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Members of the Duke Medical Physics community enjoying their return to hosting retreats, this year at Haw River State Park

DUMPAA President

To the Medical Physics Alumni Association-

My fellow Alumni, students faculty and staff. First and absolutely foremost, I'd like to express my deepest gratitude to be able to serve as president in this organization. Looking back on the last two years, we've been blindsided with a massive change to how we work and learn, as well as various sources of social upheaval. These challenges have forced us to take a hard look at ourselves and our priorities. While these may seem like separate obstacles to tackle, I've been incredibly impressed with how this board as well as this association has used these difficult issues as an opportunity to meet more deeply-rooted challenges head on and seriously and methodically consider how each informs one another.

Continued on page 2...



Matthew Goss MS, DABR
DUMPAA President



Want to get involved with the newsletter?

Be featured as an alumni or research
spotlight?

Contact:

Cielle Collins

(ciellecollins10@gmail.com), James
Spencer

(james.r.spencer23@gmail.com), or
Michael Trager (mtrager92@gmail.com)

DUMPAA President | Matthew Goss (2)

We've worked together to attempt to become better practitioners of healthcare and education, and I couldn't be more proud. I've been granted the ability to serve another term as your president and I look forward to building on what we've done already. From the mentorship program, to the social justice and awareness committee, to the Voices of Alumni and outreach at HBCUs, we have pushed our members to get more involved and help give some of our expertise back to our community, students, and field. New social outings and initiatives, partnerships with nonprofits, group trips, and an in-person gala reunion and celebration are all priorities, and we will work tirelessly to make these things come to fruition. Thank you for another amazing and productive year. I can't wait to see you all in person soon, and can't wait to see what we all can accomplish together, in 2022.



Matthew D. Goss

Class of 2007

President, Duke University
Medical Physics Alumni
Association

Meet the Newly Elected DUMPAA Board & Committee Chairs

This year we have three newly elected board members and committee chairs. We would like to extend a huge thank you to Michael Trager, Titania Juang, and Jaclyn Gaylor who finished up their DUMPAA terms at the end of 2021.

James Spencer, MS, DABR: I'm really excited to be Co-Chair of the Communications Committee this year with Cielle Collins as well as being more involved in the Alumni Association. I have really fond memories of my time at Duke, and seeing everyone's updates and how we continue to grow only strengthens them but does make me miss Durham even more. I graduated from Duke in 2017 and stayed there to finish an imaging residency in 2019 with Duke's CIPG. I then went back home to the Dallas-Fort Worth metroplex to begin my current job working with Texas Health Resources as an in-house medical physicist. I also received my ABR certification this year and was promoted to a Senior position. Outside of work I am spoiling my cat Coconut, attempting to win weekly trivia with friends, and trying to travel more both domestically and internationally.



James Spencer, MS, DABR
DUMPAA Communications
Committee Co-Chair

DUMPAA New Board Members and Committee Chairs (2)

Ericka Chorniak, MS: This year, after graduating from Duke, I matched with Mary Bird Perkins Cancer Center in Baton Rouge, Louisiana. Since then I have been working as a resident in our radiation oncology department. I have really taken to the cajun culture including taking a swamp tour on a fan boat and patting a ~15 foot alligator on the head. The residency has been a fantastic experience thus far, and I am looking forward to the remaining year and a half!

Geaux Duke!



Ericka Chorniak, MS
DUMPAA Graduate Program
Relations Committee Chair



Isabella Duarte, PhD
DUMPAA Professional
Development Committee
Chair

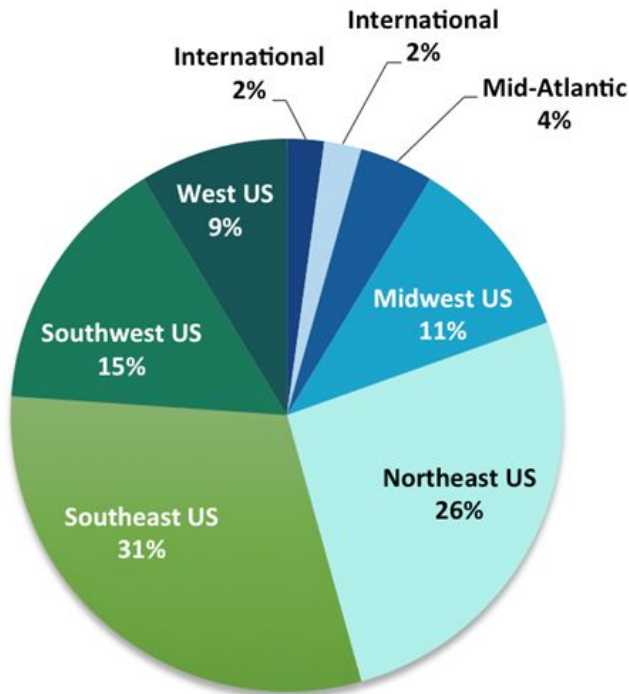
Isabella Duarte, PhD: I am very excited to join the Alumni Association as the new Professional Development Committee Chair and stay connected with our amazing Duke Alumni network. Since graduating from my PhD at Duke in 2020, I have been a radiation therapy resident at NYU Langone, where I will also be staying post-residency as a RadOnc physicist and faculty member. In my free time, I enjoy walking around the city, having picnics in Central Park, and getting to try different restaurants. There is always something new to do in NYC!

Alumni Association Fun Facts - What Are We Up To?

Alumni Update brought to you by DUMPAA Social Media - Michelle Rokni (MS '18)

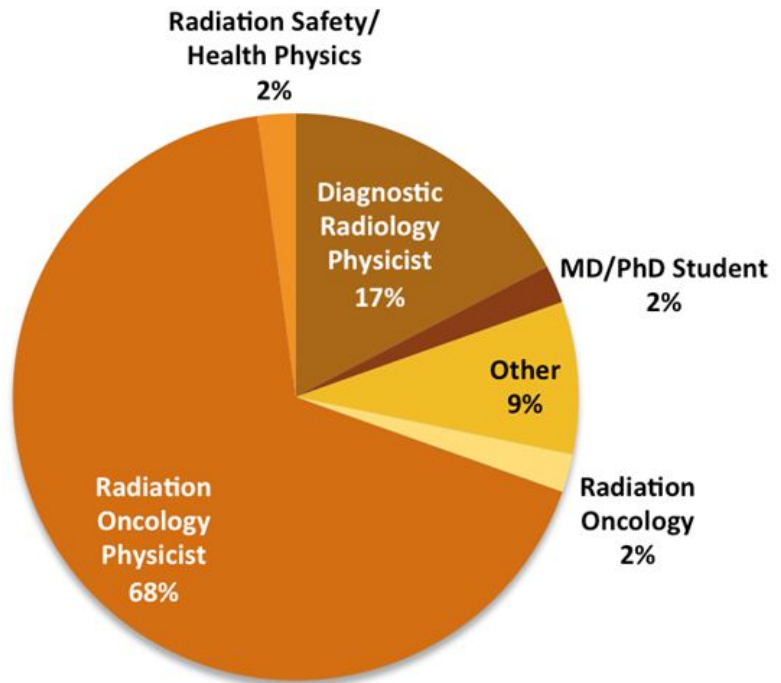
This year through our social media pages and email listserv, we reached out to Duke Medical Physics Alumni to get updated on what everyone is up to. Below are some of the statistics and fun facts we learned about our alumni!

% Respondents by Location



And one alumnus is currently living in Jamaica!

