

HENRY FORD

# SYNAPSE

*Neurosurgery*

*Summer 2017*



## *A Look Inside*

- Letter from the Chair
- New Co-Directors at Brain Tumor Center
- 5-ALA Drug Trial Targets High-Grade Brain Tumors
- Epilepsy Laser Ablation
- Clinical Trials
- Residents' Corner



## LETTER FROM THE CHAIR



Dear Colleagues and Friends,

True innovation must continually challenge the status quo. In the Henry Ford Department of Neurosurgery, our team pursues improved outcomes for our patients through relentless investigation and discovery as well as a pioneering spirit that

has been the hallmark of our department for decades. This issue of Synapse highlights a few of our latest advances in research and patient care.

### Improving Spine Care Outcomes

The Michigan Spine Surgery Improvement Collaborative (MSSIC) is continuing to take steps toward our goal of improving spine surgery outcomes. Last year, we successfully developed and implemented new risk adjustment models, which have provided new insights on complications. For 2017, all 26 participating hospitals have implemented quality improvement initiatives, and we have already seen promising results.

### New Trials for Safer Brain Surgery

Precision in brain surgery is critical to achieving a good outcome, and Henry Ford is known for advancing techniques to offer patients safer surgeries. This heritage continues with our participation in two new safety and efficacy trials. The first investigates the use of a minimally invasive, MRI-guided laser ablation system for temporal lobe epilepsy treatment. The second, a drug trial, investigates the use of fluorescence-guided microscopy to assist in the identification of malignant glioma tumors during surgery.

### New Era Begins at Brain Tumor Center

In light of the groundbreaking of the new Henry Ford Cancer Institute, I will be overseeing its construction and development, and then will serve as the new medical director. I am honored to pass the stewardship of Hermelin Brain Tumor Center to Ian Lee, M.D., and Tobias Walbert, M.D., who were recently named as the new co-directors. Drs. Lee and Walbert are both committed to building upon the comprehensive approach to treatment that has defined our center. This includes our increased focus on personalized medicine, a powerful tool that allows us to better tailor treatments to patients' specific needs.

I am proud of the work our team has done to advance neurosurgical research and treatment, and I look forward to our future, where we will continue to provide innovative care that transforms our patients' lives.

### STEVEN N. KALKANIS, M.D.

Professor and Chairman, Department of Neurosurgery,  
Mark L. Rosenblum Endowed Chair in Neurosurgery,  
Co-Director, Neuroscience Institute  
Medical Director, Henry Ford Cancer Institute

## MSSIC UPDATE



*The Michigan Spine Surgery Improvement Collaborative (MSSIC) is a statewide quality improvement initiative that aims to improve spine surgery outcomes for patients in Michigan. Henry Ford Health System is the Coordinating Center for MSSIC.*

In 2017, MSSIC continues to gain momentum. Currently, we have 26 participating hospitals, including 185 orthopedic surgeons and neurosurgeons, 50 data abstractors and 26 quality administrative leads. By the end of March 2017, 32,354 cases had been entered into the MSSIC registry, with the majority of cases being lumbar (rather than cervical) procedures. Over 26,000 cases are more than 90 days post-surgery, so we can now begin to assess treatment complications and patient-reported outcomes.

### Risk Adjustment Models

One of the accomplishments in 2016 was the development of statistical risk adjustment models to be used in hospital-level and surgeon-level comparisons of adverse events and complication rates. These models allow for an "apples to apples" comparison among hospitals and surgeons who may be treating different kinds of cases. We use the adjusted rates to identify hospitals and surgeons who have low complication rates, and then work with them to identify steps they are taking to achieve these rates. At our regular meetings, top-performing sites present best practices for others to emulate.

One analysis using MSSIC data showed that early ambulation after surgery has a significant impact on reducing the occurrence of urinary retention and readmissions. Only four out of 26 participating sites were consistently ambulating at least 75 percent of their patients on the day of surgery, presenting a great opportunity for improvement. Hospitals statewide have begun early ambulation quality improvement initiatives in an effort to reduce complication rates.

### Quality Improvement (QI) Initiatives

For 2017, participating MSSIC hospitals across the state have identified one of three high-priority outcomes and the corresponding interventions, and have implemented their quality improvement initiatives:

- **URINARY RETENTION:** Interventions include early ambulation and the revision of post-op UR catheterization protocols.
- **SURGICAL SITE INFECTION:** Interventions include staphylococcus aureus screening and decolonization, preoperative use of chlorhexidine wash, screening of Hgb A1c in diabetic patients and personal/home hygiene teaching modules.
- **90-DAY HOSPITAL READMISSION:** The primary reason for readmission varies, so case review and root cause analysis were used in an effort to determine the best intervention for each site. These include post-discharge call programs, a mid-level provider hotline for post-op questions and appropriate triaging of care needs, early ambulation programs, and implementation of a pre-operative Risk Assessment and Prevention Tool (RAPT) to better determine the appropriate discharge disposition and needs of the patient.

Individual hospitals are beginning to see significant improvements in key outcomes as a result of these initiatives, and we look forward to measurable improvements at the state level as a result of this program.

