Department of Neurosurgery
July 1, 2012 - June 30, 2013
Howard Yonas, MD, Chair

Significant Developments

UNM Trauma Neurosurgery/IHS Program

The remote imaging program that was begun six years ago is growing to a multi-faceted telemedicine system. The system, developed through the IHS grant is successfully enabling patient interaction to NS doctors through audio and visual transfers along with radiographic integration and clinical charting. Based on this successful Model, the Department submitted a 12.5 million dollar grant to the Combined Medicare/Medicaid Systems (CMS) Innovation Project that if funded, will support the creation of a statewide tele-neurological emergency service. We anticipate being notified in early 2014 if we will be funded. Within the last week, we were notified through the HSC research department that preliminary review of our application indicated good stores. Because, Dr Martina Stippler, who had assumed much of the responsibility for continuing the initial efforts of Dr. Yonas to establish the system, will be leaving UNM in October to join her husband in Boston, the department has attempted to make up for this loss with hiring two new faculty. These new members of the department will also assume partial responsibilities at the VA and at the SRMC where we are aggressively moving to having a larger presence in those independent funding centers. Dr. Yonas will assume responsibility for maintaining the neurosurgical aspects of the level 1 trauma program at UNM.

UNMH Stroke Program

At the writing of this report UNMH Stroke and Heart Care Centers were only 1 of 6 hospitals awarded GOLD Performance Achievement Award. The UNMH Stroke Program became the first and only Joint Commission (TJC) certified Primary Stroke Care Center in the state of New Mexico in July 2009. In October 2009, a partnership with the Albuquerque Stroke Club was formed to provide stroke victims, their families, and caregivers with an outreach community resource after hospital discharge. The UNMH Stroke Support group originally met once a month but has recently increased the meetings to every first and third Wednesday of each month to meet family and patients' scheduling needs.

The GOLD Performance Achievement Award was received in 2012 and continued to 2013 by the stroke program for successfully achieving two years of 90% or higher adherence to all areas of American Heart Association (AHA) "Get with the Guidelines" (GWTG) program quality indicators. Of the ten core measures for GWTG, the stroke program indicators range from 94.7%-100% compliance for the year. In June 2010, the stroke program successfully passed the Disease Specific Certification Intracycle Review for Joint Commission.

Dr. Branko Huisa joined the department of neurology after a stroke fellowship. Dr. Huisa is interested in directing trials of proposed therapies for stroke care. Dr. Huisa will assume a leadership role in the tele-stroke service. He along with a member of neurosurgery will help develop a cerebrovascular center at UNM.

The cerebrovascular program was strengthened by the addition of Dr Andrew Carlson to the department of Neurosurgery. A year of endovascular fellowship training brings a unique high level of skill and knowledge that is essential for building a modern stroke program that can provide the full gamut of treatments that stroke victims could need. Working with Dr Huisa we see the goal of becoming the only comprehensive stroke program in the state.

Dr. Malkoff and Deidre Kearney, R.N., were appointed as head and secretary, respectively of the New Mexico State Stroke Advisory Board.

Research in the Department of Neurosurgery has increased dramatically in the past year under the stewardship of Edwin Nemoto, Ph.D., who joined the faculty in 2010 as Professor and Director of Research. He is responsible for organizing the departmental research efforts and implementing neuromonitoring in the Neuroscience Intensive Care Unit. Kim Olin RN, BSN, CCRN, CNRN is the neuromonitoring technical director and nurse educator. Neuromonitoring has made data acquisition for research, patient care and understanding disease process in patients in the NSI by the easy collection of pertinent vital signs and brain specific oxygen, blood flow, temperature and brain metabolites by micro dialysis. The process of bringing these variables together can begin with the creation of a database to combine patient chart data with online streaming data acquisitions. An independent research server was installed at UNMH for data collection and storage from all patients in July 2011.

Dr Mark Krasberg joined the department of neurosurgery in 2012 to develop a new approach to analyzing multiple streams of physiological data. Mark is a PhD physicist who is bringing unique skills and perspectives to physiological data analysis.

Spinal Health Program

The Center for Spine Health was developed over the past year with the integration of a team of physiatrists together with our surgical team. Dr. Evan Rivers is a physiatrist with a specialty focus in the care of the spine. He has full appointment with neurosurgery. Sunita Rajput is a second physiatrist with a 50% appointment in neurosurgery and Dr. John's Sloan and Sorg are community physiatrists, who work within our group a half day each. In addition Dr. J. Fred Harrington focuses his efforts to spine surgery. Dr Harrington and Rivers are the primary program support for a new effort in Endoscopic spine surgery funded by a 2.5 million dollar gift from Dr Andrew Yeung. Dr Peter Shin will join the department in January 2014. His specialty interest is minimally invasive spine and he will play an active role in all parts of the spine program with a clinical focus at the SRMC. The Department of Neurosurgery and Orthopedics began discussing potential joint hires to better provide one comprehensive Center for Spine Health. One candidate was interviewed in June of 2013.

Neuro-critical Care

Neurosurgery has taken the leading role in developing the Neuro critical care aspect of the neurosciences program. Our first hire was Dr. Mark Malkoff who has provided leadership in not only the neuroICU but also as a leader of the stroke team and as a member of the neurology support team. Mark has been funded 90% by neurosurgery. We lost one attending, Dr. Chamisa

McIndoe, in critical care and we have hired Dr. Huy Tran to assist in the neuroICU and also with stroke care and tele-medicine coverage. This group will be joined by Dr. Robert Alunday who is training at the University of Washington in St Louis in Neurocritical care following a residency in Emergency Medicine.

