Best wishes to everyone for the new year!

2016 is a year of which we can all be proud. From the hiring of our first endovascular neurosurgeon, to the recruitment of an excellent intern class and new faculty, the opening of our new very successful South County location and the inaugural year of the extremely well-received Christopher Davidson Forum, it was a very successful year for us as a department. As we embark on 2017, I want to recognize that our successes are the result of significant hard work from each and every one of you. I thank you for all of your efforts and look forward to an even more successful 2017.

Ralph G. Dacey Jr., MD
Henry G. & Edith R. Schwartz Professor and Chairman of Neurological Surgery

Gavin Dunn Named One of 2016 Rock Docs

Gavin Dunn, MD, PhD, was one of four physicians honored at the September 30, 2016 CUREiosity party as one of the year’s “Rock Docs” making a difference at the Alvin J. Siteman Cancer Center.

One of the most unique events in St. Louis, CUREiosity celebrates the "Rock Docs" making a difference at the Alvin J. Siteman Cancer Center as well as the cutting-edge "Rock Star Research" being conducted at the institution. More than 300 guests attended the 2016 party which was be held at Four Seasons Hotel located at Lumiere Place.

2016 Rock Doc Recipients from Left to Right: Michael Naughton, MD, Majella Doyle, MD, MBA, Monica Shokeen, PhD, MBA, and Gavin Dunn, MD, PhD
Department Celebrates Journal of Neurosurgery and JAMA Pediatrics Achievements

The December 2016 Journal of Neurosurgery cover displayed the work of Thomas Beaumont, MD, PhD, David Limbrick Jr., MD, PhD, Keith Rich, MD, Franz Wippold II, MD, and Ralph Dacey Jr., MD regarding their publication entitled “Natural History of Colloid Cysts of the Third Ventricle.” Colloid cysts of the third ventricle are rare, histologically benign lesions that occur in the region of the foramen of Monro where they can result in obstructive hydrocephalus and death. Defining the natural history of colloid cysts has been challenging due to the low incidence of the lesion combined with the potential for acute presentation that precludes prospective randomized studies. The authors performed a single-center retrospective review of all cases of colloid cysts of the third ventricle treated over two decades at Washington University to identify factors strongly correlated with symptomatic clinical status and presentation with obstructive hydrocephalus. Several factors that were strongly correlated with these two outcome variables were identified and the authors defined new third ventricle ‘risk zones’ where colloid cysts can cause obstructive hydrocephalus. Interestingly, patients with lesions outside these risk zones did not present with obstructive hydrocephalus. Predictive factors were combined into a 5-point clinical scale referred to as the Colloid Cyst Risk Score (CCRS), a simple clinical tool that can be used to identify symptomatic lesions and stratify the risk of obstructive hydrocephalus.

The February 2017 Journal of Neurosurgery Spine cover displayed the work of Bradley Stephens, MPH, MD, and Neill Wright, MD, regarding their publication entitled “Reconstruction of the C-1 Lateral Mass with a Titanium Expandable Cage after Resection of Eosinophilic Granuloma in an Adult Patient.” The authors describe a 27-year-old man with pathologically proven EG who presented with complete destruction of the C-1 lateral mass requiring spinal stabilization. A titanium expandable cage was used to reconstruct the weight-bearing column from the occipital condyle to the superior articular surface of C-2 from a posterior approach, with preservation of the traversing vertebral artery. To the authors’ knowledge, this is the first reported instance of reconstruction of the C-1 lateral mass using an expandable metal cage, which facilitated preservation of the vertebral artery.

