

Department of Neurological Surgery Newsletter

S U M M E R - 2 0 2 2

Letter from the Department Chair



With the advent of a new academic year, the Department of Neurological Surgery is looking forward to a year of growth, development, and continued progress. It has been an exciting year that included a successful departmental five-year review and a review of our residency program. I am pleased to share that our residency program review passed with zero citations, which is an impressive feat, and our program has been extended for another 10 years.

In addition to successful departmental surveys, we have added new talent

to enrich the services we provide to the community. We have had the pleasure of welcoming several new members of the Department, including a new cerebrovascular and skull base neurosurgeon, **Peter Amenta, MD**. We have also hired a new spine neurosurgeon, **Stephen Gutting, MD**. Both Dr. Amenta and Dr. Gutting bring many years of experience in neurosurgery to the Department. We have also expanded our research leadership team with the addition of our Vice Chair of Research, **Rachael Sirianni, PhD**. **Yesenia Guevara** has accompanied Dr. Sirianni as her Research Associate. Other new faces include **William Lambert, MD**, our new PGY-1 resident in neurological surgery. **Somto Anumba Nnah, APRN**, **Lindsay Lapierre, PA** and **Allison Hester, PA**, have joined our team of Advanced Care Practitioners and **Cherise Kearney, MHA**, is the new Department Administrator. As we continue to look toward the future and adapt to an ever-changing, post-pandemic environment, we remain committed to following our mission of training the next generation of neurosurgeon-scientists, educators, and leaders in neurological surgery while working relentlessly towards our pursuit of being the best place to give care and the best place to get care.

Mark D. Johnson, MD, PhD

Maroun Semaan Professor in Neurological Surgery
Chair, Department of Neurological Surgery

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New Academic Year, new crew!

Dr. Daci, PGY-4 has started her 2 year
research rotation, **Dr. Owusu-Adjei**, PGY-3,
Dr. Mietus, PGY-2 and **Dr. Lambert**, PGY-1.
Cheers to the new Academic Year.

Welcome William Lambert MD, Neurological Surgery Intern Resident

We are pleased to announce that **William Lambert, MD**, will be our next resident in the Department of Neurological Surgery at the UMass Chan Medical School and UMass Memorial Health. Will attended Boston College where he majored in biology and was inducted into the Phi Beta Kappa Honor Society in 2016. After graduation, he worked for several years as an administrative assistant in the cerebrovascular division of the Department of Neurosurgery at Brigham and Women's Hospital. His supervisor at the Brigham described Will as "a superstar" with "a calm demeanor, humility and drive." Will then matriculated at the University of Connecticut School of Medicine, where his performance was stellar. His clinical performance was near the top of his graduating class, and his performance on standardized examinations was in the extraordinary range. He has conducted research in the area of pediatric neurosurgery and has published eight peer-



reviewed articles, including four as first author. Several additional articles have been submitted for publication. The Dean's letter stated that "he has produced superb performances across multiple competencies in multiple disciplines, demonstrating mastery of skills that are crucial to success as a physician." Will has also demonstrated significant leadership skills while in college and medical school. In college, he founded Camp Kesem Chestnut Hill, a national organization that supports the children of cancer patients. He

helped to found the University of Connecticut student chapter of the American Association of Neurological Surgeons, served as Director of the Pediatric Hematology Oncology Craft student organization, and volunteered as a tutor and mentor in medical school. Will enjoys hiking, camping and long distance running. Please join us in welcoming Will to our UMass Neurosurgery family.

An Intern Year of Residency at UMass Chan Medical School, Neurological Surgery

by Constance Mietus, MD, PhD, PGY-2

I have had an incredible first year of residency. I am grateful to our neurosurgical faculty who have been exceptional mentors and teachers. Throughout this year I have had the privilege of treating patients both inside and outside of the OR, which has been an absolutely rewarding experience. My skillset and confidence have grown with each rotation as I have learned how integrated neurosurgical care is across multiple specialties and disciplines. I am grateful for my time spent learning with the neuro ICU, neuroradiology, neurology, trauma, and orthopedic surgery teams. Throughout the experiences and challenges of intern year, I have had the most amazing co-residents helping me to navigate and grow. After such a great first year, I can only imagine the good things to come in PGY-2!

Constance Mietus, MD, PhD, PGY-2, (right) - First Stereotactic Needle Biopsy as a PGY-1, with **Richard P. Moser, MD**.





Hope & Healing Celebration

Our Department had a great time celebrating at the UMass Memorial Health Gala. Thank you all for a fun gathering event!

