

Neurotransmitter

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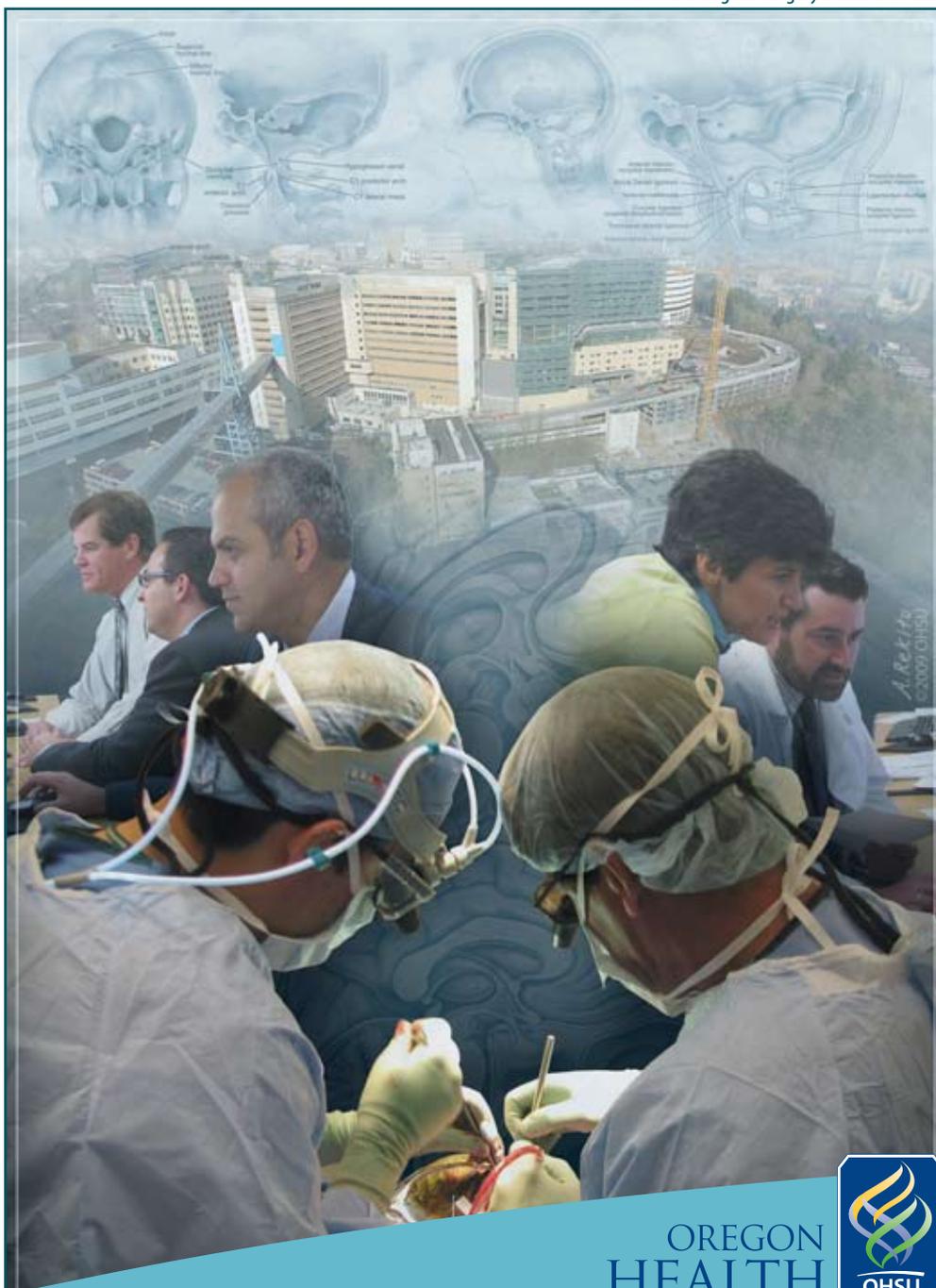
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OHSU Neurological Surgery Skullbase Team



John Raaf Professor and Chairman

Kim J. Burchiel, M.D., F.A.C.S.

