



THE MONTLAKE CUT

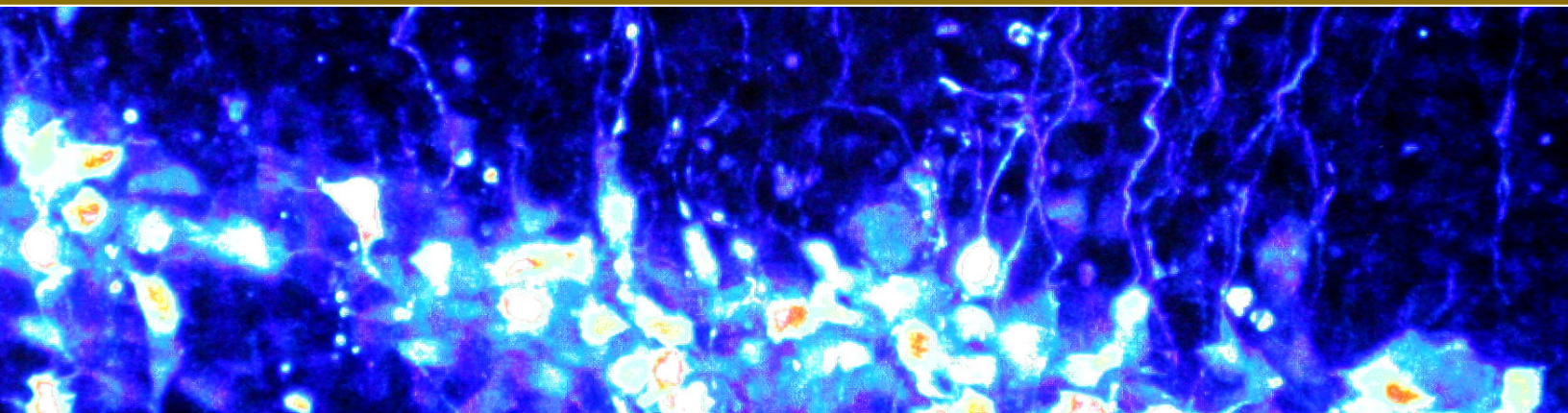
A PUBLICATION OF THE DEPARTMENT OF NEUROLOGICAL SURGERY



An academic neurosurgical department is much more than an exceptional quaternary treatment center for very ill patients. In addition to our responsibilities for training the coming generations of neurosurgical residents, we also have young medical students, PAs, and ARNP students rotating on our services learning how to care for people sick from neurological injuries and illnesses. These activities are an essential part of our teaching mission.

Beyond direct care and teaching, of course, our residents and faculty are continually invested in research aimed at improved ways in which these illnesses are treated. In this issue of the newsletter, there are stories about Assistant Professors Michael Levitt's and Andrew Ko's contributions to these efforts. Dr. Levitt is working to better understand and treat aneurysms, and Dr. Ko is busy developing improved surgical treatment of essential tremor. In all, the faculty and residents hit a new high in 2017 with a total 179 peer-reviewed publications. Former resident Rohan Ramakrishna, now Assistant Professor at Cornell, had a personal best of not one but two best AANS abstract awards. Professor David Coppel made it into the *Wall Street Journal* with comments on how competition in sports impacts life. We welcome the Neurotrauma Fellow Aziz Alali, and celebrate with Assistant Professor Rajiv Saigal and his wife Susy in welcoming their first child. There are also two new members of the HMC Practitioner team to welcome, Crystal Kim and Annie Logan.

Richard G. Ellenbogen, M.D., F.A.C.S.
Professor & Chairman
Department of Neurological Surgery



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DAVID COPPEL ET AL WIN PAPER OF THE YEAR

For their paper “Psychosocial Correlates of Young Athletes’ Self-Reported Concussion Symptoms During the Course of Recovery,” Daniel J. O’Rourke, Ronald E. Smith, Stephanie Punt, David Breiger, and Department of Neurological Surgery Professor David Coppel were awarded the Paper of the Year Award for 2017 by the Society for Sport, Exercise & Performance Psychology. This work found that “the combined influence of the psychosocial factors predicted 43% of the variance in symptom expression over time. Athletic identity, performance anxiety, and amotivation were the most consistent and influential person variables, each being related to more intense symptom reports and slower recovery. Results suggest the potential importance of psychological factors in concussion recovery.” In the Society citation, officials noted that “SEPP is the official journal of the Society for Sport, Exercise & Performance Psychology, Division 47 of the American Psychological Association. In an effort to recognize and promote high quality research published in SEPP, in 2016, the Society together with the SEPP journal established the “Paper of the Year Award”.