## STEREOTACTIC LASER ABLATION FOR TEMPORAL LOBE EPILEPSY



According to the Institute of Medicine, only 4,000 epilepsy patients undergo surgery to treat their epilepsy in the United States each year, while as many as 100,000 patients are potential candidates for this surgery. One reason for the lack of utilizations may be the difficult recovery that can sometimes be associated with conventional surgery. This operation involves removing part of the skull and cutting through healthy brain tissue to reach the area of the brain needing treatment.

"Even with the complications of surgery, a patient will live approximately eight years longer than if they were to continue with medications that aren't working," says Henry Ford Neurosurgeon Jason Schwalb, M.D.

The Henry Ford Neuroscience Institute is investigating a new, minimally invasive procedure that may offer patients a better alternative to traditional epilepsy treatments.

### Minimally Invasive Option for Epilepsy Surgery

With the Visualase® MRI-guided laser ablation system, surgeons can offer a minimally invasive alternative to a traditional craniotomy for epilepsy treatment. Visualase surgery begins by making a small hole in the skull. Using

guided imaging, surgeons are able to thread a fiber-optic cable into the skull and direct it to the affected area.

The laser is then able to heat and destroy the affected part of the brain without harming the surrounding healthy tissue. Because this procedure is guided by MRI images, surgeons are able to provide precise ablation.

"There are new MR sequences that allow you to look at the temperature of small areas of the brain in real time," Dr. Schwalb says. "You can program the system, so that if surrounding areas that are important are warming up, it will turn off the machine automatically."

### New SLATE Trial

Henry Ford Hospital is one of a select group of hospitals participating in a new national trial to evaluate the safety and efficacy of Visualase for mesial temporal epilepsy treatment. With the Stereotactic Laser Ablation for Temporal Lobe Epilepsy (SLATE) trial, Dr. Schwalb hopes to utilize this minimally invasive technique to increase the effectiveness of the treatment of temporal lobe epilepsy in patients who have a history of drug-resistant epilepsy.

*To learn more about this trial or refer a patient, call (313) 916-2360 or visit [henryford.com/epilepsy](http://henryford.com/epilepsy).*

## CLINIC OFFERS MULTIDISCIPLINARY CARE FOR COMPLEX CONDITION

For more than a decade, Henry Ford has been offering multidisciplinary neurofibromatosis treatment, addressing the unique challenges that people with this complex condition and their families face.

Neurofibromatosis is a genetic disorder resulting in skin lesions, which can develop into tumors of the nervous system, including the brain, nerves and eyes. These and other complications can significantly impact a patient's quality of life, and in 5-10 percent of cases, these tumors are malignant.

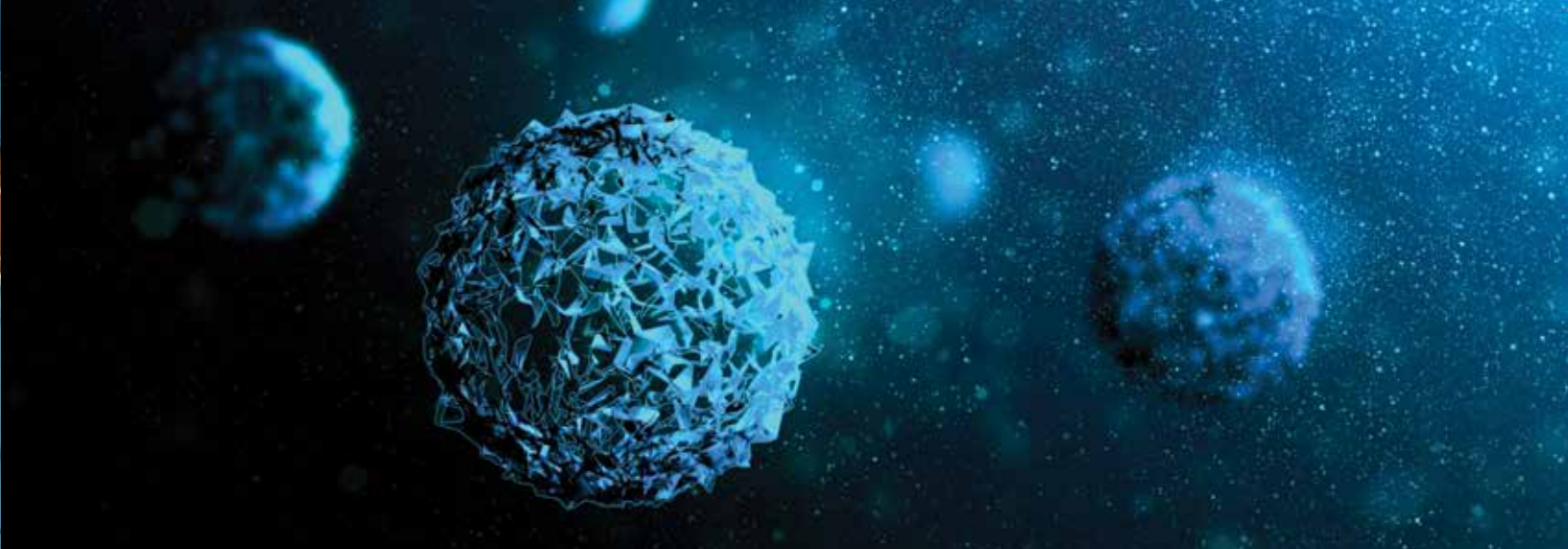
Neurofibromatosis cases often are difficult to diagnose and treat because they can affect many organs of the body, and many patients require multiple specialists, multidisciplinary management and surveillance. "We're striving to provide a comprehensive treatment team of specialists from all areas," says neuro-oncologist Dr. Walbert.

