DEPARTMENT OF NEUROSURGERY
ALUMNI NEWSLETTER

CARILION CLINIC | VTC School of Medicine

June 1, 2024

IN THIS ISSUE

NOTE FROM THE CHAIR

Neurosurgery Chair
John A. Jane, Jr, MD

On behalf of the entire Department of Neurosurgery, I welcome you to our Neurosurgery Newsletter. Within the Newsletter, we celebrate just some of our recent achievements which have been built on the incredible clinical, research, and education initiatives of the previous residents and faculty. Our faculty are leading clinical excellence in Neurosurgical Oncology, Spine, Vascular, Skull Base, Pediatrics, and Functional. We will continue to provide excellent care to our community and seek to become a regional destination site for complex neurosurgical care. We look forward to keeping you updated over the upcoming year and beyond.

DEPARTMENT NEWS- Fall 2023/ Spring 2024

- Neurosurgery officially becomes The Department of Neurosurgery, a new department of Carilion Clinic in May 2023 and a Department of the Virginia Tech School of Medicine in December 2023.
- Dr John A. Jane, Jr., MD is named as the inaugural Chair of the Department of Neurosurgery.
- Dr. Mark Witcher, MD, PhD, FAANS, is named Vice Chair of Research and Education, as well as Clerkship Director for Acting Internships and MS4 students
- Dr. Cara Rogers, DO, FAANS is promoted to Clerkship Director for MS3 students
- Dr. Eric Marvin, DO is promoted to Chair of the Department of Neurosurgery Academic Promotions Committee
- Research efforts increase, including hiring Dr. Jordan Darden, PhD as Director of Neurosurgery Research to increase participation in funded trials and assist in the development and commercialization of new innovations developed within the Department

- Efforts have focused to improve subspecialty care by fellowship-trained neurosurgeons leading specialty care teams in Complex Spine, Vascular, Pituitary, Functional, Oncologic, Pediatrics and Skullbase care

- Resident education expands to include global neurosurgical opportunities, cadaver lab expansion, visiting scholar seminars and the VTC Biodesign Program - a novel resident fellowship

RESIDENT EDUCATION

The resident education program has undergone significant expansions during the last two years. Given the invaluable training offered through cadaveric dissection and prosection, residents now have six guided cadaver labs throughout the year directed by rotating VTC faculty on cranial and spinal approaches with the inclusion of a concurrent microvascular reconstruction lab led by Dr. John Entwistle, DO. Additionally, we have established the VTC Department of Neurosurgery Skullbase lab, directed by Dr. Eric Marvin, DO, which focuses on additional guided and atlas-based skull base dissections. The lab was funded by the Neurosurgical Resident Education Fund and includes three cranial or spinal stations, two operative microscopes, as well as electric drills and hand tools as well as full sets of microdissectors.

Additionally, partnerships with industry sponsors allow for two clinical Visiting Scholars each year. In the fall, the Visiting Scholar is selected by the faculty with the opportunity to provide a lecture as well as an oral boards-style case discussion with cases selected and presented by VTC senior residents. The Spring Visiting Scholar is selected by the graduating Chief Resident to provide a dinner presentation and case discussion as well as an operatively-focused morning lecture and guided cadaveric dissection. Recent Visiting Scholars include Dr. Robert Naftel, MD of Vanderbilt University, Dr. Binit Jha of the National Academy of Medical Sciences in Kathmandu, Nepal, and Dr. Ricardo Hanel, MD, PhD of Baptist Health in Jacksonville, Florida.