Neurosurgery

Stanley L. Barnwell, M.D., Ph.D.
 Kim J. Burchiel, M.D., F.A.C.S.
 Johnny B. Delashaw, Jr., M.D.
 Nicholas Coppa, M.D.
 Aclan Dogan, M.D.
 Jorge L. Eller, M.D.
 Edmund H. Frank, M.D., F.A.C.S.
 Daniel Guillaume, M.D.
 Andrew N. Nemecek, M.D.
 Edward A. Neuwelt, M.D.
 Brian T. Ragel, M.D.
 Nathan R. Selden, M.D., Ph.D., F.A.C.S.

Neuroendocrinology

Maria Fleseriu, M.D.

Neuroradiology

Jim Anderson, M.D.
 Gary Nesbit, M.D.

Neuropsychology

David Gostnell, Ph.D.
 Richard Kolbell, Ph.D., A.B.P.P.

Otolaryngology

Sean O. McMenomey, M.D.

Pain Management

Kim J. Burchiel, M.D., F.A.C.S.

Physician Assistants

Marty Caudle, P.A.-C., P.T.
 Stephen Giles, M.S., P.A.-C., Ph.D.
 Lori E. Guidone, M.S., P.A.-C.
 Christine Li, P.A.-C., M.P.A.P.
 Janette Remling, M.S., P.A.-C.
 Katie Thompson, M.S., P.A.-C.

Nurse Practitioners

Wendy O. Domreis, M.S., R.N., C.P.N.P.
 Laurie Yablon, R.N., C.P.N.P.
 Chris G. Yedinak, M.N., C.F.N.P.

Research

Valerie C. Anderson, Ph.D., M.C.R.
 Thomas K. Baumann, Ph.D.
 Mary M. Heinricher, Ph.D.

Emeritus Faculty

Harold D. Paxton, M.D.

Administration

Sally Rodgers, M.A., FACMPE
 Shirley McCartney, Ph.D.
 Andy Rekito, M.S.

OHSU *Neurotransmitter* is published by the Department of Neurological Surgery, Oregon Health & Science University, School of Medicine, for colleagues, alumni and friends of the department.

For inquiries, submissions or suggestions, please contact Shirley McCartney, Ph.D. at 503 494-7469 or mccartns@ohsu.edu.

Learn more about us on our website: www.ohsu.edu/neurosurgery

Editor: Shirley McCartney, Ph.D.
Illustrator: Andy Rekito, M.S.
Contributors: Kim J. Burchiel, M.D. and Shirley McCartney, Ph.D.

Chairman's Update

Comparatively Effective?

Amidst the current healthcare *reform* debate, much of the impetus to uncover and implement the most effective strategies of healthcare has been overcome by rhetoric. I think all parties, regardless of political affiliation, health insurance coverage, or socioeconomic status, can agree that our future healthcare resources should be focused on treatments, which are both demonstrably effective and comparatively more efficacious than other comparable treatments for similar conditions. Adhering to this tenet should allow us to spend our limited healthcare budget on the best possible care.

In the past, this concept has run under the banner of *evidence-based medicine*. However, the emphasis now is more operational, *i.e.*, not only should treatments be evidence-based, but they should constitute *best practice* in comparison to other alternatives. Thus, I feel we have now entered the era of **Comparative Effectiveness Research (CER)**. This is defined, by the Institute of Medicine (IOM) as:

“CER is the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care. The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.”

The IOM has published a list of 100 top priorities for CER:

www.iom.edu/CMS/3809/63608/71025.aspx, several of which are germane to the practice of neurological surgery:

- Establish a **prospective registry** to compare the effectiveness of treatment strategies for **low back pain** without neurological deficit or spinal deformity.
- Compare the effectiveness of treatment strategies (*e.g.*, artificial cervical discs, spinal fusion, pharmacologic treatment with physical therapy) for **cervical disc and neck pain**.

- Compare the effectiveness (*e.g.*, pain relief, functional outcomes) of different surgical strategies for **symptomatic cervical disc herniation** in patients for whom **appropriate nonsurgical care has failed**.

OHSU is attempting to lead in the area of CER, as evidenced by several on-going efforts in our department, and affiliated centers. For example, the OHSU Spine Center has now established a prospective outcomes database, that tracks general health survey outcomes (SF-36v.2) and spine-related (Oswestry Disability Index-ODI) in all patients enrolled in the center; both surgically and non-surgically managed. Analysis of our first year of data shows steady and significant improvement in both groups. Our prospective spine database is already collecting information that bears directly on the three IOM priorities outlined above.

