



MESSAGE FROM CHAIR

Fall Issue 2023



Dear colleagues and friends,

When I came to Augusta University - Medical College of Georgia, Department of Neurosurgery as chair a little over 4 years ago, I joined a culture like no other. I already knew the department's strengths in patient-centered care, and innovative teaching, however, I had limited knowledge of the creative bench research done at this great Institution. In close collaboration with the Neurology Department, we have been able to create a superb Neuroscience Center able to evaluate, diagnosis and treat the most difficult patients in our region and the state of Georgia.

Over the past year, we have reached (as a group) many milestones. I was invited as a **Semmes Lecturer-Honored Guest** to the **73rd Annual Southern Neurosurgical Society** meeting at Marco Island in February 2023. The **Inaugural Marshall Allen Symposium** featuring Dr. Mark Hadley from UAB followed this event. This symposium was a total success. It brought together the entire MCG family (alumni, faculty, and former residents).

In May/2023, **Dr. Scott Rahimi** was named President of the **Georgia Neurosurgical Society (GNS)**. The department of Neurosurgery participated for the first time in the **Annual Charity Neurosurgery Softball Tournament** in New York City. Our performance was not an illustrious one but this event helped to develop a strong personal bonding between faculty and residents.

More important, since late August/2023 Augusta University Medical Center (AUMC) has a new name and a strong collaborator in the Wellstar System. We have become **Wellstar- MCG Health**. Nevertheless, we still have the same commitment and support from the institution as before and beyond.

In addition, we had the greatest representation ever to **CNS annual meeting** with 14 abstracts and strong participation from students, residents and faculty.

Lastly, but no less important, **Dr. Salman Ali** has joined the Oncology/Skull base Team effective Dec/2023 (see below).

I have no doubt, as in the history of this Institution, that we will, with this amazing team, continue to add milestones to MCG Neurosurgery's rich history and elevate the standard of care for our patients.

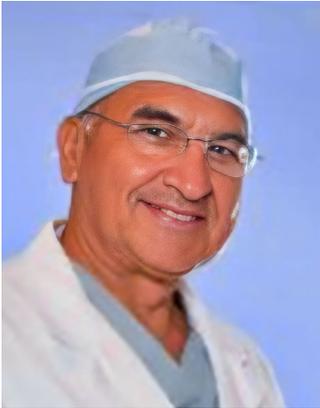
Thank you for your support.

Fernando L. Vale, M.D.
Chair, Department of Neurosurgery
Marshall B. Allen, Jr., M.D. Distinguished Chair
Director, Functional and Epilepsy Section
Professor

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MESSAGE FOR ALUMNI



My Dear Neurosurgery Alumni,

Christmas is the time of the year where we reflect about things that happened during the year, things we were supposed to do and did not do, and things we are going to plan for the new year. I have to say that we were very happy **The First Marshall B. Allen Jr. Symposium** was a reality, and a successful one. We had modest physical participation from the Alumni.

I assure you **Fernando Vale, MD**, our chairman, is trying hard to keep the excellence in teaching and expanding the research aspect of the program but he needs our help.

MCG is the Center of excellence in Trauma, Vascular, Brain Tumor, Spine, Functional Neurosurgery in the area. I would like to ask you to donate to the neurosurgery funds for this purpose. You could designate the area of preference for those funds, Research, residents training, Library etc. We did it in the past, when we had our annual meeting and celebrated with the BOSS those meetings. It was a time of togetherness, jokes, fun memories, very old and new former residents had a chance to interact and get to know each other. I am inviting you to actively participate and be more involved with the program we all cherish. As in the past, it would be nice if each year a new former resident spearhead these activities. However, any good ideas from any one of you are welcome.

May the spirit of Christmas and happiness be with you and your family.

