

# The Montlake Cut

A Publication of the Department of Neurological Surgery, UW Medicine Health Care System

April 2013



## *Chairman's Message... The View from Puget Sound ...*



*Richard G. Ellenbogen, M.D., F.A.C.S.*

In this issue of the *Montlake Cut* we examine our remarkable culture of innovation, and neurological surgery ingenuity. The primary goal of our efforts remains to improve patient outcome through research and unsurpassed clinical care. Our mentorship and the subsequent educational benefits to our students is measured in their success in pushing our field forward.

We are currently finalizing the curricula for our Neurological Surgery Summer Student Program—now in its 5th year funded entirely from donations from our faculty and friends. Our students are chosen from a wide range of locations in the Pacific Northwest. The students include the economically disadvantaged, culturally diverse, but highly motivated Rainier Scholars, Native American students and students who have performed at an exemplary level in high school and college. In addition to direct laboratory experience, a rich clinical environment, and range of translational research, this program provides an opportunity for college students to learn about the challenges and thrill inherent in a neuroscience education and career.

Sincerely,

Richard G. Ellenbogen, MD, FACS

Professor & Chairman, Department of Neurological Surgery

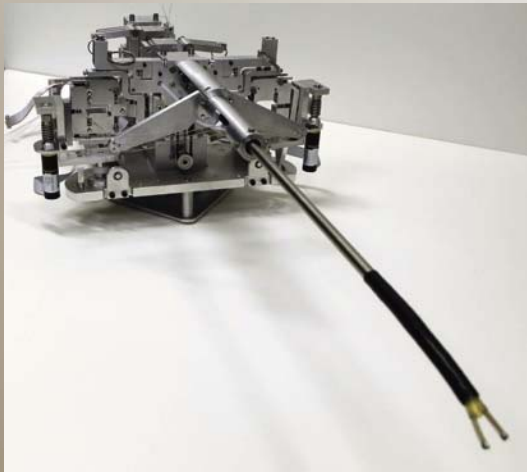


### IN THIS ISSUE:

◆ INNOVATION, INVENTION & INGENUITY -----	2-3	◆ PUZZLER -----	6-7
◆ PUBLICATION STATISTICS -----	10	◆ NEXT ACCREDITATION SYSTEM (NAS) -----	8
◆ NEW CHIEF AT SEATTLE CHILDRENS -----	4	◆ SUGGESTED READING -----	9
◆ DR. GREELY DEVELOPS SPOKANE DBS PROGRAM -----	5	◆ UW AANS COCKTAIL RECEPTION -----	10
◆ SUMMER STUDENT PROGRAM -----	6-7	◆ STAFF SPOTLIGHT—DARLENE MARTIN -----	10

# *Innovation, Invention & Ingenuity*

Ingenuity is defined as cleverness, sometimes with synonyms applied such as ability, creativity, genius, gumption, resourcefulness, talent and wisdom. Perhaps ingenuity is the ability to see beyond the present state and understand a better way. How do I do this better, easier, more efficiently....those are the driving questions



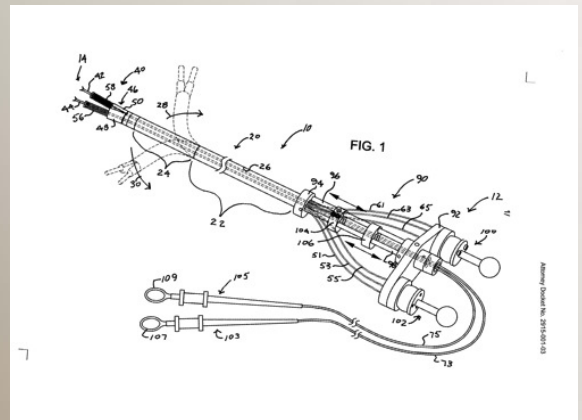
Roboscope Prototype

that lead to invention.