NEW WEBSITES

- Neurosurgery Research | Carilion Clinic

Updated Main Website:

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First spine lab of the 2023-2024 academic year led by Vaibhav Patel, MD

Participants typically included residents, attendings, medical students, Virginia Tech undergraduates and research personnel

In addition to the clinical Visiting Scholars program, we hosted ten guest faculty during Neurosurgery Academics in our novel seminar series and educational program called the Virginia Tech- Research Updates in Neurosciences (VT-RUN). This program included the incorporation of multiple visiting faculty from regional academic and biotechnology companies to enhance our current and future neurosurgeons' repertoire of research collaborations, and increase potential for patient care innovation within our Department. This series will run in alternative years to give projects time to develop and grow. The inaugural year produced incredible collaborations including:

- Three grant proposals
- Three projects collaborations
- Multiple innovations and IP discussions
- Neuromaterials collaborative domain proposed within innovation field
- Additional collaborative discussions across Virginia Tech

Carilion Clinic has also partnered with one of the nation's top engineering schools, Virginia Tech to bring a unique program to southwest Virginia. This new biomedical innovation program takes its roots from the Stanford Bio-X foundational work and has expanded to include a unique learning opportunity.

The Virginia Tech Carilion Clinic Biodesign Fellowship Program is an immersive clinical and science-intensive mentorship program in the biomedical and health sciences that emphasizes patient-centered innovation. It brings together a surgical resident with graduate or postgraduate students from the engineering sciences to identify, design, and test new ways to address today's healthcare needs. It offers four key hallmarks that make this program the only one of its kind in the nation.

1. Clinical and Scientific Immersion - Our fellows will observe, identify needs, and solve problems in the clinical setting – the emergency department, operative suite, patient clinics and even transportation – from the first day. Similarly, fellows will be brought into the laboratories of expert chemists, biologists, engineers, physicists, or computer scientists to learn developing applicable technologies and methods available to solve issues identified during the clinical immersion.

2. Pairing of Surgical Resident and Engineer - Our fellows are paired to work on their final project to learn collaboration techniques and build off the skill sets of non-physician colleagues. Although individual fellows will progress through the program, the pairing is unique in designing and advancing innovations.

3. Focus on Rural Healthcare and Innovation - One in five Americans are considered rural. Rural patients, particularly in our native southwest Virginia, require a different perspective and approach to treatment. Our patients generally have increased comorbidities and limited access to care and resources including educational materials and medical information. Needs and innovations developed in a rural environment broadly apply to nationwide and global populations.

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4. Innovation Funds Included - Unlike other programs offering certificates and Masters in Biodesign, the Virginia Tech Carilion Clinic Biodesign Fellowship features the time and funds to identify, fabricate, test, patent and commercialize innovations.

Drs. Witcher, Olasunkanmi and Darden serve as Program Faculty and participate on the program's Advisory Board. For more information on the program, please visit Carilion Clinic Biodesign Program at Virginia Tech | Biomedical Engineering and Mechanics | Virginia Tech (vt.edu).

GLOBAL INIATIVES

The Carilion Clinic Department of Neurosurgery has initiated international partnerships with two highly regarded hospitals in Kathmandu, Nepal. Both Bir Hospital (National Academy of Medical Sciences) and Tribhuvan University Teaching Hospital (Nepal Institute of Medicine) are large public hospitals, deriving the majority of their health care funding from government sources. They both have very well-respected neurosurgical training programs and provide excellent care to a very large population with diverse neurosurgical needs.

Team instructs on surgical technique at Bir Hospital, Katmandu, Nepal

We are making a concerted effort to expand the neurosurgical options available to these populations in the functional and endovascular realms of neurosurgery through direct and indirect surgical involvement. Our students, residents, and attendings will rotate through these two hospitals, providing surgical care to Nepalese patients while teaching their counterparts techniques and skills utilized at VTC Neurosurgery. Our hosting partners will be sharing their expertise in specific diagnostic pathologies that have a high incidence rate not typically found in the southeastern U.S.,

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as well as their unique health care resources and insights into patient care. Together, this equal exchange of information, skills and patient care will be vital to improving both our understanding of unique pathologies as well as the skills needed to treat certain populations. Our trips to Nepal take place in April each year, and our efforts are funded by the Neurosurgical Resident Education Fund and private donations. We continue to seek industry partners to support our efforts.