New England Neurosurgical Society (NENS) Annual Meeting Chatham, MA

by Rrita Daci, MD, PGY-4, Research Year

I am very thankful to **Ron Riesenburger, MD** and the New England Neurosurgical Society (NENS) for the opportunity to have presented a remarkable case report and literature review on Myelocystocele at NENS 2022 with **Gerald McGillicuddy, MD**. The meeting took place in one of the most scenic areas of New England, Chatham, MA, during the weekend of June 24-25. It was the most pleasurable experience to meet several prominent neurosurgeons in the area (and world!), learn more about the history of NENS, and mingle with new life-long colleagues. The conference was full of very interesting science which is truly inspiring to me, as I am now entering my research years of residency.



(Left to right) Omar Sorour, MS4, Co-President, AANS UMass Student Chapter Officer, Rrita Daci, PGY-4 research year, Coleman Riordan, MS4, Co-President, AANS UMass Student Chapter Officer, and Gerald McGillicuddy, MD.



Rachael W. Sirianni, PhD - Focused on the Use of Biomaterials to Improve Drug Delivery to the Brain and Spinal Cord



Neurosurgery is growing! Welcome **Rachael W. Sirianni, PhD**, as Professor and Vice Chair of Research for our department. Dr. Sirianni received her doctorate in Biomedical Engineering from Yale University and her postdoctoral training in Diagnostic Radiology at the Yale School of Medicine. Her most recent faculty appointment was the University of Texas Health Science Center at Houston, where she conducted preclinical studies to facilitate new clinical trials for treatment of pediatric brain tumors. By joining our department, Dr. Sirianni aims to continue developing these translational research interests while also supporting the growth of research infrastructure, development of research-focused educational opportunities, and eventual recruitment of new faculty.

Dr. Sirianni's research program is focused on the use of biomaterials to improve drug delivery to the brain and spinal cord. Drugs that have been administered systemically face multiple barriers to effective delivery, including rapid clearance and metabolism in the periphery, as well as inadequate transport across the blood brain barrier (BBB). Her group takes two approaches to tackle this challenge. First, they have developed biodegradable and biocompatible nanoparticles that can encapsulate and slowly release drugs. This approach effectively protects drugs from clearance and metabolism, enabling safer and more effective use. One advantage of utilizing nanoparticle systems for drug delivery is that the surface of the nanoparticle can be modified or engineered to facilitate specific interactions with target cells, i.e., enabling better

delivery to the disease tissue while reducing toxic effects on off-target cells. This approach for surface modification carries substantial potential to improve drug delivery to the brain by permitting nanoparticles to accumulate and release their payloads directly at the site of diseased. Second, they are developing approaches for alternative routes of administration that can bypass the BBB, including direct administration of nanoparticles to the cerebrospinal fluid (CSF) that surrounds the brain and spinal cord. Their data demonstrate that nanoparticles not only distribute readily within CSF filled compartments of the brain and spinal cord, but that nanoparticles can also improve drug tolerability, distribution, and therapeutic efficacy in preclinical models of disease. Importantly,

Sirianni continued to page 6

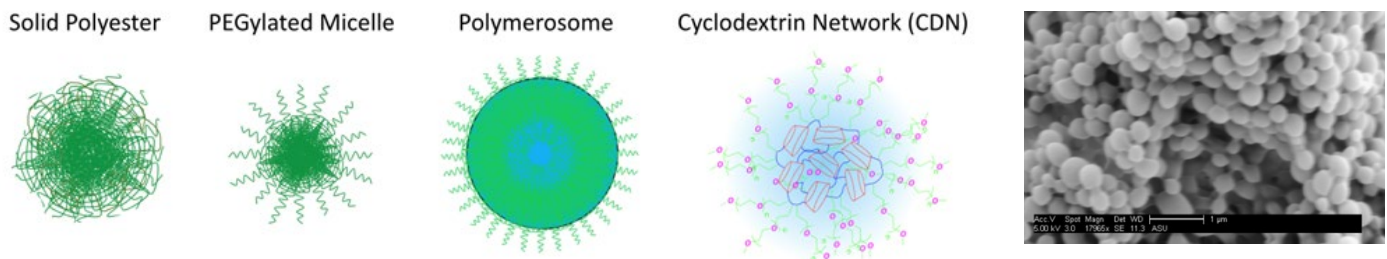


Figure. Nanoparticles can be engineered with a variety of internal structures to encapsulate and slowly release drugs that possess different properties. The right image shows a scanning electron micrograph (SEM) of nanoparticles, which can be suspended readily in aqueous solution for administration to physiological environments.