Residency Program

The Department applied for and was successful in securing an enfolded accredited Society of Neurosurgeons "Critical Care Fellowship" that began on July 1, 2013. The program director and coordinator also trained and attended workshops on the Next Accreditation System that began July 1, 2013. One of the new requirements is that all neurosurgery resident programs be seven years in length. The department's action plan was approved for our transition to a seven year program by the ACGME and for the last two fiscal years the department has recruited their top ranked candidate in 2012 and their top two ranked candidates in 2013. We continue to provide and expand a more comprehensive training program for our residents.

Significant Plans and Recommendations for the Near Future

The Department plans to open our endoscopic spine program in early 2014 at SRMC. Together with the hiring of Dr. Shin we plan to develop a major new program for UNM utilizing the available, modern amenities at the SRMC. We are exploring the opportunity of developing a spine focused rehab program to complete our Center of Spinal Health. A free standing space is being considered for this program.

Another priority for the department is to make the UNM Cerebrovascular Center a reality with full implementation of the tele stroke program. With the hire of Dr. Andrew Carlson, who completed a skull base surgery fellowship prior to his return to UNM, the department will expand the Skull Base Surgery Program for residents and junior faculty. If the department's application to CMS for a three year, 12.5 million dollar grant is funded UNM Neurosurgery will make a forceful entry into all of the hospitals of the state with provision of a fully funded system to provide remote Neuro emergencies care. This will be part of a systematic examination of how to provide telemedicine emergent care for all clinical services.

Dr. Marchand from the Department of Neurosurgery and Dr. Fisch from the Department of Neurology continue to expand the epilepsy program. The program has grown signficantly. Dr. Marchand is also working with members of the movement disorders physician team in Neurology to help expand that service. Dr. Marchand continues to be the only pediatric neurosurgeon the state allowing for an increase (15%) in referrals for the past year.

Due to the lack of a permanent VA neurosurgeon, the department agreed to lead the recruiting efforts of a team that will have dual appointment between VA and UNM. This allows the department to grow while utilizing additional funding and space centers. Currently, Dr. Suguna Pappu will have a 5/8 assignment at the VA with 3/8 at UNM. We anticipate a second shared position at the VA with the hire of a neurosurgeon, Dr. Jeremy Lewis in July of 2014. Dr. Lewis will help cover UNMH at a split 4/8 assignment.

With the successful expansion of the programs discussed above the department is preparing an application to increase the numbers of residents we train each year. The application will be submitted to the ACGME Resident Review Committee at their early 2014 meeting.

The department anticipates another year of growth in our Research Department with the increased number of grant submissions, as well as in our clinical services with the expansion of the above mentioned programs. It will be imperative that the department is supported in their need to restructure the administrative staff to accommodate the substantial growth of the department. This will include reclassifying and providing growth opportunities to current staff who have been asked to take on additional duties during our continued growth. The department will also have anticipated space issues but are confident they can be overcome.

Staff and Faculty Appointments

Staff and Faculty Appointments				
Start Date	S/F	Last	First	Position
07/01/12	S	Kwilosz	Donna	Clinical Psychologist
08/13/12	S	Brown	Sandra	Nurse/Clinical Research Coordinator
08/13/12	S	Cotton	Isabelle	Administrative Assistant 2
08/17/12	F	Pappu	Suguna	Visiting Assistant Professor
08/20/12	F	Rivers	William Evan	Assistant Professor
08/20/12	S	Wussow	Theresa	Nurse/Clinical Research Coordinator
09/01/12	F	Krasberg	Mark	Visiting Assistant Professor
10/01/12	S	Pena-Philippides	Juan Carlos	Research Specialist/Lab
10/01/12	F	Carlson	Andrew	Assistant Professor
10/08/12	S	Mead	Brittany	Research Coordinator
11/05/12	S	Salandre	Lyra	Research Coordinator
02/18/13	S	Gosselin	Kayla	Research Coordinator
02/25/13	S	Shuttleworth	Mayre "Meg"	Counselor/Social Worker
03/25/13	S	Paden Butler	Kelly Renée	Operations Specialist
06/10/13	S	Hannum	Dane	Youth Summer Program Worker 2
06/24/13	S	Hall	Patricia	Specialty Nurse/RN

Staff and Faculty Separations

Staff and Faculty Separations				
Separation	S/F	Last	First	Position
07/25/12	S	Ryman	Sephira	HS Research Tech 2
08/17/12	S	Benavidez	Vanessa	Youth Summer Program Worker 1
08/17/12	S	Hall	Patricia	Nurse/Clinical Research Coordinator
11/30/12	F	MacIndoe	Chamisa	Assistant Professor
02/17/13	S	Salandre	Lyra	Research Coordinator
03/18/13	S	Karlovitz	Anne	Specialty Nurse
06/30/13	S	Frantz	Joseph	HS Research Tech 2

Publications and Outside Professional Activities of Staff Members

CLINICAL FACULTY

Howard Yonas, Distinguished Professor/Chair

Distinguished Professor in 2012

Publications:

Bammer, Roland, Carlson, Andrew P., **Yonas, Howard**, MD; "Xe-enhanced CT Perfustion Measurements": Wolters Dluwer Health, to be released in Fall of 2012
Carlson AP, Yonas H, Nemoto EM. Response to Letter by Powers Regarding Article "Failure of Hemodynamic Selection in General or of Specific PET Methodology: Carotid Occlusion Surgery Study (COSS)". *Stroke*. 2012 Epub 2012 Mar 1.
Carlson AP, Yonas H. Chapter 27: Xenon/CT. In LeRoux P, Levine J, Kofke WA (Eds.) *Monitoring in Neurocritical Care*. Apr 12, 2013

Conferences and Presentations:

June 6, '12 University of New Mexico Cancer Center, CNTC Retreat – Keynote Speaker, "Nanosolutions for Big Brain Tumors", Albuquerque, NM
October 6, '12 4th International Symposium on Flow Measurement in Cerebrovascular Surgery – "Xenon
CT and focal blood flow (thermal dilution technology), Chicago, IL

Research Activites:

Xenon/CT, quantitative cerebral blood flow measurement: In collaboration with the radiology

research group at University of Pittsburgh Medical Center, under the direction of David Gur, ScD, the 76 pioneering work with this technology began in the late 1970's. Clinical application of this work has continued under my direction in the following areas:
***** Skull base tumors and aneurysms: CBF measurements with balloon test occlusion can guide the decision to proceed to carotid sacrifice.
***** Subarachnoid hemorrhage, fulminant hepatic encephalopathy and head injury: CBF measurements obtained at critical decision points can guide clinical management.
***** Advanced occlusive vascular disease: CBF measurements combined with a vasodilatory challenge can identify patients at high risk for hemodynamic stroke and guide the application of direct cerebral vascular revascularization procedures.
***** Acute stroke: Acute CBF measurements can distinguish patients with compromised but retained and significant perfusion from patients with no perfusion and irreversible ischemia. The latter group not only does not benefit from thrombolysis but are at increased risk to develop enhanced swelling and bleeding with reperfusion therapy.
***** Stroke: The absence of perfusion can be used as a guide for directing management toward the treatment of severe delayed swelling and the removal of a large portion of the infarcted tissue (strokectomy) with the initial signs of impending herniation.
Alternate physiological monitoring approaches for patients with cerebral ischemia.
***** Direct cerebral oximetry equipment is being tested, in the operating room and cerebrovascular intensive care unit, as a means of acquiring continuous information about cerebral ischemia.
***** Direct cerebral oximetry measurements, TCD measurements and XE/CT CBF measurements are
being compared for the purpose of finding the most accurate and cost effective technology available to
assess those patients at risk for stroke.
***** A computer system for acquiring and integrating continuous information from multiple physiological monitors is being developed for use in the operating room and ICU.

Multiple approaches to understanding the origin, growth, rupture and treatment of cerebral
aneurysms:
***** Electron microscopic studies of the histology of ruptured and unruptured aneurysms based on acute tissue samples of aneurysm domes obtained during surgery.
***** Studies of possible genetic predispositions to the formation of cerebral aneurysm are being examined in the patients and families that have a strong family history of cerebral aneurysms.
***** Computer finite element modeling in 2D and 3D is being developed on a Cray computer to analyze the underlying hemodynamic variables that cause the formation and rupture of cerebral aneurysms.
***** Studies using TCD & the Lindegaard Ratio and Xe/CT CBF are being done for the purpose of finding the most accurate and cost effective technology for defining vasospasm in aneurysm patients.

DHHS 10-233-SOL-00053 (Requisition IHS1074992). **"Computer Tomography (CT) Applications**
Utilization and Cost Analysis in Indian Country." $300,000; 01/01/2010 to 12/31/2012. Principal

Investigator. 80
Internal UNM/CTSC. "**Non-Invasive Monitoring of Flow in Cerebral Shunts**" $39,000; 10/1/11 –
9/30/12 Project ID: CTSC024-2

Christopher Taylor, Assistant Professor, Vice Chair
Residency Program Director

6/2010 – 12/2012	M.B.A. University of New Mexico, Anderson School of Management, Albuquerque, New Mexico
4/2012 – current	Volunteer, New Mexico Medical Review Commission Albuquerque, New Mexico

UNM Medical Leadership Academy. UNM Health System. September 25, 2012 – October 1, 2014. Albuquerque, New Mexico

Advanced Stroke Treatment Summit. July 16 – 17, 2012. Santa Monica, California

Grants:

- 2013 – 2018 TBD Primary investigator. Minimally Invasive Surgery plus rt-PA for Intracerebral Hemorrhage Evacuation III (MISTIE III).
- 2008 – current $90,000 Primary investigator. MAPS Trial: Matrix and Platinum Science; A Prospective, Randomized, Multi-center Investigating Matrix and GDC Coils for the Treatment of Intracranial Saccular Aneurysms.

PUBLICATIONS

- Taylor CL: Should All Coverage Policy Decisions Be Nationalized? **AANS Neurosurgeon: Practice Management** Volume 21, Number 1, 2012
- Kaloostian P, Westhout F, Taylor C: Epidemiology of death from aneurysmal subarachnoid hemorrhage in New Mexico. **J NeuroInterventional Surg** Published online first: June 12, 2012. doi:10.1136/neurintsurg-2012-010368
- Kaloostian P, Taylor C: Supratentorial dural-based hemangioblastoma in a Native American patient without Von Hipple Lindau syndrome. **J Surgical Case Reports** 6:11, June 2012

PRESENTATIONS

- Speaker, University of New Mexico Hospital. *Management of Patients with VP Shunts.* Albuquerque, New Mexico, July 11, 2012
- Speaker, Neuroscience Grand Rounds, University of New Mexico. *Update: Intracranial Stenosis and Occlusion.* Albuquerque, New Mexico, September 7, 2012

- Speaker, Suter Science Seminar, Eastern Mennonite University. *A Time Bomb in the Brain: Aneurysms of the Central Nervous System.* Harrisonburg, Virginia, October 13, 2012

