

**CURRICULUM VITAE
OREGON HEALTH & SCIENCE UNIVERSITY**

NAME **Nathan R. Selden, MD, PhD, FACS, FAAP**

DATE **December 12, 2014**

I. PRESENT POSITION AND ADDRESS

Academic Rank: **Campagna Chair of Pediatric Neurosurgery (Tenured)**
Department/Division: **Neurological Surgery/Pediatric Neurosurgery**
Professional Address: **CH8N, 3303 SW Bond Avenue, Portland, Oregon, 97239**
E-Mail Address: **seldenn@ohsu.edu**

II. EDUCATION

Undergraduate and Graduate:

1993 Doctor of Medicine, Cum Laude, Harvard Medical School

- John E. Thayer Scholarship, Harvard University, 1993. Presented annually to one graduate of Harvard Medical School for academic excellence.
- Aesculapian Honors Society, Harvard Medical School, 1993.

1990 Doctor of Philosophy, Departments of Experimental Psychology and Anatomy, University of Cambridge

- Marshall Scholar, United Kingdom, 1986 to 1989.
- President, Jesus College Middle Combination Room (Graduate Society), University of Cambridge, 1987-88.
- Tutor, Natural Sciences (Biology B), Queen's College, University of Cambridge, 1987-1989.

1986 Bachelor of Arts, With Distinction, Human Biology, Stanford University

- Dinkelspiel Award, the Stanford University Commencement Prize, 1986.
- Dean's Award for Service, Stanford University, 1986.
- E.C. Converse Honors Scholarship, Stanford University, 1985–86.
- Phi Beta Kappa, Stanford University, 1985.
- Legislative Intern for U.S. Senator Max Baucus, Washington, D.C., 1981. Wrote "An Intern's Views of the Hill," *The Washington Post*, June 7, 1981.

Postgraduate (Include Year, Degree, and Institution):

1999-2000 Fellow, Pediatric Neurological Surgery, Children's Memorial Hospital,
Northwestern University Medical School, July to March.

1998-1999 Chief Resident, Neurological Surgery
University of Michigan Medical Center

- Award of the American Academy of Neurological Surgery, 1998.
- Resident Award, Galens Medical Society, University of Michigan Medical School, for dedication to medical student teaching, 1999.

1993-1998 Intern and Resident, Neurological Surgery
University of Michigan Medical Center

1997-1998 Postdoctoral Fellow, Neuroanatomy, Department of Neurology,
Northwestern University Medical School, July to March.

Certification (Include Board, Number, Date, and Recertification):

American Board of Neurological Surgery #24032 (Participating MOC)	2004
American Board of Pediatric Neurological Surgery	2011
Controlled Substance Certificate, Drug Enforcement Administration	1999
Basic Life Support/Advanced Cardiac Life Support Certification	1997
Diplomat of the American Board of Medical Examiners	1994

Licenses (Include State, Date, Status, Number, and Renewal Date):

Oregon	2000	Active	MD22319	Renewal date: 12/31/2016
Illinois	1999	Inactive	036-099800	Renewal date: NA
Michigan	1998	Inactive	430-106-1835	Renewal date: NA

III. PROFESSIONAL EXPERIENCE**Academic (Include Year, Position, and Institution):**

Mario and Edith Campagna Chair of Pediatric Neurosurgery, July 2012 to present.

Mario and Edith Campagna Professor of Pediatric Neurosurgery, July 2009 to present.

Mario and Edith Campagna Associate Professor of Pediatric Neurosurgery, October 2005 to June 2009.

Vice-Chairman for Education, Department of Neurological Surgery, Oregon Health & Science University, September, 2003 to present.

Professor, Department of Pediatrics, Oregon Health & Science University.

Professor, Department of Behavioral Neuroscience, Oregon Health & Science University.

Administrative (Include Year, Position, and Institution):

Program Director, Neurological Surgery Residency, Oregon Health & Science University, February 2005 to present.

- ACGME Parker J. Palmer Courage to Teach Award, 2013.
- ACGME site visit, 5 year full accreditation with commendation, complement increase from 14 to 18 residents, 'notable practice' designation, 2012.
- ACGME site visit, 5 year full accreditation, 2005.

Head, Division of Pediatric Neurological Surgery, Department of Neurological Surgery, Oregon Health & Science University, August, 2000, to present.

Director, Pediatric Neurological Surgery, Doernbecher Children's Hospital, July, 2002 to present.

- Member, *Gold Humanism Honor Society*, The Arnold P. Gold Foundation, 2013 to present.
- Best Oregon Doctors. *Portland Monthly* Magazine, December 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2014.
- Best Doctors in America, 2005-2006, 2007-2008, 2008-2009, 2009-2010, 2010-2011, 2011-12, 2012-2013, 2013-2014, 2014-2015 at www.bestdoctors.com.
- Guide to America's Top Surgeons, Consumers' Research Council of America, 2008, 2009, 2010, 2011, 2012, 2013 at www.consumersresearchcncl.org.
- America's Top Doctors, Castle Connolly Medical, Ltd., 2008, 2009, 2010, 2011, 2012, 2013, 2014 (13th edition), at www.castleconnolly.com (listed nationally and in Portland Monthly best doctors edition).
- U.S. News & World Report Top Doctors, 2011, 2012, 2013, 2014.
- 40 Rose Award Medal, Oregon Health & Science University, May 2006.
- 'Exceptional Mentor' designation, School of Medicine Class of 2014.

Director, Pediatric Neurotrauma, Oregon Health & Science University, June 2000 to July 2002; October 2004 to November 2008; and January 2012 to present.

Co-founder and co-director, Comprehensive Pediatric Brain Tumor Clinic, Doernbecher Children's Hospital, September, 2000, to July, 2007.

Director, Resident Education, Neurological Surgery Residency, Oregon Health & Science University, September, 2002, to September, 2003.

Other (Include Year, Position, and Institution):

Attending Surgeon, Doernbecher Children's and OHSU Hospitals, May, 2000, to present.

Attending Surgeon, Veteran's Affairs Medical Center, Portland, Oregon, June, 2000, to September, 2007.

Consultant Surgeon, Shriners Hospital for Children, Portland, Oregon, September, 2002, to present.

Associate Consultant Surgeon, Shriners Hospital for Children, Portland, Oregon, June, 2000, to August, 2002.

Courtesy Staff Surgeon, Department of Neurological Surgery, St. Vincent's Medical Center, Portland, Oregon, October, 2000, to present.

Associate Attending Surgeon, Children's Memorial Hospital, Chicago, Ill., July, 1999, to March, 2000.

Participant, OHSU Physician Leadership Academy, The Advisory Board Company, June to October, 2006.

Accreditation Council for Continuing Medical Education (ACCME) Training Course, Chicago, Ill., December, 2006.

IV. SCHOLARSHIP

Area(s) of Research/Scholarly Interest:

1. *Medical evidence in Pediatric Neurological Surgery.* I have tested diagnostic criteria and surgical indications for spinal dysraphism, including tethered cord syndrome and Chiari malformation, by both compiling and evaluating original medical evidence. This work has included patho-anatomical study of surgical specimens and systematic review of the surgical literature on spinal cord tethering due to thickened filum terminale. I have also served twice as one of 12 to 15 academic clinical experts on a national task force that authored guidelines for the medical management of severe traumatic brain injury in infants, children and adolescents.
2. *Cellular therapy for neurodegenerative disease in children.* I served as the Surgeon and Co-Principal Investigator for the first trial of neuronal stem cell therapy in humans, which is also the first clinical trial of a purified stem cell population of any kind in the central nervous system. This Phase I trial was undertaken to treat neuronal ceroid lipofuscinosis (types 1 and 2), commonly known as Batten Disease, a uniformly fatal inherited metabolic condition. We

- successfully surgically implanted neuronal stem cells in all six study patients. Trial rationale and design parameters, and clinical results have been published. Long term follow-up results are being analyzed.
3. *Novel educational methods in neurological surgery.* See Educator's portfolio. This represents novel intellectual contributions, online educational products, and curricular development associated with the ACGME, including extensive reports within the peer-reviewed literature, as well as service within OHSU and nationally in leadership, committee and collaborative roles.
 4. *Nociceptive modulatory circuitry in the amygdala and rostral ventromedial medulla (RVM).* I have utilized both lightly anesthetized and awake behaving rat models of nociception to evaluate the pharmacological anatomy of pain modulatory pathways in the limbic system and brainstem. In one project our laboratory has identified pharmacological subtypes of RVM neurons that are pro- or anti-nociceptive, or neutral. Each functional neuronal subtype is characterized by the presence of contrasting purinergic receptor subtypes, identified using physiological or immunohistochemical techniques. In another project, we have identified a novel adrenergic input to the nociceptive amygdala that mediates the effects of environmental stress on analgesia.

Grants and Contracts:

Federal/National (Include Title, Source, PI, Amount Period, and % Effort)

Feed and Swaddle (natural sedation for infant brain imaging), Co-I (PI Dr. Anna Kuang), Doernbecher Impact Award, 2014, \$10,000.

Fundamental skills and knowledge training for neurological surgery PGY1 residents, National Courses Director – Nathan Selden, \$1,890,000 (2011-15), grant from Stryker education to the Society of Neurological Surgeons and Congress of Neurological Surgeons (plus extensive in kind donations from Stryker and multiple other sponsors).

Outcomes in patients undergoing surgical intervention for Chiari type I malformation and syringomyelia, Syringomyelia and Chiari Alliance Project, site PI for OHSU (National PI Bermans Iskandar, Univ. of Wisconsin).

Park-Reeves Outcomes Registry in Chiari I malformation, Washington University St. Louis Chiari Outcomes Project, site PI for OHSU (National PI Tae Sung Park, Washington University St. Louis).

DIPG Biology and Treatment Study – Site co-PI. \$7000 per patient enrollment. January 2011 to present.

Phase Ib testing of purified neural stem cells in patients with infantile neuronal ceroid lipofuscinosis (Batten disease), PI – Nathan Selden, Approx \$100,000 (Neurosurgery) plus 5% FTE, Stem Cells, Incorporated, Palo Alto, CA, November 2010 to November 2012. Discontinued June 2011 due to narrow eligibility window and non-accrual.

Phase I testing of purified neural stem cells in patients with infantile neuronal ceroid lipofuscinosis (Batten disease), Co-PI – Nathan Selden, \$80,000 (Neurosurgery), Stem Cells, Incorporated, Palo Alto, CA, March 1, 2006 to January 31, 2009.

Long term follow-up of patients transplanted with purified neural stem cells, Co-I, Nathan Selden, January 2008 to present, 5% FTE.

Purinergic control of medullary pain modulation. NIH KO8 Career Development Award (5 years), PI – Nathan Selden, \$726,000 direct costs, October 1, 2002 to September 30, 2007.

Purinergic control of medullary pain modulation. Child Health Research Center/NICHHD award (3 years), Junior investigator – Nathan Selden, \$75,000 direct costs, July 1, 2002 to June 30, 2005.

Neurochemistry of the human basal ganglia. Hartford Foundation/American Federation for Aging Research Fellowship. Recipient: Nathan Selden, Mentor: M.-Marsel Mesulam, Director, Behavioral Neurology Unit, Beth Israel Hospital and Harvard Medical School, Boston, Massachusetts. \$10,000, 1992.

Cerebral cortical neurochemistry. Harvard Medical School/National Institutes of Health Research Fellowship. Recipient: Nathan Selden, Mentor: M.-Marsel Mesulam, Director, Behavioral Neurology Unit, Beth Israel Hospital and Harvard Medical School, Boston, Massachusetts. \$2,500, 1990.

State and Local (Include Title, Source, PI, Amount Period, and % Effort)

Bioabsorbable intrafascial stent for 3rd Ventriculostomy, device engineering development. Cameron Foundation, PI – Nathan Selden, \$50,000, November, 2009 and \$50,000 November 2010.

Amygdala and stress induced analgesia. Miller Family Foundation, PI – Nathan Selden, \$40,000, November 2008.

Amygdala and stress induced analgesia. Cameron Foundation, PI – Nathan Selden, \$100,000, December 2006.

Bioabsorbable intrafascial stent for 3rd Ventriculostomy, pre-clinical testing in sheep. Bioscience Innovation Fund, OHSU/State of Oregon, \$80,000, 2007-2009.

Other Support (Include Title, Source, PI, Amount Period, and % Effort)

Co-Mentor, GCRC Medical Student Clinical Research Award, Ms. Jennifer Haser, OHSU, July 2005-June 2006, \$25,000.

