DUKE UNIVERSITY
MEDICAL PHYSICS
GRADUATE PROGRAM

2011 ALUMNI NEWSLETTER

The Official Newsletter of the Duke Medical Physics Alumni Association

Hock Plaza

IN THIS ISSUE

HAROLD PARK, MS
Alumni President

Our Alumni Community

The number of alumni from the Duke Medical physics program continues to grow with each passing year. There are over 60 alumni with many more on the way as this year's matriculating class numbers 30 strong! We have alumni in various disciplines of medical physics living all over the United States and in other countries. How do we stay connected? What events are happening with the medical physics program that we as alumni should be made aware? The Duke Medical Physics Alumni Association hopes to be the bridge that creates and strengthens connections between alumni, current students, faculty and the medical physics graduate program. But why are these connections important? How will the alumni association facilitate this?

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A Message from Our Program Director

The field of medical physics is enjoying a period of significant advancement, both in terms of its professional stature and its contributions to biomedical science. In this brief report, I would like to update you on things of importance to our program at Duke as well as to the field as a whole.

Starting with field as a whole, there are several important trends that I see that will influence the future of medical physicists. On the professional front, the move by the American Board of Radiology to require accredited graduate or residency education starting in 2012 and mandated residencies in 2014 for those interested in board certification is a harbinger of increased professionalism among clinical medical physicists. I am

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JAMES DOBBINS III, PHD
Director

DUKE MEDICAL PHYSICS ALUMNI NEWLETTER

Summer 2011

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Our Alumni Community

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Supporting One Another

The Duke medical physics program has alumni in clinical and research positions, PhD programs, residency positions, and industry. There is a wealth of knowledge and experience carried by our alumni which is making a difference to the people in their local hospital, office, and department. Many of us also have developed product or procedural expertise in the areas where we serve. In creating and strengthening connections within our Duke medical physics community, we can draw upon the talents we each have to support one another with questions or issues that arise or when we are looking for advice. We may feel more comfortable asking questions and receiving feedback in this forum rather than in other places that may be too large or too public. I have a small group of classmates I turn to with clinical questions to which I cannot find answers, and they have been very helpful to me. However, there are times that a question cannot be adequately addressed by this group due to lack of experience with that particular request. A forum that reaches out to our alumni community may give this question a better chance at being addressed.

There are a few ways we are investigating to try and build these connections. Currently we have a Duke Medical Physics Google Group that we will try to utilize for reaching out to each other. Later this year, we will also be launching an alumni website to be a central meeting place for alumni. Finally in this newsletter, an alumnus shares about a clinical procedure she found to be useful and relevant in a column titled “What’s New?” I hope that this evolves into a recurring column in future newsletters so that this can be one of the ways we can share and learn from one another.

Making an Impact

The alumni association also seeks to generate interest and engagement of alumni to support the current students and the medical physics program. These connections will allow alumni to make an impact on the lives of students in various ways. We can provide guidance and advice to students as they navigate their way through career decisions. For example, the program holds Career Day events and seminars for students that alumni can participate in and provide valuable insight. The medical physics retreat can also be a great opportunity for us to share our experiences, especially the ones we would have avoided at all costs!

In what other ways can we help out our future colleagues? Perhaps we can establish an internship program for students who wish to acquire clinical experience prior to graduation. Or maybe we can create summer school clinical crash courses at Duke to give students a taste of life in the clinic. Let’s do what we can to give back to the students and make our program as strong as it can be.

"Let's do what we can to give back to the students and make our program as strong as it can be."

Building a Community

Creating, maintaining and strengthening these connections with fellow alumni, students, faculty and the graduate program will ultimately allow us to build a Duke medical physics community that can thrive and make an impact in the world of medical physics. Even though some of this may sound far-fetched, I would like to encourage each of us to consider how we as alumni can contribute and participate in molding this community in the manner we desire. Please share your thoughts and ideas and we can see where this leads us. Together, I know we can make a difference.