Martina Stippler, Associate Professor

PUBLICATIONS

- Nemoto EM, Bragin D, Stippler M, Pappu S, Krynik J, Berlin T, Yonas H. Microvascular shunts in the pathogenesis of high intracranial pressure. Acta Neruochir Suppl. 2013;118:205-
  209
- Stippler M, Ramirez PM, Berti A, MacIndoe C, Villalobos N, Murray-Krezan C. Chronic
- Subdural Hematoma Patients 90 Years And Older. Neurological Research. 2013 Apr;35(3):243-6
- Stippler M, Ortiz V, Adelson PD, Chang YF, Tyler-Kabara EC, Wisniewski SR, Fink EL, Kochanek PM, Brown SD, Bell MJ. Brain tissue oxygen monitoring after severe traumatic
  brain injury in children: relationship to outcome and association with other clinical parameters. J Neurosurg Pediatr. 2012 Nov;10(5):383-91
- Carlson A, Stippler M, Myers OB. Predictive Factors for Vision Recovery after Optic Nerve
  Decompression for Chronic Compressive Neuropathy: Systematic Review and Meta-Analysis.
  J Neurol Surg B. 2013; 74(01): 020-038.
- Mayer A, Ling J, Mojtahed K, Stippler M, Reo R, Yang Z.A FMRI Study of Multimodal Selective Attention Following Mild Traumatic Brain Injury. Brain Imaging Behav. 2012 Jun;6(2):343-54
- Traumatic Brain Injury in Elders. Stippler M, Holguin E, Nemoto E. Annals of Long-Term
  Care. 2012;20(5):41-46.

PRESENTATIONS

- Stippler, M, Current Treatment and Controversies in Traumatic Brain Injury: Concussion. AANS Annual Meeting, New Orleans, 2013.
- Stippler, M, Teleradiolgy Consultation in Neurotrauma. CNS Annual Meeting, Chicago, September 2012.

INVITED LECTURES

- Stippler M. Prognosis if severe Traumatic Brain Injury. University of New Mexico Health
  Palliative Care & Geriatric Interest Rounds, Albuquerque, NM, August 8, 2013

- Stippler M. Prognosis if severe Traumatic Brain Injury. University of New Mexico Health
  Sciences Center Neurosciences Grand Rounds, Albuquerque, NM, March 1, 2013
- Stippler M. Sodium Imbalance in the NSG Patient. University of New Mexico Health Sciences Center, Albuquerque, NM, December 2012.

J. Fred Harrington, Associate Professor

INVITED LECTURES

Featured Speaker, UNM Grand Rounds in Neurology/Neurosurgery "Development of a Comprehensive Spine Center" May 11,2012 (Regional)

Featured Speaker, ANONM Meeting. Anesthetic Considerations Specific to spine Surgery Sept 22, 2012 (Regional)

Presentations at Scientific Meetings

Gogawalla Z, Benzel E, Barker F, Harrington JF et al. Risk factors for subluxation after lumbar decompressive laminectomy. Oral Presentation at the American Association of Neurological Surgeons Meeting. Washington DC April 7, 2012.

Grants

1) Principal Investigator. The role of PEMF energy in modifying cytokine receptor expression after experimental spinal cord injury IVIV Corporation $296,000
Sept 2011 to Sept 2013

2) Principal Investigator. Characterization of the nociceptive response to epidural glutamate infusion and treatment with ionotropic and metabotropic epidural glutamate receptor antagonists. University of New Mexico RAC grant $25,000 July 2012 to July 2013

Mark Malkoff, Professor

Employment History

☐ Professor of Neurosurgery and Neurology,07/2008-Present, University of New Mexico, Albuquerque, NM.
☐ Director of NSI and Stroke Program, 07/2008-Present, University of New Mexico, Albuquerque, NM.

Hospital Appointment, 07/2008-Present, University of New Mexico, Albuquerque, NM.
Director of Neurocritical and Neurovascular Service, 02/2005-06/2008, Barrow Neurological Institute, Phoenix, AZ.

Other Extramural Professional Activities

☐*Society of Critical Care Medicine*, Fundamental Critical Care Support Instructor, 2012
☐*Critical Care Medicine* Ad Hoc Reviewer 2010-1 2013

Invited Lectures
☐ 2012,*Medical Management of Acute Stroke,* University of New Mexico School of Medicine, Neurosciences Grand Rounds
☐ 2012, Neurocritical Care Society*Traumatic Spinal Cord Injury*
☐ 2012,*Subarachnoid Hemorrhage* SUNY Stony Brook SICU lecture
☐ 2012,*Critical Care Issues in Stroke,* University of New Mexico School of Medicine, Neurosciences Grand Rounds
☐ 2012,*Tele-medicine Stroke Program,* The Role of Tele-health in the Management of Rural Neuro-emergencies Conference, Albuquerque, NM
☐ 2012,*Update in Critical Care,* University of New Mexico School of Medicine Clinical Neurosciences Symposium 2012
☐ 2012,*Aggressive Stroke Therapy,* University of New Mexico School of Medicine, Neurosciences Grand Rounds

Original Research or Scholarly Articles in Refereed Journals:
☐ Foroud T; FIA Study Investigators, Whole exome sequencing of intracranial aneurysm. *Stroke*. 2013 Jun;44(6 Suppl 1):S26-8. doi: 10.1161. Review.