The desire to improve care and advance the science of medicine has driven the UW Department of Neurological Surgery to innovate both inside and outside of the operating room. Using our patients and the diseases we study as inspiration, the ingenious drive to move [the field and art of] neurosurgery forward has lead to a department wide effort to invent and commercialize ideas/products that will impact patient care.

Since 1987 there have been 95 invention disclosures by neurosurgical faculty, 191 patent applications filed, 79 patents issued, and 18 commercialization agreements completed. Ideas have run the gamut from tumor paint (Ellenbogen, Zhang), new robotic devices (Kim/Sekhar,Pridgeon), treatments for epilepsy (D'Ambrosio/Ojemann), new shunt valves and devices to put catheters more precisely into the brain (Browd, Mourad). Research scientists within our department have contributed ideas outside of neurosurgery working on things as far afield as novel toothbrushes and methods to purify water (Mourad). The inventive spirit runs deep through the fiber of the department.

With the recent flurry of inventions and invention disclosures, the Department of Neurological Surgery has taken a novel and proactive role in fostering the creative spirit shown by the majority of our faculty. Under the leadership of Dr. Samuel Browd, the department recently launched a program termed "Synapse" to support and facilitate innovation and



Roboscope Patent Drawing

eventual commercialization of new ideas and products. The process begins with an idea or need. A physician and scientist are paired together to invent around possible solutions and this leads to disclosure of a potential new invention to the university. Early evaluations of the market, intellectual property and regulatory path are undertaken to validate the idea and potential need/impact. From there an entire team is assembled in collaboration with the UW Center for Commercialization (C4C) to support the development and eventual licensing of the idea/product to a receiving corporate entity.

One exciting development has been the formation of numerous faculty founded startups in Seattle. These companies include: Spi Surgical, Blaze, Viket, Aqueduct Neurosciences, and EchoGuide Medical amongst others. The emerging companies have all found seasoned business leadership to license the UW-owned technology and move the ideas out of the university to further device development, explore regulatory options, and refine the market opportunities that are essential to obtain investment capital. Our faculty serve in a variety of roles in these emerging companies working within the university to support continued collaborations/research and outside of the UW either as consultants or rarely as chief medical or technology officers within the companies they founded.



Early and critically important non-dilutional funding has come from a variety of sources to support our collective work including: seed grants from the UW C4C (Commercialization Gap Funding), the Coulter Translational Research Program, Life Science Discovery Fund, Washington Research Foundation, NIH and DOD commercialization grants such as SBIR and STTR awards. Several startups have moved from investor seed grants to active fund raising including efforts to secure commitments from angel investors and venture capital firms. These investment (or dilutional) funding opportunities are critical to move ideas from the university out into the private sector where they are ultimately manufactured and marketed to hospitals and physicians.



With our continued and ever expanding cache of ideas, inventions and companies, the Department of Neurological Surgery at the University of Washington is positioned as a national leader in intellectual property development and commercialization. Our mission statement puts “Patients First” and our vision is to continue to move the bar on scientific developments in neurosurgery. Our continued goal is to be the thought leader, bringing new ideas and products that improve patient’s lives to market.

If you would like to learn more about our innovations and start-up portfolio,— Please contact Dr. Samuel Browd at [Samuel.Browd@seattlechildrens.org](mailto:Samuel.Browd@seattlechildrens.org)

Information on UW Medicine Department of Neurological Surgery Grand Rounds :  
<http://neurosurgery.washington.edu/>

## *Faculty Publication Statistics Continue to Blossom and Grow !*

**2012 Peer-Review Journal Articles, N=124**

**2012 Book Chapters, N=4**

Calendar year 2012 was productive for departmental faculty and residents, with 124 peer-review articles and four book chapters published, as well as another two dozen articles accepted in early 2013. This productivity represents an almost 15% increase over both 2010 (n=108) and 2011 (n=107). Residents and/or fellows collaborated on 36 of these, which reflects the renewed emphasis on the 'research' portion of the residency training experience. Is this increased productivity attributable to the extra hours afforded by Leap Day in 2012...to the blue moon this past summer... or merely to old-fashioned hard work!?

