M. SERDAR ALP, MD

Iran Caddesi No: 13/20 Kavaklidere 06540, Ankara, Turkey e-mail: alpms@hotmail.com

EDUCATION

1977 – 1980	Izmir Turk College, Izmir, Turkey
1980 – 1986	Medical School of Ankara University, Ankara, Turkey
August 1984	Elective Course at Department of Radiology, Hammersmith Hospital, Royal Postgraduate Medical School, London, England
Oct – Nov 1985	Internship at Department of Neurosurgery, Maida Vale Hospital, London, England

HONORS & AWARDS

Second Degree Award of Mathematics By Turkish Scientific And Technical Research Council, 1979

EMPLOYMENT RECORD

Dec 1986 – Dec 1988	Neurosurgery Resident Department of Neurosurgery, Medical School of Gazi University, Ankara, Turkey
Jan 1989 – Jan 1990	Research Fellow Department of Neurosurgery, The National Hospital For Nervous Diseases, London, England
Feb 1990 – Jun 1993	Neurosurgery Resident Department of Neurosurgery, Medical School of Gazi University, Ankara, Turkey
Feb 1994 – Jun 1994	Research Fellow Department of Neurosurgery, University of Illinois at Chicago, Chicago, Illinois
Jul 1994 – Jun 1997	Clinical Fellow Stereotaxy and Image-Guided Neurosurgery at Department of Neurosurgery, University of Illinois at Chicago, Chicago, Illinois
Jan 1996 – Mar 2000	Assistant to Editor in Surgical Neurology, Chicago, Illinois
Jul 1997 – Jul 1998	General Surgery Intern Department of Surgery, University of Illinois at Chicago, Chicago, Illinois
Jul 1998 – Jun 2003	Neurosurgery Resident Department of Neurosurgery, University of Illinois at Chicago,

Jul 2003 – Jun 2004 Clinical Fellow

Skull Base Surgery at Department of Neurological Surgery, Oregon Health & Science University, Portland, Oregon

Nov 2004 – Jul 2008 Assistant Professor of Neurosurgery

Department of Neurosurgery, University of Texas at Houston,

Houston, Texas

Aug 2008 – Jul 2009 Clinical Fellow And Faculty

Department of Orthopaedic Surgery, Spine Section, Johns

Hopkins University, Baltimore, Maryland

Oct 2009 – Mar 2018 Consultant Neurosurgeon

Ankara Guven Hospital, Ankara, Turkey

Apr 2018 – June 2020 Chief of Department of Neurosurgery

Ankara Guven Hospital, Ankara, Turkey

May 2019 – Jan 2020 Director of Guven Future Company

Ankara, Turkey

Oct 2015 – up to date CEO of Zanzybar, Health Information Technologies

Ankara, Turkey

LICENSES & CERTIFICATES

- 1. ECFMG Certificate
 Certificate # 0-449-455-5, Permanent
- 2. State of Illinois Medical Licence Licence # 125-032204, Temporary
- 3. State of Oregon Medical Licence Licence # LL12612, Temporary
- 4. Turkish Medical Licence Licence # 7680, Permanent
- **5.** Certificate of "Modern Dissection Techniques of Bone, Biometals, and Bioplastics Course", October 13-15, 1994, Chicago, Illinois
- 6. Certificate of "Advanced Skull Base Microanatomy and Hand-On Dissection Workshop", November 17-19, 1995, Allegheny General Hospital Pittsburgh, Pennsylvania
- 7. Certificate of "Image-Guided Surgery, Stereotaxy, Radiosurgery July 1 1994- June 30, 1997, University of Illinois at Chicago, Illinois
- Diploma of General Surgery Internship June 23, 1998, University of Illinois at Chicago, Chicago, Illinois

- 9. Certificate of "Review and Update in Neurobiology for Neurosurgeons" October 15-22, 2000, Marine Biology Laboratory, Woods Hole, Massachusetts
- **10.** Certificate of "Advanced Techniques in Image-Guided Brain and Spine Surgery" December 12-15, 2000, The Mount Sinai Medical School, New York, New York
- Certificate of "Neuropathology Review Course"
 February 24-28, 2003, The Armed Forces Institute of Pathology, Bethesda, Maryland
- **12.** Certificate of "Skull Base Surgery And Neurootology" May 13-18, 2004, West Palm Beach, Florida
- **13.** Diploma of "Neurooncology & Skull Base Surgery" June 30, 2004, Portland, Oregon
- 14. Texas Medical License License # FTL 41906