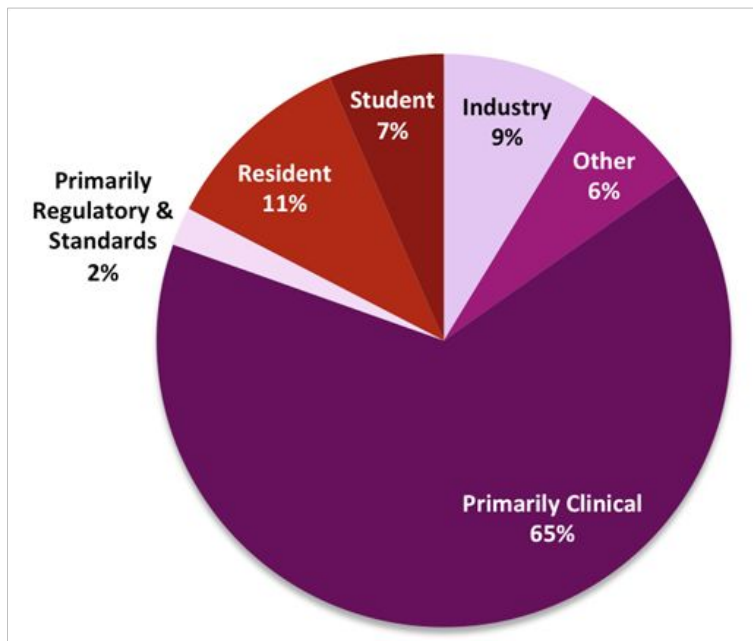
% Respondents Position Type



Other Position Types Include:

- Resident Physician
- Attorney
- Junior Physicist

% Respondents Discipline Type

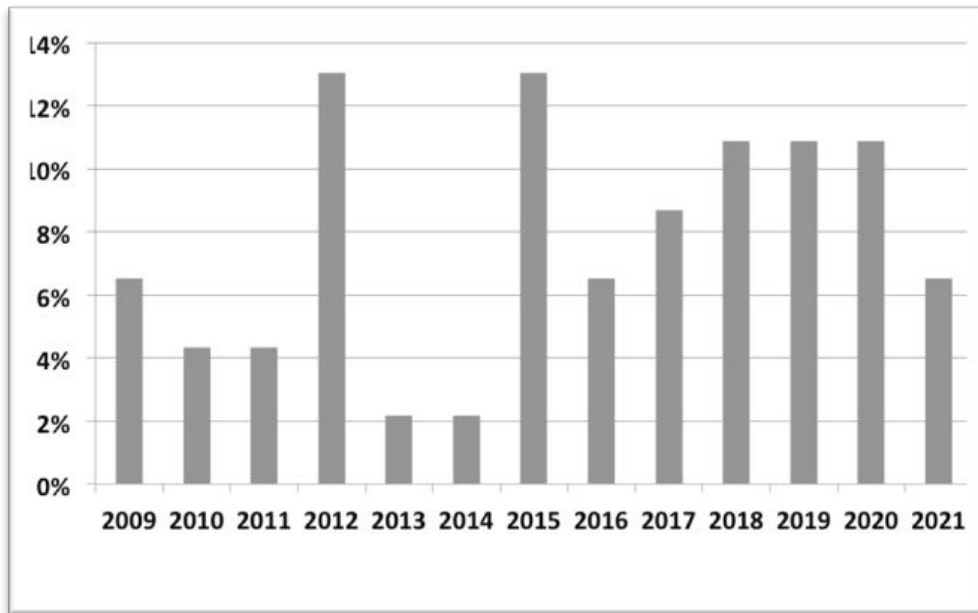


Other Disciplines include:

- Doctor of Osteopathy
- Pharma R&D Portfolio Mgt
- Biomedical Engineering
- Patent Law

Alumni Association Fun Facts - What Are We Up To? (2)

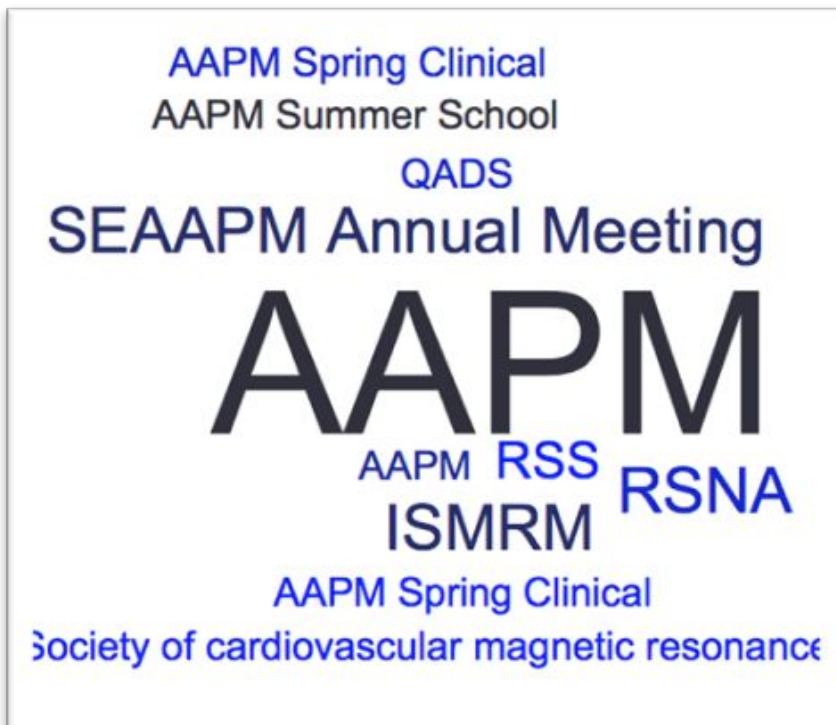
% Respondents by Graduation Year



AAPM Committees We Participate In:

- Alliance for Quality CT
- Med Phys Leadership Academy Community Subcommittee
- Ad Hoc Committee to Evaluate Need for Web Management Systems
- Med Phys Leadership Academy Progress Assessment Subcommittee
- TG-300
- Website Editorial Board
- DWS Workshop Group
- Lung Function in RT
- Diversity and Inclusion
- AAPM history committee
- Hispanic and Latin-x Med Phys Subcommittee
- Equipment Donation Program Subcommittee
- Women's Professional Subcommittee
- New England AAPM IT subcommittee

Conferences Alumni Hope To Attend This Year:



Alumni Association Updates (1)

Duke Medical Physics Alumni Social Events - Kristy Perez (PhD '11) and Matt Goss (MS '07)

Save the Date!

We are pleased to announce we are planning a

Duke Medical Physics Alumni Reunion

in Durham August 26-28, 2022

We are planning to have a few social events at various venues in Durham. This is not intended to be a work event but rather a social, family-friendly event. We'd love to gather at some of our favorite places – Tyler's Taproom, the Durham Bulls Stadium, Bull McCabe's, etc. Hopefully, you will be available to catch up and see what is new with everyone.

We hope to see as many people as possible. We look forward to nostalgia in Durham.

Please save the weekend of August 26-28, 2022.

Radiating Hope Trips <https://www.radiatinghope.org/>

Radiating Hope is a nonprofit focused on appropriate and necessary treatment and equipment for cancer care. Its mission is to improve access to care, specifically radiation oncology care, around the globe. With the help of our generous volunteers and donors, Radiating Hope identifies and secures available radiation machines, transports them to developing countries in need, and trains staff on how to use these life-saving machines.

Radiating Hope has facilitated successful equipment donations to a host of developing countries, including Panama, Senegal, Ethiopia, Nepal, Guatemala, Tanzania, and Honduras. To date, Radiating Hope has delivered 24 radiation machines, both new and donated, all over the world. Each project is a game changer for the receiving facility and has a huge impact on a country's future radiation treatment development.

Radiating Hope is already making strides toward expanding their mission and reach by partnering with various organizations in three important areas: equipment and placement; training and education; and events and awareness. In addition to these three areas, the need for direct funding through gifts and pledges are critical to the success of our program.

In order to continue this important work, Radiating Hope has worked to identify some immediate needs. Along with identifying the needs, we are also working to identify individuals, corporations, and foundations willing to become a part of this important mission as financial supporters. Our volunteers work tirelessly on the logistics of getting these machines to communities in need and they spend long hours traveling and



Alumni Association Updates (2)

training physicians to use the equipment. But there is more to be done, and it will require necessary funding to be successful.