Current Grant and Contract Funding:
☐ Ethnic/Racial Variations of Intracerebral Hemorrhage (ERICH)
o Project PI: Daniel Woo, MD, University of Cincinnati
o Site PI: Marc Malkoff, MD
o LOE 10%
o Funding Organization: NIH, University of Cincinnati
o August 1, 2010 – July 31, 2015
o Period 1
☐☐ August 1, 2010– July 31, 2011
☐☐ $105,902 Direct + $50,963 F&A = $156,865 Total

Teaching / Education
2008-Present, University of New Mexico Health Sciences Center Phase II Medical Students and/or Neurology Residents; *Coma, Intracranial Hemorrhage, Internal Medicine and Current Treatment in Stroke, Stroke, Neuronal Cell Death, Nonaneurysmal Intracranial Hemorrhage, Brain Death, Increased Intracranial Pressure, The Evidence Behind UNM Stroke Protocol, Stroke Protocol and System at UNM, Imaging Perfusion, Changes in Stroke Therapy*

<u>Suguna Pappu, Visiting Professor</u>

July 2008–June 2012 University of New Mexico: Resident, Department of Neurosurgery
July 2008–Present University of New Mexico: Visiting Assistant Professor

Current Research Interests
Quantitative analysis of multimodality intracranial monitors in the setting of traumatic brain injury and aneurysmal subarachnoid hemorrhage: Multimodal monitors are placed for all patients at UNMH with severe traumatic brain injury and aneurysmal subarachnoid hemorrhage. We

currently have collected data on over 100 patients. This analytical approach stresses a multivariate strategy to provide clinical interpretation and feedback.
Deformation of ventricular shape for measurement of compliance in hydrocephalus. While cerebrospinal fluid shunt failure may often present with clear radiographic evidence, in many cases the compliance of ventricles may not permit a morphological change. Knowledge of an individual's compliance curve may help in clinical management.
Image based quantification of intracranial pressure: CT images of severe TBI with ICP correlation

Andrew Carlson, Assistant Professor

- 7/1/2012-6/30/2013 University of South Florida: Tampa, FL
  Position: ***Skull Base/Complex Cranial Neurosurgery Fellow***- Department of Neurosurgery

- 7/1/2011- 6/30/2012 University of Illinois at Chicago: Chicago, IL
  Position: ***Endovascular Neurosurgery Fellow***- Department of Neurosurgery
    - Completed fellowship program in endovascular neurosurgery.

Specific Training/ Certification

- Pipeline embolization device didactic training. August 28, 2013. Albuquerque, NM

Educational activities/ conferences

- International Stroke Conference 2013. February 6-8, 2013. Honolulu, HI.
- 3rd International Endovascular Stroke Conference: joint SNIS/ CV section meeting. February 4-5, 2013. Honolulu, HI.
- Congress of Neurosurgeons 2012 Annual Meeting. October 6-10, 2012. Chicago, IL.
- Society of Neurointerventional Surgery 9th Annual Meeting and 3rd Fellows Course. July 23-27, 2012. San Diego, CA.

Bibliography:

Peer-Reviewed Articles

- Chohan MO, **Carlson AP**, Hart B, Yonas H. Lack of Functional Patency of Lamina Terminalis after Fenestration following Clipping of Anterior Circulation Aneurysms. *J Neurosurg*. In Press (accepted 3/19/13)
- Van Gompel JJ, Tabor MH, Youssef AS, Lau T, **Carlson AP**, Van Loveren HR, Agazzi S. Field of View Comparison Between 2D and 3D Endoscopy. *Laryngoscope*. Epub May 1, 2013.
- **Carlson AP**, Alaraj A, Amin-Hanjani S, Charbel FT, Aletich VA. Continued Concern of Parent Vessel Steno-occlusive Progression with Onyx HD-500 and the Utility of

Quantitative MRI in Serial Assesment. *Neurosurgery*. 2013 Mar;72(3):341-52. Epub Nov 30, 2012.

- **Carlson AP,** Stippler M, Myers, O. Predictive factors for vision recovery after optic nerve decompression for chronic compressive neuropathy: systematic review and meta-analysis. *J Neurol Surg B: Skull Base*. Nov 26, 2012.
- **Carlson AP,** Alaraj A, Dashti R, Aletich VA. The bihemispheric posterior inferior cerebellar artery: anatomic variations and clinical relevance in 11 cases. *J Neurointerv Sur* Epub Nov 20, 2012.
- **Carlson AP**, Alaraj A, Amin-Hanjani S, Charbel FT, Aletich V. Endovascular approach and technique for treatment of transverse-sigmoid dural arteriovenous fistula with cortical reflux: the importance of venous sinus sacrifice. *J Neurointerv Surg* Epub Oct 10, 2012
- Alaraj A, Pytynia K, **Carlson AP**, Krishna PH, Charbel FT, Amin-Hanjani S, Aletich V. Combined preoperative onyx embolization and internal carotid artery covered stent placement for treatment of glomus vagale tumor: review of literature and illustrative case. *Neurol Res.* 2012 Epub 2012 May 30.
- **Carlson AP**, Yonas H, Nemoto EM. Response to Letter by Powers Regarding Article "Failure of Hemodynamic Selection in General or of Specific PET Methodology: Carotid Occlusion Surgery Study (COSS)". *Stroke*. 2012 Epub 2012 Mar 1.

Non Peer-Reviewed Publications

- **Carlson AP**, Yonas H. Chapter 27: Xenon/CT. In LeRoux P, Levine J, Kofke WA (Eds.) *Monitoring in Neurocritical Care*. Apr 12, 2013
- **Carlson AP**, Shuttleworth CW. Decreased cortical spreading depolarizations in neurosurgical patients being given ketamine. *Future Neurology*. 2013 Jan;8(1):17-20

Presentations, Posters, Abstracts

- **Carlson AP.** Endovascular therapy for acute ischemic stroke: state of the art and state of the science. Combined Neurology/Neurosurgery Grand Rounds- University of New Mexico. August 23, 2013. Albuquerque, NM.
- **Carlson AP.** Cortical Spreading Depolarization: The Most Important Concept in Brain Injury You've Never Heard of. Combined Neurology/ Neurosurgery Grand Rounds University of South Florida. June 7, 2013. Tampa, FL.