Visit the **Duke Medical Physics Google Group @** http://groups.google.com/group/duke-medical-physics

A Message from our Program Director

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glad to report that efforts of the field to meet the 2012 challenge have been largely successful, as evidenced by data acquired through the new Society of Directors of Academic Medical Physics Programs, or SDAMPP (launched by us in 2008). The mandate of an accredited residency starting in 2014 for board eligibility has been a harder milestone to reach. The problem is the inadequate number of residencies available relative to the number of graduates seeking them. Starting three years ago, leaders in the field of medical physics education began meeting annually to address these educational issues, including the lack of a sufficient number of residencies. Dr. Samei and I had the privilege to be a part of those discussions through our leadership roles in SDAMPP. There are approximately 200-250 graduates of medical physics graduate programs in the U.S. and Canada each year, but only about 75-100 residency slots per year currently available. This is a substantial improvement over three years ago when there were only 25-50 residency slots per year. The leaders of the AAPM, CAMPEP, and SDAMPP having been working collaboratively to meet the challenge of the residency slots required for the 2014 mandate. Many new residencies are being created each year, but I believe that additional strategies will also be required to meet the full need. In that regard, two institutions have started new professional Doctor of Medical Physics (DMP) degree programs to help meet the need for residency-equivalent slots. The DMP degree has its advantages and disadvantages, but may be part of the overall solution, and we are pursuing starting such a degree at Duke. Despite the challenges that face our field in meeting the 2014 challenge, I do believe that after we get over the hurdle of producing enough residency slots, there will be an overall improvement in the quality of training provided for clinical medical physicists.

Another challenge that faces us as a field is how to prepare for "medicine of the future." There will be an increasing move towards personalized medicine, involving more functional imaging assessments of disease and personalized treatment strategies. The science required to make this vision of medicine a reality is a bit different than the type of work we traditionally do in medical physics but provides a very exciting opportunity for us as physicists to continue our strong legacy of contributing to the science of medicine. There are many new and exciting research avenues underway these days, and fortunately, many faculty members at Duke are at the leading edge of these innovations. I believe the next 20 years will be a very exciting time for medical physicists who are engaged in scientific research.

There are also exciting and important things to report about our program at Duke. Our students continue to excel scholastically (25 students presented papers at scientific meetings this last year – the largest number ever), and several of our students have won awards for their work. Sam Brady won the Lutz Moritz Memorial Award at the Health Physics Society annual meeting, and Mats Fredrickson won the best student paper award at the NC HPS meeting. Also, Andrew Thomas was first author of a paper selected for the "Highlights of 2010" recognition as one of the best papers in the journal Physics in Medicine and Biology this past year.

Our class size this year is also our largest ever. In the 2010-11 academic year we have 29 new MS and 4 new PhD

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A Message from our Program Director

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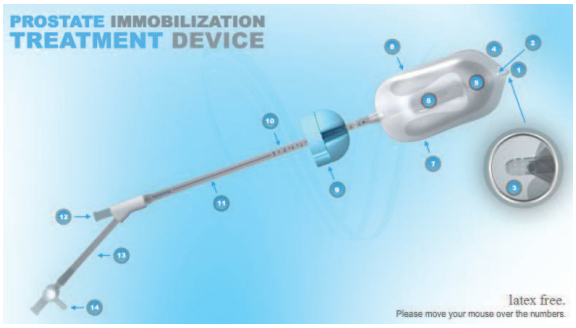
students for a total of 37 MS and 20 PhD students. This very large size Masters class resulted in part from our decision to bring Masters students in for our spring open house and our new option to use scholarship money as part of a work-study program for eligible students. While the larger class size produces some logistical challenges, we nonetheless are enjoying our expanded "family" and look forward to achievements of our students in the years ahead.

As we look at our growing number of alumni, I want to express appreciation for the efforts you are making to stay connected with one another and our program. You put on a wonderful alumni gathering during the AAPM meeting last summer, and your production of this newsletter helps keep the Duke medical physics community informed of our activities. I also encourage you to make available opportunities for internships and employment for our current students as you progress in your career.

All of the faculty of the program extend our heartfelt best wishes to you. We are proud of all that you are doing to make the world a better place through your work, whether research or clinical, and we consider it a privilege to have been a part of that journey with you.