Jacob K. Greenberg, MD, MSCI, and David Limbrick, MD, PhD, received top billing in the February 2017 issue of JAMA Pediatrics for their publication entitled “Development and Internal Validation of a Clinical Risk Score for Treating Children With Mild Head Trauma and Intracranial Injury” (Jacob K. Greenberg, MD, MSCI, Yan Yan, MD, PhD, Christopher R. Carpenter, MD, MSc, Angela Lumba-Brown, MD; Martin S. Keller, MD; Jose A. Pineda, MD, Ross C. Brownson, PhD, David D. Limbrick, MD, PhD). The research includes a new risk scoring system intended to help determine whether a child with mild traumatic brain injury and an abnormal CT scan can be monitored safely in a general hospital ward or requires the increased surveillance of an ICU.
Scientists have identified a gene involved in cell metabolism and energy production that is overactive in a deadly form of brain cancer known as glioblastoma, according to a study at Washington University School of Medicine in St. Louis. The findings suggest that inhibiting that gene may improve the outlook for glioblastoma patients.

Glioblastoma is the most common and aggressive brain cancer in adults. Over 70 percent of patients with glioblastoma die within two years of diagnosis.

The new research showed that glioblastoma patients with high expression of a gene known as NAMPT died sooner. Tumors with elevated expression of the same gene grew rapidly when they were implanted in mice and shrank when NAMPT was inhibited.

NAMPT is a key component of a metabolic pathway known as the nicotinamide adenine dinucleotide (NAD+) pathway that is involved in producing cellular energy and plays a key role in several biological processes that depend on energy generation, such as aging, diabetes and inflammation.

The study is published Dec. 7 in Proceedings of the National Academy of Sciences.

Using human glioblastoma cells, Albert H. Kim, MD, PhD, an assistant professor of neurological surgery, postdoctoral researcher Amit Gujar, PhD, and colleagues showed that NAMPT helped cancerous stem cells survive and proliferate, fueling the growth of existing tumors, while inhibiting NAMPT reduced the ability of the cancer stem cells to renew themselves.

Furthermore, the scientists found that glioblastoma cells responded to radiation therapy – a standard therapy used to treat the disease in people – by increasing expression of NAD+ pathway genes, and that inhibiting NAMPT before dosing the cells with radiation made them easier to kill.

“If you target the NAD+ pathway, you can disrupt the ability of the cancer stem cells to self-renew, and you can also make them more sensitive to radiation treatment,” said Kim, who also treats patients with brain tumors at Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital. “In a patient, that could mean that if you suppress the pathway, the same dose of radiation may be more effective at destroying the tumor.”

The NAD+ pathway has recently attracted scientific attention because of its role in aging. NAMPT produces a molecule known as nicotinamide mononucleotide (NMN) which other scientists have shown to reduce signs of aging in mice. There is no evidence that NAMPT increases the incidence of cancer, even after prolonged administration. While its safety in people has yet to be determined – a clinical trial is ongoing in Japan – NMN and other molecules along the NAD+ pathway are being marketed as anti-aging supplements.

“There’s a lot of buzz about taking NAD+ precursors for their anti-aging effects, which is based on a lot of great science,” Kim said. “I don’t know if taking NAD+ precursors makes existing tumors grow faster, but one implication of our work is that we don’t yet fully understand all of the consequences of enhancing NAD+ levels.”

The NAD+ pathway involves many different genes and proteins, and its very complexity may be the key to having it both ways. Kim believes it may be possible to carefully modulate the pathway so as to suppress cancer without interfering with other important biological processes.

“The question we are considering now is, ‘How do we make an NAD+ strategy that is specific for cancer?’” Kim said. “Maybe there are some cancer-specific regulators, and we can disrupt those. Maybe we can change the expression of some key NAD+ pathway genes only in cancer cells, not healthy cells. There are many ways to look at this, and that’s why we want to dig deeper into how this pathway works in glioblastoma.”
When the Barnes-Jewish Hospital (BJH) 11300 neurosurgical innovation unit was in the works, the plan was it would employ a number of best practices, which potentially could be implemented house-wide. Now, nine months after opening, the unit is reviewing its progress. Thought to be one of the most innovative concepts was the transformational leadership program that helped unit leadership and talent acquisition create behavioral-based interview guides to select and develop staff for the unit.