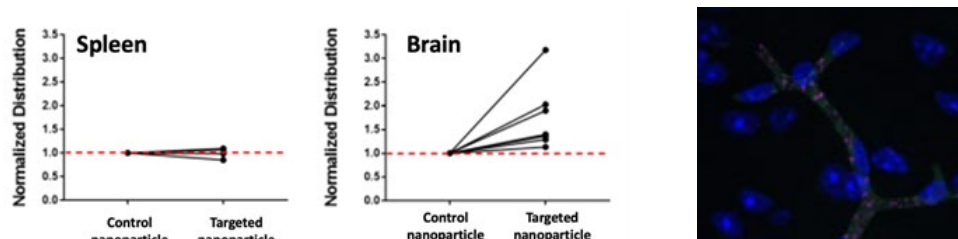


Figure. Modification of the surface of nanoparticles with a targeting ligand specifically enhances delivery to the central nervous system (CNS) while not increasing delivery to off-target tissues (spleen). This engineering approach enables nanoparticles to specifically interact with and adhere to the vasculature of the BBB.

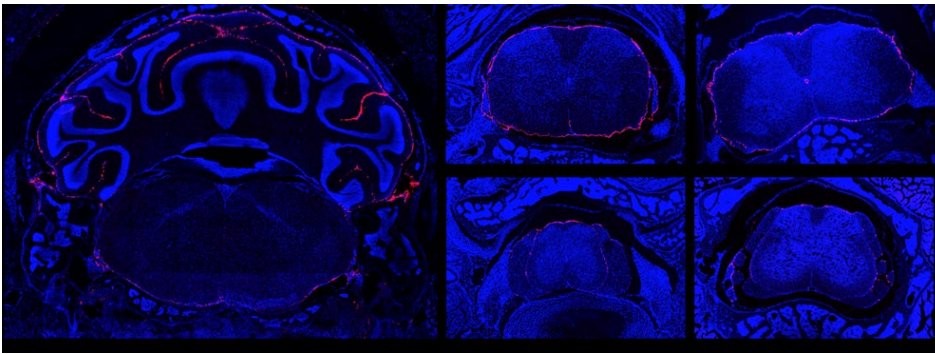


Figure. Fluorescent nanoparticles that have been administered directly to the CSF distribute across all CSF-exposed surfaces of the brain and spinal cord. This approach enables the drugs that have been encapsulated within the nanoparticle to more readily access diseased tissue in the brain and spinal cord while minimizing peripheral toxicity.

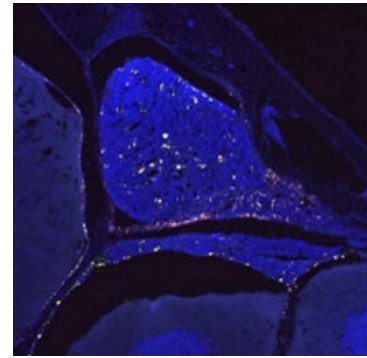


Figure. Nanoparticles that have been administered directly to the CSF are able to infiltrate metastatic cancer lesions on the surface of the brain (the metastasis is defined by the dense, blue staining in the center of the image)