What's New | Prostate Immobilization

SHERRY LEEPER (MS '09) currently works in the radiation oncology department at Lowell General Hospital in Lowell, MA. She is also a member of the New Professionals Subcommittee in the AAPM and wrote an article in the November/December 2010 AAPM Newsletter titled "What to Expect at Your First Job as a Clinical Medical Physicist". Her center began using rectal balloons on prostate patients about a year ago to help with immobilization and localization with external beam treatments.



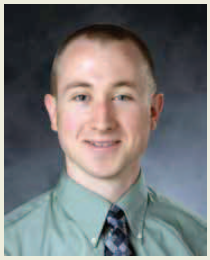
Schematic of the RadiaDyne rectal balloon treatment device for prostate immobilization (RadiaDyne LLC, Houston, TX, USA).

At my clinic we use RadiaDyne rectal balloons that are designed specifically for prostate IMRT treatments. This device is inserted into the rectum and then inflated with air or water, whichever your clinic decides to use. The balloon expands the rectal wall so that less of the rectum is in the treatment field, which improves the rectal DVH and allows for dose escalation to the prostate. Another benefit of the balloon is that it is specially shaped to cradle the prostate and seminal vesicles so that they are in a very reproducible position for daily treatments.

There has been much success with the rectal balloons at my clinic. The patients tolerate the balloons fairly well, and so far no one has declined them for use for their treatments. We have presimulation and pretreatment regimens to minimize rectal contents surrounding the balloon, and the balloon comes with a release valve to evacuate any excess gas seen on CT or CBCT. If you have any questions or would like to know more, feel free to contact me.

*Sherry Leeper can be reached at **sleeper@lowellgeneral.org**.*

Student Update



T. JORDAN SMITH (MS 11) was a recipient of the U.S. Air Force Health Professions Scholarship while at Duke, and will attend Commissioned Officer Training this summer before traveling to his permanent duty station at Travis Air Force base in Fairfield, CA. There he will train and work at the David Grant USAF Medical Center in diagnostic imaging, nuclear medicine, therapy, and medical health physics, as well as readiness, teaching, and regional support.

From January 2010 to May 2011, I've had the opportunity to serve on the Student Advisory Board (nicknamed StAB) to address any issues concerning the program from the student's point of view. We meet monthly with the Director of Graduate Studies to work at solving any problems noted by the members of the board or the rest of the student body. The current members of StAB are Titania Juang, Larry Cumberbatch, Steve Mann (GPSC representative), Jennifer Dixon, Jacob Hoberg, and Deon Dick (GSA representative).

I have also had the great pleasure of serving as the student representative to the Medical Physics Administrative Council, a monthly gathering of the leaders of our program, to discuss and vote on the major workings within. It has been a great chance to get to know the faculty, voice the concerns of the students, and hear of possible changes on the horizon.

DMP

You may remember from last year's issue that a survey regarding the hypothetical Doctorate of Medical Physics program was formulated, distributed, and analyzed by some of our own students. Despite the mixed opinions from around the country, two programs (Vanderbilt University and Texas Tech University) have pursued and been approved by CAMPEP to go ahead with the degree program, and Vanderbilt is taking applicants.

Duke is also considering such a program offering, and began seeking approval through the Graduate School last year. Due to several factors, though, the proposal has delayed. The new plan is to talk with the medical school about hosting the program, but the proposal, if successful, is not likely to be considered for final approval until the upcoming academic year.

Annual Student Retreat

For the second year running, StAB assisted Paco Robles, a current PhD candidate, in planning and executing a program-sponsored getaway at the start of the fall semester. At minimal cost, first-year, second-year, and PhD students traveled to Myrtle Beach, SC, for two days of student-led orientation talks, allowing the first-years an opportunity to hear from and talk to the upperclassmen about what to expect from our program in the time they'll spend here.

The retreat again proved to be an enjoyable and educational weekend, as well as a time to become acquainted with one another. This tradition is already planned for the coming fall, and I expect it will remain for years to come.

Record-Size Entering Class

The newest cohort to enter the program is the largest to-date, weighing in at 29 MS students plus 4 PhDs. This large number reflects a successful recruiting season, and brings with it a few challenges as you can imagine. Along with the Hock classroom being at capacity twice per week, the core course professors and TAs have their grading work cut out for them. Many students sought research positions at the outset of the first year, as not to risk losing their choice of laboratory.