Co-mentor, Tarter Foundation, OHSU, Resident Research Grant, to Dr. Jonathan Carlson, MD, PhD (Neurosurgical House Officer), \$2000, 2004.

British Marshall Scholar, United Kingdom, 1986-1989, \$90,000.

Molecular markers in tumors and cerebrospinal fluid as prognostic factors in pediatric and adolescent central nervous system tumors. Co-I – Nathan Selden, Dickenson Foundation of California, \$36,405, 1998.

Cholinergic anatomy in the human cerebral hemisphere. Brownell Fund/University of Michigan Neurological Surgery Research Grant. Recipient: Nathan Selden, \$6000, 1997.

Human cerebral cortical anatomy. Lake Odessa Seizure Awareness Association Grant. PI – Nathan Selden, \$2800, 1997.

Student Research Award, American Geriatrics Society, \$3000, 1992.

Comparative biology of immunological hormone regulation. American Heart Association/Oregon Affiliate Research Fellowship. Recipient: Nathan Selden, Mentor: Laurens Ruben, Director, Immunology Laboratory, Reed College, Portland, Oregon, \$3000, 1985.

Murine interleukins. University of California at Los Angeles/Associated Western Universities Undergraduate Research Fellowship. Recipient: Nathan Selden, Mentor: Takashi Makinodan, Director, Geriatric Research and Education Center, West Los Angeles VA Medical Center, Los Angeles, California, \$3000, 1983.

Pending Support (Include Title, Source, PI, Amount Period, and % Effort)

Publications/Creative Work:

Peer-reviewed

Selden, NR (2015) Professionalism includes personal accountability and independence (ethical point-counterpoint on duty hours exceptions). *American Medical Association Journal of Ethics* (formerly *Virtual Mentor*). January 2015, Volume 17, Number 1: 23-32. <http://virtualmentor.ama-assn.org/2015/01/ecas3-1501.html>

Kuang, A., and Selden, N.R. (2014) Secondary cranial vault remodeling for restenosis after primary sagittal synostosis repair, Case report. *In press, Pediatric Neurosurgery*.

Strong, M.J., Thompson, E.M., Roundy, N., and Selden, N.R. (2015) Use of lumbar laminoplasty vs. laminotomy for transection of the filum terminale does not affect complication rates or post-operative course. *Child's Nervous System*, DOI 10.1007/s00381-015-2615-8

Zammar SG, Hamade YJ, Aoun RN, El Tecle NE, El Ahmadi TY, Adelson PD, Kurpad SN, Harrop JS, Hodge H, Mishra RC, Rajshekar V, Rezai AR, Sankhla S, Sattur MG, Selden NR, Sharan A, Resnick DK, Bendok BR. (2014) The Cognitive and Technical Skills Impact of the Congress of Neurological Surgeons Simulation Curriculum on Neurosurgical Trainees at the 2013 Neurological Society of India Meeting. *World Neurosurgery*. 12/2014; DOI: 10.1016/j.wneu.2014.12.006.

Maire, J.J., Close, L.N., Heinricher, M.M. and Selden, N.R. (2013). Distinct pathway for opioid and norepinephrine-triggered antinociception from the Amygdala. *Submitted, European Journal of Pain*.

Taylor, D.R., Venable, G.T., Jones, G.M., Lepard, J.R., Roberts, M.L., Saleh, N., Sidiqi, S.K., Moore, A., Khan, N., Michael, L.M., Selden, N.R., and Klimo, P. (2014) Five-year institutional bibliometric profiles for 103 U.S. neurosurgical residency programs. *In press, Journal of Neurosurgery*.

Yue, E.L., Meckler, G.D., Fleischman, R., Selden, N.R., Bardo, D.M.E., Chu, A.K., Vu, E.T., Rongwei, F., and Spiro, D.M. (2015) Test characteristics of Quick-brain MRI for shunt evaluation in children: A new modality to avoid unnecessary radiation. *Journal of Neurosurgery: Pediatrics*. Accompanied by podcast, DOI: 10.3171/2014.9.PEDS14207.

Parker, S.L., McGirt, M.J., Asher, A.L., and Selden, N.R. (2014) Quality improvement in neurological surgery graduate medical education. *In press, Neurosurgery Clinics of North America*.

Asher, A.L., Parker, S.L., Rolston, J., Selden, N.R., and McGirt, M.J. (2014) Using clinical registries to improve the quality of neurosurgical care. *In press, Neurosurgery Clinics of North America*.

Asher, A.L., Speroff, T., Dittus, R.S., Parker, S.L., Davies, J., Selden, N.R., Nian, H., Glassman, S., Mummaneni, P., Shaffrey, C. Watridge, C., Cheng, J., and McGirt, M.J. (2014) The national neurosurgery quality and outcomes database (N2QOD): A collaborative north American outcomes registry to advance value-based spine care. *Spine* 10.1097/BRS.0000000000000579.

Klimo, P., Venable, G.T., Khan, N.R., Taylor, D.R., Shepherd, B.A., Thompson, C.J., and Selden, N.R., (2014) Bibliometric evaluation of pediatric neurosurgery in North America. *Journal of Neurosurgery:Pediatrics*, October DOI:10.3171/2014.8.PEDS1488.

Thompson, E.M., Wagner, K., Kronfeld, K., and Selden, N.R. (2013) Using a two variable method in radionuclide shuntography to predict shunt patency. *Journal of Neurosurgery*, Sept 26:1-4 (epub ahead of print), accompanied by podcast.

Fontes, R.B.V., Selden, N.R., and Byrne, R.W. (2014) Fostering and assessing professionalism and communications skills in neurosurgical education. *Journal of Surgical Education*, October (epub ahead of print), doi: 10.1016/j.jsurg.2014.06.016

Thompson, E.M., Baird, L.C., and Selden, N.R. (2014) Results of a North American survey of quick brain MRI utilization to evaluate cerebral ventricles in children. *Journal of Neurosurgery:Pediatrics*, June, DOI: 10.3171/2014.2PEDS13567

Thompson, E.M., Strong, M.J., Warren, G., Woltjer, R.L. and Selden, N.R. (2014) The clinical significance of filum terminale MRI and histological characteristics in tethered cord syndrome, *Journal of Neurosurgery:Pediatrics*, 13:255-259 (accompanied by podcast).

Curry, M., Whitney, N., Roundy, N., and Selden, N.R. (2014) Acute subdural hematoma in a child with previous bilateral encephaloduroarteriosynangioses. *Child's Nervous System*, 30(4):699-702, DOI 10.1007/s00381-013-2285-3

Ragel, B.T., Piedra, M.D., Klimo, P., Burchiel, K.J., Waldo, H., McCartney, S. and Selden, N.R. (2014) An ACGME duty hour compliant three-person night float system for neurosurgical residency programs, *Journal of Graduate Medical Education*, June 2014, DOI: <http://dx.doi.org/10.4300/JGME-D-13-00172.1>

Selden, N.R., Oritano, T.C., Hadjipanayis, C., and Byrne, R. (2013) Model based simulation for early neurosurgical learners, *Neurosurgery* (with accompanying podcast), October 2013, 73:S15-24.

Litvack, Z.N., Lindsay, R., and Selden, N.R. (2013). Dural splitting craniocervical decompression for Chiari I malformation in pediatric patients: Clinical outcomes, healthcare costs and resource utilization. *Neurosurgery*, doi: 10.1227/NEU.0b013e31828ca1ed.

Kuang, A.A., Bergquist, C., Crupi, L., Oliverio, M., and Selden, N.R. (2013) Effectiveness and safety of independent pediatric nurse practitioners in evaluating plagiocephaly. *Plastic and Reconstructive Surgery*, *Plastic and Reconstructive Surgery*, August, 132:414-18, PRS-D-13-00072.

Kuang, A.A., Jenq, T., Didier, R., Moneta, L., Bardo, D., and Selden, N.R. (2013). Benign radiographic coronal synostosis after sagittal synostosis repair. *Journal of Craniofacial Surgery*, 24(3): 981-984.

Cetas, J., Nasser, M., Saedi, T., Kuang, A.K., McCartney, S. and Selden, N.R. (2013) Delayed intracranial hypertension after cranial vault remodeling for single suture synostosis. *Journal of Neurosurgery: Pediatrics*, April 2013, DOI: 10.3171/2013.3.PEDS12525.

Selden, N.R., Anderson, V.C., McCartney, S., Oritano, T.C., Burchiel, K.J., and Barbaro, N.M. (2013) Society of Neurological Surgeons boot camp courses: Knowledge retention and relevance of hands on learning after 6 months of postgraduate year 1 training. *Journal of Neurosurgery*, April 2013, DOI: 10.3171/2013.3.JNS122114 (Accompanied by podcast, editorial, and editorial response).

Selden, N.R., Al-Uzri, A.A., Koch, T., Sikora, D.M., Nguyen-Driver, M.D., Guillaume, D.J., Koh, J.L., Gultekin, S.H., Anderson, J.C., Vogel, H., Sutcliffe, T.L., Huhn, S.L., and Steiner, R.D. (2011) Transplantation of Human Central Nervous System Stem Cells for Infantile and Late Infantile Neuronal Ceroid Lipofuscinosis. *Journal of Neurosurgery*, DOI: 10.3171/2013.3.PEDS12397 (Accompanied by podcast).

Selden, N.R., Abosch, A., Byrne, R., Harbaugh, R., Krauss, W., Mapstone, T., Sagher, O., Zipfel, G., Derstine, P., and Edgar, L. (2013) Neurosurgery Milestones, *Journal of Graduate Medical Education*, March, 2013, supplement, 24-35. DOI: <http://dx.doi.org/10.4300/JGME-05-01s1-04>

Swing, S.R., Beeson, M.S., Carraccio, C., Coburn, M., Iobst, W., Selden, N.R., Stern, P., and Vydareny, K. (2013) Educational milestone development in 7 specialties entering the Next Accreditation System. *Journal of Graduate Medical Education*, March 2013, 98-106. DOI: <http://dx.doi.org/10.4300/JGME-05-01-33>.

Selden, N.R., Ghogawala, Z., Harbaugh, R.E., Litvack, Z.N., McGirt, M.J. and Asher, A.L. (2013) The future of practice science: Challenges and opportunities for neurosurgery. *Journal of Neurosurgery: Focus*, 34(1):E8.

McGirt, M.J., Speroff, T., Godil, S.S., Cheng, J., Selden, N.R., and Asher, A.L. (2013) Outcomes science in practice: An overview and initial experience at the Vanderbilt spine center. *Journal of Neurosurgery: Focus*, 34(1):E7.

Asher, A.L., McCormick, P., Selden, N.R., Ghogowala, Z., and McGirt, M.J. (2013) The National Neurosurgery Quality and Outcomes Database and NeuroPoint Alliance: Rationale, development, and implementation. *Journal of Neurosurgery: Focus*, 34(1):E2.

Thompson, E.M., Wozniak, S.E., Roberts, C.M., Kao, A., Anderson, V.C., and Selden, N.R.* (2012) Vagal nerve stimulation for partial and generalized epilepsy from infancy to adolescence. *Journal of Neurosurgery: Pediatrics*, 10:200-205. 10.3171/2012.5.PEDS11489.

Piedra, M., Thompson, E., Selden, N.R.*, Ragel, B., and Guillaume, D (2012) Optimal timing of autologous cranioplasty after decompressive craniectomy in children. *Journal of Neurosurgery: Pediatrics*, 10:268-272, 10.3171/2012.6.PEDS1268.

Whitney, N.L., and Selden, N.R.* (2012) Pullout proofing external ventricular drains: Technical note. *Journal of Neurosurgery: Pediatrics*, 10:320-323, 10.3171/2012.7.PEDS1280.

Oh, K.H., Kennedy, A., Selden, N.R., Mclean, L. and Sohaey, R. (2011) Asymmetric ventriculomegaly, interhemispheric cyst, dysgenesis of the corpus callosum (AVID): An imaging triad. *Journal of Ultrasound in Medicine*, 31:1811-1820.