MEMBERSHIPS

- 1. Member of American Association of Neurological Surgeons
- 2. Member of Congress of Neurological Surgeons
- 3. Member of Turkish Neurosurgical Association

PUBLICATIONS

- 1. Alp MS, Crockard HA: Lesson of the week: Late complication of undetected odontoid fracture in children. BMJ 300(6720):319-320, 1990.
- 2. Alp MS: What is a Torkildsen shunt? Surg Neurol 43:405-406, 1995.
- 3. Alp MS: Periventricular lucency on computed tomography associated with hydrocephalus: What is the cause? Surg Neurol 44:285-286, 1995.
- 4. Alp MS,, Luer MS, Misra M, Dujovny M, Ausman JI: Modified solution for filling MRI coordinate indicators for the ZD stereotactic frame. Neurol Res 17:295-296, 1995.
- Misra M, Dujovny M, Aletich V, <u>Alp MS</u>, Debrun GM, Ausman JI: Transcranial cerebral oximetry in endovascular treatment of carotid-cavernous fistula. Neuroradiology 38:590-594, 1996.
- 6. Misra M, Nijensohn E, Debrun GM, Charbel FT, Alp MS, Ausman JI: Transverse sinus dural fistula: Combined surgical and endovascular approach. A case report. Surg Neurol 46:129-134, 1996.
- 7. Dujovny M, Misra M, <u>Alp MS</u>, Slavin K, Ausman JI: Carotid-Cavernous fistula and jugular venous oxygen saturation (letter). J Neurosurg 84:723, 1996.
- **8.** Misra M, <u>Alp MS</u>, Dujovny M, Ausman JI: Near-infrared spectroscopy use in patients with head injury (letter). J Neurosurg 85:363-364, 1996.
- 9. Misra M, Alp MS, Ausman JI: Magnetic resonance angiography for anterior midline

- aneurysms (letter) Br J Neurosurg 10:621-622, 1996.
- Misra M, Dujovny M, <u>Alp MS</u>: Cerebral oxygen saturation: Windows to the brain. Psychline 1:33-36, 1996.
- Dujovny M, Dujovny N, Fiat D, Gundamraj NR, Misra M, <u>Alp MS</u>, ZhaoYJ: Magnetic field gradients in the MRI suite and their effects on aneurysm clips. Neurol Res 18:483-486, 1996.
- **12.** Dujovny M, Gundamraj NR, Misra M, <u>Alp MS</u>: Aneurysm clips. Crit Rev Neurosurg 7:169-175, 1997.
- **13.** Dujovny M, Misra M, <u>Alp MS</u>: The Ad-Tech disposable brain biopsy needle. Surg Neurol 46:597-598, 1996.
- **14.** Alp MS, Dujovny M, Charbel FT, Ausman JI: Image-guided stereotactic neurosurgery with the MKM mocroscope (comment). Surg Neurol 47:176-177, 1997.
- **15.** Dujovny M, <u>Alp MS</u>, Slavin K, Dujovny N, Misra M, Zhao YJ, Jackson L: Magnetic characteristics of Yasargil aneurysm clips. Surg Neurol 47:547-550, 1997.
- **16.** Dujovny M, Gundamraj NR, <u>Alp MS</u>, Misra M: Aneurysm clip testing for ferromagnetic properties: Clip variability issues. Radiology 202:637-639, 1997.
- 17. Aspey BS, <u>Alp MS</u>, Patel Y, Harrison MJ: Effects of combined glutamate and platelet-activating factor inhibition on the outcome of focal cerebral ischemia an initial screening study. Metab Brain Dis 12:237-249, 1997.
- 18. Misra M, Dujovny M, <u>Alp MS</u>, Slavin KV, Ausman JI, Widman RA:Changes in cerebral oxygen saturation with change in posture: a preliminary report. J Stroke Cerebrovasc Dis 6:337-340, 1997.
- 19. Dujovny M, Alp MS, Dujovny N, Zhao YJ, Gundamraj NR, Misra M, Dobben G: Aneurysm clips: Magnetic quantification of and magnetic resonance imaging safety. J Neurosurg 87:788-794, 1997.
- 20. Misra M, Dujovny M, Alp MS: Endoscopi instruments. Surg Neurol 48:140-142, 1997.
- **21.** Agner C, Dujovny M, Misra M, <u>Alp MS</u>: Balloon occlusion test. Crit Rev Neurosurg 7:169-175, 1997.
- **22.** Alp MS, Misra M, Dujovny M, Ausman JI: Diagnosis of traumatic carotid-cavernous sinus fistula by monitoring venous oxygen saturation in the jugular bulb: Report of two cases (letter). Neurosurgery 41:996-997, 1997.
- **23.** Alp MS: Frameless stereotactic lesion contour-guided surgery using a computer-navigated microscope (comment). Surg Neurol 49:288-289, 1998.
- **24.** Alp MS, Dujovny M, Charbel FT, Ausman JI: Head registration techniques for image-guided surgery. Neurol Res 20:31-37, 1998.
- **25.** Bashir Q, Thornton J, <u>Alp MS</u>, Debrun GM, Aletich VA, Charbel FT, Ausman JI: Carotid-cavernous fistula associated with Ehlers-Danlos syndrome type IV. A case report and