Outcomes data is also being tracked by several other methods. For example, the **University HealthSystem Consortium (UHC)** www.uhc.edu tracks all of our outcomes in comparison to other University hospitals. In the area of deep brain stimulation (DBS) for Parkinson's disease and essential tremor, our results are substantially superior in outcomes: morbidity, length of stay and cost, to other UHC hospitals in the database. Clinical outcomes for the DBS program are being carefully tracked, and will appear in upcoming publications, including the *New England Journal of Medicine (NEJM)*.

CER will play an increasingly role in the conduct and funding of clinical care in the next decade. OHSU, and our department will continue to be a leader in this area, and as information is developed, our commitment will be to communicate to you the results of our efforts.



Kim J. Burchiel, M.D., F.A.C.S.
 John Raaf Professor and Chairman
 OHSU Neurological Surgery



Deep Brain Stimulation Outcome Data	OHSU	UHC	OHSU Physician	UHC Physician
Mean length of stay observed (days/patient)*	1.52	1.97	1.52	2.55
Mean cost observed (\$/patient)*	13,648.3	20,211.4	13,648.3	23,763.91
Complications (%)*	0	4.61	0	8.57
*all values expressed as mean				

Spine Center & Functional Outcomes Annual Paxton-Alumni Dinner

The OHSU Spine Center is part of an international study group leading medical research in spine and back pain treatments throughout the world. As Oregon's only academic health center, OHSU can provide patients the most advanced treatments before they are re available anywhere else in the region. Our leading-edge research brings the most advanced care to patients.

OHSU Spine Center – Functional Outcomes Program

The Functional Outcomes Program uses a secure web based survey tool to collect patient medical and social histories, and validated quality of life measurements at each appointment. The program allows us to not only track patient's progress, but also to adjust treatment plans to optimize progress.

Why measure Functional Outcomes?

The Functional Outcomes Program improves patient care by:

- fostering effective communication between the patient and the physician,
- tracking patient progress toward established goals,
- serving as an educational tool for patients about their conditions,
- supplying data to analyze the efficacy of treatment, and make adjustments as needed, and
- helping to identify best practices for conservative and surgical spine care.

Preliminary Functional Outcome Results

Our preliminary results demonstrate success with both our conservative treatment patients and our surgical patients.

We use a generic health survey (SF-36v.2) that measures patients' functional and mental health from the point of view of the patient.

At the end of June, we celebrated the continuing influence of **Harold D. Paxton, M.D.** who provided the framework, values and educational foundation of the Department of Neurological Surgery at OHSU, a tradition which I have tried to emulate as we move forward with all the department is accomplishing and planning. Pax's influence is deep and broad; I am grateful for the leadership he gave—and in many ways, continues to give—to the department.



Neil Kitchen, M.D.

Annually, we celebrate this leadership at a dinner and accompanying lecture series, this year given by Neil Kitchen, M.D., a visiting scholar from the University College London Hospital Trust in England. This year's dinner was even more poignant as we celebrated the successful career of Cal Tanabe, M.D. '64 & '70, who was Dr. Paxton's first resident. Cal's medical career is stellar, but his approach to life and to leadership also follows in the footsteps of Pax. Cal's comments at the Distinguished Alumni Award dinner in June were moving and inspirational.



Cal Tanabe, M.D.

The department faculty and staff thank all those in attendance for continued support.

Kim Burchiel

Kim J. Burchiel, M.D., F.A.C.S.
John Raaf Professor and Chairman
OHSU Neurological Surgery

Surgical patients (1 year after surgery)

Physical Component Summary Score

- ✓ an average of 41.5% improvement in score
- ✓ 83% of patients reported improvement

Bodily Pain Score

- ✓ an average of 32.5% improvement in score
- ✓ 76% of patients reported improvement

Low back patients disability (Oswestry Disability Index -ODI) score

- ✓ an average of 28% decrease in ODI score
- ✓ 77% of patients reported improvement

Non operatively treated patients (1 year data)