Part of this funding comes from RH sponsoring various trips. These adventures not only get members and volunteers out into nature, but historically they occur in areas where there is a need for outreach and equipment donation. Everest Base Camp trips have funded Linac and HDR units in Kathmandu, Machu Pichu has helped the surrounding community in Peru, and Kilimanjaro climbs have allowed people in Kenya and Tanzania access to care they would never have been able to get otherwise.

This year marks the first domestic climbing trip for RH, at Mt. Baker outside Seattle. This was done in the hope of slowing people who would normally be unable or unwilling to travel internationally and attempt a more formidable climb the ability to get their feet wet in the areas of volunteering and alpine climbing. I am the team lead with 8 other spots currently open and I urge you all to consider joining: <https://www.radglobaladventures.com/next-climbs.html> (this will have the Baker trip updated shortly)

I have been volunteering with Radiating Hope for over 6 years, and have been recently elected to its board of Trustees. I was able to climb Mt. Blanc with their sponsorship in 2010, then became a project lead for a site in Kenya, and finally began work on a continuing project in Bolivia to source, place, commission a linear accelerator at a newly-built municipal hospital in La Paz. While traveling there, I was able to meet with the head of their NRC, various government agencies, physicians physicists and clinicians at private clinics and was invited to give a lecture series at a local university which is interested in starting their own medical physics program, and which would contribute to the implementation of the new clinical site. I was also able to do some excellent high altitude climbing!

I strongly urge you all to get involved, be it through donation or teaching and training initiatives. Please stay in touch especially if your site or a site you know has anything physics-related equipment wise that can be donated. There are so many amazing opportunities to make a difference and I hope that the Duke Medical Physics Alumni Association can be a force within RH for the good we hope to do in the Radiating Oncology community at large.



More info:

Current locations in need of equipment and training include but are not limited to:

Bangladesh, Bolivia, Burundi, Cameroon, Columbia, Congo, Cuba, Equador, Egypt, El Salvador, Ethiopia, Georgia, Ghana, Guatemala, Haiti, Honduras, Iran, Iraq, Jamaica, Kenya, Madagascar, Nepal, Nigeria, Panama, Peru, Rwanda, Senegal, South Africa, Serbia, Kosovo, Syria, Tanzania, Uganda, Ukraine, Zambia, and Zimbabwe.

Alumni Association Updates (3)

Specific funding needs include:

Brachytherapy Radiation Treatment:

- Brachytherapy suite of new equipment - \$250K
 - Includes: HDR machine, all accessories, 5-year source changes and maintenance
- Brachytherapy donated HDR machine - \$100K (availability based on donations)
 - Includes: HDR machine, accessories as available, 5-year source changes and maintenance
- Brachytherapy training for equipment recipients - \$30K
 - Includes: One week of onsite training by a team of Radiating Hope medical professionals
- Brachytherapy bunker to house equipment - \$125K (estimate based on typical site conditions)

Exterior Beam Radiation Treatment:

- Linear Accelerator suite of new equipment - \$1-3 million USD
 - Includes: Linac and installation, software, hardware, and all needed accessories
- Linear Accelerator installation of donated suite - \$250-500K USD (varies by machine type and location; availability based on donations)
- Linear Accelerator training for equipment recipients - \$30K
 - Includes: One week of onsite training by a team of Radiating Hope medical professionals
- Linac bunker to house equipment - \$300K (estimate based on usual site conditions)

Voices of Alumni Program

Of the many initiatives our current administration has implemented in the last years, the Voices of Alumni forum has been met with an incredible and unexpected amount of enthusiasm, not only from the alumni itself, but from the program administration and the current student body. Originally intended as a panel or discussion forum associated with the mentorship program, the board of directors working with Dr. Oldham felt like giving this its own space and structure would be of greater use. Having a more relaxed and open space for questions, comments, anecdotes and stories can hopefully foster more engagement and participation. Matt Goss, the current Alumni Association President kindly volunteered to talk at the inaugural session, with substantial help from Trevor McKeown and other student volunteers. It took a few brave souls to ask some physics and career-related questions, but after this the floodgates opened and the discussion moved effortlessly, from volunteering to board prep, to stories about the first class' time at Duke, to staying in touch with colleagues and friends and collaborative fieldwork. Overall, it was heralded as a success with calls from the students for more alumni presenters of varying clinical and nonclinical backgrounds. We are hoping to make this a monthly event, with the option to move to bi-monthly if the students find it useful.

We are looking for alumni interested in participating in Voices of Alumni. We are especially interested in alumni in unusual/non-clinical careers, such as government/policy, industry, engineering, etc. Anyone interested in volunteering can reach out to Matt Goss at goss.matthew@gmail.com.

Alumni Association Updates (4)

Duke Medical Physics Alumni Social Injustice and Bias Awareness Committee (SIBAC) - Deon Dick (MS '12)

In February 2021, DUMPAA issued a call for volunteers to join this ad hoc Social Injustice and Bias Awareness Committee (SIBAC) which would focus on promoting awareness and education on social injustice and systematic bias. Passivity in the face of these problems was not an option and so SIBAC was created.

The establishment of SIBAC was subsequent to the murder of George Floyd, a black man, by Derek Chauvin, a white police officer, in May 2020, following which DUMPAA issued a statement denouncing racial injustice, violence and brutality toward the Black community based on its commitment to:

1. Change that begins with education which transforms into tangible action
2. Becoming a support system, sounding board and safe forum for discussion around these topics

Later in 2021, another statement was issued by DUMPAA denouncing all racially motivated acts of violence, messages of hate, and expressions of intolerance towards the Asian community.

The medical physics community is always stronger because of our cultural and racial perspectives. Professional education on these issues is necessary to enact measurable systematic change. Therefore, SIBAC commits to actionable items which include:

1. Recommend and review relevant material to educate our community.
2. Become a safe space for our Alumni to discuss their own experiences or questions on social injustices.
3. Commit to self-education and advocating for others to increase their understanding of the pervasiveness of the systematic bias that impacts our communities.
4. Commit to maintaining a constructive dialogue as everyone learns and becomes more aware of social injustice and racial and systematic bias.
5. Identifying additional goals and initiatives to benefit our Alumni community and beyond.

Since the inaugural meeting of SIBAC in March 2021, we have

1. Curated a recommended list of materials for self-education and bias awareness for our Alumni
2. Created a safe and open forum to freely discuss and understand how experiences of racial bias in the medical physics community affect the marginalized social groups
3. Contacted Historically Black Colleges and Universities (HBCU) to educate physicists about the field of medical physics
4. Identified areas where systematic bias exists in the medical physics community, such as in hiring practices, and how to combat/bring awareness to these issues

Social injustice directly impacts members of the medical physics body and through bias awareness, we hope to foster a community that recognizes the benefits of the collective diversity and unique backgrounds that exist in our profession.