Aldemaro J. Volcan MD

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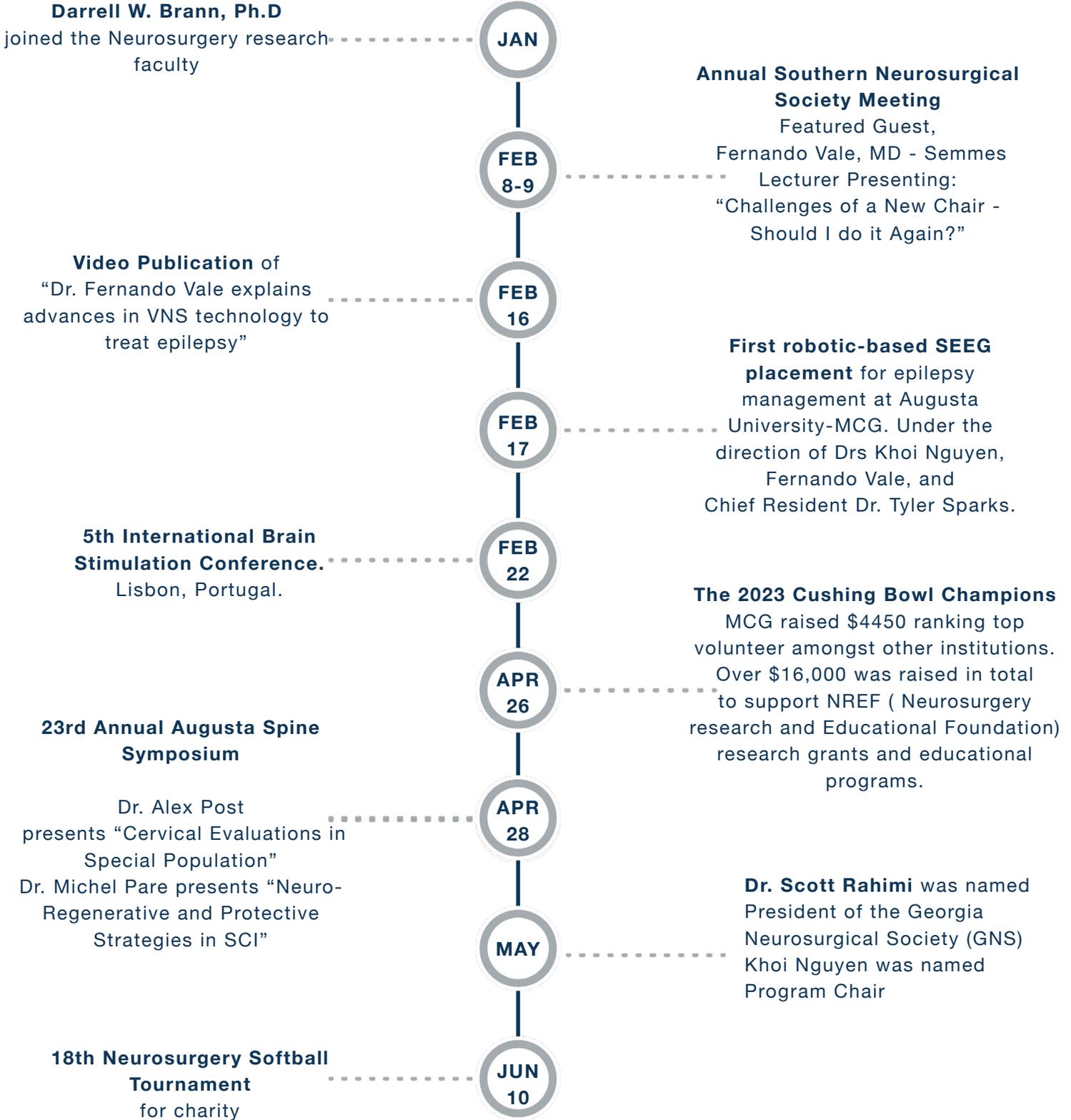
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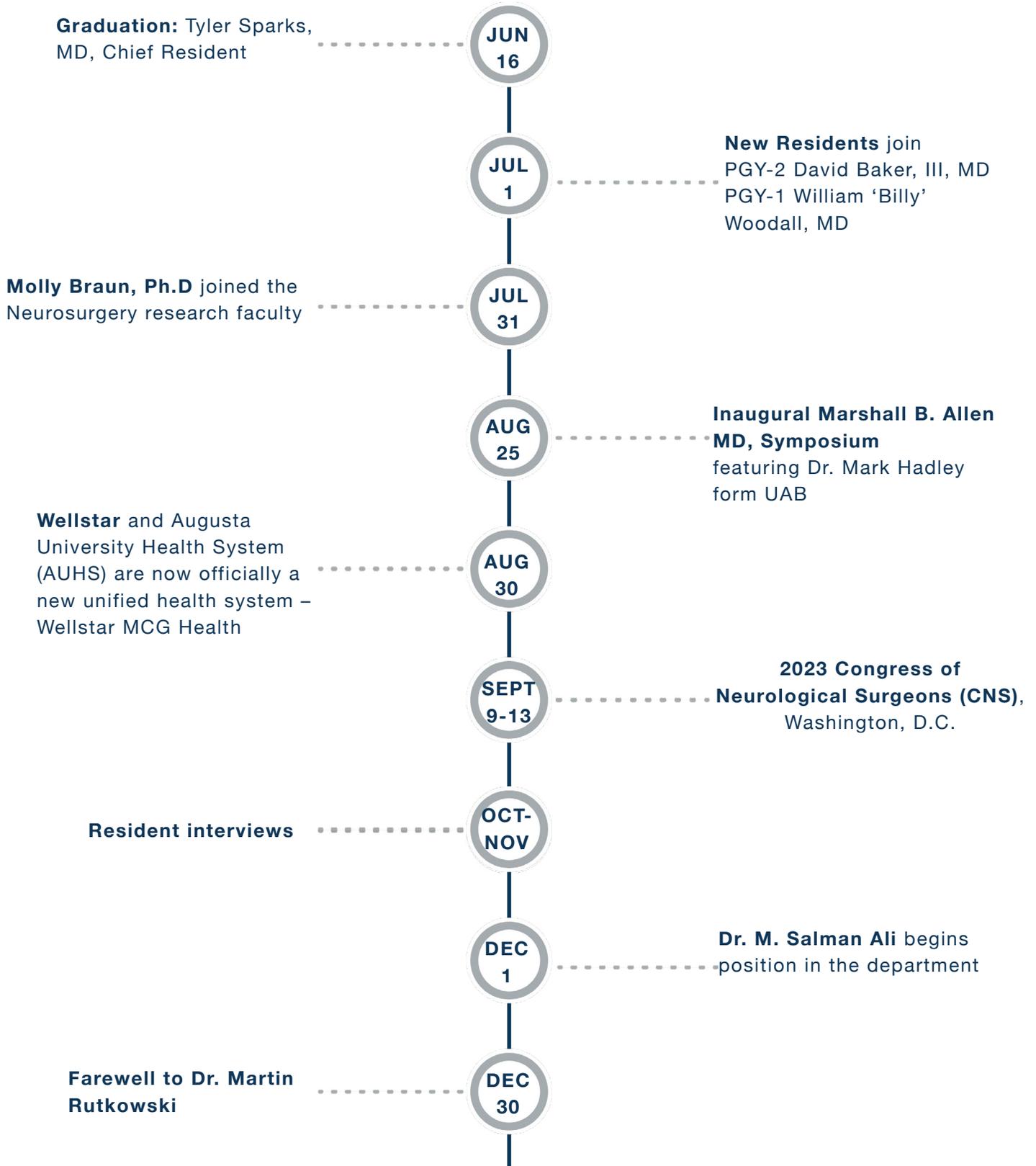
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TIMELINE RECAP OF 2023