Selden, NR,* Origiano, TC, Burchiel, KJ, Getch, CC, Anderson, VC, McCartney, S, Abdulrauf, SI, Barrow, DL, Ehni, BL, Grady, MS, Hadjipanayis, CG, Heilman, CB, Popp, AJ, Sawaya, R, Schuster, JM, Wu, JK, and Barbaro, NM (2012) A national fundamentals curriculum for incoming neurosurgery PGY1 residents: The 2010 Society of Neurological Surgeons Boot Camp courses. *Neurosurgery*, 70(4):971-981. DOI: 10.1097/PCC.0b013e31823f435c

Roberts, C.M., Thompson, E., and Selden, N.R.* (2011) Transendoscopic recording of gelastic seizures from a hypothalamic hamartoma: Technical note. *Pediatric Neurosurgery*, 47(2):L147-51.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 1. Introduction. *Pediatric Critical Care Medicine* 13:S3-S6 10.1097/PCC.1090b1013e31823f31437e.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 2. Methods. *Pediatric Critical Care Medicine* 13:S7-S10 10.1097/PCC.1090b1013e31823f31843df.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker

RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 3. Indications for intracranial pressure monitoring. *Pediatric Critical Care Medicine* 13:S11-S17 10.1097/PCC.1090b1013e31823f31440c.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 4. Threshold for treatment of intracranial hypertension. *Pediatric Critical Care Medicine* 13:S18-S23 10.1097/PCC.1090b1013e31823f34424.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 5. Cerebral perfusion pressure thresholds. *Pediatric Critical Care Medicine* 13:S24-S29 10.1097/PCC.1090b1013e31823f34450.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 6. Advanced neuromonitoring. *Pediatric Critical Care Medicine* 13:S30-S32 10.1097/PCC.1090b1013e31823f31659a.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 7. Neuroimaging. *Pediatric Critical Care Medicine* 13:S33-S35 10.1097/PCC.1090b1013e31823f31865e31822.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 8. Hyperosmolar therapy. *Pediatric Critical Care Medicine* 13:S36-S41 10.1097/PCC.1090b1013e31823f36621.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 9. Temperature control. *Pediatric Critical Care Medicine* 13:S42-S45 10.1097/PCC.1090b1013e31823f31664b.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 10. Cerebrospinal fluid drainage. *Pediatric Critical Care Medicine* 13:S46-S48 10.1097/PCC.1090b1013e31823f31665f.

Kochanek PM, Adelson PD, Ashwal S, Bell MJ, Bratton S, Carson S, Chesnut RM, Ghahar J, Goldstein B, Grant GA, Kissoon N, Peterson K, Selden NR, Tong KA, Tasker RC, Vavilala MS, Wainwright MS, Warden CR (2012) Chapter 11. Barbiturates. *Pediatric Critical Care Medicine* 13:S49-S52 10.1097/PCC.1090b1013e31823f36696.

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Selden, N, Ortiz, J, Close, L and Heinricher (2008) α_2 -Noradrenergic antagonist administration into the central nucleus of the amygdala blocks stress induced analgesia, *Neurosurgery*, 62(6):1427. *Proceedings of the Congress of Neurological Surgeons Annual Meeting, Orlando, Florida, September, 2008.*

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- Liu, KC, Selden, NR, Durham, SR (2003) Utility of serial computed tomography scans in pediatric head trauma. *Proceedings of the 32nd Annual Meeting of the AANS/CNS Section on Pediatric Neurological Surgery*, 32:27.
- Hunt, M, Selden, NR, Durham, SR (2003) Skiing and snowboarding head injury: Why are had injuries more common in snowboarders? *Proceedings of the 32nd Annual Meeting of the AANS/CNS Section on Pediatric Neurological Surgery*, 32:28.
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- Stephan, MJ, Nesbit, GM, Selden, NR, Behrens, ML, Whitaker, MA, Barnwell. Successful endovascular treatment of spinal canal arteriovenous fistula in a young child with hereditary hemorrhagic telangiectasia. (2003) *Proceedings of the 24th Annual David W. Smith Workshop on Malformations and Morphogenesis*.
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Selden, N., Patel, N., Grube, S. and Papadopoulos, S. (1998) Improved outcome and reduced cost in cervical spinal cord injury using emergency MRI and surgical decompression. *Journal of Neurosurgery*, 88:393A.

Selden, N., Patel, N., Grube, S., and Papadopoulos, S. (1997) Emergent MRI and surgical decompression improves outcome and reduces cost in spinal cord injury. *Proceedings of the Congress of Neurological Surgeons*, 47:726.

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Selden, N., Geula, C. and Mesulam, M-M. (1990) Human caudate and putamen chemoarchitecture. *Society for Neuroscience Abstracts*, 16:505.1.

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Other

Patents under review. Selden, N.R. (2004 and 2010). Interfascial stent and method of maintaining patency of surgical fenestrations.

Published articles in:

- *Washington Post* (Washington, D.C.)
- *Willamette Week* (Portland, Oregon)
- *Downtowner* (Portland, Oregon)
- *Stanford Daily* (Stanford, California)

Invited Lectures, Conference Presentations or Professorships:

International and National

Graduation Day Visiting Professor, Rush University Department of Neurosurgery, Chicago, IL, June 2015.

Intentional Education: Reform of US Residency Training. Japanese Congress of Neurological Surgeons, Tokyo, Japan, May 2015. (*Presidential Address for the Congress of Neurological Surgeons*).

CNS Stem Cell Therapy in Patients. American Association of Neurological Surgeons Breakfast Seminar, Washington, DC, May 2015.

CNS Presidential Message, American Association of Neurological Surgeons, General Scientific Session II, Washington, DC, May 2015.

CNS Presidential Update, U.S. Council for State Neurosurgical Societies, Washington, DC, May 2015.

Neurosurgical Education in an Outcomes Era, Turkish Neurosurgical Society Annual Meeting, Antalya Turkey, April 2015.

Pediatric Neurovascular Syndromes, International Basic Neurosurgery Course, Antalya Turkey, April 2015.

Moya Moya Disease, International Basic Neurosurgery Course, Antalya Turkey, April 2015.

Guidelines Defend Access and Improve Quality. Scientific Session IV, AANS-CNS Joint Section on Disorders of the Spine and Peripheral Nerves, March 2014, Phoenix, Arizona.

Paradigm Shift in US Residency Training: Education Science and Outcomes. Neurosurgical Society of India 2014 Annual Meeting, Coimbatore, India (*Presidential Address for the Congress of Neurological Surgeons*).

Diagnostic Boundaries in Minor Spinal Dysraphism: A Cautionary Tale. Visiting Professor, Washington University St. Louis, November 2014.

Intentional Education: Assessment and Outcomes. Visiting Professor, Washington University St. Louis, November 2014.

Milestones Update and a Look at the Data, SNS-CNS Program Director and Coordinators' Workshop, CNS Annual Meeting, Boston, MA, October, 2014.

Ask the Experts: Families of Teens with Hydrocephalus, 2014 National Conference on Hydrocephalus, Hydrocephalus Association, July, Portland, Oregon.

Neuro-imaging: Radiation Exposure and Quick Brain MRIs, 2014 National Conference on Hydrocephalus, Hydrocephalus Association, July, Portland, Oregon.

A New Paradigm for Neurosurgical Training: Intentional Learning & Outcomes Management, Honored Guest Lecture, Michigan Association of Neurological Surgeons (MANS), 2014 Annual Meeting, Crystal Mountain, Michigan, May 2014.

Long Term Outcomes of the First Phase I Clinical Trial of Neural Stem Cell Transplantation, Honored Guest Lecture, Michigan Association of Neurological Surgeons (MANS), 2014 Annual Meeting, Crystal Mountain, Michigan, May 2014.

Milestones Pilot Group Update and Data Collection Automation, Society of Neurological Surgeons Annual Meeting, Rochester, Minnesota, May 2014.

Streamlining Organized Neurosurgery, address and panel discussion with leadership of SNS, CNS, AANS and ABNS, Society of Neurological Surgeons Annual Meeting, Rochester, Minnesota, May 2014.

Neural Stem Cell Transplantation for CNS Degenerative Disease, Breakfast Seminar, American Association of Neurological Surgeons 2013 Annual Meeting, April 2014.

Thick filum terminale and filum terminale lipoma, Invited International Lecturer, International Basic Neurosurgery Course, Term I, Course III, Antalya, Turkey, March 2014.

Lipomyelomeningocele, Invited International Lecturer, International Basic Neurosurgery Course, Term I, Course III, Antalya, Turkey, March 2014.

Surgical anatomy, positions and surgical approaches: Posterior cervical and cervico-thoracic junction, Invited International Lecturer, International Basic Neurosurgery Course, Term I, Course III, Antalya, Turkey, March 2014.

The science of neurosurgical education, Invited International Lecturer, International Basic Neurosurgery Course, Term I, Course III, Antalya, Turkey, March 2014.

Neural Stem Cell Transplantation in Neurodegenerative Disease, Visiting Professor, University of Florida, Department of Neurological Surgery, Gainesville Florida, February 2014.

Tethered Spinal Cord: Clinical Findings, Diagnostic Boundaries and Surgical Outcomes, Visiting Professor, University of Florida, Department of Neurological Surgery, Gainesville Florida, February 2014.

Phase I Trial of CNS Neural Stem Cell Transplantation in Children: Challenges, Strategies and Results, Visiting Professor, Carolinas Medical Center, Charlotte, North Carolina, September, 2013.

A New Outcomes Era in Residency Training: Assessment and Milestones, Visiting Professor, Carolinas Medical Center, Charlotte, North Carolina, September, 2013.

Getting into Neurosurgery Residency – Tips & Pitfalls, PC4 “So You Want to Be A Neurosurgeon”, Congress of Neurological Surgeons Annual Meeting, October 2013, San Francisco, CA.

Neurosurgical Milestones Evaluation and Reporting for Program Directors and Coordinators, in Practical Course 13, RRC Next Accreditation System, Milestones and Matrix Curriculum, Congress of Neurological Surgeons Annual Meeting, October 2013, San Francisco, CA.

Hydrocephalus Emergencies, Society of Neurological Surgeons Western Region Boot Camp Course, Portland, OR, July 2013.

SNS Matrix Curriculum, Evaluation Tools, and the Online Learning and Portfolio SNS Platform: How Does it All Fit Together? Society of Neurological Surgeons Annual Meeting (Program Directors and Coordinators Symposium), June 2013, Boston Massachusetts.

Mock Clinical Competency Committee Workshop, Society of Neurological Surgeons Annual Meeting (Program Directors and Coordinators Symposium), June 2013, Boston Massachusetts.

Milestones and Clinical Competency Committees, Society of Neurological Surgeons Annual Meeting, June 2013, June 2013, Boston Massachusetts.

Neurosurgery Boot Camp I, Society of Neurological Surgeons Annual Meeting, June 2013, Boston Massachusetts.

Breaking Bad News, Society of Neurological Surgeons Junior Resident Boot Camp, San Diego, CA (Western Region), May 2013.

Informed Consent, Society of Neurological Surgeons Junior Resident Boot Camp, San Diego, CA (Western Region), May 2013.

Neurosurgery Milestones Adoption, ACGME Webinar, May 22nd, 2013.

2013 Invited Lecturer, AANS Young Neurosurgeon’s Luncheon, 2013 Annual Meeting, New Orleans, Louisiana.

CNS Transplantation for Batten’s Disease, Breakfast Seminar, American Association of Neurological Surgeons 2013 Annual Meeting, April 2013.

CNS Neural Stem Cell Transplantation in Children, Visiting Professor, Departments of Neurological Surgery and Neurology, Stanford University Medical Center, Stanford, CA, April 2013.

Boot Camps for Teaching Neurosurgical Milestones, Education Seminar, 2013 Annual Meeting of the American Society of Pediatric Neurosurgeons, Kauai, Hawaii, February, 2013.

Building a Career in Academic Pediatric Neurosurgery, Breakfast Seminar, 2013 Annual Meeting of the AANS-CNS Joint Section on Pediatric Neurological Surgery, December, 2012.

Guidelines for Pediatric Traumatic Brain Injury, CNS Trauma Guidelines Webinar, November 6th, 2012.

Implementing milestones verification for neurosurgical residents. CNS-ACGME Practical Course, Congress of Neurological Surgeons Annual Meeting, October 2012, Chicago, IL.

Therapeutic stem cells. Second International Meeting of the Society for CNS Interstitial Delivery of Therapeutics, October 6th, 2012, Chicago, Illinois.

Pediatric traumatic brain injury guidelines. Luncheon seminar, Congress of Neurological Surgeons Annual Meeting, October 2012, Chicago, IL.

Neural stem cell transplantation in children for neurodegenerative disorders. Central European Neurosurgical Society, Prague, Czech Republic, June, 2012.