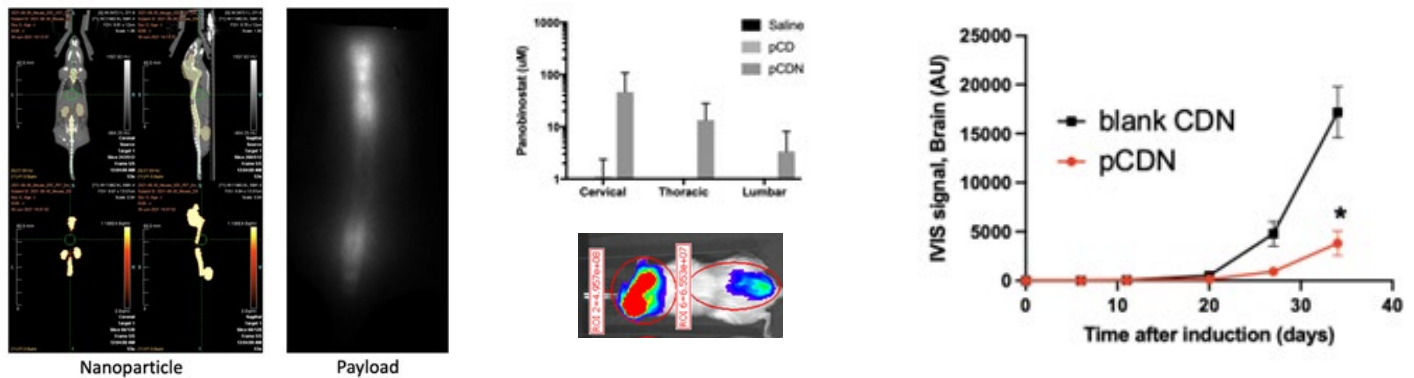


Figure. Nanoparticles that have been radiolabeled and administered directly to the CSF distribute readily across the surfaces of the brain and spinal cord, as measured by imaging with Positron Emission Tomography (PET) imaging. This enhanced distribution enables delivery of payload to even distal regions of the spinal cord. In the example on the right, the drug panobinostat is undetectable in thoracic or lumbar spinal cord when administered in a clinically doseable form (pCD). Once encapsulated within a nanoparticle system (pCDN), drug reaches all segments of the spinal cord at high levels. This ultimately translates to a therapeutic benefit in a patient derived xenograft model of pediatric medulloblastoma (pCDs did not impact tumor growth, data not shown)

Sirianni continued from page 5

administration of nanoparticles directly to the CSF enables drug to reach a high concentration at target tissue sites within the brain and spinal cord while simultaneously reducing or eliminating drug exposure in the periphery, which enhances the translational value of this approach for delivery of chemotherapeutic compounds whose dosing is otherwise limited by peripheral toxicity. Although CSF-administration is widely used in the clinic, the Sirianni group is one of the only laboratories developing nanoparticle based strategies that can expand the types of drugs that can be used as well as their specific safety and potency within the central nervous system.

Dr. Sirianni's research is funded by multiple sources, including current support from 3 R01 grants from the National Institutes of Health, as well as prior funding by the Department of Defense, National Science Foundation, and multiple private research foundations. Her current research program supports development of these approaches in pediatric neuro-oncology and traumatic brain injury. The Sirianni Laboratory is highly collaborative and works with a network of preclinical and clinical investigators to develop these systems for eventual translation into the clinic.

Recognition



The UMass Chan Coordinator Advisory Committee in partnership with the Office of Graduate Medical Education have announced nominations for the newly created, Program Coordinator of the Year Award.

Congratulations to **Cassandra Wamester**, Neurological Surgery Residency Program Coordinator, for being nominated for UMass Chan Program Coordinator of the Year.

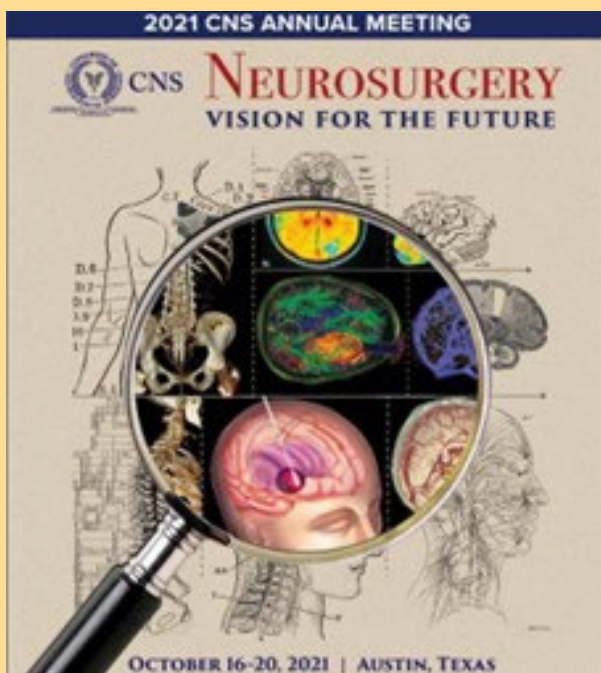
This award recognizes the contributions coordinators make every day at UMass Chan and is for the core residency coordinators focusing 100% time to the operation and compliance of the training program.

Thank You Cassi for your commitment to graduate medical education and the work you do every day!



The Society of Neurological Surgeons (SNS), 2022 Annual Meeting, Hosted by Henry Ford Health System was held in Detroit, Michigan on May 21-24.

Mark Johnson, MD, PhD and **Peter S. Amenta, MD** attended the meeting. Dr. Johnson presented: Whom to interview? Applicant Screening and Virtual Interviewing in the post-USMLE Era.



The Congress of Neurological Surgeons (CNS) Annual Meeting was held on October 16-20, 2021 in Austin, Texas. **Oguz Cataltepe, MD** presented and our 3 residents attended the meeting.