2023 NEUROSURGERY RESEARCH UPDATES



The department currently is nationally ranked in the top 29 Neurosurgery departments with respect to NIH funding and is poised for further growth in the coming years. Basic science expertise, led by four Ph.D. scientists, is focused on defining the role of neuroinflammation in acute brain injuries. Departmental research is conducted in state-of-the-art facilities on the Medical College of Georgia campus by a diverse group of trainees, including neurosurgical residents, medical students, postdoctoral fellows, graduate students, and undergraduate students. Dr. Dhandapani's laboratories is studying how metabolic changes within the brain activate the immune system. This knowledge will be critical to develop new therapies to maximize

recovery while reducing harmful inflammation after concussions, traumatic brain injuries, and hemorrhagic strokes. Dr. Vaibhav's laboratory is defining how the endocannabinoid system may represent a therapeutic target to limit long-term neurodegeneration after traumatic brain injury. Dr. Brann's laboratory is investigating how traumatic brain injuries increase brain aging, resulting in neurodegeneration and dementia. Finally, Dr. Braun's laboratory is study the impact of the glymphatic system on cognitive function in the context of traumatic brain injury and dementia. Our highly collaborative laboratories utilizing a variety of approaches with the goal of developing new clinical trials to reduce the burden of neurological injuries.