While it can strike at any age, most cases are discovered in children. At least 50 percent of individuals with neurofibromatosis 1, one of the common forms of the disease, have learning disabilities.

In 2007, the Multidisciplinary Neurofibromatosis Clinic at Henry Ford Hospital received the Network Affiliate Status award from the Children's Tumor Foundation (CTF), a national neurofibromatosis organization. Henry Ford is the only neurofibromatosis clinic in Michigan with this recognition.







## 5-ALA DRUG TRIAL TARGETS HIGH-GRADE BRAIN TUMORS

*In May, Steven Kalkanis, M.D., and Costas Hadjipanayis, M.D., traveled to Washington, D.C., to testify before the advisory committee to the FDA in support of the use of 5-Aminolevulinic Acid (5-ALA) for glioma surgery. 5-ALA utilizes blue-light fluorescence-guided microscopy (FGS) to assist neurosurgeons in the identification of glioma tumors during surgery. The advisory panel unanimously voted 11-0 in favor of the proposal to recommend 5-ALA for approval to the FDA. In the beginning of June, the full FDA endorsed this recommendation and gave final FDA approval to 5-ALA.*

Removing more of the cancerous tissue in glioma treatment can lead to a better surgical outcome and allows coordinated treatments such as radiation and chemotherapy to be more effective. Unfortunately, it can be challenging with conventional white-light microscopy to distinguish the tumor margin during surgery.

### Improving imaging accuracy

Over the past decade, neurosurgeons in Europe have used FGS and 5-Aminolevulinic Acid (5-ALA), a natural hemoglobin metabolite,

to help improve accuracy in resection of malignant gliomas. When 5-ALA crosses the blood-brain barrier, it is taken up by cancer cells, which convert the 5-ALA into protoporphyrin IX (PpIX), a fluorescent metabolite.

When viewed under a blue-light microscope with special filters, the high concentration of PpIX fluoresces red, distinguishing cancerous cells from surrounding healthy tissue, which remains blue. This makes it easier to distinguish tumor tissue from healthy brain tissue, allowing for a more complete resection that can be verified using intraoperative MRI.

### New option for gliomas

Hermelin Brain Tumor Center neurosurgeons recently completed a trial investigating the safety and efficacy of FGS and Gleolan®, an oral drug that contains 5-ALA. The trial included patients with newly diagnosed or recurrent malignant gliomas.

“The goal with neurosurgical treatment of malignant gliomas is to resect as much of the tumor as possible while sparing healthy brain tissue,” says Henry Ford neurosurgeon Ian Lee, M.D.

## NEW CO-DIRECTORS AT BRAIN TUMOR CENTER



IAN LEE, M.D.



TOBIAS WALBERT, M.D.

This year marks the start of a new era as neurosurgeon Ian Lee, M.D. and neuro-oncologist Tobias Walbert, M.D. were named the new co-directors of the Hermelin Brain Tumor Center. Building upon the vision and success of their predecessors, both physicians are dedicated to providing each patient with a personalized, comprehensive approach to cancer treatment.

As the new co-directors, Drs. Lee and Walbert are striving to create an environment that puts the patient and their families at the center of the best care possible. Both physicians bring a balance of experience and a desire to grow the reputation of the center itself. Lee has a special interest in innovative and minimally invasive surgical treatments for brain tumors, and has been a part of trials researching the benefits of laser ablation on brain tumors. As a neuro-oncologist, Walbert shares a passion for improving the diagnosis and treatment of brain tumors through extensive research participation as a principal investigator in numerous studies as well as a special medical interest in palliative care in neurological disease.

### Building on a heritage of excellence in treatment

For more than two decades, the Hermelin center has provided new hope to brain tumor patients, most recently under the leadership of Steven N. Kalkanis, M.D., professor and chairman of the Department of Neurosurgery and co-director of the Neuroscience Institute. Dr. Kalkanis will be overseeing construction and development of the new Henry Ford Cancer Institute, and will serve as its medical director.

As Lee and Walbert take the lead at Hermelin, they will continue to build upon the approach to treatment that has defined the center. This includes:

- Offering patient services that aren't available at other centers
- Ensuring access to the newest technology, close to home
- Making clinical trials accessible to more patients
- Increasing the number of surgical trials

### The new era of personalized medicine in brain cancer

“We want to get closer to defeating brain cancer,” Dr. Walbert says. “One way we're doing this is by increasing our focus on personalized medicine.” This approach uses specific, individual genetic markers to diagnose patients, before developing treatment options that work on a molecular level.

One key trial that the Hermelin team is joining is the NCI-MATCH (Molecular Analytics for Therapy Choice). This trial seeks to determine whether treating cancers according to their molecular abnormalities will show evidence of effectiveness. It utilizes advanced DNA sequencing and includes more drugs for testing than most other clinical trials.