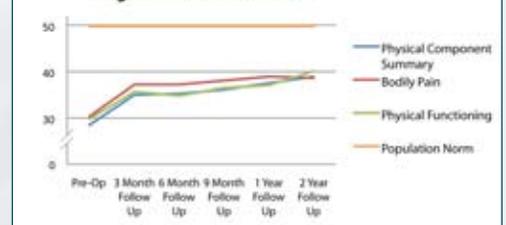
Physical Component Summary Score

- ✓ an average of 11.5% improvement in score
- ✓ 65% of patients reported improvement

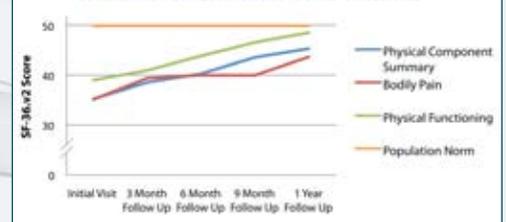
For more information

For more information about our Functional Outcome Program, or to refer a patient or consult with our team, please call the OHSU Spine Center at 503-418-9888.

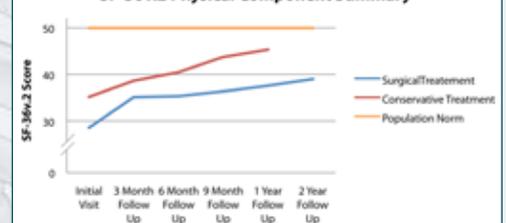
Surgical SF-36v.2 Outcomes



Conservative Treatment SF-36v.2 Outcomes



SF-36v.2 Physical Component Summary



Advancing Education

Medical education, like medical science, is moving into a new, more scientific era. Like other specialists, neurosurgeons around North America are making serious efforts to understand and improve the effectiveness of surgical education, in order to improve the quality of patient care. OHSU neurosurgeons are leaders of this movement toward a more scientific surgical education.



The extensive efforts of OHSU's neurosurgical faculty to advance modern and technologically based neurosurgical education complement a long history and continuing tradition at OHSU of faculty leadership in surgical anatomy and technology courses, surgical device development and testing, and local, national and regional lecturing and teaching.

OIDD Summer Youth Program

The Oregon Institute on Disability & Development Summer Youth Program provides a unique opportunity for high school and undergraduate students interested in pursuing healthcare-related career.

The primary objectives of the OIDD Summer Youth Program are to:

- expose students to the disabilities field, to health and allied healthcare careers,
- expand the definition of "disabilities" for better understanding,
- mentor students and facilitate network building opportunities, and
- expose students to community-based and clinical research.

Amanda Armstrong (freshman at Portland State University) interned with **Brian Ragel**, M.D. Amanda committed to 15-20 (flexible) hours work/week for 10-12 weeks with Dr. Ragel in his neurosurgical practice. Amanda hopes to pursue a career in the clinical neurosciences.

For more information, contact:

Oregon Institute on Disability & Development

OIDD Summer Youth Program

707 S.W. Gaines St

Portland, OR 97239-2901

503-494-8364

www.ohsu.edu/oidd

Visiting Medical Students

OHSU uses VSAS, the Visiting Student Application Service, to receive visiting student applications for each academic year, www.aamc.org/vsas. Visiting medical student applications are only accepted from **fourth-year** medical students in good standing who are:

- receiving an M.D. from a school which is accredited by the Liaison Committee on Medical Education (LCME), or
- receiving a D.O. degree from a school which is accredited by the Education Department of the American Osteopathic Association (AOA).

If students do not meet these requirements, they are not eligible for a visiting student rotation at OHSU.

Neurological surgery welcomed 12 students in 2009 into one of three clinical rotations (neurosurgery, pediatric neurosurgery and neuroscience critical care) that typically last 3-4 weeks.

Campagna Scholar 2009 — Precision Grip in Essential tremor

Tristan Stani, a medical student at Warren Alpert Medical School of Brown University was the Campagna Scholar for 2009. He has a certificate in post-baccalaureate premedical studies, from The Johns Hopkins University and a Bachelor of Arts, from St. John's College, Annapolis, MD.

His 10-week summer research project, working with **Valerie Anderson**, Ph.D., involved examining precision grip (holding an object between thumb and forefinger) performance in essential tremor (ET) subjects before and after deep brain stimulation (DBS). Ten healthy controls were also studied. The regularity of repetitive, self-paced finger tapping is known to be abnormal in patients with ET and improved following DBS. It is not known if precision grip can also be restored. Experiments were designed to measure hand distal and proximal musculature control and coordination in ET subjects to determine if DBS alleviated tremor and if precision grip was restored.