Pediatric TBI Guidelines, CNS Webinar Faculty: Guidelines for the Management of Severe TBI, June 8th, 2012.

A duty hours compliant night float system for neurosurgery programs, Society of Neurological Surgeons, Atlanta, Georgia, May, 2012.

Boot Camp Courses: Junior Resident Course Development, Society of Neurological Surgeons, Atlanta, Georgia, May, 2012.

The science of clinical practice: Education, AANS Practical Course on Clinical Data Registries, Miami Florida, April 2012.

Translating a novel therapeutic strategy and agent in a pediatric surgical trial: CNS transplant of neural stem cells for Batten's disease. Seminars in Translational Science Research, DuPont Hospital, Wilmington, Delaware, March 2012.

Visiting Professor, Jefferson Medical College Department of Neurological Surgery, March 2012. *Neural Stem Cells: Translational Trial in Batten's Disease, NCL 1 and 2.*

The Development of Neurosurgical Boot Camp Courses in the United States; and Work-up of the CSF Shunt, an invited introductory lecture for the first Pakistan Neurosurgery Trainee Boot Camp, February 23, 2012 (by Skype).

Visiting Professor, University of California, San Diego, Medical Center, Department of Neurological Surgery, October, 2011. Central Nervous System Transplantation of Neural Stem Cells.

CNS stem cell transplanation in children. Department of Neurological Surgery. Children's Hospital Boston, June 2011.

Neurosurgery Boot camps for residents: A report to the Society of Neurological Surgeons, Society of Neurological Surgeons Annual Meeting, Portland, Oregon, May, 2011.

Pediatric Neurosurgery (Host Program), Society of Neurological Surgeons Annual Meeting, Portland, Oregon, May, 2011.

Residency Program (Host Program), Society of Neurological Surgeons Annual Meeting, Portland, Oregon, May, 2011.

Introduction, Program Directors' Boot camp, Simulation in neurosurgical residency education practical course, Society of Neurological Surgeons Annual Meeting, Portland, Oregon, May, 2011.

Professionalism, fundamental skills, and safety: Outcomes of the 2010 Neurosurgery PGY-1 Bootcamp courses, AANS 2011 Annual Meeting, Plenary Session II, April, 2011.

Professionalism, fundamental skills, and safety: Outcomes of the 2010 Neurosurgery PGY-1 Bootcamp courses, ACGME 2011 National Annual GME Conference, Nashville, TN, March 2011.

Simulation, structured learning, and skill based promotion: The future of neurosurgical residency training. Interurban Neurosurgical Society, Chicago, Ill, March, 2011.

Hydrocephalus: Theory, diagnosis and management across the life span. Association of Neurosurgical Physician Assistants, (Joint Meeting with the Congress of Neurological Surgeons), San Francisco, CA, October 2010.

Big heads, little kids: Hydrocephalus, shunts and ventricles. American Academy of Pediatrics, 2010 National Conference & Exhibition (Meet the expert session), San Francisco, California, October, 2010.

Misshapen heads: Is it cranial synostosis? American Academy of Pediatrics, 2010 National Conference & Exhibition (Meet the expert session), San Francisco, California, October, 2010.

Professionalism, Supervision and Pearls for the Junior Resident. Society of Neurological Surgeons PGY1 Bootcamp Course, Western Region, July 2010, Portland, Oregon.

Neural stem cells and human therapeutics: Report of the first clinical trial. Visiting Professor. Department of Neurosurgery, LSU Health Sciences Center, Shreveport, Louisiana, June, 2010.

Neurosurgery Intern 'Bootcamp'. Society of Neurological Surgeons ('Senior Society'), Annual Meeting, Yale, Connecticut, June 2010.

Program Director's Toolkit (Lecture for Neurosurgery Residency Program Directors Training Session). Society of Neurological Surgeons ('Senior Society'), Annual Meeting, Yale, Connecticut, June 2010.

Neuronal stem cell transplantation for neuronal ceroid lipofuscinosis. General Scientific Session I, American Association of Neurological Surgeons, May 2010.

Practical, ethical, and regulatory challenges to the advance of stem cell research for central nervous system disease. Breakfast seminar on Stem Cell Transplantation, American Association of Neurological Surgeons, May 2010.

Expert Commentary for: Neural stem cells exist within the cerebrospinal fluid of the adult human CNS. Scientific Session III (Stereotactic and Functional), American Association of Neurological Surgeons, May 2010.

PGY1 Bootcamp courses for neurosurgery residents. Neurosurgical Summit, Philadelphia, PA, May 2010.

Teaching for Effect: Educational Outcomes. Meeting of the SNS Task Force on Resident Education, Salt Lake City, Utah, May, 2009.

Stress Induced Analgesia: Can We Hijack Adaptation? Invited presentation, AANS/CNS Joint Section for Pain Surgery, Seminar, AANS Annual Meeting, San Diego, CA, May, 2009.

Minimal Tethered Cord Syndrome, Breakfast Seminar, AANS Annual Meeting, San Diego, CA, May, 2009.

Neuronal Stem Cell Transplantation for CNS Metabolic Disease, Breakfast Seminar, AANS Annual Meeting, San Diego, CA, May, 2009.

Stem Cell Applications in Pediatric Neurosurgery: Current Innovations and Controversies, AANS/CNS Joint Section for Pediatric Neurosurgery, Annual Meeting, Spokane, WA, December, 2008.

Neuronal Stem Cells and Human Therapeutics, University of Michigan Medical Center, *Visiting Professorship*, November, 2008.

Tethered Cord: Slippery Slope? University Alabama Birmingham Medical Center, *Visiting Professorship*, October, 2008.

Neuronal Stem Cells and Human Therapeutics, University Alabama Birmingham Medical Center, *Visiting Professorship*, October, 2008.

Introduction of Dr. Anthony Asher, 58th President of the Congress of Neurological Surgeons, General Scientific Session I, Orlando, Florida, September, 2008.

Creating a Community of Learning: Educational Science at the Annual Meeting, General Scientific Session I, Orlando, Florida, September, 2008.

Stress and Pain Modulation, University of Michigan Medical Center, Annual Hoff Scientific Symposium, July, 2008.

Tethered Spinal Cord. Phoenix Children's Hospital, Phoenix, Arizona. *Visiting Professorship*, June, 2008.

Residency Data Collection and the SNS Website. May, 2008, Society of Neurological Surgeons, Madison, Wisc.

Digital Surgical Education. April 2008, American Association of Neurological Surgeons Annual Meeting, Washington, D.C., Practical Course Faculty.

Controversies in Tethered Cord Syndrome. April 2008, American Association of Neurological Surgeons Annual Meeting, Washington, D.C., Breakfast Seminar Faculty.

Minimal Tethered Cord Syndrome. October 2007, American Academy of Pediatrics National Annual Meeting, San Francisco California, Seminar Faculty.

Neurosurgical Lumps, Bumps, Pits and Tracts. October 2007, American Academy of Pediatrics National Annual Meeting, San Francisco California, Seminar Faculty.

Making the Most of MOC, Congress of Neurological Surgeons Annual Meeting, Socioeconomic Practical Course: Part III: Neurosurgical Education, San Diego, September, 2007.

Continuing Medical Education: Meeting as Workshop, Congress of Neurological Surgeons Annual Meeting, Consensus Session on Medical Education, San Diego, September, 2007.

Introduction to Integrated Medical Learning, Congress of Neurological Surgeons Annual Meeting, General Scientific Session III, September, 2007.

Web based technology support for neurosurgery residency redesign, Neurosurgery Education Summit, July 2007, Washington, D.C.

A toolbox for Program Directors. May, 2007. Society of Neurological Surgeons (Senior Society), San Francisco, California.

Controversies in Tethered Cord Syndrome. April 2007, American Association of Neurological Surgeons Annual Meeting, Washington, D.C., Breakfast Seminar Faculty.

Digital Surgical Education. April 2007, American Association of Neurological Surgeons Annual Meeting, Washington, D.C., Practical Course Faculty.

The Competencies: New Paradigms in Surgical Education, January, 2007, University of Virginia Department of Neurological Surgery, Charlottesville, Virginia, *Visiting Professorship, January, 2007.*

Iskandar, B.J. and Selden, N.R. (2007) Task Force Report on Spinal Dysraphism. American Society of Pediatric Neurosurgeons, January, 2006.

A Candidate Circuit for Stress Induced Analgesia, University of Michigan Medical Center, December 15th, 2006.

Discussant (2): "Is multifocal seizure resection in children reasonable?" and "Surgical targeting and focal implantation of gene therapy for global neurologic disease: operative techniques and nuances", Congress of Neurological Surgeons Annual Meeting, Neurosurgical Forum, Chicago, IL, October, 2006.

Selden, N.R. (2006) Technical considerations in extradural Chiari decompression. *Digital Video Theater Presentation, Congress of Neurological Surgeons Annual Meeting, Chicago, Ill.*

The Non-Clinical Core Competencies: Their Relevance to Patient Safety. September 12th, 2006, Congress of Neurological Surgeons Annual Meeting, Chicago Ill., General Scientific Session IV.

Practice, Science and Evidence in Minimal Tethered Cord Syndrome. Festschrift for Dr. Jonathan McGillicuddy, MD, University of Michigan Medical Center, August, 2006.

Pain Modulating Neurons in the Medulla. Festschrift for Dr. Julian T. Hoff, MD, University of Michigan Medical Center, July, 2005.

Pain Modulating Neurons in the Medulla: Purinergic Control. 28th Annual Meeting of the American Association of Pediatric Neurosurgery, Maui, Hawaii, January, 2005.

Controversies in Tethered Spinal Cord Surgery: The Case for Surgery. 33rd Annual Meeting of the AANS/CNS Section of Pediatric Neurological Surgery, San Francisco, December, 2004.

Trajectories of cholinergic pathways within the human cerebral hemisphere. American Academy of Neurological Surgery, Santa Barbara, California, 1998.

The anatomy and function of association cortex. Neuroanatomy Course for Nursing Associates, Congress of Neurological Surgeons, Montreal, Canada, 1996.

Functions of the ceruleo-cortical noradrenergic projection. Psychopharmacology Section, Neuroscience Department, Scripps Research Institute, La Jolla, California, 1989.

Behavioral and endocrine functions of forebrain noradrenergic projections in the rat. INSERM unit for the Psychobiology of Adaptive Behavior, University of Bordeaux, France, 1989.

Regional and Local

The Neurological Examination, Clinical Neuroscience on the Coast CME Course, Salishan, Oregon, September, 2014.

Neurological Examination Demonstration, Clinical Neuroscience on the Coast CME Course, Salishan, Oregon, September, 2014.

National Agenda for Protocol Driven Care in Neurosurgery, OHSU Traumatic Brain Injury Consortium Symposium, May 2014.

Light and Space: Evolving Neurosurgical Paradigms for Tumor Resection, Portland International Neuroscience Symposium, Portland, Oregon, July 2013.

Simulation for Neurosurgery Boot Camps, OHSU Simulation Grand Rounds, February 4th, 2013.

Extracranial findings of congenital lesions, Pediatric Grand Rounds, Peace Health Southwest Washington Medical Center, Vancouver Washington, January 24, 2012.

Surgical treatment of epilepsy, Clinical Neuroscience at the Oregon Coast, Oregon Health & Science University CME Course, Salishan, Oregon, September 2011.

Stem Cell Therapy of Lysosomal Storage Disorders. North Pacific Pediatric Colloquium, April 2011, Portland, Oregon.

Large heads, small heads, misshapen heads. Pediatrics Grand Rounds, Peace Health Medical Center, Eugene, Oregon, September, 2010.

CSF Shunt Emergencies. Foundations in Neurosurgery “Bootcamp” for Neurosurgery R1s and R2s (University of Washington, Stanford, University of California San Francisco, University of Southern California, OHSU), Oregon Health & Science University, Portland, OR, August, 2009.

Lumps, Bumps, Dimples and Tracts: Stigmata of Dysraphism. The Children’s Clinic, Grand Rounds, Tualatin, Oregon, June, 2009.

Cutaneous markers of dysraphism. Internal Medicine and Pediatrics Grand Rounds, Willamette Falls Hospital, Oregon, March, 2009.

Lumps, Bumps and Dimples: Physical Examination Findings of Dysraphism, Broadway Pediatric Associates, Portland, Oregon, March, 2009.