If you are interested in getting involved with the SIBAC, please reach out to Kristy Perez at kristy.l.perez@gmail.com

Alumni Association Updates (5)

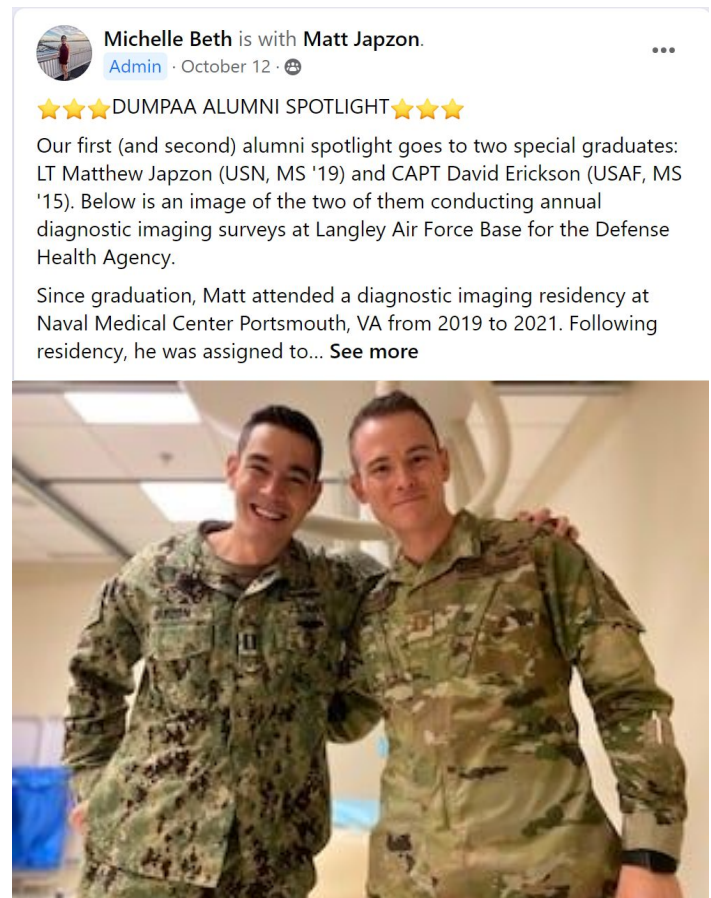
Duke Medical Physics Alumni Social Media - Michelle Rokni (MS '18)

We are excited to continue building our official Duke Medical Physics Alumni Association social media accounts that we started last year! Currently, we have a private DUMPAA [Facebook](#) and [LinkedIn](#) group, but hope to continue to grow our social media presence in the future. If you have not done so, be sure to join them, as we plan to use them as a way for the alumni board to communicate with everyone about news and special events, as well as be a place for everyone to come and share exciting information, ask questions, and stay connected with one another in an informal setting.

Additionally, on our Facebook page we have started a new **Duke Med Phys Alumni spotlight series!** This series will highlight various alumni, showcasing what they have been up to since graduation. Whether it is a new job, exciting family update, or interesting work project, we would love to share this with our alumni group on our social media pages!

Please feel free to either self-nominate yourself or other alumni members to be featured next. You can send nominations to Michelle Rokni at roknimichelle@gmail.com, and include the following:

1. Name of the person you are nominating
2. Graduation year
3. Brief blurb of what they have been up to
4. Picture (not necessary)



Alumni Association Updates (6)

Duke Medical Physics Alumni Association Mentorship Program - Run by Titania Juang (PhD '15)

The Duke Medical Physics Alumni Association Mentorship Program has had a very successful first year! The program launched in December 2020, and 33 alumni mentors and 17 student and alumni mentees have already signed up. Mentees were given the option either to be matched to a mentor or to reach out to potential mentors on their own. The matching process for this cycle completed with 13 mentor-mentee matches made through the program, and 4 mentees provided with a shortlist of potential mentors who align with their professional goals. Each matched mentorship term will last 3-12 months based on the needs of each mentoring partnership.

This program is a great professional development opportunity for both mentors and mentees and a great way to connect with other members of the Duke Medical Physics community. We will be doing another push for a new round of signups in the first quarter of the new year, however if you have experience and advice you are willing to share you can sign up [here to become a mentor](#). If you are a student looking for career guidance and support and are interested in connecting with a mentor, please keep your eye out for the next sign-up opportunity.

Areas of professional guidance and support can include:

- **ABR exam preparation**
- **Residency applications**
- **Professional skills development**
 - Education
 - Research
 - Clinical care
 - Involvement in professional organizations
 - Leadership
- **Career planning and development**
 - Strategies for achieving long- and short-term career goals
 - Job searching (including CV/resumes, applications, and interviewing)
- **Equity, diversity, and inclusion (EDI) in the workplace**
- **Work/life balance**

If you have any questions about this program please email both Isabella Duarte iduarte92@hotmail.com and Titania Juang titania.juang@gmail.com with your inquiries.



Alumni Spotlight | Justin Roper (1)



Justin Roper (PhD '10) is lead clinical physicist and assistant professor in the Department of Radiation Oncology at the Winship Cancer Institute of Emory University and adjunct in the Department of Nuclear & Radiological Engineering & Medical Physics at the Georgia Institute of Technology.

My medical physics journey

My medical physics education began in 2005 as part of the inaugural class at Duke where I completed a PhD and then a residency. Looking back, I realize how incredibly fortunate I was to receive multi-disciplinary training at an institution shaping the future of medical physics. In equal measure, I am thankful for the professional relationships and friendships that started at Duke yet have persisted over the years despite physical separation. Those connections are interwoven in my professional journey.

After residency, I joined the faculty at Emory University where plans for expansion, including a five-vault proton center, framed many conversations. Much effort focused on the formal education of the future hires in physics and dosimetry. I am particularly proud of the partnership with Southern Illinois University Dosimetry Graduate Program – to date all Emory trained dosimetry students have passed their board exams on the first attempt. Clinical problems framed my research. Our work to characterize safe SRS treatments for multiple metastases continues to draw interest at conferences. While rewarding, these academic initiatives were often fit in between clinical duties – patients have always come first.

As professional duties are multidimensional, so is life. After the challenging birth of our third child Vera, Lauren and I reassessed our family needs, and I joined former Dukies at HCA's flagship medical center in Nashville, TN. Nashville brought us closer to grandparents, aunts, uncles, and cousins. At HCA I gained insights into lean practices, open staffing models and a deep appreciation for the incredibly talented professionals who ensure excellent patient care in private practice. For the first time in years, I had time to pursue other interests. I started a medical physics consulting company, commissioned an IORT program in an underserved rural community and ventured to Alaska through the connections of another Duke classmate. Lauren and I bought a farm on the Caney Fork River at the bottom of an 18-mile canyon that abuts over 55,000 acres of protected land filled with miles of hiking trails, fabulous caves and magnificent waterfalls that gush from the mountain side with no stream above or below.



Lauren, Justin, Vera, Cora and Jonah Roper

Alumni Spotlight | Justin Roper (2)

While back in Tennessee both of my in-laws were diagnosed with cancer and needed radiation therapy. Tennessee was where we needed to be in that season of life. Thankfully both are now multiple years into remission. Our youngest Vera is thriving. My journey changed again. Since leaving for Tennessee, Emory opened the new proton center that had been planned many years prior. Resources aligned with leadership's vision, and the physics group doubled in size allowing for substantially more support of educational initiatives, research and clinical program development. What is perhaps even more remarkable is that I had the opportunity to return in a leadership role. Emory has a certain energy and excitement now. A 17-story cancer center is under construction. Protons are hitting flash dose rates. Our world class experts in artificial intelligence are creating networks that I very much want to help translate into the clinic. Looking back, I could not have anticipated where medical physics would take me. While our journeys may differ, I think that the sage advice often shared at Duke holds true. We all have the opportunity to make the world a better place.



Top: Roper Farm at Dry Creek; Lost Creek Falls featured in Disney's The Jungle Book; Sheep Cave
Bottom: Virgin Falls plunges 110 feet into a cave; Kayaking on the Caney Fork River

Alumni Research Spotlight | Kyle Lafata (1)



Kyle J. Lafata (MS '15, PhD '18) is an assistant professor of radiology, radiation oncology, and electrical & computer engineering at Duke University. His lab focuses on the theory, development, and application of multiscale imaging biomarkers. Kyle earned his PhD in medical physics at Duke University with Prof. Fang-Fang Yin and completed his postdoctoral training at Duke and the U.S. Department of Veterans Affairs in the *Big Data Scientist Training Enhancement Program*.

Kyle Lafata recently joined the faculty at Duke University with appointments in Radiology, Radiation Oncology, Electrical & Computer Engineering, and Medical Physics. His work focuses on advanced mathematical techniques for image interrogation, image-based phenotyping, multiscale data fusion, and computational biomarkers. To date, his work has led to advances in quantitative imaging and better characterization of disease appearance and behavior. Kyle has pioneered several nature-inspired methods and soft-computing paradigms based on the applied analysis of stochastic differential equations, self-organization, and quantum machine learning (i.e., an emerging branch of research that explores the methodological and structural similarities between quantum systems and learning systems).