The size of the entering class is the result of several factors, and is larger than was anticipated. The admissions committee is tasked to calculate the number of acceptance letters to send out each year, considering that some will choose not to attend Duke. This past year, however, the number of students accepting offers of admission was more than double the number of the previous year's cohort.

Regardless of the need to come early and claim a seat for class, the student body finished the spring semester in high spirits. Our program's ability to unite even a large group of future-physicists is still alive and well in its sixth year.

Alumni Interview | Victor Hosfeld, MS

VICTOR HOSFELD (MS '08) currently works in the department of Radiation Oncology at the MidMichigan Medical Center and is an adjunct professor at his alma mater, Kettering University, where he is teaching the first medical physics class ever offered there. His class is one of the courses required in order to receive a minor in medical physics. He just completed teaching his third term and shares his experiences with us.

How did you find this opportunity to teach a class in medical physics?

After graduating from Duke, I was invited by Kettering University to join the Board of Advisors for the Physics Department. Kettering has traditionally been considered a training ground for engineers, applied scientists, and managers for the automotive industry. The Physics Department headed by Dr. Bahram Roughani has done a phenomenal job of diversifying our curriculum to create more appeal and to suit the needs of students in our present economic climate. In an effort to remain competitive as a Physics Program, we created the architecture for the Medical Physics minor, and I was asked to design and instruct the "Medical Physics Principles" course.

How does a student at Kettering receive a minor in medical physics?

In addition to taking my course, students are also required to complete courses in modern physics, nuclear physics, and an elective course in Human Biology, Signals & Systems, Introduction to Bioengineering Applications, or Spectroscopy & Microscopy. We feel that this gives students a strong foundation to be successful in a graduate program in medical physics or other related fields such as engineering, biotechnology, biochemistry, or medical school.

Your class is titled "Medical Physics Principles." What topics do you cover in your course?

The central focus of our course covers radiation interaction, specifically x-ray and gamma radiation. We are able to explore topics related to diagnostic imaging, nuclear medicine, radiation therapy, and health physics once we have established a fundamental understanding of this focus. This gives our students a taste of the 4 major flavors of medical physics. Our goal is to explore each topic from an applied perspective as most of our students are engineers and applied scientists.

What have you learned most about the task of teaching medical physics to students?

Each group of students has its very own personality. You have to learn how to adapt your lessons for each incoming class to give them an opportunity to learn the material in the best way possible. The lessons cannot be prepackaged bits of information that that are delivered the same way each time. I make an effort to tailor the lectures to achieve the greatest impact on each class. I am never concerned with the students wasting my time, but rather I am terrified of wasting their time. If I knew that a student was not learning in my class or did not like coming to my class, I would not be able to sleep at night.

What is the greatest challenge you face in teaching?

TIME. There is simply not enough of it. Defining the breadth and depth of material that will provide our students with the most value in that short undergraduate semester is an ongoing challenge. In addition to teaching, I maintain my clinical responsibilities and have become more involved in some larger corporate performance projects at my center. Dedicating enough time for each responsibility is often a very delicate balance.

Do you see your classroom preparation helping your clinical duties?

It really helps reinforce the fundamentals – a good starting point when trying to solve problems in the clinic. Getting materials ready for my class serves a second purpose: to help me as I go through the ABR board exams. It has proved to be a great preparatory tool.

What place does teaching have in your future plans?

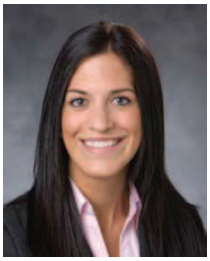
We recently graduated our first class of students who have minors in medical physics. After a few more classes graduate, we will evaluate whether to begin offering medical

physics as an undergraduate major. We are optimistic of this occurrence and in that event, I may focus on teaching a course specifically targeting radiation therapy in place of my "Medical Physics Principles" course.

How did the faculty at Duke help prepare you for the work you are doing right now?