Valerie Anderson, Ph.D.

First Regional Foundations in Neurosurgery Resident Education

Funded by a generous education grant from Stryker, the two day (Aug 7-8, 2009) hands on course was designed for beginning residents interested in the fundamentals of neurosurgical management and technique. The faculty addressed various procedural techniques and surgical approaches, emphasizing proper decision making in the care of the emergency and perioperative neurosurgery patient. The focus of the course was to promote quality and patient safety in a training environment. Topics covered included: patient assessment, intracranial pressure monitoring and management, incision design, spinal traction and reduction, bedside neurosurgical procedures, pediatric basics, use of navigation, microscopy and neurosurgical instrumentation, and cranial closure techniques.



Drs. Burchiel, Barbaro and Selden are now working with the Congress of Neurological Surgeons (Senior Society) to formulate a national foundation course for neurosurgical resident education.

OHSU Faculty

Nathan R. Selden, M.D., Ph.D. (Course Director)

Gregory Anderson, Ph.D.

Kim J. Burchiel, M.D.

Nicholas Coppa, M.D.

Edmund H. Frank, M.D.

Daniel Guillaume, M.D.

Andrew N. Nemecek, M.D.

Brian T. Ragel, M.D.

Visiting Faculty

Anthony M. Avellino, M.D., M.B.A.

University of Washington, Seattle, Wash.

Nicholas M. Barbaro, M.D.

University of California, San Francisco, Calif.

Griffith R. Harsh, M.D.

Lucile Packard Children's Hospital at Stanford, Calif.

Glenn Shields

Stanford Neurosurgery, Stanford, Calif.

Research Funding

American Recovery and Reinvestment Act grant funding awarded to **Mary Heinricher**, Ph.D.

American Recovery and Reinvestment Act (ARRA)

The recently signed American Recovery and Reinvestment Act (ARRA) of 2009 provides \$10.4 billion to the NIH to stimulate the U.S. economy by creating and retaining jobs and accelerating the pace of biomedical research.

National Institute of Neurological Disorders and Stroke (NINDS)

The mission of NINDS is to reduce the burden of neurological disease - a burden borne by every age group, by every segment of society, by people all over the world.

Migraine headache and central pain facilitating systems funded by the National Institute of Neurological Disorders and Stroke

Despite the high prevalence of migraine in the general population, understanding of the underlying mechanisms remains incomplete. The experiments described in Dr. Heinricher's grant funded work will attempt to delineate a more complete theory of migraine headache pain. The experiments should provide important support for the idea of a "central generator" in migraine headache pain, and provide insights into the mechanisms of action of triptans (a family of tryptamine based drugs used to interrupt an attack or episode of severe headache).

www.ohsu.edu/neurosurgery/news-events/research_news.cfm

Animal Models of Diabetic Complications Consortium Pilot & Feasibility Program Award to **Thomas Baumann**, Ph.D.

Animal Models of Diabetic Complications Consortium (AMDCC)

The AMDCC is an interdisciplinary consortium designed to develop new animal models that closely mimic the human complications of diabetes for the purpose of studying disease pathogenesis, prevention and treatment. Additional goals of the AMDCC are to define criteria to validate each diabetic complication for its similarity to the human disease, test the role of candidate genes that emerge from human genetic studies, and facilitate the exchange of models, tissues, reagents, and expertise between members of the consortium and the greater scientific community.

Microneurography model of painful diabetic peripheral neuropathy

Diabetic neuropathy, which develops over time covers a family of nerve disorders defined by nerve damage caused by diabetes. Spontaneous burning pain is a common symptom of diabetic peripheral neuropathy (nerve damage in the arms and legs). The microneurography experiments, (a microelectrode is inserted in a nerve bundle), described in Dr. Baumann's grant funded work will attempt to determine a more complete understanding of painful diabetic neuropathy. The experiments should provide important support for the observation that human painful diabetic neuropathy is associated with spontaneous action potential discharge in nociceptive C-fiber primary afferents. Microneurography model C-fiber discharge pattern comparisons with those measured in diabetic humans who do or do not experience spon-



Mary Heinricher, Ph.D.

taneous burning pain will provide insights into the mechanisms of action of diabetic peripheral neuropathy.