At Duke, the Lafata Lab studies the imaging phenotype across multiple length-scales, including radiological (i.e., $\sim 10^{-3}$ m), pathological (i.e., $\sim 10^{-6}$ m), and molecular (i.e., $\sim 10^{-9}$ m). This involves the high-throughput extraction, fusion, and analysis of imaging features on radiology (i.e., *radiomics*) and digital pathology (i.e., *pathomics*) to define a multiscale mathematical representation of disease (Figure 1). By exploring this multiscale landscape, the lab aims to characterize tissue microenvironments, interrogate the biology and treatment resistance of disease, improve diagnostics, and quantify treatment response. Current funded projects include applications in head and neck cancer, lung cancer, diffuse liver disease, chronic kidney disease, and organ transplantation.

As an illustrating example application in computational oncology, a recently funded

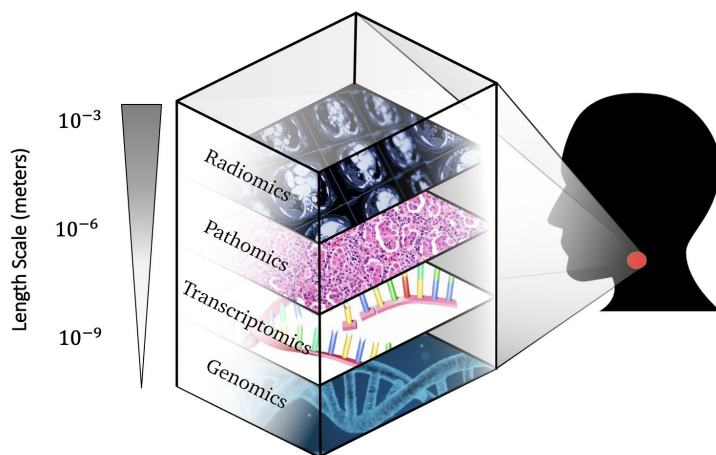


Figure 1. Multiscale imaging and disease characterization. The Lafata Lab studies the imaging phenotype across length-scales, including radiological (i.e., $\sim 10^{-3}$ m), pathological (i.e., $\sim 10^{-6}$ m), and molecular (i.e., $\sim 10^{-9}$ m). Head and neck cancer is used as an illustrating example.

Department of Defense grant focuses on multiscale characterization of radiation resistance in head and neck squamous cell carcinoma (HNSCC). The project will investigate pathomic (Figure 2) and radiomic (Figure 3) expression patterns of patients with HNSCC to identify quantitative markers of radiation resistance and metabolic response to therapy at different length-scales. These methodologies will be experimentally confirmed and further interrogated using pre-clinical mouse models of HNSCC, where radiopathomic expression will be compared to molecular-level data from DNA and RNA sequencing to dissect mechanisms of resistance to standard therapies and interrogate the role of immune dysregulation in HNSCC recurrence. This project will result in an image-guided computational platform for mechanistic and therapeutic HNSCC research and multiscale biomarker discovery. The key goal is to

Alumni Research Spotlight | Kyle Lafata (2)

improve the current understanding of HNSCC treatment resistance and help to bridge a knowledge gap between abstract mathematical image representation and underlying cancer biology.

For more information, visit the Lafata Lab website: <https://www.kylelafata.com>

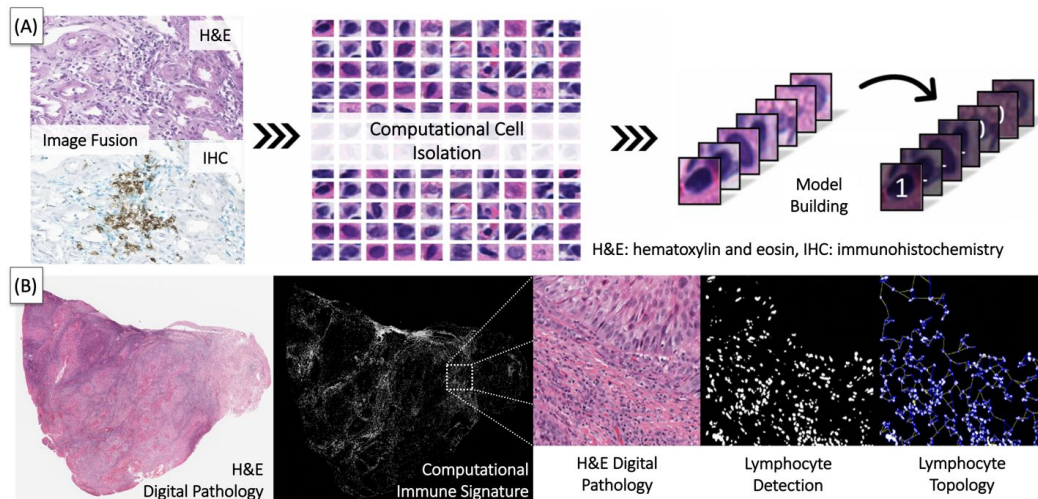


Figure 2. Pathomic phenotyping of head and neck cancer. (A) H&E images are registered with immunohistochemistry to generate a pixel-to-pixel relationship between H&E stain intensity and CD3/CD20 protein expression. Single cells are computationally isolated, which are then used for deep learning, pathomic extraction, and topological measurements. (B) The tumor microenvironment of a head and neck cancer specimen is computationally interrogated to study immune dysregulation. Deep learning is used to detect lymphocytes, which are then quantified via graph theory to measure spatial relationships and lymphocytic interactions.

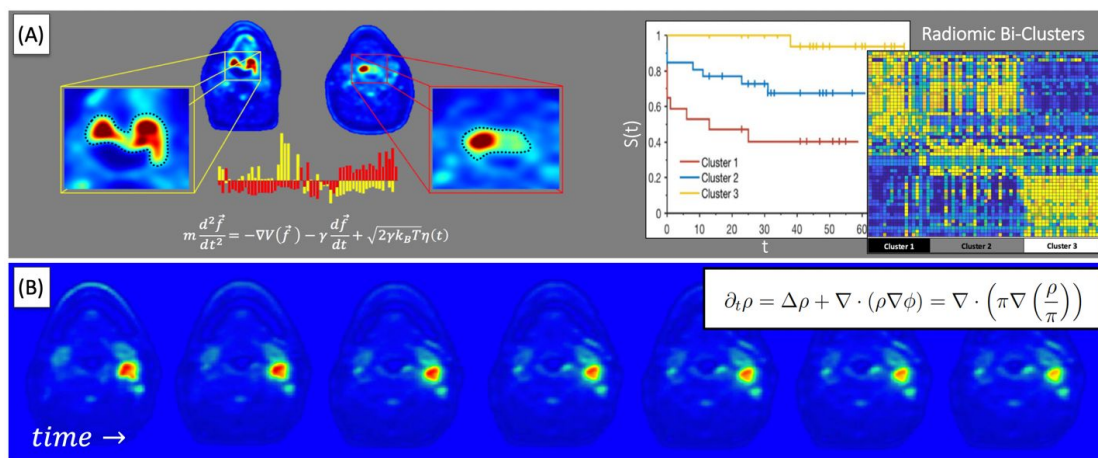


Figure 3. Radiomic phenotyping of head and neck cancer. (A) Intrinsic radiomic expression patterns on FDG-PET images encode tumor-specific clusters revealed via Langevin dynamics. These clusters are associated with recurrence free survival in patients with oropharyngeal head and neck cancer. (B) Mathematical modeling of metabolic response based on Fokker-Planck dynamics and equilibrium driven deformation. The time-evolution of the disease is estimated via data assimilation (i.e., FDG-PET images) into a physics-based modeling framework (Fokker-Planck).