The 2012 publication report is found on the Departmental website.

## *New Chief of Service at Seattle Children's Hospital*

The remarkable and talented Jeffrey George Ojemann, Professor of Neurological Surgery, and UW Medicine Director of Neurological Surgery Research, has been appointed Chief of Service at Seattle Children's Hospital (SCH).



*Jeffrey G. Ojemann M.D.  
Professor  
Service Chief  
Neurological Surgery*

Jeff earned his undergraduate degree in Physics from Princeton University and completed his medical education and neurological surgery residency at Washington University, St Louis. He also completed a pediatric neurosurgery fellowship, in St. Louis. Jeff is a nationally renowned pediatric and epilepsy neurosurgeon who is also a leader and mentor for translational neurological surgery research and director of a prestigious NIH training grant.

Jeff is a member of the executive committee at the Center for Integrative Brain Research in the Seattle Children's Research Institute. He holds the Richard G. Ellenbogen Endowed Chair in Pediatric Neurosurgery at Seattle Children's and is a research affiliate at the University of Washington Center on Human Development and Disability, Center for Sensorimotor Neural Engineering, and the Integrative Brain Imaging Center.

His research projects investigate electrical brain signals in memory and language, in part to find ways in which these signals can be used to interface with machines. He is a pioneer in the field of brain machine interfaces and is funded to develop new devices that are controlled and modeled after neural systems to facilitate neuromuscular rehabilitation for stroke, TBI, and Spinal Cord Injury.

Other studies involve functional MRI changes before and following epilepsy surgery; the role of flumazenil PET in the presurgical evaluation of seizures; and electrical brain signals in memory and language and higher cognitive deficits in neurosurgical patients.

## *Dr. David Greeley : A View of one of our Friends in Spokane*

David Greeley's education was entirely at UW. He went to college and medical school at the University of Washington and his neurology residency was at the "other" UW-the University of Wisconsin in Madison. Those experiences formed his belief in collaborative care in the neurosciences, and in deep brain stimulation surgery (DBS) specifically. He writes, "I don't believe it can be done correctly working alone."

When the FDA approved DBS for Essential Tremor (ET), David and his neurosurgical colleague Dr. Jeff Hirschauer in Spokane jumped at the opportunity to provide the service as a team, and became one of the first private groups in the country to perform the surgery. To further their collaborative efforts, they joined with a neuropsychologist and started studying the "non-motor benefits" of DBS -- specifically how it impacted cognition and quality of life. They are proud of their team-approach, patient selection criteria, and patient outcomes that match those of the best programs.



*David Greeley, MD*

The group has been joined now by Jamie Mark, ARNP. Since 2000, Jamie has been a speaker and educator for Medtronic, along with Medtronic representative Pat Kautzman who has been with them from the start.

Dr. Jonathan Carlson has since joined Dr. Hirschauer in his practice at Inland Neurosurgery and Spine. Dr. Carlson trained under UW Neurological Surgery graduate Dr. Kim Burchiel at OHSU, and also has expertise in pallidotomy and thalamotomy from work as part of his MD/PhD.



*Jamie Mark, ARNP*

Continuing his collaborative efforts, David was recruited to Seattle once a month to work with neurosurgeons at Northwest (now part of the UW Medicine system) in further developing their own DBS programs. In Spokane, they continue to do about 50 DBS surgeries per year. Their team approach includes neuropsychological and/or cognitive testing, physical and speech therapists, as well as case managers and social service specialists for caregiver screening. The Spokane group believes patients should be operated upon in the location where their devices will be programmed, and recommends to physicians/patients living closer to Spokane than Seattle consider Spokane as an option.

For questions or for anyone interested in the Spokane program please contact David's office at Northwest Neurological (509-458-7720) or the neurosurgeons at Inland Neurosurgery and Spine (509-624-9112). A video can be found on the web at (<http://www.youtube.com/watch?v=FieqICgM-Jc>).