The faculty at Duke is incredible. Their excellence in teaching us the science of medical physics has provided the foundation for which I base my clinical work and teaching of medical physics. I learned lessons that have molded me as an individual and changed my whole outlook on my career and perhaps even the direction of my career. Their lessons in professionalism, serving others, and being a good neighbor will stay with me for my entire live. For this I am forever grateful.

Catching Up | Lauren Courlas, MS



LAUREN COURLAS (MS '10)
Junior Medical Physicist, Northwest Medical Physics Center, Lynnwood, WA

While finishing up at Duke I applied to many residencies and junior medical physicist positions around the country. I was torn between a residency opportunity and a junior position and, after much thought and consideration, I ultimately accepted a junior position in Washington. I began work at the end of June 2010 as a Junior Medical Physicist with Northwest Medical Physics Center, a large consulting firm that provides medical physics services to numerous centers in the Northwest. The Radiation Oncology Department in which I work has two Varian linear accelerators and a CyberKnife radiosurgery system at the main campus and a third Varian linear accelerator at a satellite clinic. The department also has active HDR and LDR brachytherapy programs.

The physics team consists of four medical physicists, including myself. When I first started working, I spent quite a bit of time observing different procedures and shadowing the senior physicists to try to better understand the role of the medical physicist in our clinic. Joining this department with relatively little experience was intimidating, and at first I felt overwhelmed by the amount of new technology, special procedures, and equipment that I would need to learn and become familiar with. I put in quite a bit of extra time, especially in the first two months, reading manuals, working on the machines and experimenting with different equipment in the evenings. The senior physicists were very understanding and were always happy to answer my questions and explain different concepts or procedures. This environment definitely made the transition from graduate school to working life easier.

Currently, my main duties include weekly chart checks, new plan reviews, IMRT/RapidArc QA, and monthly linear accelerator/OBI QA. I also spend a lot of time in dosimetry, providing guidance from a physics perspective and improving my own treatment planning skills. Most recently, I've been working on improving our daily and monthly OBI QA procedures and teaching the therapists how to perform the new daily procedure and incorporate it into their morning warm-up routine. In addition to these more routine duties, I also spend a lot of time trouble shooting any problems that may arise

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Catching Up | Lauren Courlas, MS

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in the clinic. This can include problems with the machines or questions from the therapists about software issues or difficult patient set-ups. Though it is sometimes stressful to be called on to problem solve on the fly, it is very rewarding being able to make a contribution that helps the clinic run smoothly and efficiently.

I will soon begin training in HDR brachytherapy, which will involve daily QA, treatment planning and source exchanges. I also hope to be involved in the commissioning of a new linear accelerator within the next six months, depending on my clinic workload. Beginning a junior physicist position after the graduate program at Duke has been challenging and exciting and has been a great start to my medical physics career.

Catching Up | Lee Stunja, MS

LEE STUNJA (MS '10)
Junior Medical Physicist, Integrated Radiotherapy Services Inc., Reading, PA

I am currently working as a consultant for several free-standing clinics in Eastern Pennsylvania. This has been an excellent learning environment because of the various responsibilities that I have. The tricky part about working in a smaller, physician-owned practice is that often times you do not have the resources that larger hospitals provide; things that I took for granted before. For me personally, I had to get acquainted with older accelerators, treatment techniques and limited QA equipment.

In terms of QA, you basically have to determine what equipment you have, what types of procedures you would like to do and then decide how to create the proper protocols to perform the tasks at hand in a safe and effective way. When you know that you can't do certain things without the proper equipment, you have the fun job of convincing the physicians and business personnel that it is in their best interests to purchase these items- again, tricky when there are budget constraints. This requires good communication skills and confidence.

I started this position at a great time because I immediately was able to do commissioning work for a clinic in northern Maryland and one of the clinics that I visit more frequently in PA. This gave me great experience in collecting and modeling the data as well as preparing it for state. I have also been able to perform various QA (annual, monthly, patient-specific IMRT etc.) throughout my time here. These clinics do not use Eclipse so I have had to learn to plan with CMS and Prowess, which took awhile to get used to. I also spend a large portion of my time developing written protocols for certain procedures and performing special physics consults for the physicians.