“Nursing leaders and staff were hired based on the same competencies but modified to their role. Everyone had to be willing and enthusiastic to try new things, speak up and escalate any concern for the sake of improvement,” says Liz Pratt, DNP, RN, ACNS-BC, research scientist and clinical nurse specialist.

The focus on hiring the right team was right on target. The unit is ranked in the 83rd percentile in overall quality of care when compared to like units within Professional Research Consultants, Inc. (PRC). This means it is performing higher than 83 percent of the neurological units across the country who are in the PRC database. Another part of the unit’s success is the Marbella care management rounding tool. The assistant nurse managers round on patients daily just like other floors but unlike other units, the questions are geared toward clinical care and patient expectations. Clinical milestones such as achieving pain control and removing urinary catheters are monitored within specific time frames. The milestones for patient expectations ensure that staff help patients understand expectations of their care, confirm whether our goals match up with their goals, and whether patients know their discharge date. “Patients are tracked for the entire length of their stay; it’s not a one and done,” says Pat Potter, RN, PhD, FAAN, director of research for patient care services. “A report is available on each patient to see if they are having success and, if they’re not, we can adjust to make improvements.”

Another success Potter refers to is each patient’s journey through the mobility program. Patients are placed on a mobility protocol once they reach 11300. There are four levels of mobility:

1. Turning and moving in bed
2. Sitting up on the side of the bed
3. Sitting in the chair
4. Walking actively

A few are in wheelchairs because they are not able to walk.

Christina Ward, BSN, BS, CMSRN, clinical nurse manager for the unit, reiterates the importance of the mobility program. “It helps prevent complications for patients down the road and has enhanced the relationships between caregivers and patients with more dialogue contributing to the success of the reduction in falls. The nurses have been diligent about interventions and safety measures.”

Ward sees a huge level of engagement with her staff. “We have an amazing team of nurses, patient care technicians, therapists and unit secretaries, and they have really owned the culture of safety. They share ideas on the board in the break room and many of our nurses participate in the UPC,” says Ward. Evidently, the feeling is mutual. The unit is using the Leadership Empowering Behavior Scale, which asks staff to evaluate the leader in the categories of:

- Enhances meaningfulness of work
- Facilitates goal accomplishment
- Fosters participation in decision making

In the first survey, Ward received an above average score for all three categories.

Potter, Pratt and Ward believe the success of the unit has a common denominator – the staff, specifically the hiring of the right staff, which leads back to the interview guides that were created for 11300. On Sept. 1, BJH began using the guides for the hiring of all nursing positions. Says Pratt, “A few hiring managers had been using behavioral-based interviewing. Now all nursing leaders have transformational competencies combined with behavioral-based interviewing, improving the consistency at BJH. This best practice can only result in more engaged units and leadership, and improved patient care.”
Department Holds First Christopher Davidson Forum

Washington University School of Medicine’s Department of Neurosurgery hosted the first Christopher Davidson Forum: Envisioning the Future of Brain Tumor Therapy on Friday, Sept. 9 through Saturday, Sept. 10, 2016 at the Holden Auditorium in the Farrell Learning & Teaching Center at WUSM.

The two-day cross-disciplinary symposium featured some of the top national leaders in neuro-oncology who shared exciting new developments into effective treatments for patients with malignant gliomas.

The symposium was generously supported by the Knight/Davidson Family, the Forum honors the legacy of Christopher Davidson, a St. Louis native, who lost his battle to brain cancer.

“We have the potential [with the Christopher Davidson Forum] to shape the trajectory of emerging brain tumor therapies,” said Eric C. Leuthardt, MD, director of the Center for Innovation in Neuroscience and Technology and the Brain Laser Center and one of the moderators of the event.

Planning is underway for the 2017 Christopher Davidson Forum, which will build on the successes of the first year. The Forum will be held on October 27-28, 2017.

Departmental Promotions, Notable Appointments and Awards

- David Limbrick, MD, PhD, was promoted to Professor as of May 2016.
- Wilson Zachary Ray, MD, was promoted to Associate Professor as of December 2016.
- Paul Santiago, MD, was promoted to Professor in July 2016.
- Jenn Strahle, MD, was promoted to Assistant Professor in July 2016.