## *Neurological Surgery Summer Student Program*

Every summer the Department of Neurological Surgery gives a group of gifted, diverse and often economically disadvantaged college and high school students a true “Bench to Bedside” exposure to neuroscience in a university medical center setting. Our Summer Neuroscience Student Program was founded in 2008 by generous donations of Dr. Richard G.

Ellenbogen and his family. It has been administrated by Jim Pridgeon, who has been program administrator for the past 5 classes. The current program includes an 8-week placement in one of our basic neuroscience laboratories, attendance at weekly Wednesday 7-9am Grand Rounds and Friday noon faculty lectures developed specifically



Dr. Richard G. Ellenbogen (center) and members of 2011 Summer Student Class

for this group. A highlight of the program is the opportunity to follow our neurological surgeons and neurosurgery residents into the Operating Room to observe procedures at Harborview Medical Center, Seattle Children’s Hospital, and the University of Washington Medical Center. Surgeries range from peripheral nerve carpal tunnel decompression to more involved hemispherectomy for intractable epilepsy, endovascular aneurysm surgery, complex craniofacial, neurostimulation, or Syringomyelia procedures. In addition to participating in lab work, Rounds and OR Observations, students give a PowerPoint presentation during the last Friday noon conference, describing their work over the summer. **We have placed 48 high school and college undergraduate students from 25 different schools in the program.** The Minority Seattle Rainier Program and Native American Programs have contributed applicants yearly. Students have participated in 10 different laboratories, attended over 75 separate Grand Rounds .



*Dr. Minku Chowdhary  
Chief, Neurosurgery  
Overlake Hospital*

### *Puzzler*

Mahatma Gandhi coined this phrase in the year that another man, who has an asteroid named after him, won a very famous award named after another man, who had one of his most famous inventions improved, but that improvement resulted in the loss of 120 lives and a major French scandal.



To get full credit, you must know the entire puzzle.

## *Summer Student Program* Continued from previous page

presentations, observed and followed nine different surgeons, and had weekly student group presentations by 15 different faculty members. Several students from our earliest classes have now been accepted into medical school, and many of the high school students have gone on to neuroscience or pre-med studies in college. The range of laboratory offerings is unique within the University. Our current program involves 18 research faculty with expertise ranging from materials engineering nano-particle development for targeting brain tumors, to surgically implanted devices for brain computer interfaces (BCI) or testing control of robotic prosthetic devices, to stem cell laboratories dedicated to regenerative medicine approaches for restoring lost function due to spinal cord injury.

These labs are supported by NIH, DOD, private foundations, and industry, and share the common purpose of translational research to bring new discoveries immediately to the benefit of patient care. In addition to direct laboratory experience, our rich clinical environment and range of translational research provides the opportunity for students to learn about the organization of neuroscience education and care on a global basis.

We are proud of our summer program students, and grateful to the faculty and staff whose commitment to education and remarkable energy make the program so successful.

### *January 2013 Puzzler Answer:*

*This “Little Doc” often was kicked by horses and had an 11% survival rate in the first group he studied which eventually led to a Nobel Prize. Who is this person, and how did he help shape the University of Washington as we know it today?*



**Answer:** Thanks to a team of pioneering scientists led by Dr. E. Donnall Thomas at Fred Hutchinson Cancer Research Center, tens of thousands of leukemia patients now lead productive lives.

Laboring in the basement of temporary facilities in Seattle four decades ago, Thomas ventured to cure leukemia and other cancers of the blood by destroying a patient's diseased bone marrow with near-lethal doses of radiation and chemotherapy and then rescuing the patient by transplanting healthy marrow. The goal: to establish a fully functioning and cancer-free blood and immune system.

Today, the success of bone-marrow transplantation stands among the world's most significant medical advances. The technique has transformed leukemia and related cancers, once thought incurable, into highly treatable diseases with survival rates as high as 90 percent.