NEW GRANTS



Krishnan Dhandapani, Ph.D., was awarded a **\$1,975,262** grant from the **National Institutes of Health (NIH)** to study how changes in cerebral metabolism influence chronic neurodegeneration after a traumatic brain injury.

Krishnan Dhandapani, in collaboration with David Hess and Mohammad Badruzzaman Khan from the Augusta University Department of Neurology, was awarded a new **\$1,848,000** grant from the **National Institutes of Health** to identify novel cerebroprotectants after stroke. This multi-center research project involves researchers from Augusta University, Yale University, Harvard University, University of Iowa, University of California-San Diego, Duke University, and University of Southern California.

Congress of Neurological Surgeons (CNS)

Abbas Jarrahi, M.D. received the “Best Basic Science Poster Award” in the Neurotrauma and Critical Care Section Session at the 2023 Congress of Neurological Surgeons for his work using genomics to define the inflammatory profiles following a traumatic brain injury.



Abbas Jarrahi, M.D. received a Master of Business Administration (MBA) degree from Hull College of Business, Augusta University in Dec, 2023. Dr Jarrahi also received membership in Beta Gamma Sigma, an international honor society for collegiate schools of business, based on his high scholastic achievement.



Dr. Dhandapani's laboratory in January, 2023. (l-r) Abbas Jarrahi, M.D., Yujiao Lu, Ph.D., Krishnan Dhandapani, Ph.D., Nicholas Moore, B.S., Meenakshi Ahluwalia, Ph.D.



Nicholas Moore, a M.D.-Ph.D. student in Dr. Dhandapani's laboratory, passed his comprehensive examination and advanced to candidacy for his Ph.D.



NEUROSURGERY UPDATES



First robotic-based SEEG placement for epilepsy management at Augusta University-MCG.

Under the direction of **Drs Khoi Nguyen and Fernando Vale.**

Picture showing robotic arm placement and SEEG depth electrode insertion by **Dr. Khoi Nguyen** and recently graduated, Chief Resident **Dr. Tyler Sparks.**



Fernando Vale, MD, who was an early user of a nonpharmacological therapy for treatment-resistant epilepsy called vagus nerve stimulation, became among the first in the nation to put a new implantable pulse generator into a patient with one of those early models, which enables her to benefit from the latest technology updates without having to replace her entire device.

Dr. Vale placed the new generator in a 40-year-old patient who received her implant 23 years ago.

Watch the video here:

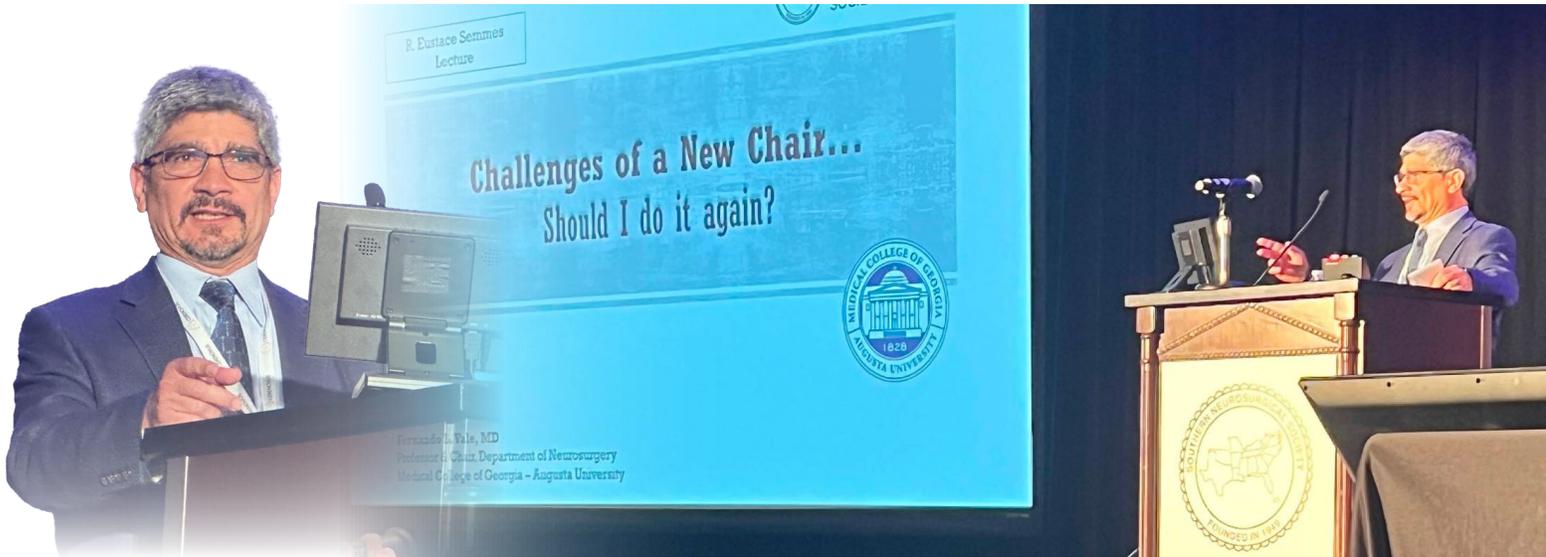
<https://www.youtube.com/watch?v=332hTN0PHWk&t=5s>

The 2023 Cushing Bowl Champions Augusta University Medical College of Georgia Neurosurgery Program.

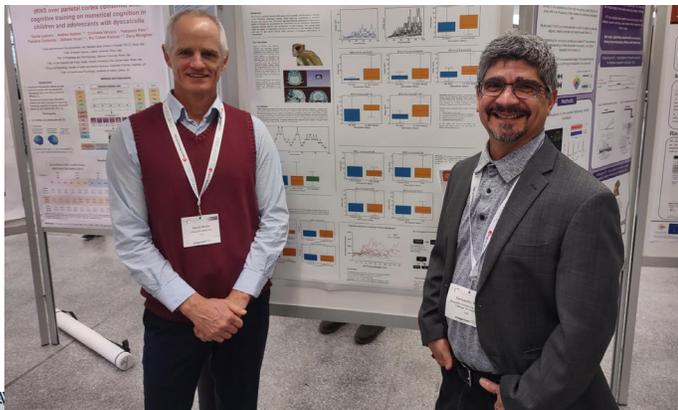
Over \$16,000 was raised in total to support NREF (Neurosurgery research and Educational Foundation) research grants and educational programs. MCG raised \$4450 ranking top volunteer amongst other institutions.

Dr. Luca Debs (right) passed the Neurosurgery primary written board exam, obtaining a score in the 97th percentile!





**Annual Southern Neurosurgical Society Meeting
 Featured Guest
 Fernando Vale, MD - Semmes Lecturer**



David Blake, Ph.D, and Fernando Vale, MD
 presenting “Intermittent stimulation of the nucleus basalis
 of Meynert in senile Macaque monkeys improves working
 memory behavior.”
At the 5th International Brain Stimulation Conference.
 Lisbon, Portugal



Tucker Oliver, who worked closely with our department faculty, graduated
 December 14th receiving his MD.

In September he presented his research “Quantifying Cholinergic Cortical
 Response to Deep Brain Stimulation in Murine Models”
 at the **2023 Congress of Neurological Surgeons (CNS)**,
 Washington, D.C.



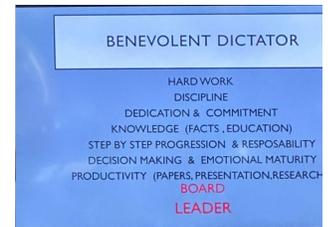
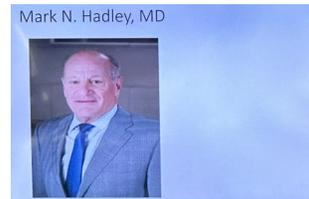
INAUGURAL MARSHALL B ALLEN SYMPOSIUM



Dear All,
 On behalf of Augusta University and myself, I would like to extend our gratitude for your participation in The Inaugural Marshall B. Allen Symposium. Your dedication and contributions to this meeting were instrumental in elevating the quality of our educational content. We are grateful for your commitment to the advancement of knowledge and your efforts in making this meeting a great success.