REPOSITORY

During the past year, our research team has developed the VTC Tissue Repository, a central tissue bank collecting tissues of the CNS resected during cases. These materials will be used to study the underlying mechanisms of neurosurgical disorders. Samples are housed locally at the Fralin Biomedical Research Institute and co-managed by VTC and Carilion staff. Participants voluntarily consent before their surgery to donate appropriate specimens (blood, tissue, CSF) that would already be collected but otherwise be discarded as waste. We have currently collected over 150 samples and continue to expand rapidly.

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RESEARCH

Over the past two years, the former Division of Neurosurgery became increasingly involved in collaborative research partnerships with faculty from across Virginia Tech. As we have now transitioned to an independent Department of Neurosurgery, we have redoubled our research efforts. Currently, all Neurosurgical Faculty are actively involved in research. We currently have over 35 research projects including:

- Six industry funded clinical trials
- Four novel innovations and technologies leading to awarding of patent
- Approximately 40+ novel publications each academic year, including faculty, residents and student co-authors
- To learn more about our ongoing efforts, please visit Neurosurgery Research | Carilion Clinic

ALUMNI SPOTLIGHT - Dr Brendan Klein

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Brendan Klein, DO
2023 Graduate

Born and raised in Chicago, Illinois. Dr. Klein attended Northern Illinois University for his undergraduate degree, majored in biology with a chemistry minor. He drove for the university bus line which he swears is still one of his favorite jobs of all time. He then moved on to medical school at Rocky Vista University in Colorado where he obtained a DO degree. He spent a year as a traditional rotating intern in Colorado before matriculating into neurosurgical residency at Virginia Tech Carilion. He then pursued a fellowship in pediatric neurosurgery at Emory University in Atlanta, one of the busiest sites for pediatric neurosurgery in the country. After a successful year he is thrilled to be returning to Roanoke as the newest faculty, charged with growing and expanding the wonderful world of pediatric neurosurgery.

Married with 2 children, including a brand new baby, Brendan lives for time spent with his family. He is an outdoors enthusiast, enjoys trail running, camping, backpacking, kayaking, and fishing. And of course, good beer. “Roanoke is a dream location, a perfect blend of city life, rurality, and the great outdoors” And, in particular, enjoys fishing along the Roanoke river with his family along the greenway, in view of the beautiful Roanoke Memorial Hospital facade.

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UPCOMING EVENTS

Summer 2024

- New Academic Year Begins
- New Neurosurgical Resident Training Begins
- Continuation of cadaver labs, including a Department visit to Stryker Bioskills Lab in Leesburg, VA.
- Summer Cookout

PROGRAM GROWTH

The Carilion Clinic Department of Neurosurgery has opened multiple locations and expanded service lines over the years. Our locations now include clinics in Roanoke (Carilion Children’s and ION), Blacksburg, Giles, Hillsville, Lexington, Martinsville and Wytheville. Surgical Procedures are conducted in Carilion Roanoke Memorial Hospital, and expanding to two new upcoming locations this year: *Carilion Rockbridge Community*

and Carilion Franklin Memorial Hospital. The Department serves patients from more than 15 states with 450-500 new patient referrals and 1,800 clinic visits monthly as well as 2,400 surgical cases annually.

GIVING BACK? SUPPORT US!

The Carilion Clinic/VTC Department of Neurosurgery has made tremendous advances over the past several years, building on a proud legacy well-known to our Alumni. We plan to continue on this trajectory but can do so only by relying on the resources available to our program. One of the best investments you can make in the value of our training program is a direct donation of support to our Department. Several years ago, the Neurosurgical Resident Education Fund was established to support the efforts to make this the best possible training program. This fund is managed by the Carilion Clinic Foundation, a 501c(3) tax-exempt organization set up to support the charitable work of Carilion's enterprises. We rely heavily on this fund for providing our cadaver labs, funding our Visiting Scholars and guest lecturers' programs, funding our international outreach work in Nepal, as well as supporting national and international resident travel for conference attendance. These efforts not only enrich the training experience of our program but continue to enhance the value and reputation of our Department. It is critical that we continue to replace the assets available in this invaluable resource. Support from our Alumni is critical to support our ongoing mission. For those interested in giving, please go to www.CarilionFoundation.org/give and select Designation: Other - **Neurosurgery Education Fund.**

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