**Bonus:** *What special diet did the patients in the above study receive?*

A Low Microbial Diet

**Puzzler Winner:** Dr. David Pitkethly

# Neurological Surgery Residency Program

## ABC's of the NAS

This year, the Accreditation Council for Graduate Medical Education (ACGME) will implement a new program named the “Next Accreditation System” or NAS. Neurological Surgery is one of the seven medical specialties participating in Phase 1 of national NAS implementation starting July 1<sup>st</sup>, 2013.

The transition for our program is available on the ACGME website. The Next Accreditation System will rely more heavily on self-reported program metrics, replacing previously used department site visits. The Accreditation Data System (ADS) has been an under-leveraged system in recent years, but will become the primary reporting tool for identifying our residents’ achievements, case logs, and our program compliance standards. Regular site visits will be replaced by a “continuous accreditation model” reviewed annually via ADS reporting.

In the clinical realm, the NAS requires that our program maintain a Clinical Competency Committee (CCC) and that we prepare for Clinical Learning Environment Reviews (CLER’s). The CCC will serve as the evaluating committee for resident assessments based on the Milestones.

The CLERs are optimistic plans for ACGME clinical site visits emphasizing safety and quality care.

Given the immediacy of the Educational Milestones, it is appropriate to review the newly published initiative. The Milestones for our program currently feature

evaluation scales for 24

critical skills organized under the six competency areas (Patient Care, Medical Knowledge, Interpersonal and Communication Skills, Professionalism, Practice-based Learning and Improvement, and Systems-based Practice). The benefits of the Milestones are a consistent articulation of our specialty-specific expectations, and will allow our residency program to track all residents’ progress for each critical skill. In a recent GME conference, the NAS implementation was described as “building a plane while it’s in flight”.

Traumatic Brain Injury – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Performs a history and physical examination of a comatose patient and assign Glasgow Coma Scale (GCS) score</li> <li>Evaluates a polytrauma patient and assign Injury Severity Score</li> <li>Provides initial management of a polytrauma patient</li> <li>Provides routine peri-operative care for patients with TBI</li> <li>Detects an altered neurological examination</li> <li>Places an ICP monitor and external ventricular drain</li> </ul>	<ul style="list-style-type: none"> <li>Explains risks and benefits of neurosurgical procedures for TBI</li> <li>Interprets diagnostic imaging for a neurotrauma patient</li> <li>Organize emergency surgical team; position for craniotomy with cervical precautions</li> <li>Assist with routine procedures (e.g., burr hole, craniotomy for hematoma or penetrating injury)</li> <li>Recognizes and initiates work-up of complications (e.g., hematoma, seizure, sepsis, monitor drift)</li> </ul>	<ul style="list-style-type: none"> <li>Formulates an interdisciplinary treatment plan for patients with polytrauma</li> <li>Selects patients for operative intervention</li> <li>Independently performs routine procedures</li> <li>Performs complex procedures with assistance (e.g., repair of vascular injury or CSF fistula, posterior fossa hematoma)</li> <li>Manages complications with assistance</li> <li>Manages ventricular drain</li> </ul>	<ul style="list-style-type: none"> <li>Prioritizes the management of injuries in a polytrauma patient</li> <li>Independently performs complex procedures</li> <li>Manages unexpected intra-operative events (e.g., cerebral edema, hemorrhage, air embolus)</li> <li>Adapts standard treatment plans to special circumstances (e.g., medical comorbidity, coagulopathy)</li> <li>Independently manages CNS complications</li> </ul>	<ul style="list-style-type: none"> <li>Systematically reviews treatment outcomes for TBI</li> <li>Participates in quality improvement for TBI care</li> <li>Participates in developing a plan for triage in a disaster management scenario</li> <li>Reconstructs complex craniofacial injuries</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Example: Neurological Surgery Educational Milestone



## *Rohans List*



Medical students and residents are now, more than anything else, required to be technically proficient both broadly and in their specific sub-specialty. To call internalizing such a large, complex body of information and storing it in a usable form demanding is like suggesting that to understand particle physics is tricky.