Graduate Program Updates

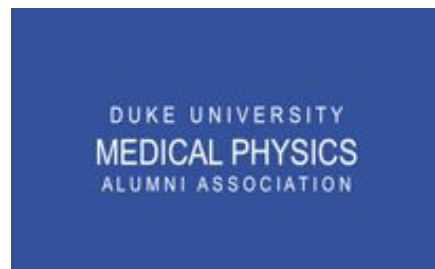
Ehsan Samei, Ph.D., FACR, Chief Imaging Physicist of the DUHS and the director of the newly established Center for Virtual Imaging Trials (CVIT), was elected as the President-Elect of the **American Association of Physicists in Medicine (AAPM)**. As many of us know, AAPM is the leading organization of medical physics in the nation and the largest organization of medical physics worldwide. There are 9,500 AAPM members, 34 staff members, and AAPM has an annual budget of \$10.7M. He began this prestigious position January 1, 2022.



The program had a two day retreat in the Fall of 2021 with guest speakers Dr. James Dobbins (President of AAPM) and Dr. Ehsan Samei.



SLAC members, along with the DUMPAA, have started “The Voices of Alumni” virtual sessions.



The Program is going to renovate the office by adding five soundproof bays/study areas (with glass walls) for the students.



The program’s Women of Medical Physics (WOMP) group has been established and has organized many events such as faculty discussion panels with female faculty and other unique and well-attended events.



Student Spotlight/Update | Breyton Riley and Trevor McKeown (1)



Breyton Riley is a second year MS student from Los Angeles, California. He is a member of the Student Leadership and Advisory Council, the Open House Planning Committee, Women of Medical Physics, a coordinator for the Student Mentorship Program, and a Duke Medical Physics Alumni Association volunteer. His thesis research is on texture characterization of head and neck squamous cell carcinoma using radiomics.



Trevor McKeown is a second year MS student from Norfolk, NE. He is the Medical Physics Administrative Council student representative and current president of the Student Leadership and Advisory Council. He has also been involved in the Open House Planning Committee, Women of Medical Physics, and a coordinator for the Student Mentorship Program. His thesis research is on automating MRI coil quality control using patient data.

Introduction

The Duke Medical Physics (DMP) program has been the picture of resilience. As we close 2021, our program has been able to restart many traditions that COVID delayed — a holiday party, a retreat, a welcome picnic, learning in a classroom — and also create some of our own! Last year the theme was about enduring challenges, surviving. This year, we have strived to make it about flourishing: embracing every opportunity to grow. It has been a pleasure seeing my classmates come together to craft the best possible learning and social experience for the first-year students, and we are thankful for a program like this that has supported our every effort to regain the sense of community stifled by the pandemic.

SLAC

The Student Leadership and Advisory Council (SLAC) has worked hard to provide and be a resource for students. So we hit the ground running! We coordinated student mentorship pairings between first and second year students. We were enthused to plan the program's first retreat in 3 years — and happy it was a success! SLAC was ecstatic to secure two prominent leaders in Medical Physics as keynote speakers, Drs. James Dobbins III and Ehsan Samei. They delivered presentations that provided our class with rare insights into the current and potential future of Medical Physics. Additionally, we established a new method of incident reporting that gives students an anonymous way to voice any concerns they may have while at Duke.



Duke Medical Physics SLAC team



Haw River State Park Fall Retreat

Student Spotlight/Update | Breyton Riley and Trevor McKeown (2)



Left to Right: Fall pumpkin carvings on display, pumpkin carving event, fall retreat, WOMP volunteers at Making Strides event

Voices of Alumni:

Another big undertaking of SLAC this year was to work with the alumni association to begin a new series of talks that focus on alumni experiences. The first of these talks happened in October featuring none other than the current alumni association president Matt Goss. We are excited to continue this program and gives students a better idea of the non traditional routes that are available to graduates of this program.

DKU students return:

Thankfully with increased vaccination rates and a better understanding of COVID across the world, our class has also been very fortunate to share fall courses with Duke Kunshan University (DKU) students again this year! The ability to share cultures and make memories with fellow medical physicists has been an incredible experience. With their student liaison Haozhao Zhang, SLAC planned a DMP+DKU mixer celebrating the winter solstice that included great food prepared by the DKU and DMP students. It was a wonderful experience for all who came, but we could all definitely use some work on our dumpling folding.



DKU and Duke Med Phys mixer

Fall activities

In conjunction with the return of fully in person classes for those in Durham, live sports have also returned. Students have gotten together to attend Duke football games in the midst of all the craziness of the first semester, camped out for countdown to craziness, and waited with anticipation for the announcement of season ticket holders. We were lucky to have three students get season tickets this year and with guest passes have had decent groups in attendance to most home games. In addition to sporting events we have also tried to keep up our holiday decorations with halloween decorating, carved pumpkins and of course loads of candy. Other activities this fall have included a cleanup at Eno River State Park, CV/resume workshops for students to work together, and group ABR study sessions led by students who have already taken part 1.

Student Spotlight/Update | Breyton Riley and Trevor McKeown (3)

Women of Medical Physics

Another student led organization that has accomplished much this year is the Women of Medical Physics (WoMP). This group is currently led by our very own Outreach Coordinator BillieAnn Radcliffe. Some of the events that WoMP has made happen this year include a screening of the movie *Radioactive* that focuses on the life of Marie Curie which led to a great discussion about how women have been treated in the scientific community, volunteering in Raleigh at the Making Strides event for breast cancer awareness, and most recently a Q&A panel of Duke Medical Physics faculty and staff on their experiences being women in our field.



WOMP event in Raleigh

It has been our pleasure to support other student-led organizations such as the Women of Medical Physics (WoMP) in their endeavors. SLAC is excited to keep this momentum going into 2022!



Duke medical physics students at football game



Duke Medical Physics holiday party

Women of Medical Physics (WoMP)| BillieAnn Radcliffe (1)

Introduction of New Duke Medical Physics Group - Women of Medical Physics (WoMP)
by Current Duke 2nd year MS student BillieAnn Radcliffe



Women of Medical Physics Year End Review

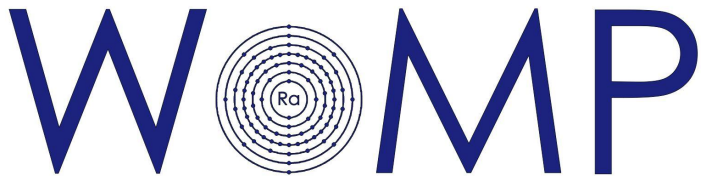
The Women of Medical Physics group at Duke was formed in 2020 by Ericka Chorniak M.S., and was officially recognized as a student organization by the Medical Physics Graduate Program and The Graduate School this past fall. WoMP's mission is to promote gender diversity and inclusivity within the medical physics community, Duke, STEM, and the world at large. We seek to understand and address unique challenges faced by women and marginalized groups within STEM by hosting events and educational campaigns about these topics. WoMP is for everyone regardless of how a member may identify because, to make change we need opinions and commitment by a diverse group of people.

One of our early goals was to create an environment for students where honest conversations can be had in a safe space, free from fear of backlash or judgement. This year, along with help from the Student Leadership Advisory Council (SLAC), we created an anonymous reporting form for student use. This document can be utilized by students to report misconduct, harassment, or anything they would like our support working through. These reports are handled at the student level unless the WoMP and SLAC representatives feel administration needs to be involved.

This semester, we held events to get the word out about our mission. In October, we had a movie night on the lawn on East Campus where we showed the Marie Curie biopic "Radioactive". We ate cookies, had drinks, and enjoyed mingling and conversing about how Dr. Curie's story can be related to women's experience in STEM today. We also volunteered for the American Cancer Society's breast cancer walk "Making Strides" in Brier Creek. We helped to guide walkers and cheer survivors and their loved ones through the finish line. We then took our group to the NC State Fair continuing to spread awareness by wearing our custom pink medical physics shirts.