“With the increasing importance of precision medicine, we envision that the HBTC will play an important role in collaborative networks to better tailor treatments according to the molecular characteristics of these types of cancer,” Dr. Lee says.

### Streamlined, coordinated care

In addition to offering the latest innovative treatments to patients, the Hermelin team also is dedicated to partnering with the referring physician throughout treatment, starting with a rapid diagnosis. “We don't want patients to have to wait for consultations because of the severity of the situation, which is why the Hermelin team provides access to a brain tumor specialist within 24 business hours,” Dr. Lee says.

With the development of the new Henry Ford Cancer Institute, the team at Hermelin also will be able to streamline care even more – increasing access and furthering the collaboration between other departments, which ultimately will improve the patient experience.



## OVERSEAS PROGRAM HONORED

A “boot camp” program to provide an intensive hands-on anatomy and surgical training experience for neurosurgeons in southeast Asia has received formal recognition from the government of Myanmar – thanking Henry Ford for our exchange program with residents from Myanmar and for our assistance in contributing to neurosurgical education in that country. The program, developed by Jack Rock, M.D., director of the Henry Ford Neurosurgery residency program and senior staff neurosurgeon, was originally intended to serve a few residents in the City of Yangon, but it has grown to include six nations, 24 international faculty and 45 residents.



## PUBLICATIONS (JULY – DECEMBER 2016)



## CLINICAL TRIALS

**ABTC 1202** – Phase I Study of MK-1775 with Radiation and Temozolomide in Patients with Newly Diagnosed Glioblastoma and Evaluation of Intratumoral Drug Distribution in Patients with Recurrent Glioblastoma

**ABTC 1302** – Drug Distribution and Pharmacodynamics Study of Pulsatile Lapatinib in Surgically Accessible EGFR-Amplified Recurrent High-Grade Glioma

**BMS CA209-498** – A Randomized Phase I Open Label Study of Nivolumab vs Temozolomide Each in Combination with Radiation Therapy in Newly Diagnosed Adult Subjects with Unmethylated MGMT (tumor O-6-methylguanine DNA methyltransferase) Glioblastoma

**BMS CA209-548** – A Randomized Phase 2 Single Blind Study of Temozolomide plus Radiation Therapy Combined with Nivolumab or Placebo in Newly Diagnosed Adult Subjects with MGMT-Methylated (tumor O6-methylguanine DNA methyltransferase) Glioblastoma

**CTSU EAV131** – Molecular Analysis for Therapy Choice (MATCH)

**CTSU N0577** – Phase III Intergroup Study of Radiotherapy versus Temozolomide Alone versus Radiotherapy with Concomitant and Adjuvant Temozolomide for Patients with 1p/19q Codeleted Anaplastic Glioma

**FPA008** – A Phase 1a/1b Study of FPA008 in Combination with Nivolumab in Patients with Selected Advanced Cancers (Five Prime)

**HFHS-C 11-01** – Prospective Study of Stereotactic Radiosurgery Using Diffusion-weighted Abnormality for Recurrent Glioblastoma After Second Line Chemotherapy

**KD019-208** – A Phase 2, Multicenter Study of Tesevatinib Monotherapy in Patients with Recurrent Glioblastoma

**N-HFHS 14-04** – Gliolan 5-ALA: A Multicenter Study of 5-Aminolevulinic Acid (5-ALA) to Enhance Visualization of Malignant Tumor in Patients with Newly Diagnosed or Recurrent Malignant Gliomas: A Safety, Histopathology, and Correlative Biomarker Study

**NRG CC001** – A Randomized Phase III Trial of Memantine and Whole-Brain Radiotherapy with or without Hippocampal Avoidance in Patients with Brain Metastases

**OT-15-001** – A Phase 3, Randomized, Open-label Study to Evaluate the Efficacy and Safety of Eflornithine with Lomustine Compared

to Lomustine Alone in Patients with Anaplastic Astrocytoma That Progress/Recur After Irradiation and Adjuvant Temozolomide Chemotherapy

**RTOG 1119** – Phase II Randomized Study of Whole Brain Radiotherapy in Combination With Concurrent Lapatinib in Patients With Brain Metastasis From HER2-Positive Breast Cancer; a Collaborative Study of RTOG and KROG

**RTOG 3508/AbbVie MI3-813** – A Randomized, Placebo Controlled Phase 2b/3 Study of ABT-414 with Concurrent Chemoradiation and Adjuvant Temozolomide in Subjects with Newly Diagnosed Glioblastoma (GBM) with Epidermal Growth Factor (EGFR) Amplification

**RXDX-101-02 (STARTRK-2)** – An Open-Label, Multicenter, Global Phase 2 Basket Study of Entrectinib for the Treatment of Patients with Locally Advanced or Metastatic Solid Tumors that Harbor NTRK1/2/3, ROS1, or ALK Gene Arrangements

**IRB 4008** – A Prospective, Randomized, Controlled Multicenter Pivotal Clinical Trial of the Artificial Cervical Disc-LP at Two Levels for Symptomatic Cervical Disc Disease

**IRB 7763** – Mechanomyography for Evaluation of Pedicle Screw Placement (Sentio, LLC), Grant# E12101

**IRB 8138** – OPTIMISE STUDY: Occipital Nerve Stimulation (ONS) for Migraine (A4003) (Boston Scientific), Grant# E14045

**IRB 8231** – The Development of a Pre-Operative Predictor Model of Outcomes in Patients Undergoing Lumbar Spine Fusion Surgeries