Dr. Vale (right) and honored guest speaker Dr. Hadley (left)





RESIDENT ACTIVITIES





Lydia Kaoutzani is our PGY-6 neurosurgery resident. She loves trying out new restaurants and running outdoors. She is also a strong believer that an iced latte counts as lunch.



Billy Woodall the newest addition of our neurosurgery family. He has started his PGY-1 year strong. Billy enjoys spending time with his family and they enjoy going camping.



David Baker our PGY-2 neurosurgery resident. He is extremely hard working and organized. He also takes spontaneous hikes on the Appalachian Trail which often end up lasting more than 24 hours. He is ready for a life in neurosurgery.



Chris Carr one of our two PGY-3 neurosurgery residents. We came to find out this year that he throws some epic Halloween parties.



Luca Debs is our PGY-5 neurosurgery resident, and please note social chair of our department. He is also an avid mountain biker. Mila, Luca's beautiful four-year-old daughter, often joins him on these adventures.



Matthew Lee our other PGY-3 neurosurgery resident. Matt's hobbies include exercising and everything related to fitness.

Chris Carr

And yes, he also cooks delicious Thanksgiving dinners and drops off food to his co-residents who happen to be on call that day.

Matthew Lee

Most recently he participated in the Ironman 70.3 Augusta. He wanted to make sure people knew it was just half an Ironman. We wanted to remind him that this is still impressive.

HAVING FUN WITH THE RESIDENTS



Dane Jones, our most beloved chief. He is an absolute legend and Semmes Murphy is beyond lucky to have him starting July. This past year Dane and Rebecca had their second beautiful daughter Sophia. Caroline has been a wonderful big sister.

Kenny James is our PGY-4 neurosurgery resident. He and his wife just welcomed their fourth child. He's currently studying for his written boards and is planning to pursue a career in spine.



In June, we went to the 18th **Neurosurgical Softball Tournament** in New York!



NEW FACULTY Muhammad Salman Ali, MD



Professional Position:

- Assistant Professor of Neurosurgery
- Director of Skull Base, Pituitary Surgery, and Surgical Neuro-oncology

Specialization:

- Expertise in endoscopic endonasal and minimally invasive keyhole approaches
- Focus on treating pituitary, complex skull base, and brain tumors

Education and Training:

- Completed neurological surgery residency at the University of Iowa
- Fellowship training in minimally invasive keyhole surgery for brain tumors
- Trained with renowned lateral skull base ENT surgeons at the University of Iowa
- Pursued subspecialty 360 skull base surgery training at King's College Hospital, London, UK
- Extensive experience in managing complex lateral and posterior fossa tumors
- Advanced expanded endonasal endoscopic fellowship at the Center of Skull Base Surgery, University of Pittsburgh Medical Center

Surgical Expertise:

- Specialized in using minimally invasive and micro neurosurgical techniques
- Treatment of complex tumors such as pituitary adenoma, cavernous sinus, craniopharyngioma, chordoma, chondrosarcoma, and angiofibroma
- Training in treating patients with basilar invagination and craniocervical junction issues

Research Contribution:

- Prolific surgeon-scientist advocating collaboration in research programs
- Completed a funded 2-year research fellowship in translational immunology at the University of California, San Francisco
- Focus on studying the role of specialized immune cells, Regulatory T cells, in brain tumors and brain aneurysms

Current Professional Leadership:

- Recruited to MCG under the leadership of Neurosurgery Chair, Fernando L. Vale and Dean, David Hess.
- Will lead a multi-disciplinary team to provide comprehensive, advanced, and latest treatment options nationally and internationally

Personal Life:

Enjoys traveling and spending time with his wife and children

Passionate about teaching and humanitarian work in underserved areas in developing countries

Contact information

Phone: (806)786-3382

Email: MUHALI@augusta.edu



NEW FACULTY Darrell W. Brann, Ph.D



Professional Position:

Professor Rehired Retiree in the Department of Neurosurgery at the MCG

Research Achievements:

- Ranked in the top 0.3% of all cited scientists globally
- Top 0.1% in the field of “Estrogen” according to Expertscape
- Significant contributions to understanding estrogen and brain-derived-estrogen in the brain
- Research focus on mechanisms underlying stroke and traumatic brain injury
- Authored 199 peer-reviewed articles with over 14,391 citations and an H-index of 70

Academic and Administrative Roles:

- Formerly served as Regents’ Professor and Virendra B. Mahesh Distinguished Chair in Neuroscience
- 2005 - 2014 Associate Director of the Institute of Neuroscience at Augusta University
- 2005 - 2014 Associate Director of the Institute of Molecular Medicine and Genetics
- 2006 - 2020 Director of the Graduate Program in Neuroscience
- 2009 - 2013 Chief of the Developmental Neurobiology Program
- 2015 - 2017 Vice Chair of the Department of Neuroscience and Regenerative Medicine (DNRM)
- 2017 - 2019 Interim Chair of the DNRM

Education and Training:

- Ph.D. in Endocrinology “With Distinction” in 1990 from the Medical College of Georgia
- Postdoctoral work in neuroendocrinology at the Medical College of Georgia under the mentorship of Dr. Virendra B. Mahesh

Funding and Recognition:

- Continuously funded by the National Institutes of Health (NIH) throughout his career
- Supported by funding from the Veteran’s Administration and the American Heart Association

Editorial and Leadership Roles:

- Served on Editorial Boards and NIH Study Sections
- Editor and Associate Editor of several leading journals
- Established and served as Chair and Vice Chair of the Gordon Conference on Excitatory Amino Acids and Brain Function

Mentorship and Support for Students:

- Mentored or co-mentored 11 Ph.D. students, with 7 receiving the Ph.D. “with distinction”
- Served on 60 Ph.D. student advisory committees
- Endowed two scholarships at the Medical College of Georgia supporting over 40 graduate students since 2005:
- **Darrell W. Brann Scholarship in Neuroscience** (awarded to the most outstanding graduate neuroscience student each year - \$1,000 award)
- **Brann Alumni Award** (awarded to up to 3 Biomedical Ph.D. Program graduate students each year - \$250 award)

**NEW FACULTY Molly Braun, Ph.D****Professional Position:**

Assistant Professor of Neurosurgery

Education & Training:

- 2019-2023 Postdoctoral Research Fellowship, University of Washington, Seattle, Washington
- 2015-2019 Ph.D. in Neuroscience, Medical College of Georgia at Augusta University, Augusta, GA
- 2007-2011 B.S. in Biological Sciences, University of California Santa Barbara, Santa Barbara, CA

Awards and Scholarship:

- 2022-2024 Alzheimer's Association Research Fellowship Award on Neutrophil extracellular traps in amyloid pathology and glymphatic impairment
- 2021-2023 UW Alzheimer's Disease Research Center Research Education Component Trainee
- 2019-2021 T32 Neurobehavior, Neuropathology, and Risk Factors in Alzheimer's Disease Training Grant Postdoctoral Fellowship
- 2018 Darrell W. Brann Alumni Scholarship Award
- 2018 Darrell W. Brann Scholarship in Neuroscience
- 2018 Society for Neuroscience Trainee Professional Development Award
- 2017 National Neurotrauma Society Travel Grant Award

Research Interests:

- Glymphatic system
- Neuroimmunology
- Neurodegeneration
- Traumatic brain injury
- Alzheimer's disease

“My lab studies the contribution of neuroimmune mechanisms and glymphatic dysfunction to the development of neurodegeneration in traumatic brain injury (TBI), Alzheimer's disease (AD), and other dementing disorders. We are also interested in mechanisms of immune-mediated modulation of glymphatic function. The glymphatic system is a network of perivascular pathways and aquaporin-4 (AQP4) water channels that facilitate the distribution and clearance of solutes from the brain. Glymphatic impairment has been implicated in aging, sleep disruption, TBI, stroke, AD, and other neurodegenerative diseases, suggesting that this may be a common mechanism underlying seemingly disparate diseases and conditions.”