WOMP volunteering at Making Strides Against Breast Cancer event in Raleigh



Women of Medical Physics

Later in the semester we held a discussion panel with female medical physics faculty and staff including Dr. Anna Rodrigues, Dr. Julie Raffi, Dr. Megan Russ, Dr. Erin MacDonald and Nicole Lafata, M.S. They shared their experiences throughout the stages of their careers and answered questions from students about their time within the medical physics field including residency, training, and personal life. The panel discussed complex topics such as biases in the workplace, allyship, mentoring, and conflict management. The medical physics program is lucky to have so many amazing and unique staff members and we plan to hold a similar panel in the spring to make use of their expertise.

WoMP hopes to continue hosting events next semester with additional volunteer opportunities, socials, presentations and more. We have a mixer with the Women in Science and Engineering Duke student organization on January 13th at Boxcar in downtown Durham to kick off the spring semester!

Overall WoMP has been met with tremendous enthusiasm from faculty, staff, and students. We are very thankful to be involved in a program with open minded individuals who are willing to contribute to our mission and make changes to benefit all.



WOMP volunteering at Making Strides Against Breast Cancer event in Raleigh



WOMP discussion panel

Alumni interested in getting involved with WOMP can email BillieAnn Radcliffe at billie.radcliffe@duke.edu.

Zachary Dean Shrock Memorial Scholarship | Devon Overson (1)

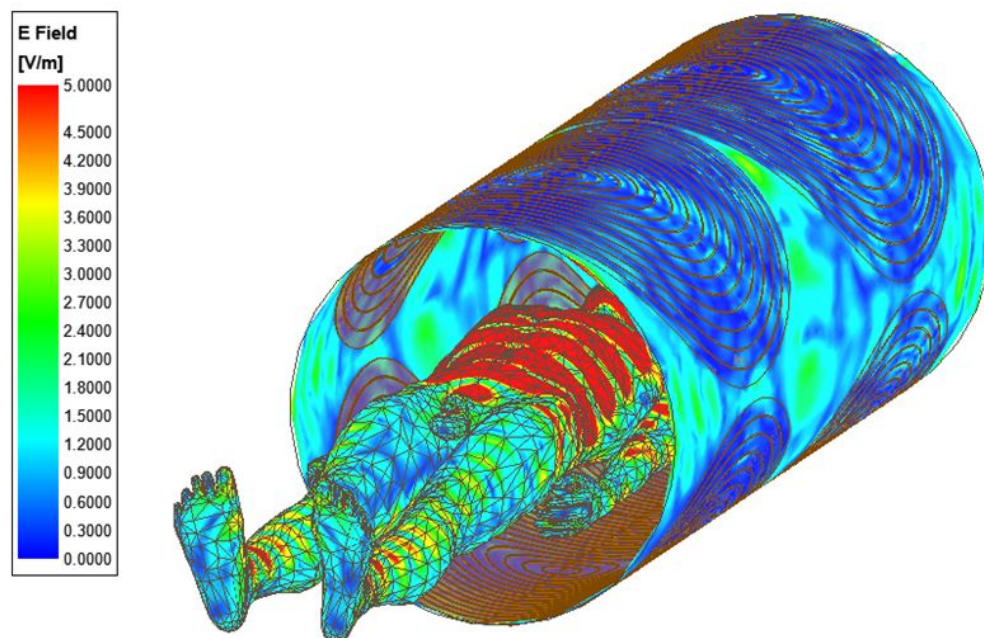


Devon Karl Overson (MS '22) is a 2nd-year master's student in Duke's Medical Physics Graduate program. Devon earned his bachelor's degree in chemistry from Brigham Young University in 2018 and worked two years in the biomedical industry before attending Duke University. With advisors Dr. Trong-Kha Truong and Dr. Dean Darnell, Devon performs research in the Duke Brain Imaging and Analysis Center. His thesis regards the development of a novel wireless MRI receive coil utilizing high frequency structure simulator software. In his spare time, Devon enjoys spending time with his wife and daughter in the wonderful outdoors of North Carolina.

Zachary Shrock's words regarding life perspective have resonated deeply with me, and I am honored and humbled to be the 2021-2022 recipient of the Zachary Dean Shrock Memorial Scholarship. I look up to Zach as a great example. I believe I am not alone in this regard.

The Zachary Shrock Memorial Scholarship has allowed me to continue my research training at Duke over the summer of 2021. During this time, my research endeavors with Drs. Truong and Darnell have sought to improve MR image quality whilst simplifying receive coil design.

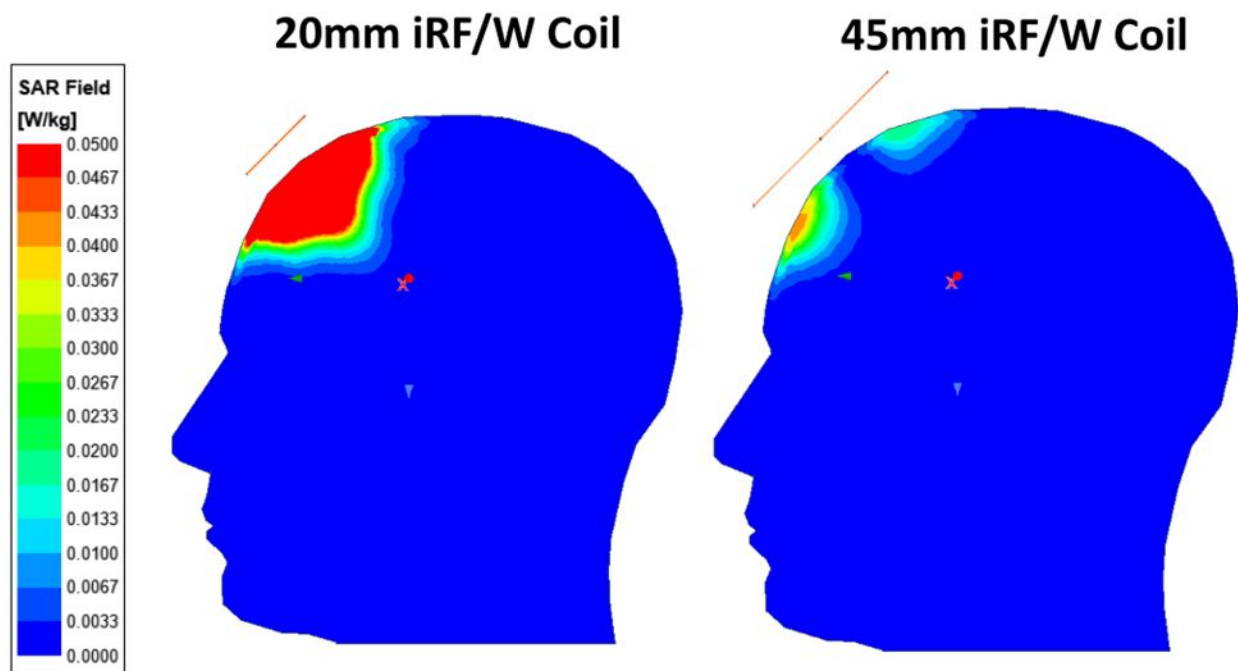
One of my projects is to aid in the development of a wireless MRI receive coil—no strings attached! A wireless RF coil is lighter, more maneuverable, and simpler than its wired counterpart. We hope that such technology can be implemented to eliminate connectors and complex wired connections in the scanner room, thereby reducing scan setup time and financial burden.



Resultant electric fields for a simulated integrated RF/Wireless data transmitting receive coil. The magnitude of the electric field can help us better understand data transmission rate in a given environment.

I specifically utilize finite element solver software to validate simulated wireless MRI receive coils in a scanner environment. The purpose of these simulations is to determine far-field gain pattern, path loss, specific absorption rate, antenna directionality, and link budget for coil elements at Wi-Fi frequency. These metrics determine engineering and design limitations that must be considered as we migrate to the physical system. Future work, which I hope to be an active participant in my career, includes flexible pediatric receive coil “blankets” and wireless data transmission for other imaging modalities.

I also have been able to assist Yixin Ma, a doctorate student in the Truong and Darnell lab, with developing a novel parallel array shimming technique which reduces warping for MR breast imaging. The prospects of this development are exciting for improved spatial identification of breast lesions.