**IRB 9165** – Three-Dimensional Motion Analysis in Patients' Status Post Anterior Cervical Fusion and Cervical Disc Arthroplasty, a Clinical Study\_MOTION STUDY Supported by the Mentored Clinician Scientist program of HFHS)

**IRB 9413** – Application of LinkView Telemedicine Device in Senior Post-operative Spine Patients

**IRB 10675** – The Effect of Tizanidine on Post-operative Analgesia in Lumbar Decompression

**IRB 10701** – Stereotactic Laser Ablation for Temporal Lobe Epilepsy (SLATE) Study

**FOR MORE INFORMATION ABOUT CURRENT CLINICAL TRIALS, PLEASE CALL (313) 916-1756.**

Alentorn A, Hoang-Xuan K, Mikkelsen T. Presenting signs and symptoms in brain tumors. *Handb Clin Neurol.* 2016;134:19-26. PMID: 26948346.

Ali R, Schwalb JM, Nerenz DR, Antoine HJ, Rubinfeld I. Use of the Modified Frailty Index to predict 30-day morbidity and mortality from spine surgery. *J Neurosurg Spine* 2016 Oct;25(4):537-41. PMID: 27153143.

Broadbent B, Tseng J, Kast R, Noh T, Brusatori M, Kalkanis SN, Auner GW. Shining light on neurosurgery diagnostics using Raman spectroscopy. *J Neurooncol.* 2016 Oct;130(1):1-9. PMID: 27522510.

Broussard JL, Castro AV, Iyer M, Paszkiewicz RL, Bediako IA, Szczepaniak LS, Szczepaniak EW, Bergman RN, Kolka CM. Insulin access to skeletal muscle is impaired during the early stages of diet-induced obesity. *Obesity (Silver Spring).* 2016 Sep;24(9):1922-8. PMID: 27569119.

Burgett ME, Lathia JD, Roth P, Nowacki AS, Galileo DS, Pugacheva E, Huang P, Vasanthi A, Li M, Byzova T, Mikkelsen T, Bao S, Rich JN, Weller M, Gladson CL. Direct contact with perivascular tumor cells enhances integrin av 3 signaling and migration of endothelial cells. *Oncotarget.* 2016 Jul 12;7(28):43852-67. PMID: 27270311.

Hong X, Meng Y, Kalkanis SN. Serum proteins are extracted along with monolayer cells in plasticware and interfere with protein analysis. *J Biol Methods* 2016;3(4). pii: e51. PMID: 27631018.

Jiang W, Finniss S, Cazacu S, Xiang C, Brodie Z, Mikkelsen T, Poisson L, Shackelford DB, Brodie C. Repurposing phenformin for the targeting of glioma stem cells and the treatment of glioblastoma. *Oncotarget.* 2016 Aug 30;7(35):56456-70. PMID: 27486821.

John JK, Robin AM, Pabaney AH, Rammo RA, Schultz LR, Sadry NS, Lee IY. Complications of ventricular entry during craniotomy for brain tumor resection. *J Neurosurg.* 2016 Nov 4; 1-7 [Epub ahead of print]. PMID: 27813467.

Kazimirsky G, Jiang W, Slavin S, Ziv-Av A, Brodie C. Mesenchymal stem cells enhance the oncolytic effect of Newcastle disease virus in glioma cells and glioma stem cells via the secretion of TRAIL. *Stem Cell Res Ther.* 2016 Oct 10;7(1):149. PMID: 27724977.

Knight RA, Nagaraja TN, Li L, Jiang Q, Tundo K, Chopp M, Zhang JF, Seyfried DM. A prospective safety trial of atorvastatin treatment to assess rebleeding after spontaneous intracerebral hemorrhage: A serial MRI investigation. *Austin J Cerebrovasc Dis & Stroke.* 2016 Jul;3(1):1043.

Lee I, Kalkanis S, Hadjipanayis CG. Stereotactic laser interstitial thermal therapy for recurrent high-grade gliomas. *Neurosurgery.* 2016 Dec;79 Suppl 1:S24-S34. PMID: 27861323.

Lewis A, Adams N, Varelas P, Greer D, Caplan A. Organ support after death by neurologic criteria: Results of a survey of US neurologists. *Neurology.* 2016 Aug 23;87(8):827-834. PMID: 27449064.

Lewis A, Varelas P, Greer D. Pregnancy and brain death: Lack of guidance in U.S. hospital policies. *Am J Perinatol.* 2016 Dec;33(14):1382-7. PMID: 27159202.

Lownie SP, Larrazabal R, Kole MK. Circle of Willis collateral during temporary internal carotid artery occlusion I: Observations from digital subtraction angiography. *Can J Neurol Sci.* 2016 Jul;43(4):533-7. PMID: 27030296.

Macki M, Dabaja AA. Literature review of vaccine-related adverse events reported from HPV vaccination in randomized controlled trials. *Basic Clin Androl.* 2016 Nov 21;26:16. eCollection 2016. PMID: 27895921.