NATALIE HOLROYD WINS THE DAISY AWARD



All of the members of the HMC Practitioner Team are magnificent, but Natalie Holroyd was recently the recipient of the coveted Daisy Award presented to extraordinary nurses. Part of the citation given tells us that, “she is selfless in her willingness to help her team. She is highly regarded as a preceptor of new staff. Other people say how much they like her. She is patient and kind. She works extra shifts if needed to ensure that patients receive the highest quality of care. When Neuro ICU was very short staffed, she took it upon herself to receive additional training and credentialing to help out there. She truly lives Harborview’s mission and values.” Bravo for Natalie and our team.

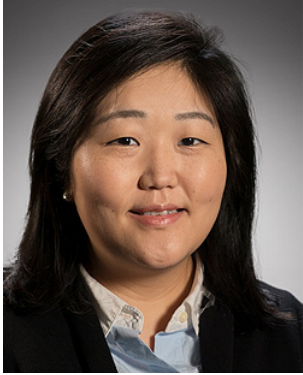
DESEAN ROGERS NAMED HMC EMPLOYEE OF THE MONTH

In a belated presentation in October, Paul Hayes gave Neurosurgery Practitioner Team member DeSean Rogers, PA-C the August HMC Employee of the Month Award. Of the thousands of people who work at HMC, DeSean’s habits of hard work, diligence, collegiality and, perhaps more than anything else, his kindness richly deserve the recognition.



NEW MEMBERS OF THE HMC PRACTITIONER TEAM

We enthusiastically welcome two dedicated and superbly trained PAs to the HMC team and to the department. They are both wonderful additions.



Crystal Kim was born in Seoul, Korea and immigrated to Dallas, TX when she was five months old. She earned her bachelor's degree in neuroscience at Smith College in Northampton, Massachusetts and then completed her Masters in Science in Physician Assistant studies from Midwestern University in Phoenix, AZ. Crystal joined the inpatient neurosurgery health care specialist team in December of 2017. She enjoys reading, writing, exploring the city and serving her community on her days off.

Annie Logan was born and raised in Seattle. She earned a PhD at Oregon Health & Science University where she studied myelination of the peripheral nervous system and then a Masters in Science in Physician Assistant studies from Rosalind Franklin University of Medicine & Science. She joined the inpatient neurosurgery health care specialist team in December of 2017. Annie also enjoys skiing, mountain biking, running and horseback riding.



DAVID COPPEL TALKS TO THE *WALL STREET JOURNAL*

Douglass Peterson is a 61-year-old man from Darien, IL who started playing ice hockey as a child. When the game got too physical for him as he aged, he decided to tone down his competition, so he switched sports. Unaccountably, Mr. Peterson took up Brazilian jujitsu, boxing, and mixed martial arts. He still does play hockey, but a more mild form. This peculiar story somehow found its way into the *Wall Street Journal*, and writer Jen Murphy contacted David Coppel, Clinical Professor in our department, who had this to say about competition and motivation.

"The stress of pushing oneself can be a real positive thing. But sometimes, it can get to a point where it has detrimental effects and impacts how you perceive yourself." Noting that the ways in which people compete is highly individualized, Professor Coppel added, "Some people are more comfortable not being challenged. Whereas other people can turn a recreational situation into a highly competitive one because they crave that pressure."

Whereas one athlete might feel, "This is great. I'm being challenged and progressing," Coppel said, another with a different set of expectations might feel badly about themselves. If you become preoccupied "with performance or winning to the point it affects your sleep or causes anxiety," he says, "it may be time to take a break or join a less competitive league."

One has to wonder a little, however, about a 61-year-old thinking mixed martial arts would ever be a good idea. [Ed]

[Read full article here.](#)

ASSISTANT PROFESSOR ANDREW KO HELPS TREAT ESSENTIAL TREMOR



Photo: The Seattle Times

The lead to a story by Seattle Times education reporter Katherine Long begins, “Fred Foy’s hands used to shake and tremble uncontrollably from a nerve disorder known as essential tremor, making it hard for him to do the simplest tasks—from signing his name to eating with utensils. So in November 2016, he went through experimental surgery at the University of Washington Medical Center to fix the tremors with a device implanted in his brain.”

“It’s working great,” said the 82-year-old Foy, of Maple Valley “It’s a miracle. I can eat now—I can do things with my right hand that I couldn’t do before.”