One concern with wireless devices is localized thermal heating due to electromagnetic radiation, called specific absorption rate (SAR). We simulate SAR in a head model at our operational frequency to ensure all safety criteria are met.

I hope that through our endeavors we can improve both access to MRI technology around the globe and diagnosis accuracy. In a small way, I am painfully aware of the lack of access to medical technology in the world and hope I can make as large of a contribution on this front as I can. I recently learned of Radiating Hope, and I look forward to participating in this organization, as well as others, to provide medical aid and expertise to communities that otherwise would not have the opportunity. I am indeed grateful for Zachary Schrock and the donors of his Memorial Scholarship. To echo Zach's words, I look forward to my lifelong quest "...to make the greatest impact I can on the world by making it a better place for the people who remain after me."

Graduating Class of 2021 and Current Student Rosters

2021 MEDICAL PHYSICS GRADUATE PROGRAM



DUKE UNIVERSITY
MEDICAL PHYSICS
GRADUATE PROGRAM

MS GRADUATES



Odunola Grace Babawale
2019-2021

Ericka Nicole Chorniak
2019-2021

Oluwadamilola
Boluwatife Fasina
2019-2021

Zachary William Gude
2019-2021

Russell Patrick Holden
2019-2021

Scott Matthew
Hoopingarner
2019-2021

Jordan Meir Hour
2019-2021

Timothy Rex Johnson
2019-2021

Lam My Lay
2019-2021



Ruilin Li
2019-2021

Hope Anna Pegues
2017-2021

Taylor William Richards
2014-2021

Nathan Allen Shaffer
2019-2021



Brian J. Shen
2019-2021

Vani Yadav
2019-2021

Yuhao Yan
2019-2021

Yijie Yuan
2019-2021

PhD GRADUATES



Yushi Chang
2018-2021

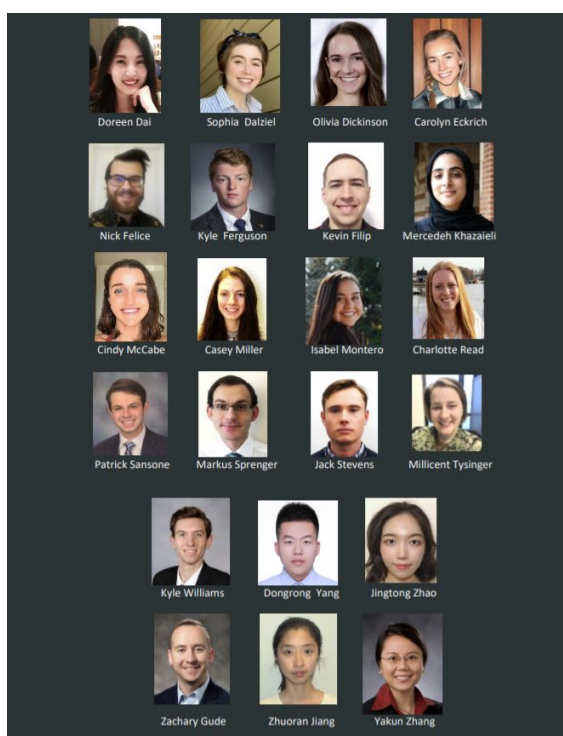
Jocelyn Mary Hoyer
2015-2021

Leith John Rankine
2016-2021

Taylor Brannon Smith
2015-2021

Wentao Wang
2018-2021

Lijia Zhang
2015-2021



Doreen Dai

Sophia Dalziel

Olivia Dickinson

Carolyn Eckrich

Nick Felice

Kyle Ferguson

Kevin Filip

Mercedeh Khazaei

Cindy McCabe

Casey Miller

Isabel Montero

Charlotte Read

Patrick Sansone

Markus Sprenger

Jack Stevens

Millicent Tysinger

Kyle Williams

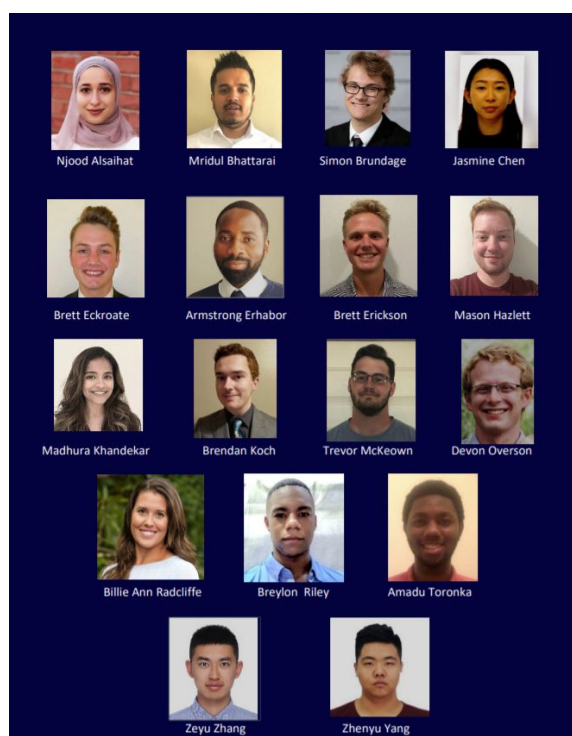
Dongrong Yang

Jingtong Zhao

Zachary Gude

Zhuoran Jiang

Yakun Zhang



Njood Alsaihat

Mridul Bhattarai

Simon Brundage

Jasmine Chen

Brett Eckroate

Armstrong Erhabor

Brett Erickson

Mason Hazlett

Madhura Khandekar

Brendan Koch

Trevor McKeown

Devon Overson

Billie Ann Radcliffe

Breyton Riley

Amadu Toronka

Zeyu Zhang

Zhenyu Yang

Alumni News (1)

Andrew Scott and Nicole Murphy (Both MS '12): Nicole and I had a very full year. After living in Chicago for six years we finally decided to put down roots and buy a house. We are certainly happy to have the extra room, and it turns out we needed it to welcome the newest addition to our family! Mary Ellicott Scott was born on August 3rd, and we are gearing up for our first Christmas as a larger family. Best holiday wishes to everyone in our extended Duke family as well!



Andrew Scott, Nicole Murphy, and Mary Scott



Josh Wilson and family

Josh Wilson (PhD '11) married Claire Sellers at a small, socially-distanced ceremony in Raleigh in mid-March, and in late May their son, Stewart Wilson, was born at UNC Rex Hospital. Also in May of this year, Josh was appointed as Director of the Imaging Physics Residency Program at Duke.

Wendy Harris (PhD '18) and her (now) fiancé, Brendan, recently got engaged in Central Park in NYC. They plan to get married in fall 2022 in Philadelphia, which is where they met.



Wendy Harris and fiancé Brendan

Alumni News (2)

Jessica Nute, PhD (MS '09): After a year-long pandemic postponement, Jessica Nute married her partner of 10 years in an outdoor ceremony in San Antonio. She is very pleased to finally be able to call him her husband. Just 2 weeks before the wedding, Jessica also accepted a new role at UT Health San Antonio as the Interim Associate Dean of Student Affairs. It's a big job and she's learning tons about financial aid, visas, Title IX, ADA and advocating for students. She's still doing her clinical imaging physics job and teaching graduate classes, and while sometimes overwhelming, is enjoying having a very direct role in helping students.



Brian Swartz's new baby boy



Jessica Nute and husband

Brian Swartz, PhD (MS '07) This year on August 26th, Brian Swartz and his wife welcomed their 3rd child, a son, as the newest addition to their family.

Alumni News (3)

Isabella Duarte (PhD '20) and her fiancé Chris got engaged this past October in New York City and will tie the knot in their hometown, Cancun Mexico, in 2022!

Kristy Perez (PhD '11) and **Paco Robles (PhD '11)** had lots of changes in 2021. They moved to a new house and their third daughter was born in November 2021.



Isabella and Chris' engagement



Kristy Perez, Paco Robles, and family