Macki M, Syeda S, Kerezoudis P, Bydon A, Witham TF, Sciubba DM, Wolinsky JP, Bydon M, Gokasian Z. rhBMP-2 protects against reoperation for pseudoarthrosis and/or instrumentation failure: A matched case-control study of 448 patients. *J Clin Neurosci.* 2016 Oct;32:99-103. PMID: 27396376.

Nerenz DR. The Affordable Care Act and coverage for exercise rehabilitation services. *J Clin Exercise Physiol.* 2016;5(3):49-52.

Noh T, Chedid MK. A novel technique to repair a transverse sacral fracture in a previously fused lumbosacral spondylolisthesis. *Surg Neurol Int.* 2016 Nov 21;7(Suppl 38):S914-S916. PMID: 28028448.

Pabaney AH, Rammo RA, Tahir RA, Seyfried D. Development of de novo arteriovenous malformation following ischemic stroke: Case report and review of current literature. *World Neurosurg.* 2016 Dec;96:608.e5-608.e12. PMID: 27671884.

Pabaney AH, Reinard KA, Kole MK, Seyfried DM, Malik GM. Management of arteriovenous malformations in the elderly: A single-center case series and analysis of outcomes. *J Neurosurg.* 2016 Jul;125(1):145-51. PMID: 26587653.

Ramaswamy V, Hielscher T, Mack SC, Lassaletta A, Lin T, Pajtlar KW, Jones DT, Luu B, Cavalli FM, Aldape K, Remke M, Mynarek M, Rutkowski S, Gururangan S, McLendon RE, Lipp ES, Dunham C, Hukin J, Eisenstat DD, Fulton D, van Landeghem FK, Santi M, van Veelen ML, Van Meir EG, Osuka S, Fan X, Muraszko KM, Tirapelli DP, Oba-Shinjo SM,

Marie SK, Carlotti CG, Lee JY, Rao AA, Giannini C, Faria CC, Nunes S, Mora J, Hamilton RL, Hauser P, Jabbod N, Petrecca K, Jung S, Massimi L, Zollo M, Cinalli G, Bognár L, Klekner A, Hortobágyi T, Leary S, Ermoian RP, Olson JM, Leonard JR, Gardner C, Grajowska WA, Chambless LB, Cain J, Eberhart CG, Ahsan S, Massimino M, Giangaspero F, Buttarelli FR, Packer RJ, Emery L, Yong WH, Soto H, Liau LM, Everson R, Grossbach A, Shalaby T, Grotzer M, Karajannis MA, Zagzag D, Wheeler H, von Hoff K, Alonso MM, Tuñon T, Schüller U, Zitterbart K, Sterba J, Chuan JA, Guzman M, Elbabaa SK, Colman H, Dhall G, Fisher PG, Fouladi M, Gajjar A, Goldman S, Hwang E, Kool M, Ladha H, Vera-Bolanos E, Wani K, Lieberman F, Mikkelsen T, Omuro AM, Pollack IF, Prados M, Robins HI, Soffiatti R, Wu J, Metellus P, Tabori U, Bartels U, Bouffett E, Hawkins CE, Rutka JT, Dirks P, Pfister SM, Merchant TE, Gilbert MR, Armstrong TS, Korshunov A, Ellison DW, Taylor MD. Therapeutic impact of cytoreductive surgery and irradiation of posterior fossa ependymoma in the molecular era: A retrospective multicohort analysis. *J Clin Oncol.* 2016 Jul 20;34(21):2468-77. PMID: 27269943.

Reinard KA, Cook DM, Zakaria HM, Basheer AM, Chang VW, Abdulhak MM. A cohort study of the morbidity of combined anterior-posterior cervical spinal fusions: Incidence and predictors of postoperative dysphagia. *Eur Spine J.* 2016 Jul;25(7):2068-77. PMID: 26972082.

Reinard KA, Zakaria HM, Qatanani A, Lee IY, Rock JP, Houin HP. Preoperative external tissue expansion for complex cranial reconstructions. *J Neurosurg.* 2016 Oct;125(4):861-8. PMID: 26722853.

Rundell S, Sherman KJ, Heagerty PJ, Mock CN, Dettori NJ, Comstock BA, Avins AL, Nedelkovic SS, Nerenz DR, Jarvik JG. Predictors of persistent disability and back pain in older adults with a new episode of care for back pain. *Pain Med.* 2016 Sep 28. pii: pnw236 [Epub ahead of print]. PMID: 27688311.

Shainer R, Almogi-Hazan O, Berger A, Hinden L, Mueller M, Brodie C, Simillion C, Pidas M, Barnea E, Or R. Preimplantation factor (PIF) provides comprehensive protection against radiation induced pathologies. *Oncotarget.* 2016 Sep 13;7(37):58975-94. PMID: 27449294.

Silva TC, Colaprico A, Olsen C, D'Angelo F, Bontempi G, Ceccarelli M, Noushmehr H. TCGA Workflow: Analyze cancer genomics and epigenomics data using Bioconductor packages. *F1000Res.* 2016 Jun 29 [revised 2016 Dec 28];5:1542. PMID: 28232861.