The UW Center for Sensorimotor Neural Engineering developed the device implanted in Mr. Foy’s brain by UW Assistant Professor of Neurological Surgery Andrew Ko.

A \$40 million federal grant from the National Science Foundation helped found the Center in 2011. Essential tremor, one of the Center’s target illnesses, is a disorder characterized by involuntary, rhythmic shaking, although patients do not shake at rest or asleep. Its cause is unknown, and up to now there has been no cure, but deep brain stimulation (DBS) does treat the symptoms.

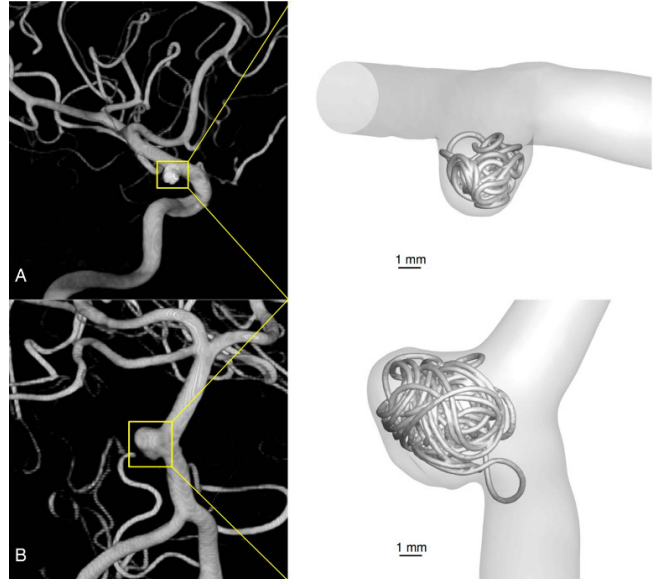
The Center’s Medtronic experimental device differs from similar equipment in that it controls tremors by turning on the stimulation only when a patient moves. Dr. Ko notes that “Research suggests that intermittent stimulation may do a better job of treating symptoms.” In addition, the on-off aspect may prolong battery life, obviating the necessity of another operation for replacement. So far just four patients have had the experimental device implanted as part of a clinical trial that runs through the end of 2018. However, researchers are looking for ways to expand it.

The novel device implanted into Mr. Foy gathers data from his motor cortex and perceives movement. “When the system detects arm movement, it turns on stimulation that is directed at a different part of the brain,” said Ko. “That stimulation treats the patient’s tremor. In some ways, it is like a prosthetic device for brain pathways.”

[Read full article here.](#)

ASSISTANT PROFESSOR MICHAEL LEVITT LOOKS MORE CLOSELY AT COILS

With a new R01 grant via the NIH Institute of Neurological Disease and Stroke (\$1.6M over five years), department vascular neurosurgeon Michael Levitt seeks to better understand the interaction between blood flow and coiled cerebral aneurysms using computational fluid dynamics models. “It’s difficult to visualize coils in vivo accurately both because of their small size and the artifacts created on CT and MRI,” says Dr. Levitt, “so most fluid dynamics researchers use an approximation of the coil mass that assumes blood flows through it uniformly.” But it’s not that simple.



Dr. Levitt’s research, in partnership with his colleague Professor Louis Kim as well as Dr. Alberto Aliseda (Department of Mechanical Engineering), aims to improve the accuracy of coiled aneurysm models, since understanding the hemodynamics of blood flowing within the coils can predict treatment outcome. By first creating 3D-printed models of each aneurysm, he can then “treat” them with commercially available coils. Then, through a partnership with the Universite Grenoble Alpes and the European Synchrotron Research Facility, they scan the models using ultra-high-resolution synchrotron particle accelerator micro-CT. This provides images with micrometer resolution (see the comparison of angiography vs synchrotron scans of coil masses above), which can then be incorporated into more accurate computerized models of blood flow. Finally, using a materials science technique called homogenization of least scales expansions, which approximates very complex and irregular geometries with “good enough” equations to take what they’ve learned with the scanned models to predict the geometry of coils more accurately. The end result is a set of computational tools that provide a better way for any researcher to model aneurysm coils without making 3D-printed models or sending them to a synchrotron.