<http://diabetes.niddk.nih.gov/dm/pubs/neuropathies>
<https://www.amdcc.org/index.aspx>

Research Laboratory Space

Neurological surgery research laboratories have historically been comprised of an assortment of small and varied spaces distributed across the OHSU campus. After almost 10 years of work with OHSU leadership, architects and laboratory designers, the department is now seeing Dr. Burchiel's long-held vision of a unified, state-of-the-art neurological surgery research laboratory coming to fruition.

In Fall 2008, construction began on renovating the 3rd floor of Richard Jones Hall for the laboratory space. Phase 1 is complete and the department now has a 1557 sq ft wet laboratory, a 327 sq ft behavior testing facility, a 344 sq ft graduate student office and 170 sq ft of shared office space. **Thomas Baumann**, Ph.D., has relocated his electrophysiological studies to these facilities, and **Mary Heinricher**, Ph.D. and **Valerie Anderson**, Ph.D. have relocated a small portion of their laboratories to the new space. **Daniel Guillaume**, M.D. will be moving his research endeavours into this area soon.



Phase 2 is expected to begin late September 2009. An additional 1800 sq ft of laboratory space with faculty offices and a small conference room, which will allow us to consolidate the remaining basic science laboratories in this area is expected sometime in Spring 2010. Staff who will be working in the phase 1 space during construction of phase 2, are looking forward to the sounds of progress – along with the potential for requiring several sets of ear plugs!

Addendum: Who is Richard Jones?

For 30 years, from 1966 to 1996, Richard T. Jones, M.D., Ph.D., (1929-2008) was a professor of biochemistry in the OHSU School of Medicine, 27 of those years as department chairman. He was acting president of the university from July 1977 through August 1978 and special consultant to OHSU President Leonard Laster, M.D., until July 1979. He also was assistant dean for academic affairs in the early 1980s. He retired in 1995. Dr. Jones, was a highly recognized biomedical researcher and the recipient of many research and training grants, including the Discovery Award in biomedical research from the Medical Research Foundation of Oregon.

OHSU Neurosciences

OHSU Neurosciences is one of the nation's leading neurologic research and training programs and provides the most comprehensive care of neurologic illnesses in the Pacific Northwest. Our nationally recognized neurological programs and centers offer comprehensive clinical and surgical services that are available nowhere else in Oregon. Our leading-edge research and clinical trial opportunities ultimately provide new treatment options, earlier detection and improved quality of life for patients.

New Fellows

Justin Cetas, M.D., Ph.D., joined neurological surgery in July 2009 as an instructor in skull base surgery. In June 2009 he completed his neurosurgical residency at OHSU. His particular interests include functional neurosurgery and epilepsy surgery. He enjoys many outdoor activities, including rock climbing and sailing.



Awards

- Neurosurgery Research and Education Foundation (NREF) Award 2007: Central mechanisms of pain in dural inflammation
- Society for Neuroscience Oregon Chapter Resident Paper Award 2008: A Novel medullary center for the control of cerebral blood flow
- Cerebrovascular Disease Research Award (Section on Cerebrovascular Surgery of the American Association of Neurological Surgeons/Congress of Neurological Surgeons) 2008: Medullary control of cerebral blood flow and its potential role in cerebral vasospasm
- Western Neurosurgical Society (WNS) Research Resident Award 2008: Coupled control of pain and cerebral blood flow in the medulla

Ashwin Viswanathan, M.D., joined neurological surgery as an instructor in functional and stereotactic neurosurgery in September 2009. He obtained a bachelor's degree in electrical engineering from the Massachusetts Institute of Technology, Cambridge, Mass. and a medical degree from Baylor College of Medicine, Houston, Texas. In 2009, he completed neurosurgical residency training at Baylor College of Medicine, Houston, Texas. He has been a neurosurgical volunteer in Peru, Ethiopia, Nepal and most recently Vietnam. His neurosurgical interests include functional and stereotactic neurosurgery and international volunteerism challenges and opportunities.