review of literature. Interventional Neuroradiology 5:313-320, 1999.

- 26. Roitberg BZ, Khan N, <u>Alp MS</u>, Hersonskey T, Charbel FT, Ausman JI: Bedside external ventricular ventricular drain placement for the treatment of acute hydrocephalus. Brit J Neurosurg 15:324-327, 2001.
- **27.** Corsten L, Raja A, Guppy K, Roitberg B, Misra M, <u>Alp MS</u>, Charbel F, Debrun G, Ausman J: Contemporary management of subarachnoid hemorrhage and vasospasm: The UIC experience. Surg Neurol 56:140-150, 2001.
- **28.** Roitberg BZ, Tuccar E, <u>Alp MS</u>: Bilateral paramedian thalamic infarct in the presence of an unpaired thalamic perforating artery. Acta Neurochir (Wien) 144:301-304, 2002.
- **29.** Powner DJ, Boccalandro C, Alp, MS, Vollmer DG: Endocrine failure after traumatic brain injury in adults. Neurocrit Care 5:61-70, 2006.

PRESENTATIONS

- **1.** Baykaner K, Çeviker N, Alp H, Turan A, <u>Alp MS</u>: Intracranial arachnoid cysts. Turkish Neurosurgical Congress, April 22-26, 1987, Mersin, Turkey.
- **2.** Baykaner K, Çeviker N, Orbay T, <u>Alp MS</u>, Alp H: Spinal tumors. Review of 59 cases. The 17th Congress of Middle East Neurosurgical Society, May 25-28, 1988, Antalya, Turkey.
- 3. Orbay T, Alp MS, Tosun H, Alp H, Kadioglu D: Approach to lateral clivus and mid-basilar artery via temporal tip resection. A cadaver study. The First Skull Base Congress, June 14-20, 1992, Hannover, Germany.
- **4.** Çeviker N, Erdogan B, <u>Alp MS</u>, Baykaner K, Alp H: Pituitary tumors. A retrospective study. Turkish Neurosurgical Congress, May 22-26, 1993, Antalya, Turkey.
- **5.** Orbay T, Tosun H, Aykol S, <u>Alp MS</u>, Alp H: Acoustic neurinoma with multiple meningiomas. Turkish Neurosurgical Congress, May 22-26, 1993, Antalya, Turkey.
- 6. Orbay T, Alp MS, Tosun H, Çeviker N, Baykaner K, Alp H: Cerebellar arteriovenous malformation with multiple PICA aneurysms. Turkish Neurosurgical Congress, May 22-26, 1993, Antalya, Turkey.
- 7. Alp MS, Debrun G, Dujovny M, Misra M, Ausman JI: Monitoring during the balloon occlusion test: Preliminary study. The Sixth Annual Meeting of the North American Skull Base Society, February 18-21, 1995, Naples, Florida.
- 8. Alp MS, Dujovny M, Slavin KS, Luer MS, Ausman JI: Use of transcranial cerebral oximetry in diagnostic and therapeutic angiographies. The 63rd Annual Meeting of the American Association of Neurological Surgeons, April 22-27, 1995, Orlando, Florida.
- Dujovny M, <u>Alp MS</u>, Slavin KV, Dobben G, Ausman JI: Magnetic characteristics of aneurysm clips. The 63rd Annual Meeting of the American Association of Neurological Surgeons, April 22-27, 1995, Orlando, Florida.
- 10. Misra M, Dujovny M, Alp MS, Slavin KS, Ausman JI: Autoregulatory dysfunction seen in cerebral oximetry: A preliminary report. The Fourth International Workshop on Cerebrovascular Surgery, June 11-14, 1995, Chicago, Illinois.