(Continued)



[henryford.com/neuro](http://henryford.com/neuro)

## PUBLICATIONS *(continued)*

Tahir RA, Asmaro K, Pabaney A, Kole M, Nypaver T, Marin H. Separate origins of the left internal and external carotid arteries from the aortic arch and cervical internal carotid artery aneurysm in a patient with Noonan syndrome: Case report and review of literature. *J Neurointervent Surg.* 2016, July 27 [Epub ahead of print]. PMID: 27466463.

Varelas PN, Lewis A. Modern approach to brain death. *Semin Neurol.* 2016 Dec;36(6):625-30. PMID: 27907967.

Yadav VN, Zamlar D, Baker GJ, Kadiyala P, Erdreich-Epstein A, DeCarvalho AC, Mikkelsen T, Castro MG, Lowenstein PR. CXCR4 increases in-vivo glioma perivascular invasion, and

reduces radiation induced apoptosis: A genetic knockdown study. *Oncotarget* 2016 Dec 13;7(50):83701-19. PMID: 27863376.

Zakaria HM, Basheer A, Boyce-Fappiano D, Elibe E, Schultz L, Lee I, Siddiqui F, Griffith B, Chang V. Application of morphometric analysis to patients with lung cancer metastasis to the spine: A clinical study. *Neurosurg Focus.* 2016 Aug;41(2):E12. PMID: 27476836.

Zhang L, Chopp M, Zhang Y, Xiong Y, Li C, Sadry N, Rhaleb I, Lu M, Zhang ZG. Diabetes mellitus impairs cognitive function in middle-aged rats and neurological recovery in middle-aged rats after stroke. *Stroke.* 2016 Aug;47(8):2112-8. PMID: 27387991.

Zhang Y, Chopp M, Zhang ZG, Katakowski M, Xin H, Qu C, Ali M, Mahmood A, Xiong Y. Systemic administration of cell-free exosomes generated by human bone marrow derived mesenchymal stem cells cultured under 2D and 3D conditions improves functional recovery in rats after traumatic brain injury. *Neurochem Int.* 2016 Aug 15; pii: S0197-0186(16)30251-0 [Epub ahead of print]. PMID: 27539657.

FOR MORE INFORMATION ABOUT HENRY FORD NEUROSCIENCE PUBLICATION PLACEMENTS, GO TO [HENRYFORD.COM/NEURO](http://HENRYFORD.COM/NEURO).

## EVENTS

### *DETROIT STROKE CONFERENCE 2017*

October 6, 2017  
Henry Ford Hospital  
Detroit, MI 48072

The Detroit Stroke Conference will focus on all aspects of stroke management. Experts from Henry Ford and around the country will share advancements in diagnosing, treatment and post-stroke care.

### *ROSENBLUM LECTURE*

October 17, 2017  
The Townsend Hotel  
Birmingham, MI 48009

The second annual Rosenblum lecture features Henry Brem, M.D., Neurosurgery Chair at Johns Hopkins Hospital.



# HENRY FORD SYNAPSE

## Neurosurgery

## NEUROSURGERY NEWS AND NOTES

### *Young Neurosurgeons Research Forum*

The Young Neurosurgeon's Research Forum took place at the American Association of Neurological Surgery (AANS) 2017 annual meeting in Los Angeles on Sunday, April 23. Supported by the Young Neurosurgeons Committee and the AANS Mentoring Program, as well as endorsed by the Senior Neurosurgical Society (SNS), this forum gives medical students, residents and fellows the opportunity to present their research in either clinical or basic science.

The Donald O. Quest Resident Clinical Science Award, awarded to the best clinical research project presented by a resident, was given to Dr. Richard Rammo for his oral presentation titled, "A Study on the Safety of Magnetic Resonance Imaging-Guided Laser Interstitial Thermal Therapy Treatment for Cerebral Radiation Necrosis," regarding his work with principal investigator, Dr. Ian Lee. The research determined the safety of laser ablation in patients who suffered from medically refractory radiation necrosis, a sometimes severe complication of radiation therapy for brain tumors. The research provides preliminary evidence that laser ablation may be a safe treatment for patients with this often devastating disease condition for which non-surgical treatments can be ineffective.

### *Department of Neurosurgery Receives NIH Grant to Study New Stroke Drug*

Building on a history of leadership in the study of novel stroke treatments, Henry Ford Department of Neurosurgery researcher, Tavarekere N. Nagaraja, Ph.D., was awarded a research grant by the National Institutes of

Health to investigate the efficacy of a new drug, Bryostatatin-1, to be used as an adjuvant to tissue plasminogen activator (tPA) therapy for acute ischemic stroke. By working in concert with tPA, researchers will study animal models to determine whether this drug will assist in protecting the brain after a stroke. If effective, this therapy could be especially beneficial for patients who cannot receive tPA within the optimal window of time (less than four and a half hours) after symptom onset.

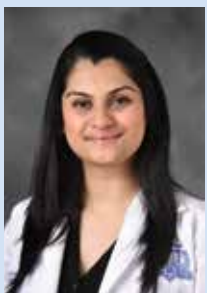
### *Welcoming New Physicians*

We are pleased to announce that we have two new additions to our Henry Ford Health System neurosurgical team – Frank La Marca, M.D., FAANS, and Azam Basheer, M.D. Both will be based at Henry Ford Allegiance Health (HFAH) in Jackson, Michigan.