Controversies and Evidence in the Management of Tethered Cord Syndrome, Grand Rounds, Salem Childhood Health Associates, October, 2008.

Neural stem cells and human CNS therapeutics. July, 2008, *BrainNet* Seminar, Portland, Oregon.

Physical diagnosis of spinal and cranial congenital anomalies. December, 2007, Northwest Permanente Pediatric Grand Rounds, Portland, Oregon.

Cutaneous markers of spinal dysraphism. November 2007, Pediatric Review and Update, Portland, Oregon (CME, Oregon Pediatric Association).

The Spectrum of Tethered Cord, Shriner’s Hospital for Children, Portland, Oregon, March 14, 2007.

Minimal Tethered Cord Syndrome: 2nd Annual Pediatric Review and Update, OHSU CME, Portland, Oregon, December, 2006.

Tethered Cord Surgery: Signs, Symptoms, Indications and Pitfalls, Neonatology and Pediatrics Grand Rounds, Rogue Valley Medical Center, Medford, Oregon, Nov. 2nd, 2006.

Panel Presentation on Cranial Synostosis Management, Interdisciplinary Problem Solving in Cranio-Maxillofacial Surgery, November 5th, 2005, Portland, Oregon; ACMF (Advanced Cranio-Maxillofacial Forum).

Advances in the Surgical Treatment of Childhood Epilepsy. 168th Annual Meeting of the North Pacific Pediatric Society, Portland, Oregon, March 2005.

The Cutting Edge: Technology in Pediatric Surgical Neuro-oncology. 10th Annual Meeting, Frontiers in Translational Research in Neuro-oncology and the Blood-Brain Barrier, Bend, Oregon, March 2004.

Tethered Spinal Cord: Diagnosis, Management, and Controversies. Neonatology/Pediatrics Grand Rounds, Rogue Valley Medical Center, Medford, Oregon, November, 2002.

Guidelines for the Management of Severe Traumatic Brain Injury in Children. Medical and Surgical Grand Rounds, St. Charles Regional Medical Center, Bend, Oregon, August, 2002.

Two Year Old With Pineal Mass, and Panel Discussion. 8th Annual International Meeting of the Blood Brain Barrier Disruption Consortium, Stevenson, Washington, April, 2002.

Recent Advances in Pediatric Neurosurgery. 164th Meeting of the North Pacific Pediatric Society, Portland, Oregon, March, 2001.

Tethered Spinal Cord and Spina Bifida Occulta. Kaiser/Northwest Permanente Pediatric Grand Rounds, Portland, Oregon, September, 2001.

Hydrocephalus Emergencies. Oregon Emergency Medical Services for Children Annual Conference. Kaizer, Oregon, June, 2001.

Technology in Surgery. Harvard Alumni Association of Oregon Annual Meeting, Portland, Oregon, May, 2001.

Pediatric Spinal Cord Injury. Twelfth Annual Northwest States Trauma Conference, Bend, Oregon, May, 2001.

New therapies for hydrocephalus. Pediatric Grand Rounds, Sacred Heart Medical Center, Eugene, Oregon, January, 2001.

Skull deformities in children. Pediatric Grand Rounds, Salem Hospital, Salem, Oregon, December, 2000.

Advances in the treatment of hydrocephalus. Rogue Valley Medical Center Neonatology Grand Rounds, Medford, Oregon, November, 2000.

Cranial synostosis and positional head deformity. Rogue Valley Medical Center Pediatric Section, Medford, Oregon, November, 2000.

V. SERVICE

Membership in Professional Societies:

Fellow, American College of Surgeons (FACS)

Fellow, American Academy of Pediatrics (FAAP)

Society of Neurological Surgeons

American Society of Pediatric Neurosurgeons

American Academy of Neurological Surgery

Society of University Neurosurgeons

Fellow, Cambridge Philosophical Society

North American Society for Neuroscience

American Association of Neurological Surgeons

Congress of Neurological Surgeons

Western Neurosurgical Society
International Society of Pediatric Neurosurgeons
AANS/CNS Section on Pediatric Neurological Surgery
Women in Neurological Surgery
Oregon Medical Association
Oregon Neurosurgical Society

Granting Agency Review Work:

Ad hoc grant reviewer, State of Pennsylvania Medical Initiatives Grant Program, 2010 (for hydrocephalus related medical device grants).

Ad hoc grant reviewer, State of Kentucky Spinal Cord and Head Injury Research Board, 2004.

Editorial and Ad Hoc Review Activities:

Editor, Program Directors' Toolkit (dynamic web-based tools for North American neurosurgery residency Program Directors, created and hosted by the Society of Neurological Surgeons, the 'Senior Society'), www.societyns.org. May, 2007 to May 2014.

Member, Editorial board, JNS Online 3D Surgical Atlas, July, 2011 to present.

Member, International advisory board, Turkish Neurosurgery, April 2014 to present.

Chair, Clinical Event Committee, Hyperbranch Medical Technologies Phase II Study, NuSeal dural sealant, 2010-11.

Member, Clinical Event Committee, Hyperbranch Medical Technologies Phase I Study, NuSeal dural sealant, 2009-10.

Editor, *SANS Lifelong Learning*, Jan. 2005-Sept 2007. (Associate Editor, *SANSwired*, 2003-04). *SANS* is now a requirement of the American Board of Neurological Surgery for Maintenance of Certification (MOC). At www.sanswired.com.

Editor (invited), *Journal of Neurosurgery: Focus*, Neurogenomics and Neuroproteomics, January, 2010, issue.

Editor (invited), *Journal of Neurosurgery: Focus*, Stem Cell Transplantation and Human Therapeutics, March-April, 2008, issue.

Editorial Board, *Pediatric Neurosurgery*, Karger, Basel, Switzerland, January 2004 to present.

Editorial Board, *Congress Quarterly*, Lippincott, Williams & Wilkins, Las Vegas, NV, September, 2006 to December, 2008.

Editorial Panel, *Clinical Neurosurgery*, Lippincott, Williams & Wilkins, Las Vegas, NV, September, 2007 to 2009.

Scientific Program Committee, Western Neurosurgical Society, 2009 Annual Meeting, 2010 Annual Meeting.

Abstracts review committee, CNS Annual Meeting (2006, 2007), Joint Section for Pediatric Neurosurgery Section Meeting (2004), and Joint Section for Pediatric Neurosurgery CNS Annual Meeting Session (2004, 2005).

Contributing Editor (Pediatric neuro-oncology), *Select Review in Neuro-Oncology*, American Association of Neurological Surgeons/Congress of Neurological Surgeons Joint Tumor Section and the Society for Neuro-Oncology, 1999 to 2003. At www.neurosurgery.org.

Member, International Brain Injury Association Advisory Group on Guidelines for the Management of Severe Head Injury in Children, 2000 to 2003, and 2009 to present (revision and re-release).

Turkish Neurosurgery (official journal of the Turkish Neurosurgical Society), Advisory Board, March 2014 to present.

Journal of Neurosurgery, Ad hoc manuscript reviewer.

Neurosurgery, Ad hoc manuscript reviewer.

Simulation, Ad hoc manuscript reviewer.

Journal of Neuro-Oncology, Ad hoc manuscript reviewer.

Surgical Neurology, Ad hoc manuscript reviewer.

Child's Nervous System, Ad hoc manuscript reviewer.

World Journal of Surgery. Ad hoc manuscript reviewer.

Neuroscience, Ad hoc manuscript reviewer.

Psychopharmacology, Ad hoc manuscript reviewer.

Brain Research, Ad hoc manuscript reviewer.

Behavioural Brain Research, Ad hoc manuscript reviewer.

Pharmacology Biochemistry and Behavior, Ad hoc manuscript reviewer.

Contemporary Clinical Trials, Ad hoc manuscript reviewer.

Journal of Zhejiang University: Science, Ad hoc manuscript reviewer.

Neuroscience Letters, Ad hoc manuscript reviewer.

Postgraduate Medical Journal, Ad hoc manuscript reviewer.

Committees:

International/National

President, Congress of Neurological Surgeons, October 2014 to September 2015.

President-elect, Congress of Neurological Surgeons, October 2013 to October 2014.

Member, Board of Directors, Neurosurgery PAC, October 2013 to April 2016.

Vice President, Board of Directors, CNS Foundation, January 2014 to present.

Member, SNS-AANS-CNS Neurosurgical Portal Executive Committee, 2014-17.

Member, Ex Officio, AANS-CNS Washington Committee, December 2013 to July 2015.

Chair, Milestones Group (Neurosurgery), ACGME, August 2012 to present.

Chair, Committee on Resident Education (CoRE), Society of Neurological Surgeons, May, 2012 to present.

Member, ACGME Advisory Group for Neurosurgery, Milestones Initiative, August 2011 to present. (Chair, Communications Competency subgroup).

Member, Board of Directors, NeuroPoint Alliance, parent organization of the National Neurosurgery Quality and Outcomes Database, October 2011 to present.

Member, SNS Infrastructure Task Force, December 2013 to present.

National Course Director, Foundations in Neurosurgery PGY1 Bootcamp Courses (6 regional courses for all US Neurosurgery PGY1 incoming residents), Society of Neurological Surgeons, July 2010, July 2011, July 2012.

Co-Chair, Hydrocephalus Association National Conference, July 2014, Portland, Oregon.

Secretary, Congress of Neurological Surgeons, October, 2009 to October 2012.

Executive Committee, Congress of Neurological Surgeons, Member (Ex Officio), October 2005 to October, 2009.

Strategic Planning Committee, Congress of Neurological Surgeons, Member, January, 2007 to present.

Co-Chair, Special Committee to Review CNS Public Policy and Socio-economic Advocacy (PARC), January, 2010 to January, 2011 (Report January 17, 2011).

Co-Chair, PARC Implementation Committee (III) for Policy, Budgetary Oversight and Washington Committee Leadership Training, May 2011 to present.

Member, CEO Search Committee, Congress of Neurological Surgeons, October 2011 to May 2012.

Co-Chair, Scientific Committee, National Neurosurgery Quality and Outcomes Database (N²QOD), January 2011 to present.

Symposium Co-Director, (PC17) RRC Next Accreditation System, Milestones, and the Neurosurgery Matrix, Congress of Neurological Surgeons Annual Meeting, October 2014, Boston, MA.

Symposium Co-Director, (PC13) ACGME Milestones and Next Accreditation System, Congress of Neurological Surgeons Annual Meeting, October 2013, San Francisco, CA.

Symposium Director, Mock Clinical Competency Committee, Society of Neurological Surgeons Annual Meeting (Program Director and Coordinator Course), June 2013, Boston, Massachusetts.

Breakfast Seminar Director, CNS Stem Cell Transplantation, AANS Annual Meeting, New Orleans, 2013, 2014, 2015.

Course Director, ACGME Practical Course (PC14) for Residency Directors, Coordinators, Department Chairs, and Educational Leaders on Milestone Implementation, October 2012, Chicago, IL.

Member, SNS Matrix Subcommittee, CoRE (Committee on Resident Education), Chair Communications Competency Group, 2012.

Chairman, Annual Meeting Committee (2009 Annual Meeting), Congress of Neurological Surgeons.

Chairman, Education Committee, Congress of Neurological Surgeons, January 2009 to October 2009 (member 2006 to present).

Member, Committee for Long Range Planning and Development of *Neurosurgery*, October 2008 to July 2009 (including selection of new Editor in 2009).

Chairman, SANS Committee, Congress of Neurological Surgeons, May, 2006 to September, 2008. (Vice-chairman, February to May, 2006).

Chairman, Scientific Program Committee (2008 Annual Meeting), Congress of Neurological Surgeons.

Vice-Chairman, Scientific Program Committee (2007 Annual Meeting), Congress of Neurological Surgeons.

Chair, Scientific Program Committee, Society of Neurological Surgeons, the 'Senior Society', 2012 Annual Meeting (Member, 2010 and 2011).

Member, Committee on Resident Education (formerly Curriculum Committee), Society of Neurological Surgeons, the 'Senior Society', May 2007 to May 2012.

Chair, Neurosurgery Intern 'Bootcamp' Subcommittee (CoRE), the 'Senior Society', January 2010 to present.

Course Director, PC14, RRC Next Accreditation System, Milestones and the Neurosurgery Matrix. Congress of Neurological Surgeons Annual Meeting, October 2012.

Moderator, Session V, 'Achieving Understanding', Society of Neurological Surgeons Annual Meeting, 2012, Atlanta, Georgia.