Marie-Pierre Fournier-Gosselin M.D., F.R.C.S.C. joined neurological surgery as an instructor in functional and stereotactic neurosurgery in September 2009. She obtained a doctorate in medicine from Université Laval, Quebec, Canada in 2002 and completed post-doctoral training in neurosurgery at Sherbrooke University, Quebec, Canada in 2008. She was also awarded a diploma in neurosurgery in 2008 by the Royal College of Physicians and Surgeons of Canada. Dr. Fournier-Gosselin plans to complete a masters degree in neuroscience at the Institute of Medical Science, University of Toronto, Canada and pursue the development of clinical, research and academic teaching expertise in functional neurosurgery in Quebec, Canada.



New Faculty

The OHSU Department of Neurological Surgery is pleased to welcome two neurosurgeons to our team.

Nicholas D. Coppa, M.D., recently completed a skull base fellowship under the tutelage of Johnny B. Delashaw, Jr., M.D. Dr. Coppa's specialties include: skull base surgery, endoscopic cranial surgery, neuro-oncology, pituitary disorders, and cerebrovascular disorders. Dr. Coppa's surgical skills and expertise in skull base and pituitary tumors will strengthen our capabilities in minimally invasive surgical techniques.



Brian T. Ragel, M.D. joins us from David Grant Medical Center, Travis Air Force Base, California, where he was Staff Neurosurgeon.

Dr. Ragel specializes in general neurosurgical treatment of problems and abnormalities of the spine and complex brain tumors. Dr. Ragel's expertise in spine and brain tumors, and his surgical skills, will strengthen our capabilities in minimally invasive surgical techniques.



Drs. Coppa and Ragel will play a vital role on our neurosurgical team. They will work with a multidisciplinary team of neurologists, neuro-oncologists and other specialists, collaborating on patient evaluations and treatment options to ensure the best possible patient outcomes.

Alumni 2009 - The Chiefs Move On

Kiarash Golshani, M.D. has accepted a diagnostic radiology fellowship position at Duke University Durham, NC.



Justin Cetas, M.D., Ph.D. is completing a fellowship in skull base surgery at OHSU with Johnny B. Delashaw, Jr., MD.

Resident Awards

Zachary Litvack, M.D. was awarded the Western Neurosurgical Society clinical science award, and a "Top 10 Abstract" at the Congress of Neurological Surgeons annual meeting. Both awards were for work detailing "Dural Splitting Decompression for Chiari I Malformation: Safety, Efficacy and Cost-Benefits." Dr. Litvack is pursuing fellowship training in pediatric neurosurgery after completing his residency in June 2010.



New Physician Assistants

The OHSU Department of Neurological Surgery is pleased to welcome two physician assistants to our team. Physician assistants (PAs) are often referred to as mid-level providers.

Physician assistants are highly trained members of our neurological surgery health care team who practice medicine with the supervision of licensed physicians, providing patients with a wide range of services that would otherwise be performed by physicians. Specific duties are defined by state regulation and practice setting, but include a variety of both diagnostic and therapeutic procedures.

Christine Li, P.A.-C, M.P.A.P., graduated from the University of Portland, Ore. with a bachelor of science in biology in 2004. After 2 years working in medical support she returned to school and graduated in 2009 from Keck School of Medicine of University of Southern California with a master of physician assistant practice.



Janette Remling, M.S., P.A.-C, graduated from the Texas State University, San Marcos, TX with a bachelor and master of science in communication disorders in 1994 and 1996, respectively. After 8 years as a speech language pathologist Janette graduated in 2006 from Pacific University, Forest Grove, Ore. with a master of science in physician assistant studies.



Research Publications 2009

The Department of Neurological Surgery is continuously researching new ways to treat or cure neurological disease. This is clearly reflected in our academic publishing record. Publishing a research paper in a journal is a huge feat. Only the most promising, thoroughly vetted scientific work is published. The process is lengthy and it can take several months from submission to peer review to the final published paper.

2009 has been an extremely productive academic publishing year for the department.

- 38 manuscripts in print
- 23 manuscripts in press
- 27 manuscripts in submission

Full citations can be located at www.ohsu.edu/neurosurgery/research/publications.cfm

Journal cover illustration success examples can be located on pg 8.

- √ *Journal of Neurosurgery* cover illustration May 2009.
- √ *Journal of Neurosurgery: Pediatrics* cover illustration October 2009.