Dr. La Marca will be the new Medical Director of the Neurosurgery Service and Director of the Center for Complex Spine Surgery at HFAH. He has special interest in the treatment of adult and adolescent spinal deformity, complex cervical spine surgery, reconstructive spine surgery for tumors of the spine, degenerative spinal disease and minimally invasive spine surgery techniques. Dr. Basheer will join Dr. La Marca at HFAH upon completion of his chief residency in June. He has a strong interest in spinal deformity, spine biomechanics and minimally invasive techniques, along with peripheral nerve disorders. Both Drs. La Marca and Basheer will become adjunct faculty in the Henry Ford Department of Neurosurgery, where we look forward to their ongoing academic and teaching contributions.

## RESIDENT RECOGNITION

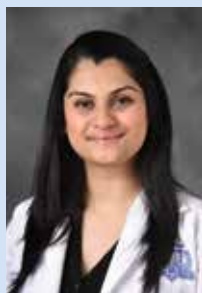
### *Graduating Residents*



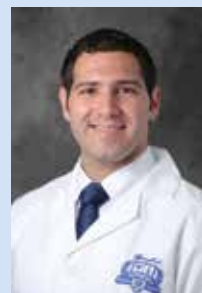
**DR. RUSHNA ALI**



**DR. AZAM BASHEER**



**DR. RUSHNA ALI**  
KAREN STUCK AWARD



**DR. RICHARD RAMMO**  
RESIDENT ACADEMIC  
ACHIEVEMENT AWARD



**DR. THOMAS ZERVOS**  
GARCIA AWARD



**DR. ELLEN AIR**  
SENIOR STAFF  
TEACHING AWARD

### *2017 Awards*

## RESIDENTS' CORNER



*Dr. Rushna Ali, who will soon graduate from the Henry Ford neurosurgical training program, became interested in treatment of disorders of the human brain when a family member suffered a subdural hematoma and fell into a coma - then experienced a complete return to normal function as a result of neurosurgical intervention.*

This experience inspired Dr. Ali to pursue a medical career, and during her undergraduate days at the Aga Khan Medical College in Karachi, Pakistan, she studied with a newly returned neurosurgical trainee from Henry Ford. (*Editor's note: Dr. Syed Enam graduated from the Neurosurgery program in 1998 and served as a department senior staff member for several years.*) He provided a role model of the perfect teacher, surgeon, researcher and mentor, and inspired her to publish and present her research at international venues as an undergraduate. After visiting Henry Ford for a one-month elective, she decided it would be a good fit, applied for and was accepted to the neurosurgical training program.

During her training, Dr. Ali developed an interest in functional neurosurgery, including the treatment of movement disorders and epilepsy. Working closely with Drs. Ellen Air and Jason Schwalb, she produced several academic manuscripts on these topics. Recently, her review of the treatment outcomes of vagus nerve stimulation (VNS) in Dravet disease, a rare genetic epilepsy syndrome, was published in the *Journal of Neurological Sciences* [1]. In this study, Dr. Ali and her colleagues wanted to procure self-reported data from the caregiver's perspective in a cross-sectional survey, and chose to accomplish their task by employing social media for distribution of the questionnaire.

Utilizing an online survey that was posted to a Facebook page hosted by the Dravet Syndrome Foundation, the authors procured the largest sample of caregivers of patients with this disease to date. Although it's not a cure for the disease, VNS was thought by the caregivers who participated in the study to have improved many aspects of the patients' lives, including reduction in seizure

frequency, improvement in seizure severity, reduced hospital admissions, improved cognition, improved emotional interaction and improved ability to participate in schoolwork.

Another manuscript that is currently being readied for publication addresses DBS (deep brain stimulation) for tinnitus, or "ringing in the ears," which can be a disabling condition [2]. Finally, she has led a team in performing a meta-analysis of extratemporal epilepsy resistant to standard oral medications [3], followed by a decision analysis of the same topic [4]. In all, Dr. Ali will graduate with 29 journal publications and three book chapters to her credit. After graduation, she will become a Clinical Fellow in Functional and Epilepsy Surgery at Vanderbilt University.

"At Henry Ford, I learned the value of collaborating with my fellow residents in a writing group, and in that group I learned how to allocate each author's strength to a different aspect of the paper," Dr. Ali says.

### REFERENCES

1. Ali R, Elsayed M, Kaur M, Air E, Mahmood N, Constantinou J, Schwalb J. Use of social media to assess the effectiveness of vagal nerve stimulation in Dravet syndrome: A caregiver's perspective. *J Neurol Sci.* 2017 Apr 15;375:146-9.
2. Rammo R, Ali R, Pabaney A, Schwalb J. A review of DBS targets for tinnitus. *In preparation.* 2017.
3. Ali R, Rammo R, Zakaria HM, Schultz L, Schwalb J. Epilepsy surgery for pharmacoresistant extratemporal epilepsy: A systematic review and meta-analysis. *In preparation.* 2017.
4. Ali R, Rammo R, Zakaria HM, Schultz L, Schwalb J. Epilepsy surgery for pharmacoresistant extratemporal epilepsy: A decision analysis. *In preparation.* 2017.



Synapse – Summer 2017

Editor: Jason Schwalb, M.D.

Newsletter team: Susan MacPhee and Jennifer Day