Editing/ Reviewed Publications

- Invited Reviewer for *Journal of Neurology, Neurosurgery, Psychiatry*. 2013

<u>Huy Tran, Assistant Professor</u>
Neurocritical Care Cedars Sinai Medical Center, 2011-2013 Fellowship

ABSTRACTS
Huy Q. Tran, Asma M. Moheet, David Palestrant, Wengui Yu. *Cox-2 Inhibitor Celecoxib for refractory fever is SAH,* Abstract#251 Neurocritical Care Society Meeting October 2013

William (Evan) Rivers

Special Training

Endoscopic Spine Surgery Mentorship, Desert Institute for Spine Care, Phoenix, AZ	2013-Present
Endoscopic Transforaminal Spine Surgery Workshop, Desert Institute for Spine Care, Phoenix, AZ	2012
Balloon Kyphoplasty Workshop, Kyphon, Chicago, IL	2012
Spinal Cord Stimulation Pain Fellows Workshop, Boston Scientific, San Antonio, TX	2012

LECTURES

University of New Mexico – Neurosciences Grand Rounds	2013
Characterizing Spine Pain	
University of New Mexico – Neurosurgery Residency Lecture	2013
Sacroiliac Joint Pain	
University of New Mexico – Neurosurgery Residency Lecture	2012
Comprehensive Pain Management and Functional Restoration	
Carolinas Rehabilitation – Grand Rounds	2012
Comprehensive Pain Management and Functional Restoration	
University of North Carolina – Grand Rounds	2012
Comprehensive Pain Management and Functional Restoration	
Rehabilitation Institute of Chicago – Grand Rounds	
Myofascial Pain Syndrome: Recent Advances	2012

GRANTS

Midwest Pain Society	10/2011-10/2012
Robert G. Addison, MD and E. Richard Blonsky, MD Research Grant - $3000	
Title: Revisiting Signs and Symptoms of Myofascial Pain: An International Survey of Pain Management Providers	
Role: Initiated study, Designed Survey, Wrote Grant Proposal, Submitted IRB, Distributed surveys	
PI: R. Norman Harden, MD	

ABSTRACTS AND PRESENTATIONS

POSTERS

National

Garrigues D, Harden RN, **Rivers WE,** Graciosa J, Kuroda M. Signs and Symptoms of Myofascial Pain Syndrome: An International Survey of Pain Management Providers, Comparing Results from the 1999 and 2012 Surveys. APS Scientific Meeting poster session. New Orleans, LA.	April 2013
Rivers WE, Zollman FZ. Agreement within and between physician acupuncturists at 12 acupuncture point locations. AAPMR Annual Assembly poster session. Orlando, FL.	November 2011

Regional/Local

Rivers WE, Harden RN, Garrigues D, Kuroda M. Revisiting Signs and Symptoms of Myofascial Pain: An International Survey of Pain Management Providers: Preliminary Report. Midwest Pain Society poster session. Chicago, IL.	October 2012

PUBLICATIONS

Journal Articles

1. **Rivers WE**, Zollman F. Reliability of surface acupuncture point location. *Med Acupunct.*2013; 25(2): 134-140

Book Chapters

1. **Rivers WE,** Benzon HT. Piriformis syndrome. In: Hayek S, Smith H, et al, eds. *Interdisciplinary Pain Medicine: A Case Approach.* Oxford University Press. Manuscript accepted.
2. Stanos SP, **Rivers WE.** Rehabilitation of Pain. In: Aminoff and Daroff, eds. *Encyclopedia of the Neurological Sciences* (2nd ed). Philadelphia: Elsevier [Academic Press]. 2014.
3. **Rivers WE**, Benzon HT, Khan F, Asenjo JF. Myofascial Injections: Trigger point, Piriformis, Iliopsoas, and Scalene Injections. In: Benzon HT, Raj PP, et al, eds. *Practical Management of Pain* (5th ed.). Philadelphia: Elsevier-Churchill Livingstone. 2013.

ONGOING RESEARCH ACTIVITY

Revisiting Signs and Symptoms of Myofascial Pain: An International Survey of Pain Management Providers PI: R. Norman Harden, M.D.	2011-Present

RESEARCH FACULTY

<u>Rex Jung, Ph.D.</u>

3/04 – Current	Assistant Research Professor, *Department of Neurology*, University of New Mexico Health Sciences Center, Albuquerque, NM

Grants Received

2009 – 2012 1P20 RR021938-01A2, NIH-NIMH: *Fronto-subcortical Disconnection Underlying Neurocognitive Dysfunction in Schizophrenia* (Jung: PI) $921,000

2012 The Johnson O'Connor Research Foundation: *Neuroscience of Aptitude* (Jung: PI) $98,000

2012 – 2015 The John Templeton Foundation: *The Neuroscience of Scientific Creativity* (Jung: PI) $1,014,000

2013 – 2015 The Johnson O'Connor Research Foundation: *A Twin Study of Aptitude* (Jung: PI) $75,000

Committee, Leadership, and Advisory Group Membership

2012 Search Committee Member for Psychiatry Chair, University of New Mexico Health Sciences Center, Albuquerque, NM

Supervisory and Advisory Roles

Dissertation Committee: Rebecca England, Ph.D. Psychology, University of New Mexico

Mathew Euler, Ph.D. Psychology, University of New Mexico

April Brown, Ph.D. Psychology, University of New Mexico

Research Advisor:	Tiffany Love, Ph.D.	University of Michigan
	Shirley Smith	University of New Mexico
	Rosalind Arden, Ph.D.	King's College, London
	Robert Chavez	Dartmouth College
	Rachel Grazioplene	University of Minnesota
	Sephira Ryman	University of New Mexico
	Andrei Vakhtin	University of New Mexico
Clinical Advisor	Brandon Kopald	University of Wisconsin-Madison