[Read full journal article here.](#)

SURGICAL TREATMENT FOR EPILEPSY CONTINUES AT UW, AS IT HAS FOR 70 YEARS

When Arthur Ward came to Seattle to inaugurate what became the Department of Neurological Surgery at UW, he brought with him the techniques for the treatment of seizure disorders by awake craniotomy. Ward had been a resident with Nobel Prize Laureate Wilder Penfield, and in Seattle he mimicked the techniques he had learned from Penfield in Montreal. Dr. Ward taught those same skills to George Ojemann (who used them to study language and single-unit recordings of neurons), and dozens of other residents, including the editor, who sometimes dozed in corners during the cooling of neurons by the hated le peltier heat exchange device, which took all day.

Epilepsy is not uncommon, and although there are now more than 30 different drugs available to treat seizures, about a third of those who suffer from epilepsy remain uncontrolled. Casey Schorr wasn't born with seizures. They started when he was 12.

"It kept getting worse and worse, even on the medications, which is why they started doubling them and tripling them," said Melani Schorr, Casey's mother. "It's a scary situation, you could be anywhere after a seizure," added Casey. "It's a scary thing to deal with and I wouldn't wish what I've gone through on anybody."

After graduation from high school, Casey went from Spokane to UW Medicine in Seattle for brain surgery. "To be able to go to college and drive my own car and everythingand be able to get on with my life," Casey said.

His surgeon, Dr. Andrew Ko, performed an anterior temporal lobectomy. "Basically, it is surgery where we take out a part of the temporal lobe, and some structures deep to the temporal lobe called the hippocampus," said Dr. Ko from his office in the UW Medicine Neurosciences Institute. Now six months later, Casey has his life back. He has a driver's license and is snowboarding again. Art Ward would be proud of the program he founded, that was expanded by George Ojemann, is now being continued by others in our department.

DEPARTMENT OF NEW BABIES

Assistant Professor Rajiv Saigal and his beautiful wife Susy happily announce the birth of their first child Camila. The equally beautiful baby was born on January 25th, and tipped in at a healthy 9 pounds 7 ounces. She was 21 inches long. We welcome yet another perfect child to the departmental family.



NEUROTRAUMA FELLOW

AZIZ ALALI, MD, PHD



Dr. Aziz Alali is our new (and first) Neurotrauma Fellow. Dr. Alali received his Bachelor of Medicine and Surgery (M.B.B.S. degree) from King Saud University in Saudi Arabia in 2006, and his PhD in Clinical Epidemiology from the University of Toronto, Canada, in 2014. In 2016 he completed his Neurological Surgery Residency Training at the University of Ottawa, Canada, and in 2017 finished his Critical Care Medicine Residency Training at the University of Toronto. Dr. Alali is working with the Neurotrauma team at Harborview Medical Center for his clinical training, and is actively engaged with the Global Neurotrauma Research Group's studies in Latin America led by Professors Randall Chesnut and Nancy Temkin in our Department.

Dr. Alali has submitted several papers since joining us and, most recently, had an abstract entitled *A Clinical Decision Rule to Predict Intracranial Hypertension in Severe Traumatic Brain Injury* accepted for platform presentation at the April 2018 AANS Annual Meeting. While existing guidelines support the treatment of intracranial hypertension in patients with severe traumatic brain injury (TBI), it is unclear when to suspect and initiate treatment for high intracranial pressure (ICP), especially in settings with limited resources. The objective of Dr. Alali's research was to derive a clinical decision rule based on a combination of clinical and CT findings that accurately predicts intracranial hypertension in severe TBI. In his analysis, Dr. Alali used existing data sets to derive a simple clinical decision rule based on a combination of clinical and imaging findings which were determined to be highly sensitive in distinguishing severe TBI patients who would suffer intracranial hypertension. Dr. Alali suggests that this decision rule can be used to identify patients who require ICP monitoring in high resource settings, or to start ICP lowering treatment in environments where resource limitations preclude invasive monitoring.

NEW PUBLICATION HIGH POINT

Neurological Surgery has always been a scientifically productive Department but now has reached a new high point in terms of publications with 179 overall contributions to the literature including 7 book chapters and 172 peer reviewed manuscripts appearing in high value journals. Our previous high was 165 overall publications. In all, 30 (80%) Neurological Surgery faculty members contributed as co-authors to the 2017 record total. [View the full list here.](#)

We are especially proud of our residents, 18 of whom co-authored publications during the year, and one of whom published 10 papers. Academic productivity is critical to improving patient outcomes and developing the future of the field.