Patient Voices

Comments directly from our patients about the care they received from the Neurosurgery healthcare team at Washington University and Barnes-Jewish Hospital

- The nurse and doctors were outstanding in their responsiveness and caring.

- I felt like the overall communication between the doctors and nurses was excellent. Dr. Osbun and nurse Alex in particular were excellent.

- The surgery was outstanding. The nurses were outstanding, the level of attentiveness and the care they provided was outstanding, and the surgery and the doctors who performed it were outstanding. They made a large incision in my skull but I felt no pain.

- Doctors’ communication and transactions were outstanding.

S. Hassan Akbari
American Syringomyelia & Chiari Alliance Project

Ananth Vellimina
NREF
“NREF Research Fellowship”
07/01/16 – 06/30/17

Neill Wright
NREF
“NREF Post-Residency Clinical Fellowship Program”
07/01/16 – 06/30/17

Hiroko Yano
NIH R21
“Epigenetic and MRNA Profiling of Striatopallidal Neurons in Huntington’s Disease”
09/01/16 – 08/31/18

Gavin Dunn
BJHF/ICTS
“Defining the Immunogenicity of Telomerase in TERT-mutant Glioblastoma”
06/01/16 – 05/31/17

Cancer Research Institute
“Monitoring the Anti-Tumor Immune Response in Glioblastoma Patients Treated with a Personalized Neoepitope Vaccine”
07/01/16 – 06/30/18

Albert Kim
NIH R01
“Regulation of Glioblastoma Stem-Like Cells by CDC20-Anaphase-Promoting Complex”
07/01/16 – 04/30/21

Dave Limbrick
NIH R01 subcontract with Wayne State
“Investigating the cellular mechanisms leading to repetitive shunt failure in the treatment of pediatric hydrocephalus”
06/15/16 – 05/31/21

NIH subcontract with Penn
“NIH Neonatal Septisome/Hydrocephalus”
02/01/16 – 01/31/17

NIH R01 subcontract with Seattle
“Targeting the CSF microbiota to optimize the CSF shunt infection treatment”
02/15/16 – 01/31/17
Publications (June 2016 - November 2016)


Publications cont.


Publications cont.


National & International Presentations (June 2016 - November 2016)

Dunn GP. Identification of Neoantigen-Specific CD8+ T Cells in Two Murine Orthotopic Glioblastoma Models Using Cancer Immunogenomics. Congress of Neurological Surgeons, American Brain Tumor Young Investigator Award, September 26, 2016.


Roland, J. Resting state functional magnetic resonance imaging for cerebral mapping in pediatric neurosurgical patients. Pediatric Neurosurgery Section Meeting, 2016.


Wright, NW. C5 Palsy. 23rd Advanced Techniques in Cervical Decompression and Stabilization, St. Louis, MO. 2016.


Zipfel, Gregory. Subarachnoid Hemorrhage: Modern Management and Novel Therapeutic Approaches. The Orlando Andy, MD Honored Lecture, University of Mississippi, Jackson, MS, June 28, 2016.


Personal News

Drs. Brandon Miller and Monica Chau welcomed their first child, daughter Sara Shirley, on July 29, 2016.

New Department of Neurosurgery Staff

Tara Holladay, RN - Drs. Albert Kim and Eric Leuthardt
Stephanie Mueller, RN - Drs. Joshua Osbun and Greg Zipfel
Jennifer Schulze, NP - Dr. Paul Santiago
Aubrey Wright - Clinical Research Coordinator for Dr. Zack Ray

Upcoming Events

- March 17, 2017 - ABNS Primary Exam
- April 22-April 26, 2017 - AANS Meeting
- June 3, 2017 - Annual Softball Tournament in New York City
- June 16, 2017 - Chief Graduation Party
- July 1, 2017 - Start of New Academic Year