Oguz Cataltepe, MD, presented: Convection Enhanced Delivery and Gene Therapy in Neurological Disorders.

2022-2023 American Association of Neurological Surgeons (AANS) UMass Student Chapter

The AANS UMass Student Chapter holds monthly journal clubs led by a faculty member to discuss articles with recent discoveries in the field. **Rita Daci, MD, PGY-4**, **Britanny Owusu-Adjei, MD, PGY-3**, **Constance Mietus, MD, PhD, PGY-2**, and **William Lambert, MD, PGY-1**, will serve as our resident advisors and be able to share their experiences as they advance during residency.

This Year's Elected Officers

- **Presidents:** Coleman Riordan (MS4) and Omar Sorour (MS4)
- **Vice Presidents:** Nathan Yingling (MS3) and Paramesh Karandikar (MS3)
- **Treasurer:** Danielle Li (MS2)
- **Research:** Christopher Zaro (MS2)



Our New Attending, Peter S. Amenta, MD, FAANS, FACS

Peter S. Amenta, MD, FAANS, FACS has joined the Department of Neurological Surgery as Associate Professor of Neurological Surgery, Director of Cerebrovascular Neurosurgery, Director of Skull base Surgery and Residency Associate Program Director.

Dr. Amenta graduated from Villanova University in 2002. He received his MD from Jefferson Medical College in 2006 and completed a Neurological Surgery residency training at Thomas Jefferson University Hospital in 2013. He then completed a Cerebrovascular and Skull Base Fellowship at the University of Miami in 2014 and a Neurovascular and Endovascular Surgery Fellowship in 2015 at Tulane University.

Dr. Amenta has received numerous awards, including Exceptional Dedication to Teaching in 2021 among many others. He is committed to the life-long values of academic medicine, which include excellent patient care, teaching, and research.



Our New Attending, Stephen Gutting, MD

Stephen Gutting, MD has joined the Department of Neurological Surgery as an Assistant Professor of Neurological Surgery, Co-Director of Spine Surgery.

Dr. Gutting comes to UMass from Steward Healthcare in Boston where he served as the Northeast Regional Chief of Neurosurgery. He was also the Chief of Neurosurgery and Chief of Spine Surgery at the Steward Healthcare flagship hospital, St. Elizabeth's Medical Center. Dr. Gutting has over twenty years of experience and his special clinical interests include cervical, thoracic and lumbar spinal instrumentation, minimally invasive spine surgery, as well as neuromodulation for the treatment of chronic pain and spasticity. Dr. Gutting received his Doctor of Medicine from the Medical

College of Wisconsin and completed his Neurological Surgery residency at the Medical College of Wisconsin Affiliated Hospitals. He is a member of the Congress of Neurological Surgeons and the American Association of Neurological Surgeons. Dr. Gutting is Board Certified by the American Board of Neurological Surgery.



Our New Administrator Cherise Kearney, MS

We are delighted to announce that **Cherise Kearney, MS** has joined the Department of Neurological Surgery as our new administrator.

Cherise Kearney has been a leader in healthcare operations since 2007. She is a member of the American College of Healthcare Executives. Prior to joining the UMass Neurosurgery team, Kearney was the Operations Director for Day Kimball Medical Group. Kearney holds a Bachelor of Science in Business Management from Daytona State College and Master of Science in Healthcare Administration from the University of Central Florida.

(New staff continued on next page)

The Department of Neurological Surgery has moved to their new offices on the 7th floor.

Welcome New Neurological Surgery Staff



Kelly Callahan
Administrative Staff



Xiomara Suarez
Administrative Staff



Charly Fitzgerald
Administrative Staff



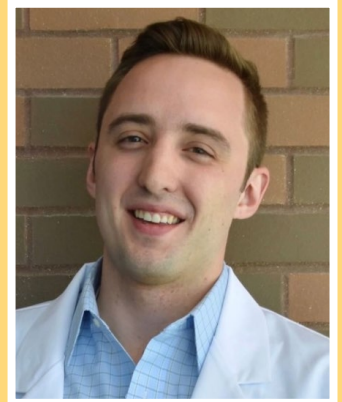
Lindsay Lapierre, PA
Advanced Practitioner



Corey Caracciolo, PA-C
Advanced Practitioner



Allison Hester, PA
Advanced Practitioner



Martin Shott, PA
Advanced Practitioner

Somto Anumba Nnah, NP, Advanced Practitioner
Not Shown



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SUMMER - 2022

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