But there is more to success and happiness in medicine than technical proficiency. It is useful to understand the patients, to avoid operating on the wrong ones, and to be able to help calm the fears and anxieties of all those seeking care, sick or not.

A variety of writers have seen into human beings far more clearly and deeply than a CT scan or an MRI.

Today's undergraduates are often educated narrowly to be competitive in the professions, and medical students and residents have little time to read anything other than what is directly applicable to their training. How deeply this would have distressed William Osler.

When he recognized what he might be missing, one of our Chief Residents (perhaps anticipating a little more free time) recently asked the editor for a broader reading list. I'm sure others might insist on different titles, or delete some of these, but here is what I offered him. I have arranged these in order of what I perceive to be increasing difficulty. The final six are, in my view, among the greatest books ever written.

Death Comes for the Archbishop, Willa Cather

The Autobiography of William Carlos Williams

Doctor Stories, William Carlos Williams

Madame Bovary, Flaubert

Open Secrets, Alice Munro

The Blue Flower, Penelope Fitzgerald

The Collected Stories of Frank O'Connor

Catch 22, Joseph Heller

Henderson the Rain King, Saul Bellow

Ward # 6, Chekhov (a novella)

Fathers and Sons, Turgenev

Invitation of a Small Boat, Nabokov

The Education of Henry Adams, Henry Adams

Nicomachean Ethics, Aristotle

Civilization and its Discontents, Freud

Crime and Punishment, Dostoyevsky

The Brothers Karamazov, Dostoyevsky

War and Peace, Tolstoy

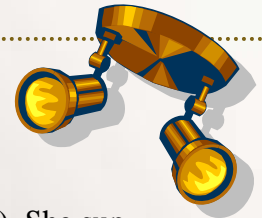
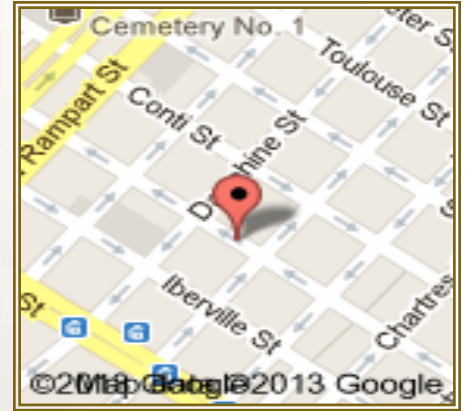
## *UW Cocktail Reception at AANS Meeting*

Are you now or have you ever been affiliated with the UW Department of Neurological Surgery? If so, please do make plans to join us in New Orleans:

*Monday, April 29 at Arnaud's.*

The UW Department of Neurological Surgery is hosting a cocktail reception from 6:30-8:30 pm at the famous Arnaud's Restaurant just off Bourbon Street in the French Quarter.

Please RSVP to [aard@uw.edu](mailto:aard@uw.edu) if you will attend.



### *Staff Spotlight...*

#### *Darlene Martin*

Darlene Martin is part of our extended family at Seattle Children's Hospital (SCH). She supports our four pediatric neurosurgeons and serves as our pediatric fellowship coordinator. Darlene was born in Ohio and moved to Florida when she was five. She joined the Air Force at twenty-two and was invited to be part of a project with ten other women in an otherwise all male role on flying status on an EC-121 in the radar section. Darlene ended up being the first female weapons controller in the Air Force! While on active duty she spent many months in Iceland and was able to travel to England, Scotland, Bermuda and parts of the United States. She spent 18 years working at a hospital in Melbourne, FL before moving to Seattle.



*Darlene Martin*

Darlene enjoys coordinating the pediatric fellowship and is also active on the planning committee for several surgical specialty events, and she coordinates an annual drive to provide swim suits for SCH patients for use in the therapy pool. She also helps fit both ski and bike helmets at SCH helmet giveaways, and hopes to keep kids away from a preventable visit to our team!

We are grateful for the joy Darlene brings to the work place and all the support she provides for our pediatric team.

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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