Dr. Gopal. Dr. Gopal plans to keep his hands in research both at Columbia and with collaboration at UF. Even after so many years, Dr. Gopal still maintains working and personal relationships with the medical physics faculty, residents, and students at UF, an attestation to the lifelong relationships that the UF Medical Physics program fosters.
Relay for Life

The Santa Fe College Relay for Life event was held April 12th, 2013. This event raised both money and awareness for the American Cancer Society with SHMPS contributing $2,135 - the 6th highest team. Each team walked the track for 18 consecutive hours in an effort to show support for the ongoing fight against cancer. Each team was evaluated for their spirit throughout the night by their participation in organized activities and overall enthusiasm. SHMPS proudly finished in third place for spirit, the same position as last year. SHMPS Relay for Life team captain, Matthew Horner, was crowned “Mr. Relay.” This year was the third time SHMPS has participated in Relay For Life, raising over $5,000 total.

Relay for Life has become a central part of the community service effort put forth by SHMPS every year. We thank everyone for their time, efforts, and support towards our Relay for Life team. If you would like to make a donation on behalf of SHMPS for next year’s event, please contact Shannon O’Reilly at soreilly@ufl.edu.
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Public outreach

In November of 2011, SHMPS hosted Mrs. Karen Musser from Apopka, Florida and her senior honors class in physics. Thanks to generous support from the Florida Chapter of the Health Physics Society, UF medical physics faculty and students had an introductory lunch with the class, and then followed with a series of lectures on “Thinking of Becoming an Engineer?” Dr. Wesley Bolch gave a brief overview of what engineering is all about, the various kinds of engineering, and what degree programs are offered at the University of Florida. The presentations that followed focused on biomedical engineering, specifically the field of medical physics with a focus on diagnostic imaging and radiation therapy. Students were given opportunity to ask questions, followed by tours of the Shands Cancer Center, the McKnight Brain Institute, and the Department of Radiology. It is hoped that more of these class visits can be arranged in the coming years. Furthermore, SHMPS will be partnering with the UF branch of the American Nuclear Society during summer of 2014 to host a full week of workshops for high school physics teachers in which certified curricula on nuclear power and medical imaging will be demonstrated and provided to the teachers for incorporation into their existing lesson plans. It is hoped that this will result in more and more Florida students coming to UF for studies in medical physics and nuclear engineering.

Intramural Sports

The SHMPS intramural team, known as the A-bombers, just completed a successful season in both men’s basketball and flag football. The team had an aggregate record of 11-3, including an undefeated season in basketball. Team members Danny Long, Matt Maynard, BC Schwarz, Elliott Stepusin, Matt Hoerner, Daniel McFadden, David Borrego, and Juan Tellez contributed to the A-bombers’ success. The basketball team dominated the competition with tough, hard-nosed defense holding opposing teams to under 28 points per game. The flag football team capped off a winning season going 3-0 down the stretch by averaging 49 points per game in those contests. The A-bombers would like to acknowledge upcoming graduates Danny Long, Matt Maynard, and Juan Tellez for their years of outstanding participation. SHMPS continued involvement in intramural sports at UF is important for the camaraderie of our group and allows members to interact with other campus organizations, promoting a healthy, competitive spirit. We look forward to the A-bombers continued success in 2013-2014 season!
E-Fair

E-fair is an annual event hosted by the University of Florida where multiple engineering disciplines are able to present their fields to grade school children. This great opportunity allows younger generations to build their interest of real-life applications of science by engaging in interactive booths set up by various organizations.

This year SHMPS provided fun ways for grade school students to see medical physics in action. The SHMPS booth consisted of a physical phantom, a lightbox with radiographs, and an ultrasound machine used to view different objects submerged in water. This important introduction of physics and its applications in medicine intrigued the children and hopefully planted the seed of medical physics interest in this younger generation.
With Your Support...

The Society of Health and Medical Physics Students is involved in a number of worthwhile community service events that we hope will instill a sense of pride among UF health and medical physics alumni. The University of Florida Student Government provides SHMPS with a budget which covers basic operating costs but also restricts the types of activities that are reimbursed. As a result, the majority of service events – Hope Lodge and Ronald McDonald House dinners, Science Teacher Workshop, Road to Recovery, etc. – have significant costs that are absorbed by the department and/or students. As a UF health or medical physics alumnus, SHMPS kindly invites you to contribute to our continued success through a monetary donation of your choice. Your invaluable support is greatly appreciated and, hopefully, gratified by the information contained within this newsletter. Email shmps.uf@gmail.com for more information.

Thank you!
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SPECTRUM SPRING 2013
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