Guest Examiner (Oral), American Board of Neurological Surgery, May 2009.

Member, Commission for Neurosurgical Residency Redesign, Representative of the Senior Society, member Information Technology and Finance Subcommittee, July 2007 to May 2009.

Co-Chairman, Educational Strategic Planning Committee, Congress of Neurological Surgeons, April 2008 to October 2009.

Co-Chairman, Integrated Medical Learning Subcommittee, Scientific Program Committee (2007 Annual Meeting), Congress of Neurological Surgeons.

Member, Initiatives Coordination Committee, Congress of Neurological Surgeons, September, 2007 to October 2009.

Member, Ad Hoc Committee on Conflict of Interest, Congress of Neurological Surgeons, January 2008 to October 2009.

Member, Scientific Program Committee, Oversight Subcommittee, General Scientific Sessions Subcommittee, Abstracts Subcommittee (2006 Annual Meeting), Congress of Neurological Surgeons.

Member, Information Technology Committee, Congress of Neurological Surgeons, 2006 to October 2009.

External referee, faculty academic promotion: Neurosurgery, University of Virginia, 2007; Neurosurgery, University of Michigan, Ann Arbor, 2007; Neurosurgery, University of Virginia, 2008; Neurosurgery, Northwestern University, Chicago, 2008; Neurosurgery, Johns Hopkins University, 2009; Neurosurgery, Jefferson Medical College, 2010; Neurosurgery, University of Virginia, 2010; Neurosurgery, University of Michigan, 2010; Neurosurgery, University of California, San Diego, 2010; Neurosurgery, University of Illinois, Peoria, 2011; Neurosurgery, University of Michigan, Ann Arbor, 2012; Neurosurgery, Vanderbilt University, 2012; Neurosurgery, University of Wisconsin, 2012; Neurosurgery, UCSF, 2012; Neuroradiology, Wake Forest, 2013; Neurosurgery, Cleveland Clinic, 2013; Neurological Surgery, UCSD, 2014; Neurological Surgery, Case Western Reserve University, 2014.

Moderator, American Society of Pediatric Neurological Surgeons, General Scientific Session III, Functional Pediatric Neurosurgery, Jan. 28th, 2008, Kona, Hawaii.

Moderator, Congress of Neurological Surgeons Annual Meeting, General Scientific Session IV (Transcendent Leadership: On Surgery and Society – The Challenges of Contemporary Healthcare), Thursday, Oct. 12th, 2006, Chicago, Ill.

Moderator, Congress of Neurological Surgeons Annual Meeting, Neurosurgical Forum (Pediatric Section), Monday, October 9th, 2006.

Guest, American Board of Neurological Surgery, Written Examination Committee, February, 2006, 2007, 2008, 2013, 2014.

Guest, American Board of Neurological Surgery, Written Examination Committee, September, 2012, 2013.

Guest Examiner, American Board of Neurological Surgery Oral Examination, May 2009, 2014.

Congress of Neurological Surgery Annual Meeting, Pediatric Section Platform Session Moderator, Wed. Oct. 12th, 2005, Boston, MA.

Chairman, Rules and Regulations Committee, AANS/CNS Joint Section for Pediatric Neurological Surgery, September, 2007 to March 2010 (Member, July 2003 to August, 2007).

Regional

Western Region Course Co-Director, Foundations in Neurosurgery PGY1 Bootcamp Courses, Society of Neurological Surgeons, July 2010 to July 2012.

Course Director, Foundations in Neurosurgery “Junior Resident Bootcamp”, (University of Washington, Stanford, University of California San Francisco, University of Southern California, OHSU), August, 2009, OHSU.

Member, Program Committee, Western Neurosurgical Society Annual Meeting, Bend, OR, September 2009, and Santa Fe, New Mexico, September 2010.

Member, Organizing Committee, 2008 Julian T. Hoff Symposium, University of Michigan Medical Center, Ann Arbor, MI, July 2008.

Oregon Neurosurgical Section Liaison, American Academy of Pediatrics, September, 2004 to present.

Institutional

Chair, Search Committee for Division Chief, Pediatric Neurology, Doernbecher Children’s Hospital and OHSU, June 2014 to present.

OHSU GMEC ‘Gang of Seven’ – Strategic Planning and Program Mentoring for ACGME NAS and CLER Adoption, July 2012 to July 2014.

OHSU Traumatic Brain Injury Consortium, 2014 Co-Chair with Drs. James Chesnutt and George Keepers.

Interviewer, Search Committee for Associate Hospital Administrator, Director Neuroscience Service Line, December 2011.

Dean’s Task force on OHSU/OHSU Medical Group integration, Member, Legal Subcommittee, 2007-2008.

Strategic Planning Subcommittee, “Learners at all Levels”, SOM, OHSU, March to June 2007.

Member, OHSUMG EPIC and CHH Optimization Committee, Nov. 2006 to February 2007.

Internal referee, faculty academic promotion, OHSU School of Medicine: Pediatrics, 2003; Neurological Surgery, 2003; Psychiatry, Graduate Education, 2006; Diagnostic Radiology, 2006; Diagnostic and Interventional Radiology, 2006, Diagnostic Radiology, 2007, Plastic Surgery 2009; Pediatric Neurology, 2009; Pathology, 2010; Anesthesiology & Peri-operative Medicine, 2010; Neurological Surgery, 2011; Pediatric Nephrology, 2012; Neurology, 2012; Emergency Medicine, 2013; Anesthesiology & Peri-operative Medicine, 2013; Pediatric Oncology, 2014; Neurological Surgery, 2014 (2); Neurological Surgery/Medicine, 2014; Pediatric Anesthesia, 2014; Diagnostic Radiology, 2014; Pediatric Intensive Care, 2014.

Interviewer, Emergency Medicine Chairperson Search, OHSU, 2006.

Oregon Health & Science University Medical Group (OHSUMG), Elected Member, Board of Directors, July 2004 to July 2007.

OHSU Cancer Center, Organ System Case Reviewer (CNS), 2004 to 2006.

Medical Educators Group, Oregon Health & Science University, August 2002 to July 2004.

Departmental

Member, Promotions & Tenure Committee, Department of Neurological Surgery, 2011 to present.

Chairman, Campagna Scholarship Committee, Department of Neurological Surgery, OHSU, March 2007 to present.

Chairman, Clinical Competency Committee (formerly Residency Advisory Committee), Department of Neurological Surgery, OHSU, July 2006 to present.

Promotions and Tenure Committee, Department of Behavioral Neuroscience, July 2004 to 2013.

Community Service:

Extensive outreach activities for the Doernbecher Foundation, approximately 30 to 40 hours per year.

Attending neurosurgeon, Shriners Children's Hospital, Portland, Oregon, 2000 to present.

Catlin Gabel School, Portland, Oregon: Head Injury Prevention in School Aged Children 2006 (2 hours); 6th Grade Surgery Day Surgical Navigation Interactive Station (4 hours) 2011, 2012, 2013, 2014; 5th Grade Brain Surgery Career Session 2011 (1 hour); 2nd Grade Brain Module guest speaker 2012 (1 hour), High School Drugs and the Brain Panel 2014 (2 hours).

Clinical Responsibilities (since last promotion):

Director, Pediatric Neurosurgery, OHSU.

Attending Neurosurgeon, Doernbecher Children's Hospital.

Attending Neurosurgeon, CDRC Craniofacial Disorders Clinic.

Attending Neurosurgeon, Shriners Children's Hospital Spasticity Clinic.

Consultant Neurosurgeon, Doernbecher Interdisciplinary Epilepsy Monitoring and Surgery Conference and Program.

Consultant Neurosurgeon, Doernbecher Comprehensive Pediatric Brain Tumor Board and Clinic (co-founded in 2000).

Courtesy Staff Neurosurgeon, Department of Neurological Surgery, St. Vincent's Medical Center, Portland, Oregon.

VI. TEACHING (OHSU Educator's Portfolio):

Overview of your Role as an Educator:

My work as an educator falls into two general areas: departmental and institutional educational service, and national educational scholarship. This work has focused on curricular development and specific learning and assessment tools (both online and live) directed at quality, measurable outcomes, and improved patient safety. Digital tools and other formal assessments have been extensively used and the resultant data reported in the literature. Currently, I am involved in efforts to integrate these residency and post-residency curricular tools into a continuum of lifelong learning, with the ultimate goal of coordinating evolving residency milestone based curriculae with life long learning tools including patient outcome registries.

Departmental:

- Program Director, Neurological Surgery Residency (2005 to present)
 - Chair, Neurosurgery Residency Advisory Committee
- Development of ACMGE Competency based curriculum for RRC program reviews (2006 and 2011)
 - Quality improvement project program
 - Externally funded cranial dissections program
 - Procedural certifications program for junior residents
 - Communication certifications program for junior residents
 - Competency based evaluation tools
- New conference curriculum (including non-clinical competencies)
- Development and donor stewardship for Campagna Neurosurgery Scholarship
 - Chair of Campagna Scholars Selection Committee

Institutional:

- Member, Dean's Strategic Planning Group on Education (2007)
- Member, Educator's Working Group (2002-2004)
- Extensive direct teaching
 - 2 lectures and 2 small group teaching hours annually
 - Clinical preceptorships
 - Multiple students supervised on Neurosurgery and Pediatric Neurosurgery rotations
 - Approximately 6 hours per year of formal didactic teaching in various departments
 - Approximately 10 hours per year of didactic and dissection based anatomical teaching for neurosurgery

- Substantial career mentorship for neurosurgery residents, undergraduate, medical and post-doctoral students

National:

- Chair, ACGME Milestones Group for Neurosurgery, August 2012 to present.
- Member, ACGME Milestones Working Group for Neurosurgery, August 2011 to June 2012.
- Member, Board of Directors, NeuroPoint Alliance, October 2011 to present (parent company of National Neurosurgery Quality and Outcomes Database)
- Co-Chair, Scientific Committee, National Neurosurgery Quality and Outcomes Database
- Editor, Program Director's Toolkit, Senior Society
- Chair, Subcommittee on Boot Camp Courses, Committee on Resident Education (CoRE), Society of Neurological Surgeons
- Society of Neurological Surgeons (Chairs and Program Directors) representative to Neurosurgery Redesigning Residency Commission
- Collaborative developer and Editor of *SANSwired*, *SANS: Lifelong Learning*, and *SANS: Competencies* (Self-assessment program required by American Board of Neurological Surgery for MOC)
- Collaborative development of *Integrated Medical Learning* and *Consensus Session* novel educational programs, Congress of Neurological Surgery
- 4 years of Congress of Neurological Surgeons Annual Meeting leadership, culminating in Scientific Program Chair (2008) and Annual Meeting Chair (2009)
- 2 years of Society of Neurological Surgeons (Chairs and Program Directors) Annual Meeting leadership, culminating in Scientific Program Chair in 2012.
- Extensive national committee service and leadership for educational and curricular initiatives, including Chair, Congress of Neurological Surgeons Education Committee, January 2009 to February 2010
- Invited talks at national neurosurgical meetings and visiting professorships, specifically covering neurosurgical education topics
- Two dozen publications on surgical education, including peer-reviewed original contributions

Awards

Parker J. Palmer Courage to Teach Award, ACGME, 2013.
OHSU Graduating Class, Outstanding Mentor Designation, 2014.

Scholarship of Teaching:

Curriculum Development

Development with Neurosurgery Milestones Group of milestones compatible comprehensive evaluation tools (16 documents including 12 formative and summative evaluations, online evaluation building tool, milestones-evaluations cross referencing

tool, additional portfolio sources listing, and explanatory presentation). This represents an entirely novel methodology in coordination with the new ACGME Milestones project, plus a very large set of comprehensive and extremely detailed tools.

ACGME Neurosurgery Milestones Working Group, 2011 to 2012 and Chair, ACGME Neurosurgery Milestones Group, 2012 to present. Development of the inaugural neurosurgery milestones sets (24 sets related to the 6 ACGME competencies for neurosurgical training through residency and fellowship level).

Society of Neurological Surgeons, practical course on ACGME Accreditation and Milestones, Co-Chair and faculty member, October 2013 (in conjunction with the Congress of Neurological Surgeons Annual Meeting, San Francisco – PC13).

Society of Neurological Surgeons, symposium on the ACGME Next Accreditation System and Neurosurgical Milestones, June 2013.