One of my favorite things thus far has been the teaching aspects. In addition to weekly chart rounds, there is a set period of time for learning and staff development. They have asked me to give several talks on various topics such radiobiology, as well things like pacemaker physics and radiosensitivity. All in all, I have enjoyed this position primarily because it involves a lot of thinking and there is always something new to learn and do. My Duke experience has definitely prepared well for this field.

Alumni News

SAM BRADY (MS '07, PHD '10) received the first Lutz Moritz Memorial award for best research paper in the area of accelerator physics from the Health Physics Society. His work on measuring 2D neutron doses using radiochromic film was recognized for this award. Sam also began his new position as a diagnostic imaging physicist at St. Jude Children's Research Hospital.

LAUREN COURLAS (MS '10) got engaged in May 2010 and will be getting married sometime in 2011.

JESSICA FULLER (MS '07) joined the Southeast Georgia Health System in November 2010. This center provides radiation treatments using multiple modalities including Cyberknife, which recently went live. She was also named third author on, "Digital Tomosynthesis for Respiratory Gated Liver Treatment: Feasibility for Daily Image Guidance", published in the January 2011 issue of the Red Journal (IJROBP). Jessica's match-making abilities also proved to be of great success when she introduced an acquaintance of hers in a martial arts class to her mother. They will be getting married in the near future.

Matt Goss at the summit of Mount Kilimanjaro.

MATT GOSS (MS '07) has taken a more active role in the Cyberknife and BrainLab SRS programs as well as filling in where needed due to a staffing shortage. Because of his work, Matt was named Employee of the Month in September 2010. Also, Matt achieved a great personal accomplishment by making it to the summit of Mount Kilimanjaro in June 2010. Thankfully, he did so without any major health issues or setbacks.

SHERRY LEEPER (MS '09) will be getting married in July 2011 and will be moving to New Hampshire.

HAROLD PARK (MS '08) welcomed a son, Evan, into his family on July 17, 2010.

LEI REN (PHD '09) received the ASTRO basic science abstract award for his work in "Optimization of a Novel CBCT Estimation Method Using Prior Information" at the 2010 ASTRO annual meeting in San Diego, CA. This work was also selected to be orally presented at the "Best In Physics" session at the same meeting.

BRADY TAYLOR (MS '08) added a son, Ethan, to his family on July 12, 2010. He was a healthy 9 lbs 2 oz.

Harold writes, "My son, Evan, in one of his funnier moods!"

Student Publications

2011

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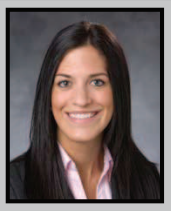

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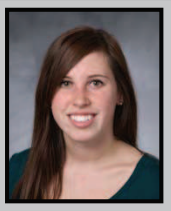

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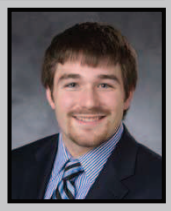

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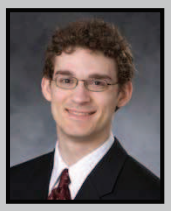

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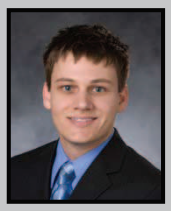

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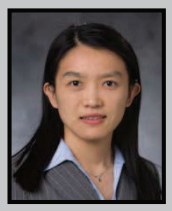

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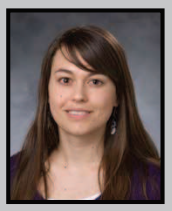

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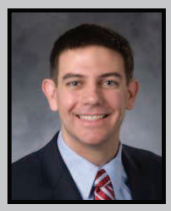

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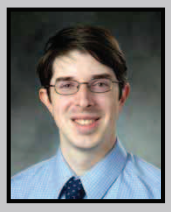

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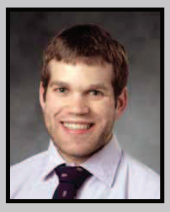

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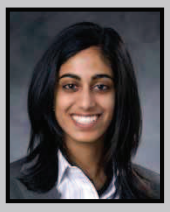

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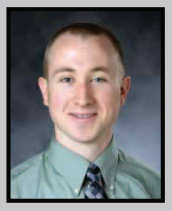

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