The 19th John Raaf Day Lecturer

William F. Chandler, M.D. is a professor of neurosurgery and co-director of the Pituitary and Neuroendocrine Center at University of Michigan, Ann Arbor, Mich. Dr. Chandler is interested in pituitary disorders, (pituitary tumors, Cushing's disease, acromegaly, craniopharyngiomas), and brain tumors. He treats patients with a variety of cerebrovascular and general neurosurgical disorders. He is a past president of the Congress of Neurological Surgeons and the Michigan Association of Neurological Surgeons. He has served as chairman of American Board of Neurological Surgery and is currently on the Board of Directors of the American Board of Medical Specialties.



John Raaf Day 2009 Schedule

Saturday, October 3, 2009

Doernbecher Children's Hospital, Vey Conference Center — 11th Floor

8:30 am - Breakfast Buffet

9:00 am - "Pituitary Surgery - Pearls and Pitfalls"

10:30 am - Break

10:45 am - "Residency Design, Career Development and Life Long Learning"

12:00 noon - Closing Remarks

Contact: Joanie Mastrandrea at 503-494-6207 or mastrand@ohsu.edu

Case of the Month by Aclan Dogan, M.D.

Dr. Dogan has begun highlighting neurosurgical cases each month that are of greater than normal clinical interest, have unusual symptoms and/or diagnostic findings, or involve innovative treatment.

Cases can be download as .pdf files that include pre- and postoperative imaging from our website www.ohsu.edu/neurosurgery.

August 2009:
Large Fusiform Aneurysm of P1-P2 segment

Distal PCA
Proximal PCA

OREGON HEALTH & SCIENCE UNIVERSITY

- June 2009: Occipital artery to PICA bypass for treatment of VA-PICA aneurysm
- July 2009: 12th cranial nerve schwannoma
- August 2009: Large fusiform aneurysm of P1-P2 segment



Change can't happen if we see things just one way.
That's why diversity is important to who we are.
We are proud to be an equal opportunity employer.

For more information or patient referrals,
contact OHSU Neurological Surgery

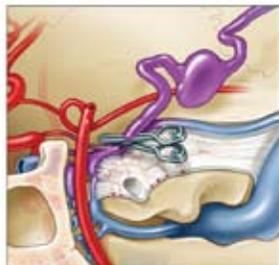
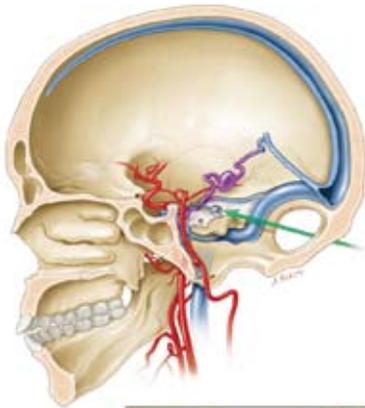
www.ohsu.edu/neurosurgery

Phone: 503 494-4314

Fax: 503 494-7161

nsg@ohsu.edu

Journal of Neurosurgery



May 2009 Volume 110, Number 5

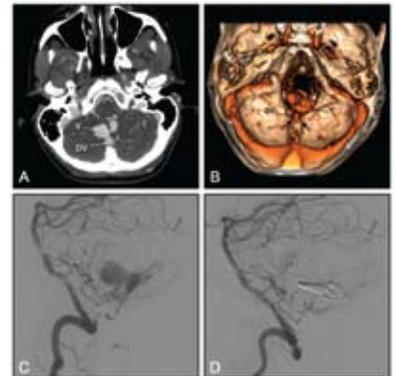


WWW.THEJNS.ORG

Medical Illustration Honors

OHSU Department of Neurological Surgery artwork was the cover feature of the May 2009 edition of the Journal of Neurosurgery. The article titled *"The role of surgery for high-grade intracranial dural arteriovenous fistulas: importance of obliteration of venous outflow"* was written by Jim Liu, M.D., **Aclan Dogan**, M.D., Dilan Ellegala, M.D., Jonathon Carlson, M.D., Gary Nesbit, M.D., **Stanley L. Barnwell**, M.D., and **Johnny B. Delashaw, Jr.**, M.D.

Manuscript illustrations and cover artwork were created by department illustrator, **Andy Rekito**. This is the department's sixth cover for JNS/JNS: Pediatrics in the past 4 years.



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