Peer Reviewed Publications

2012

1. **Jung RE**, Chaves RS, Flores RA, Qualls C, Sibbitt WJ, Roldan CA (2012). White Matter Correlates of Neuropsychological Dysfunction in Systemic Lupus Erythematosus. *PLoS ONE*, 7(1):e28373
2. Lou L, Xu L, **Jung RE**, Pearlson G, Adali T, Calhoun V. (2012). Constrained Source Based Morphometry Identifies Structural Networks Associated with Default Mode Network, *Brain Connectivity*, 2(1):33-43.
3. Segall J, Allen EA, **Jung RE**, Erhardt E, Arja S, Kiehl KA, and Calhoun VD, (2012). Correspondence between Structure and Function in the Human Brain at Rest, *Frontiers in Neuroinformatics*, 6(10):1-17.
4. Mayer AR, Teshiba TM, Franco AR, Shane M, Mannell MV, Stephen JM & **Jung RE** (2012). Modeling conflict and error in the medial frontal cortex, *Human Brain Mapping*, 33(12):2843-55.

2013

5. **Jung RE** & Haier RJ (2013). "Creativity and Intelligence: Brain networks that link and differentiate the expression of genius." In O. Vartanian, A.S. Bristol, & J.C. Kaufman (Eds). The Neuroscience of Creativity. Cambridge University Press.
6. **Jung RE** & Ryman SG (2013) "Imaging Creativity." In K.H. Kim, J.C. Kaufman, & J. Baer (Eds.), Creatively Gifted Students Are Not Like Other Gifted Students: Research, Theory, and Practice. Cambridge University Press.
7. V Kulkarni, JS Pudipeddi, L Akoglu, JT Vogelstein, RJ Vogelstein, S Ryman, & **RE Jung** (2013). Sex Differences in the Human Connectome. In Imamura et al., (Eds.): Brain and Health Informatics 2013, Lecture Notes in Artificial Intelligence 8211, pp. 82-91

8. **Jung RE**, Mead BS, Carrasco J, Flores RA. (2013). The Structure of Creative Cognition in the Human Brain. *Frontiers in Human Neuroscience*, 7: doi: 10.3389/fnhum.2013.00330
9. Roldan C, Sibbitt Jr. WL, Qualls C, **Jung RE**, Greene ER, Gasparovic CM, Hayek R, Charlton GA, & Crookston K. (In Press). Libman-Sacks Endocarditis and Embolic Cerebrovascular Disease. *Cardiovascular Imaging*,
10. Vakhtin AA, Calhoun VC, **Jung RE**, Ford CC. (In Press). Changes in Intrinsic Functional Brain Networks Following Blast-Induced Mild Traumatic Brain Injury. *Brain Injury*,
11. Stephen JM, Coffman BA, **Jung RE,** Bustillo JR, Aine CJ, Calhoun VD (In Press). Using joint ICA to link MEG and DTI data applied to schizophrenia. *NeuroImage,*

In Submission

12. Silva LM, Ryman SG, Frantz JA, Carrasco J, & **Jung RE** (In Submission). Lower Thalamic Volumes Predict Creative Achievement in a Healthy Young Cohort. *NeuroImage*,
13. Roldan, CA, Schevchuck A, Macias L, Tolstrup K, Roldan PC, Greene ER, **Jung RE**, Qualls CR, Hayek R, & Sibbitt Jr. WL. (In Submission). Lambl's Excrescences: Embolic Risk and Pathogenesis. *Cardiovascular Imaging*,
14. Bertelli M, Salvador-Carulla L, Scuticchio D, Varrucciu N, Martinez-Leal R, **Jung R**, et al., (In Submission). Intelligence and Specific Cognitive Functions in Intellectual Developmental Disorders: Revision of Implications for the New Diagnostic Criteria and Assessment.
15. Vakhtin AA, Carrasco J, Flores RA, Frantz JA, Ryman SG, & **Jung RE**. (In Submission). Resting State Intrinsic Functional Brain Network Correlates of Creative Achievement.
16. Grazioplene RG, Ryman S, Gray JR, Rustichini A, **Jung RE**, & DeYoung CG. (In Preparation). Subcortical Intelligence: Caudate Volume Predicts IQ in Healthy Adults.

Invited External Lectures

1. Jung RE, (2013). *Keynote Address*: "The importance of personality variables in the manifestation of creativity: neuroimaging findings", 1st World Conference on Personality. March 19-23, 2013, Stellenbosch, South Africa.
2. Jung RE, "The structure of creative cognition within an evolutionary framework" Association for Psychological Science Annual Meeting, May 23rd – 26th, Washington, D.C.
3. Jung RE, "Brain networks of Genius = Intelligence + Creativity" Symposium: Neuroscience of Creativity and Intelligence (Darya Zabelina – Organizer). American Psychological Association Annual Meeting. July 27th – 31st, 2013. Honolulu, Hawaii.

Podcasts

1. New Mexico People, Places, and Ideas, KUNM, "Creativity and the Brain: Making the Connection"; March 9, 2012, http://kunm.org/post/creativity-and-brain-making-connection
2. On Being with Krista Tippett, American Public Media, "Creativity and the Everyday Brain"; March 22, 2012, http://being.publicradio.org/programs/2012/creativity-and-the-everyday-brain/
3. To The Best of Our Knowledge, "The Neuroscience of Creativity"; November 25, 2012, http://ttbook.org/book/rex-jung-neuroscience-creativity

Blogs

1. The Daily Beast; Andrew Sullivan, "Rap Your Head Around This" 11/20/12, http://andrewsullivan.thedailybeast.com/2012/11/how-the-brain-creates.html
2. Psychology Today; John Allen, "Creativity, the Brain, and Evolution" 04/29/10, http://www.psychologytoday.com/blog/lives-the-brain/201004/creativity-the-brain-and-evolution
3. Scientific American Mind, Scott Barry Kaufman, "The Real Neuroscience of Creativity" 08/19/13 http://blogs.scientificamerican.com/beautiful-minds/
   Huffington Post, Scott Barry Kaufman, "The Real Neuroscience of Creativity" 09/05/13 http://www.huffingtonpost.com/scott-barry-kaufman/the-real-neuroscience-of_b_3870582.html

Tamara Roitbak, Ph.D.