Society of Neurological Surgeons, practical course on ACGME Milestones Implementation, Chair and faculty member, October 2012 (in conjunction with the Congress of Neurological Surgeons Annual Meeting, Chicago – PC14).

Society of Neurological Surgeons, curriculum needs assessment and development for national Junior Residents Course, 2012 (Course development and implementation by Dr. Rich Byrne and the Subcommittee on Resident Courses, 2013).

Society of Neurological Surgeons, symposium on the use of simulation in neurosurgical residency education, including break out sessions using manikin based cognitive and decision making skills trainers. Planning, faculty selection and organization for didactic and hands on three hour symposium for 60 neurosurgical RRC Program Directors and department chairs, May, 2011.

Society of Neurological Surgeons PGY1 Boot Camp Courses national curriculum, 2010-present. Six regional courses (Portland, Chicago, Houston, Atlanta, Philadelphia, Boston) serving all (approximately 200) U.S. neurological surgery interns nationally. Responsible for coordination with national program directors society and sponsors, leadership of responsible SNS committee, curriculum creation, course materials creation, design and implementation of national course surveys, selection of course cities, centers and directors. This national effort was the subject of a news report on CNN, *Calling Dr. Gupta*, August 2010.

Pacific Region PGY1 Boot Camp curriculum, (University of Washington, Stanford, University of California San Francisco, University of Southern California, OHSU), August, 2009, OHSU. Pilot PGY1 Boot Camp course. Responsible for curriculum design, funding, organization, faculty selection and administration.

Self-Assessment in Neurological Surgery (SANS), Non-clinical core competencies curriculum, at <http://sans.cns.org>.

OHSU Neurosurgery Residency Program conference curriculum.

Educational Publications

See Publications (Peer-reviewed, Non peer-reviewed, and Electronic)

Educational Conference Presentations

National:

See invited presentations.

Local:

Chiari I Malformation: Pathophysiology, Surgical Techniques, and Case Presentations, Neurological Surgery Grand Rounds, OHSU, July, 2014.

Update on Milestones, Evaluations and NAS – What it means for residents, Neurological Surgery Grand Rounds, OHSU, June, 2014.

Clinical Presentation and Management of Dysraphism, Spine Conference, Departments of Neurological Surgery and Orthopedics, Oregon Health & Science University, May 2014.

Quick Brain MRI for VP Shunt Failure: Quality Improvement, Utilization and Test Characteristics, Neurosurgery Grand Rounds, January 2014.

Matching in Neurological Surgery, Neurosurgery Interest Group, OHSU SOM, January 2014.

Choosing Neurosurgery (Lecture, MSII). OHSU School of Medicine Continuity Specialty Course: Neurosurgery, September, 2013.

Milestones Compatible Resident Evaluations: How To. Neurosurgery Grand Rounds, August, 2013.

The Future of Neurosurgical Technology, OHSU Foundation Board Luncheon, June 2013.

ACGME Milestones: What they mean for our program. OHSU Neurosurgery Teaching Conference, May 2013.

Safe Patient Care Hand Offs. OHSU Neurosurgery Grand Rounds, February 2013.

Hydrocephalus and ventriculoperitoneal shunts. OHSU School of Medicine MS II Neurosciences course, February, 2013.

Academic career development in neurological surgery. OHSU Neurosurgery Grand Rounds, January, 2013.

The Future of Doernbecher Neurosurgery, Doernbecher Foundation Board Luncheon Meeting, December, 2012.

Milestones: A practical approach. Portland VA Medical Center GME Group Meeting, December, 2012.

ACGME Milestones, what it means for PD's, PC's and Programs. OHSU GME Afternoon Seminar, OHSU, August, 2012.

Hydrocephalus and ventriculoperitoneal shunts. OHSU School of Medicine MS II Neurosciences course, February, 2012.

Cutaneous markers of dysraphism, Pediatric resident luncheon seminar, September 2011.

Cranial vault shape, synostosis and positional head deformity. Department of Neurological Surgery Grand Rounds, OHSU, August 8, 2011.

Ethics in human subjects research. Department of Neurological Surgery Grand Rounds, OHSU, March 28, 2011.

Head shape and size, diagnosis and treatment of synostosis. Department of Neurological Surgery Grand Rounds, OHSU, November 29, 2010.

Professionalism in Neurological Surgery. Department of Neurological Surgery Grand Rounds, OHSU, June 2010.

Craniopharyngiomas in Children: To Resect or Not To Resect? Department of Pediatrics Grand Rounds, OHSU, January 2010.

Modified orbitozygomatic craniotomy for craniopharyngioma resection in children, Neurosurgery Grand Rounds, Oregon Health & Science University, November, 2009.

CSF Shunt Emergencies, Neurosurgery Grand Rounds, Oregon Health & Science University, July, 2009.

Clinical Research Using CNS Cellular Therapeutics: Barriers and Strategies, Neurosurgery Grand Rounds, Oregon Health & Science University, November, 2008.

Human Subjects Research: Obligation to the Patient, Neurosurgery Grand Rounds, Oregon Health & Science University, August, 2008.

Evaluation of CSF Shunt Malfunction, Neurosurgery Grand Rounds, Oregon Health & Science University, July, 2008.

Chiari I Malformation: Indications and Methods, Neurosurgery Grand Rounds, Oregon Health & Science University, May, 2008.

Lumps, Bumps, Pits and Tracts in Dysraphism, Pediatrics Grand Rounds, Oregon Health & Science University, October, 2007.

Cutaneous Signs of Cranial and Spinal Dysraphism, Neurosurgery Grand Rounds, Oregon Health & Science University, October, 2007.

Pediatric Neurosurgical Emergencies, Neurosurgery Grand Rounds, August, 2007.

The Amygdala and Pain Modulation. Behavioural Neuroscience Monday Morning Seminars, October 30th, 2006.

Tethered cord controversies: The state of the art. OHSU Neurosurgery Grand Rounds, September, 2006.

Advances in Epilepsy Surgery for Children, Doernbecher Children's Hospital – Credit Unions for Kids Annual Luncheon (with Colin Roberts, MD), June, 2006.

Discussant: Occult Tethered Cord Syndrome, Pediatrics Department Journal Club, OHSU, June, 2006.

Lifelong Learning in Neurological Surgery. OHSU Department of Neurology Grand Rounds, June, 2006.

What Are the Core Competencies and How Do We Learn Them? OHSU Neurosurgery Teaching Conference, February, 2006.

'Forgive and Remember': Ethical Behavior in Neurological Surgery Training. OHSU Neurosurgery Teaching Conference, January, 2006.

Evidence and Minimal Tethered Spinal Cord: Where we are headed. OHSU Department of Neurology Grand Rounds, November, 2005.

Pain Modulatory Neurons in the Medulla. Department of Behavioral Neuroscience Research Seminar, October, 2005.

Tethered Spinal Cord: Current Practices and Controversy. OHSU Neurosurgery Teaching Conference, September, 2005.

Hydrocephalus: Principles and Emergency Treatment. OHSU Neurosurgery Teaching Conference, July, 2005.

Descending Pain Modulation and the Medulla. Oregon Child Health Research Center Site Review Conference, February, 2005, OHSU.

Doernbecher Childhood Epilepsy Program. Department of Pediatrics Grand Rounds, February, 2005.

Advances in the Surgical Care of Epilepsy in Children, Board of Directors Meeting, Doernbecher Children's Hospital Foundation, Oregon Health & Science University, December, 2004.

Recurrent High Grade Ependymoma, Department of Pediatrics Tumor Board, Oregon Health & Science University, August, 2004.

Quality Review and Protocol Care for Children With Ventricular Shunts, Neurosurgery Department Teaching Conference, Oregon Health & Science University, July, 2004.

Indications for Surgical Management of Chiari I Malformation: New Data from Doernbecher Children's Hospital on Minimally Invasive Techniques, Neurology/Neurosurgery Grand Rounds, Oregon Health & Science University, December, 2003.

Guidelines for the Management of Severe Traumatic Brain Injury in Children. Neurology/Neurosurgery Grand Rounds, Oregon Health & Science University, Portland, Oregon, September, 2003.

Guidelines for the Management of Severe Traumatic Brain Injury in Children. Pediatrics Grand Rounds, Doernbecher Children's Hospital, Portland, Oregon, September, 2003.

Evidence Based Medicine: Guideline Formulation – Pediatric Head Injury. Neurosurgery Grand Rounds, Oregon Health & Science University, Portland, Oregon, August, 2003.

Spinal Cord Tethering, An Evidence Based Approach. Pediatric Grand Rounds, Doernbecher Children's Hospital, Portland, Oregon, May 2003.

Development of Nociceptive Systems in the CNS and PNS. Pain Elective Course, 2nd Year SOM, March 2003.

Core Competencies Training in Neurological Surgery, Neurological Surgery Teaching Conference, Oregon Health & Science University, Portland, Oregon, March, 2003.

Emergency Care of Hydrocephalus Patients. Neurological Surgery Teaching Conference, Oregon Health & Science University, Portland, Oregon, February, 2003.

A Vision for Pediatric Neurosurgery at OHSU. Pediatric Neurosurgery Team Building Retreat, Portland, Oregon, February, 2003.

Cerebral Mass Lesions. Neuroscience and Behavior, 2nd Year Core Course, Oregon Health & Science University, School of Medicine, Portland, Oregon, February, 2001, 02, 03.

Intrathecal baclofen therapy for spasticity. Operating Room Training Series, Doernbecher Children's Hospital, January, 2003.

Neurological Surgery for Pain. Neuroscience and Behavior, 2nd Year Core Course, Oregon Health & Science University, School of Medicine, Portland, Oregon, January, 2003.

Pediatric Neurosurgical Emergencies. Emergency Medicine Teaching Lecture Series, Oregon Health & Science University, School of Medicine, Portland, Oregon, January, 2003.

Anatomical investigation of pain modulatory circuitry in the rostral ventromedial medulla. Raaf Professorship Celebration, Oregon Health & Science University, Neurosurgery Departmental Presentations, October, 2002.

Team Building. Leadership and Residency Core Competencies Working Group Meeting. Oregon Health & Science University, October, 2002.

Spinal Cord De-tethering: Current Practice and Controversies. Neurology/Neurosurgery Grand Rounds, Oregon Health & Science University, October, 2002.

Post-hemorrhagic Hydrocephalus. Neonatology Fellows Teaching Conference, Oregon Health & Science University, March, 2002.

Careers in Neurosurgery: "It ain't just brain surgery". School of Medicine, Oregon Health and Science University, March, 2002.

Management of Spinal Tumors in Neurofibromatosis. Pediatric Oncology Seminar, Oregon Health & Science University, August, 2001.

Triage and Management of Hydrocephalus Patients. Neurology/Neurosurgery Grand Rounds. Oregon Health & Science University, Portland, Oregon, June 2001.

Interdisciplinary Care in Pediatric Neurosurgery. Society for University Neurosurgeons. Oregon Health & Science University, Portland, Oregon, June, 2001.

Advances in Pediatric Neurological Surgery. Credit Unions for Kids, Doernbecher Children's Hospital, May, 2001.

Pediatric Neurosurgery for the 21st Century. Doernbecher Children's Hospital Foundation Board Meeting, Portland, Oregon, May, 2001.

Spinal cord de-tethering: Is it worth it? CDRC/Shriner's Children's Hospital Annual Spina Bifida Conference, Portland, Oregon, April 2001.

Surgical Care of the Hydrocephalus Patient. Doernbecher Children's Hospital Operating Rooms Nursing Conference, March, 2001.

Doernbecher Children's Hospital Comprehensive Pediatric Brain Tumor Program, Doernbecher Medical Staff Meeting, March, 2001.

Acute paraplegia in a toddler. Doernbecher Children's Hospital Grand Rounds, Oregon Health & Science University, Portland, Oregon, February, 2001.

Development of Pediatric Neurosurgery at OHSU. Doernbecher Children's Hospital Foundation Board Meeting, Oregon Health & Science University, Portland, Oregon, February, 2001.

Pediatric Management of Children with Hydrocephalus. Pediatrics Teaching Conference, Oregon Health & Science University, Portland, Oregon, February, 2001.

Hydrocephalus emergencies. Emergency Medicine Grand Rounds, Oregon Health & Science University, Oregon, January, 2001.

Diagnosis and management of hydrocephalus. Primary and acute care pediatrics course, Oregon Health & Science University, Portland, Oregon, November, 2000.

Technology in pediatric neurological surgery. Doernbecher Children's Hospital Grand Rounds, Oregon Health & Science University, Portland, Oregon, November, 2000.