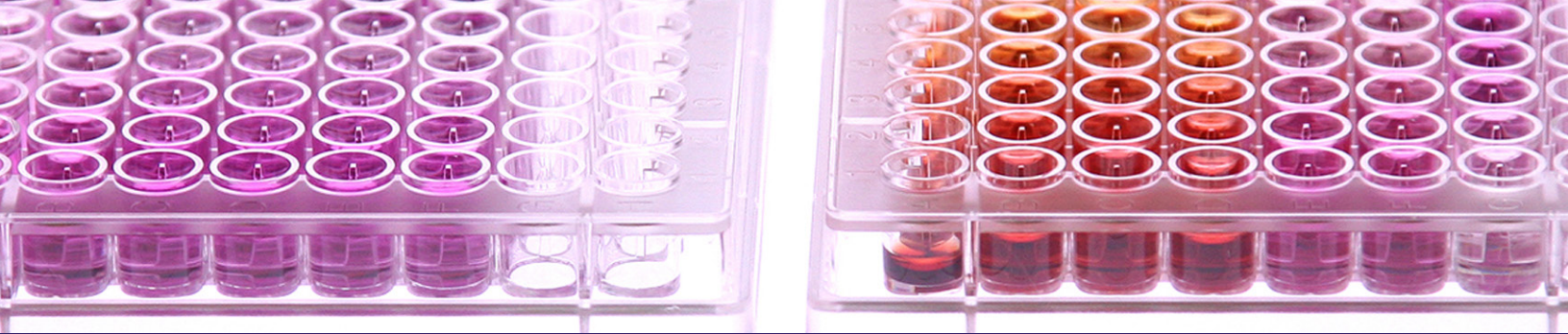
ROHAN RAMAKRISHNA WINS AANS ABSTRACT PRIZE AWARD–TWICE!



Former UW resident Rohan Ramakrishna, now the Alvina and Willis Murphy Assistant Professor of Neurological Surgery at Weill Cornell Medicine, has won the AANS best abstract prize for 2018 for two submissions. The announcement from the AANS notes they considered more than 1,500 abstracts for presentation at the 2018 Annual Meeting.

Dr. Ramakrishna's Covehouse Award abstract investigated the effect of surgeon experience on patient outcomes in neuro-oncology. While it has previously been shown that surgeon volume in general correlates with better results, the effect of cumulative experience versus annual experience remains unknown. It is possible, for example, that procedures like hemicraniectomy might not require a large annual volume to remain proficient after a certain experience, while others might. This study categorized people based on both annual and cumulative volumes of craniotomies for malignant brain tumors. Results found a benefit to both high cumulative and high annual volumes. Based on data generated by using the New York Statewide Planning and Research Cooperative (SPARCS) database, patients treated by these surgeons had significantly shorter length of stay, lower charges, fewer medical complications, fewer neurologic complications, and fewer reoperations within 30 days.

The Preuss Award abstract examined developing a large sequencing cohort using both whole exome (WES) and RNA data. Rohan and colleagues accumulated nearly 100 gliomas with this information and compared it to the targeted sequencing results obtained from commercial platforms such as Foundation Medicine (FM). The most frequently altered genes detected by both WES and FM include EGFR, CDKN2A/B, TP53, PTEN, NF1, IDH1, ATRX, and PIK3CA. Certain alterations such as TERT promoter mutations, present in the majority of IDH-wild type infiltrating astrocytomas as detected by FM, were not assessed by WES. Several mutations in cancer related genes were germline alterations in the WES pipeline alone, including in ARID1A, BRCA1, NF1, and WT1. So the majority of the most common recurrent genetic alterations in the spectrum of astrocytomas are reliably detected by WES and at comparable rates to more targeted panels such as FM. Exome sequencing pipelines should be tailored to cover highly recurrent somatic alterations occurring within introns and promoters and would benefit by higher coverage of critical regions. Germline assessment is important both for the interpretation of alterations detected in tumor tissue as well as for the overall management of the patient who may be at risk for multiple neoplastic processes.



PUZZLER



Dr. Minku Chowdhary
Director, Neurosurgery
Overlake Hospital

Winter Edition Answer

Nikolas Tesla, who was born during a lightning storm and once had such a large overdue bill at the Waldorf Astoria, they tore down one of his labs for scrap metal to collect the debt.

Spring Edition Question

This person, known as the ethnic version of a famous French soldier of a war between the House of Plantagenet and the House of Valois, helped revolutionize the role of women in one of the largest countries in the world. What were the famous last words she wrote before her death based on a play of her surname?

We remain eager to publish stories and photos about all aspects and activities of the Department. Please share your memories, ideas and suggestions for stories and news items that expand our common ground. Please contact us at these email addresses:

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