Research Projects and Activities:

Project #1: In vivo inhibition of specific vascular microRNAs as a strategy for stroke treatment.

Project #2: The role of neurogenesis and microRNAs in the TBI/PTSD comorbidity.

Project#3: Effect of SDF-1 (stromal cell-derived factor-1) on the development of chronic subdural hematoma.

Project #4: IVIVI project: Effect of pulsed electromagnetic field (PEMF) on recovery from stroke, neurogenesis and neuroinflammation

Funded:

NIH R01 application:
"In vivo Inhibition of Specific microRNAs to Support Post-Stroke Revascularization". Role: PI
Applied on Feb 5, 2013
Funding period 09/01/2013 – 08/31/2018

Funded and completed

UNM CTSC Pilot project award 09/01/2012-08/31/2013
PI: Roitbak
The Role of SDF-1/CXCR4 Axis in Progression of Chronic Subdural Hematoma

Completed on 02/28/2013:
UNM Clinical and Translational Science Center
BBI/CoBRE Integrative Program in CNS Pathophysiology Res. Award
PI: Roitbak
Inhibition of MicroRNA miR-155 to Support Recovery after Stroke

Pending:

NIH R21 grant application:
"Role of microRNAs and Neurogenesis in TBI and PTSD Comorbidity". Role: PI
Applied on June 5, 2013
Funding period: 03/01/2014-02/28/2015
NIH evaluation pending

Denis Bragin, Ph.D.

Publications

Original Research Articles:

1. **Bragin DE**, Bush RC, Nemoto EM. Effect of cerebral perfusion pressure on cerebral cortical microvascular shunting at high intracranial pressure in rats. ***Stroke***. 2013 Jan; 44(1):177-81.
2. **Denis E. Bragin**, Gloria L. Statom, Sean Hagberg and Edwin M. Nemoto. Pulsed Electromagnetic Field (PEMF) Increases Microvascular Perfusion and Tissue Oxygenation in the Healthy Rat Brain. ***J Neurosurgery***. Submitted October 3, 2013. Under review.

Proceedings and other writings:

1. Edwin M. Nemoto, **Denis Bragin**, Martina Stippler, Suguna Pappu, Jessica Kraynik, Tracey Berlin, Howard Yonas. Microvascular shunts in the pathogenesis of high intracranial pressure. ***Brain Edema XV***. Acta Neurochirurgica Supplement, 118. Wien: Springer-Verlag, 2013, 205-209.
2. **Denis E. Bragin**, Gloria Statom and Edwin M. Nemoto. Assessment of Impaired Cerebrovascular Autoregulation at High Intracranial Pressure by Dynamic Cerebrovascular Reactivity (CVRx) and Intracranial Pressure Reactivity (PRx). ***International Circulation.*** February 2013. 113. 13

Abstracts:

1. **Denis E. Bragin**, Susan Thompson, Gloria L. Statom, Marina V. Kameneva, Edwin M. Nemoto. Drag-reducing polymer improves microvascular flow and tissue oxygenation in the normal and traumatized rat brain. ***Journal of Neurotrauma***. 2013. 30: A-133-134.
2. Edwin M. Nemoto, **Denis E. Bragin**, Gloria L. Statom, Suguna Pappu, Bobby Sena, Tracey Berlin, Kim Olin, Mark Krasberg, Howard Yonas. Role of microvascular shunting in CBF and ICP dysautoregulation. ***Journal of Neurotrauma***. 2013. 30: A-125-126.
3. **Denis E. Bragin**, Gloria Statom and Edwin M. Nemoto. Cerebrovascular Reactivity (CVRx) and Intracranial Pressure Reactivity (PRx) Assessment of Impaired Cerebrovascular Autoregulation in Intracranial Hypertension. ***Stroke.*** 2013; 44: A42.
4. **Denis E. Bragin**, Gloria Statom and Edwin M. Nemoto. Pulsed Electromagnetic Field (PEMF) Increases Microvascular Flow And Tissue Oxygenation In the Normal Rat Brain. ***Stroke***. 2013; 44: ATP 262.
5. **Denis E. Bragin**, Gloria Statom and Edwin M. Nemoto. Microvascular Shunt Flow after Traumatic Brain Injury (TBI) with Intracranial Hypertension in Rats. ***Journal of Neurotrauma***. 2012. 29: A-22.
6. **Denis E. Bragin**, Gloria Statom and Edwin M. Nemoto. Dynamic Intracranial Pressure (PRx) and Cerebrovascular (CVRx) Reactivity Reflect Impaired Cerebrovascular Autoregulation at High Intracranial Pressure (ICP). ***Journal of Neurotrauma***. 2012. 29: A-118.

Presentations/Lectures:

Denis E. Bragin, Gloria Statom and Edwin M. Nemoto. Cerebrovascular Reactivity (CVRx) and Intracranial Pressure Reactivity (PRx) Assessment of Impaired Cerebrovascular Autoregulation in Intracranial Hypertension ***International Stroke Conference***, Honolulu, Hawaii, USA, February 6-8, 2013. **Oral.**

Denis E. Bragin, Gloria Statom and Edwin M. Nemoto. Pulsed Electromagnetic Field (PEMF) Increases Microvascular Flow And Tissue Oxygenation In the Normal Rat Brain ***International Stroke Conference***, Honolulu, Hawaii, USA, February 6-8, 2013. **Poster.**