Evaluation and surgical management of hydrocephalus. Neurosurgery teaching seminar, Oregon Health & Science University, Portland, Oregon, September, 2000.

Evaluation and management of cervical spinal cord injury. Neurology/Neurosurgery Grand Rounds, Oregon Health & Science University, Portland, Oregon, September, 2000.

Computer-guided stereotaxy for surgical neuro-oncology in children. Pediatric Oncology Seminar, Oregon Health & Science University, Portland, Oregon, September, 2000.

ICU management of raised intra-cranial pressure. Pediatric Intensive Care Unit Nursing Education Series, Oregon Health & Science University, Portland, Oregon, August, 2000.

Coronal Synostosis. Neurosurgical Grand Rounds, Northwestern University Medical School, Chicago, Illinois, December, 1999.

The University of Michigan Emergent Imaging and Decompression Protocol. 150th Anniversary of the Department of Surgery, Scientific Symposia, University of Michigan Medical Center, Ann Arbor, Michigan, June, 1999.

Contemporary management of spinal cord injury. Trauma Surgical Grand Rounds, Department of Surgery, University of Michigan Medical Center, Ann Arbor, Michigan, May, 1999.

Brainstem reticular activating system: A current perspective. Neurosurgical Grand Rounds, University of Michigan Medical Center, Ann Arbor, Michigan, 1998.

Pathophysiology and management of spinal cord injury. Neurosurgical Grand Rounds, University of Michigan Medical Center, Ann Arbor, Michigan, 1998.

Microtubule associated proteins and cortical anatomy in the human brain. Neurosurgical Grand Rounds, University of Michigan Medical Center, Ann Arbor, Michigan, 1998.

Chiari I Malformation: Pathophysiology and surgical management. Neurosurgical Grand Rounds, University of Michigan Medical Center, Ann Arbor, Michigan, 1996.

The research team: students and their mentors. Walter B. Cannon Society Research Symposium, Harvard Medical School, 1993.

Locus ceruleus and selective attention in animal models. Seminars in Behavioral Neurology, Longwood Area Hospitals and the Harvard Medical School Department of Neurology, 1991.

Prospects for the Class of 1993 in science and medicine. In 'Medicine 1940-1990: Perspectives in patient care.' Scientific Symposia of the Harvard Medical Alumni Association, 1990.

Stress, spatial learning and ceruleo-cortical noradrenaline. Behavioral Neurobiology Seminars, Departments of Anatomy and Experimental Psychology, University of Cambridge, 1989.

Noradrenaline and attention. Behavioral Neurobiology Seminars, Departments of Anatomy and Experimental Psychology, University of Cambridge, 1988.

Education Grants and Contracts:

2011-15 Society of Neurological Surgeons National PGY1 Bootcamp Courses. Direct costs grant (not including extensive national donation of in kind resources by multiple corporate sponsors). From Stryker, to the Society of Neurological Surgeons and Congress of Neurological Surgeons, \$1,890,000.

2010 Society of Neurological Surgeons National PGY1 Bootcamp Courses. 6 direct unrestricted educational grants to regional course centers totaling \$150,000, plus \$150,000 in in-kind donations.

2010 Society of Neurological Surgeons Western Regional PGY1 Bootcamp Course, Co-Director, \$25,000 cash and \$17,000 of in kind unrestricted educational grants to OHSU Neurosurgery.

Campagna Scholarship endowment, to Doernbecher Children's Hospital Foundation, Administered by the Department of Neurological Surgery, \$215,000.

Unrestricted educational grants for Integrated Medical Learning®, Integra Foundation, to the Scientific Program Committee of the Congress of Neurological Surgeons, \$100,000 (2007) and \$100,000 (2008).

Unrestricted educational grant to OHSU Neurosurgery Residency Program for trainee attendance at the Woods Hole 'Research and Update in Neurosurgery & Neuroscience' training course, Synthes CMF Education, \$5000, 2009, 2010, 2011.

Unrestricted educational grant to OHSU Neurosurgery Residency Program for trainee attendance at the Armed Forces Institute of Pathology Course, Stryker Educational Foundation, \$5000, 2008, 2009, 2010, 2011.

Unrestricted educational grant to OHSU Neurosurgery Residency Program Cranial Dissection Curriculum (cadavers and supplies), Synthes Educational Foundation, \$4000 each in 2007 and 2008, \$6000 in 2009, 2010, 2011, 2012.

Educational Activity (see Appendix A and B):

Faculty, OHSU MS 1 Gross Anatomy Lab, 2 hour spinal cord and meninges module, 2009, 2010.

Faculty, Oregon Health & Science University Neurological Surgery Teaching Conference: Series of eight tutorials on human neuroanatomy, 2002, 2003, 2006, 2008, 2010.

Faculty, Neurosciences Core Course, School of Medicine, Oregon Health & Science University: 2 lectures (Surgical Management of Pain, and Mass Lesions) and 2 small group tutorials (Head Injury and Mass Lesions), annually 2001-10. Lecture on Pediatric Neurosurgery and Hydrocephalus, 2012.

Faculty preceptor, Pediatric neurosurgery rotation, Oregon Health & Science University: Monthly rotation for 5 students in 2000-05, 2 in 2006, one student 2007, two students, 2008, 2009 and 2010, one student 2011.

Faculty, Continuity Curriculum, School of Medicine, Oregon Health & Science University: 1 lecture (Neurosurgery: Emergencies in Pediatric Neurosurgery), 2009.

Clinical Preceptor SOM 2nd Year Students: Spring term 2007.

Faculty preceptor, Child Health II rotation, one month neurosurgery selective, Oregon Health & Science University, 2004 to present, two students 2006, one student 2012.

Faculty, Oregon Health & Science University, School of Medicine 2nd Year Elective Course in Pain Medicine and Neuroscience, 'Pain and Nervous System Development' Seminar, 2002 and 2004.

Faculty, Nervous System and Behavior Core Course, Harvard Medical School, 1992.

Faculty, Natural Sciences, Queens' College, University of Cambridge, 1987 to 1989.

Teaching Assistant, Human Biology Core, Stanford University, Spring, 1986.

Service and Membership of Educational Committees:

See Committees (International/National, Regional, and Institutional)

Mentoring:

Neurosurgical Trainees:

Hai Sun (2014) – Fellow in Skull Base and Vascular Neurosurgery, Barrow Institute, Phoenix, Arizona.

Neil Roundy (2014) – Staff Neurosurgeon, Peace Health, Eugene, Oregon.

Eric Thompson (2013) – Asst. Professor, Duke University (after fellowship in Pediatric Neurological Surgery, Hospital for Sick Children, University of Toronto, Toronto, Canada).

Mark Piedra (2013) – Staff Neurosurgeon, Billings, Montana.

Ahmed Raslan (2012) – Assistant Professor, Functional neurosurgery, Oregon Health & Science University.

Mehmet Berk (2012) – Staff Neurosurgeon, Legacy Health Care, Portland, Oregon.

Emun Abdu (2011) – Staff Neurosurgeon, House Institute, Los Angeles, California, (after fellowship in Vascular and endovascular neurosurgery, Swedish Hospital, Seattle, Washington).

Samual Hughes (2011) – Staff neurosurgeon, Adventist Hospital, Portland, Oregon.

Zachary Litvack (2010) – Asst Professor, George Washington University and Residency Program Director (after NREF skull base endoscopic fellowship at Harvard/Brigham & Women's Hospital).

Jason Weinstein (2010) – Chief of Neurosurgery, Northwest Permanente, Portland, Oregon.

Kiarash Golshani (2009) – Asst Professor, Loma Linda University (after endovascular fellowship at Duke University).

Justin Cetas (2009) – Associate Professor, Oregon Health & Science University (after skull base fellowship at Oregon Health & Science University).

Kenneth Liu (2008) – Asst Professor, University of Virginia, Charlottesville (after endovascular fellowship at Oregon Health & Science University).

Jonathan Carlson (2008) – Staff Neurosurgeon, Sacred Heart Medical Center, Spokane, Washington.

Matthew Hunt (2007) – Asst Professor and Residency Program Director, University of Minnesota (after skull base fellowship at Queen’s Square, London, England).

Warren Roberts (2007) – Staff Neurosurgeon, Adventist Hospital, Denver, Colorado.

Aclan Dogan (2006) – Associate Professor, Oregon Health & Science University (after skull base and endovascular fellowships at Oregon Health & Science University).

Farhad Limonadi (2005) – Staff Neurosurgeon, Eisenhower Medical Center, Palm Desert, California.

Additional/Other:

Marshall Scholarship Alumni Mentor – Stanford University, 2013 to present.

Eric Thompson, MD, resident, Pediatric neurosurgery and organized medicine, 2006 to present, multiple peer reviewed articles and national presentations on pediatric neurosurgery topics, application for CSNS socioeconomic fellowship, application to pediatric neurosurgery fellowships.

Susan Wozniak, MD (candidate), 2010 Campagna Scholar, 3 peer reviewed publications on vagal nerve stimulator therapy in children, national conference presentation.

Zachary Litvack, MD, resident, Pediatric neurosurgery and organized medicine, 2005 to 2010, chapter in Youman’s textbook on tethered cord; Congress of Neurological Surgeons Top Ten abstract (Pediatric Section), Western Neurosurgical Society Clinical Award, and journal article on extradural Chiari decompression; Chair of CNS Resident and SANS Resident Challenge Committees and full membership on CNS Executive Committee (2 years).

Jen Maire, BS, laboratory assistant, Central Mechanisms of Nociceptive Modulation, Selden laboratory, 2008 to 2009, publication of peer-reviewed manuscript, application to OHSU Medical School.

Liesl Close, BA, laboratory assistant, Central Mechanisms of Nociceptive Modulation, Selden laboratory, 2004 to 2008, publication of multiple peer-reviewed manuscripts, admission to OHSU Medical School, application to neurosurgical residency 2011-12.

Justin Ortiz, MD, postdoctoral researcher, Central Mechanisms of Nociceptive Modulation, Selden laboratory, August 2005 to present, publication of multiple peer-reviewed manuscripts, Anesthesiology National Academy Resident Award, admission to funded Research Track, OHSU Anesthesia and Peri-operative Medicine Residency Program.

Jonathan Carlson, MD, PhD, neurosurgical house officer: Laboratory rotation co-supervisor, Dr. Carlson awarded Congress of Neurological Surgeons Tasker Award for Pain Research (2004), three manuscripts published. Mentor for Dr. Carlson’s successful OHSU Tartar Foundation resident research grant (\$2000, 2004).

Justin Cetas, MD, PhD, neurosurgical house officer: Laboratory rotation supervisor, August, 2004 to present, three manuscripts published.

Lesley Siler, OHSU MD-PhD candidate (MSTP): Laboratory rotation supervisor (summer 2003), Clinical preceptor, pediatric neurosurgery (summer 2003 and winter 2005). Successful application for internal medicine residency.

Hallie Gardner, University of Virginia pre-medical undergraduate. Summer intern 2003, participation in clinical research project, clinical observation. Successful applicant to medical school.

Rebecca Allen, Stanford University undergraduate. Summer intern, 2002, participation in clinical research project, clinical observation, co-authorship of peer-reviewed, published manuscript and two abstracts, successful application to OHSU Medical School.

Nayna Patel, University of Michigan undergraduate, Rotating and research student, 1999, participation in clinical research project, co-authorship of two peer-reviewed, published manuscripts and three abstracts, admission to University of Michigan Medical School.

Student Advisor, quarter-time academic advising position, Program in Human Biology, Stanford University, Stanford, California, 1985-86.

Resident Advisor, Program in Residential Education, Stanford University, Stanford, California, 1985-86.

VII. PERSONAL

Diploma with High Honors, Phillips Exeter Academy, 1981.

- Legislative Intern, U.S. Senator Max Baucus, Washington, D.C., January to June, 1981.

President, Phi Kappa Psi Fraternity, Stanford University, 1984.

Starboard oarsman, 2nd, 3rd and 4th Eights, Jesus College Cambridge, England, 1986 to 1989.

Starting guard, Jesus College Basketball Team (1988 University Cup Champions), 1986 to 1989.

Interests: Alpine skiing, whitewater rafting, hiking, backpacking, basketball, squash, mystery novels.

Married: Dr. Karen B. Selden (Hedges), Plastic and Reconstructive Surgeon. Three children.

Last Revised: December 12th, 2014