RECENT PUBLICATIONS

Ahluwalia M, Gaur P, **Vaibhav K** (2023). Brain injury and neurodegeneration: Molecular, functional, and translational approach. *Biomedicines*. 2023; 11(7): 1947.

Ahluwalia M, McMichael H, Kumar M, Espinosa MP, Bosomtwi A, Lu Y, Khodadadi H, **Jarrahi A**, Khan **MB**, Hess **DC**, **Rahimi SY**, Vender **JR**, Vale **FL**, Braun **M**, Baban B, **Dhandapani KM**, **Vaibhav K**. Altered endocannabinoid metabolism compromises the brain-CSF barrier and exacerbates chronic deficits after traumatic brain injury in mice. *Exp Neurol*. 2023; 361:114320.
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Brain Stimulation 2023; 16(1): 364.

Carr C, **Woodall W**. publication comment for: authors forthcoming. Covers to Improve Esthetic Outcome after Surgery for Chronic Subdural Hematoma by Burr Hole Trepanation (CORRECT-SCAR) – results of a Swiss single-blinded, randomized controlled trial. *Neurosurgery*. 2023. PMID forthcoming.

Debs LH, Patel KK, Moore-Hill D, **Vale FL**. Non-dominant temporal lobe surgery: a case report of prosopagnosia following cavernous malformation resection. *Acta Neurol Belg*. 2023 Dec;123(6):2349-2351.
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Jarrahi A, Khodadadi H, **Moore NS**, Lu Y, Awad ME, Salles EL, **Vaibhav K**, Baban B, **Dhandapani KM** (2023). Recombinant human DNase-I improves acute respiratory distress syndrome via neutrophil extracellular trap degradation. *J Thromb Haemost*, 21: 2473-2484.

Kaoutzani L, Goldman L, **Kumar M**, Vale **FL**. Revision and Removal of Vagus Nerve Stimulation Systems: Twenty-five Years' Experience. *Acta Neurochirurgica (Wien)*. 2023 Nov 14. doi: 10.1007/s00701-023-05875-1
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Kaoutzani L, **Rahimi SY**. Headache, vision changes and cranial nerve palsy after head trauma. *JACEP Open*. 2023;4:e12938. <https://doi.org/10.1002/emp2.12938>



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PMID: 37261367
PMCID: PMC10227773

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Zibitt M, Makhoul V, Yu JC, **Nguyen K**, Williams JK. Glymphatics, Cranium, and the Brain Homeostasis. *FACE*. 2023;4(2):218-227. doi:10.1177/27325016231160291

BOOK CHAPTERS

Vaibhav K*, Ahluwalia, Gaur P. Special Issue Reprint Book "Brain Injury and Neurodegeneration. Molecular, Functional, and Translational Approach". Edited by Vaibhav K, Ahluwalia, Gaur P. 2023, ISBN 978-3-0365-8384-6 (Hbk) ISBN 978-3-0365-8385-3.

TALKS, ABSTRACTS, and CONFERENCE PROCEEDINGS

Bosomtwi A, Ara R, **Kong F**, **Lu Y**, **Dhandapani KM**. Characterization of a controlled cortical impact brain injury and metabolic changes using magnetic resonance spectroscopy. 2023 International Society for Magnetic Resonance in Medicine Annual Meeting, Toronto, Canada. (poster)

Palacios ME*, Ahluwalia M, Gulhane M, **Kumar M**, Zabala MG, Amble V, **Vale FL**, **Dhandapani KM**, Baban B, **Vaibhav K**. Transient receptor potential vanilloid-1 as a molecular switch for neurovascular recovery in traumatic brain injury. 2023 National Neurotrauma Society Annual Meeting. *J Neurotrauma* 40: A122. (poster)

Gulhane M, Bosomtwi A, Kumar M, Palacios ME, **Ahluwalia M**, Zaidi SA, Caldwell R, Smith S, Tawfik A, **Vaibhav K**. Moderate to severe traumatic brain injury-induced alteration in optic nerve metabolites leads to chronic retinal and optical neuropathy. 2023 National Neurotrauma Society Annual Meeting. *J Neurotrauma* 40: A123. (poster)

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2023 Newsletter Fall Issue
edited by
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