- 11. Dujovny M, <u>Alp MS</u>, Dujovny N, Misra M, Ausman JI: Aneurysm clip compatability. The Fourth International Workshop on Cerebrovascular Surgery, June 11-14, 1995, Chicago, Illinois.
- 12. Misra M, Dujovny M, Aletich V, <u>Alp MS</u>, Debrun G, Ausman JI: Cerebral oxygen saturation during endovascular occlusion of carotid-cavernous fistula. The Fourth International Workshop on Cerebrovascular Surgery, June 11-14, 1995, Chicago, Illinois.
- 13. Alp MS, Dujovny M, Aletich V, Debrun G, Misra M, Ausman JI: Balloon occlusion test and cerebral oxygen saturation monitoring. The Fourth International Workshop on Cerebrovascular Surgery, June 11-14, 1995, Chicago, Illinois.
- 14. Ausman JI, Dujovny M, <u>Alp MS</u>, Goldberg A, Charbel FT, Misra M, Brunner D: Imageguided computer-interacted surgery. The 45th Annual Meeting of Congress of Neurological Surgeons, October 14-19, 1995, San Francisco, California.
- 15. Misra M, Dujovny M, Aletich V, <u>Alp MS</u>, Debrun G, Ausman JI: Cerebral oxygen saturation during endovascular occlusion of carotid-cavernous fistula. The 45th Annual Meeting of Congress of Neurological Surgeons, October 14-19, 1995, San Francisco, California.
- **16.** Dujovny M, <u>Alp MS</u>, Dujovny N, Misra M, Ausman JI: Aneurysm clip compatability. The 45th Annual Meeting of Congress of Neurological Surgeons, October 14-19, 1995, San Francisco, California.
- 17. Alp MS, Dujovny M, Aletich V, Debrun G, Misra M, Ausman JI: Balloon occlusion test and cerebral oxygen saturation monitoring. The 45th Annual Meeting of Congress of Neurological Surgeons, October 14-19, 1995, San Francisco, California.
- **18.** Akdemir G, Misra M, <u>Alp MS</u>, Dujovny M, Ausman JI: Measurements of human thoracic vertebrae: An anatomical study. The 45th Annual Meeting of Congress of Neurological Surgeons, October 14-19, 1995, San Francisco, California.
- 19. Alp MS, Ausman JI, Dujovny M, Charbel FT, Misra M, Goldberg A: Head registration techniques in the pediatric age group. The 24th Annual Meeting of American Academy of Pediatric Neurosurgeons, December 6-9, 1995, Pasedena, California.
- 20. Ausman JI, Dujovny M, Charbel FT, <u>Alp MS</u>, Goldberg A, Misra M: Clinical experience with the Carl Zeiss MKM system. The 64th Annual Meeting of the American Association of Neurological Surgeons, April 27-May 5, 1996, Minneapolis, Minnesota.
- **21.** Misra M, <u>Alp MS</u>, Dujovny M, Slavin KV, Ausman JI: Cerebral oxygen saturation variation seen with change in posture. The 64th Annual Meeting of the American Association of Neurological Surgeons, April 27-May 5, 1996, Minneapolis, Minnesota.
- **22.** Akdemir G, <u>Alp MS</u>, Misra M, Dujovny M, Ausman JI: Transforaminal ligaments of the thoracic spine. The 64th Annual Meeting of the American Association of Neurological Surgeons, April 27-May 5, 1996, Minneapolis, Minnesota.
- **23.** Charbel FT, <u>Alp MS</u>, Misra M, Goldberg AL, Dujovny M, Ausman JI: Optic nerve decompression under image guidance. The Second International Skull Base Congress

- and the Seventh Annual Meeting of the North American Skull Base Society, June 29-July 4, 1996, San Diego, California.
- **24.** Goldberg AL, Dujovny M, <u>Alp MS</u>, Misra M, Ausman JI: Accuracy of image-guided surgery fiducials. The Second International Skull Base Congress and the Seventh Annual Meeting of the North American Skull Base Society, June 29-July 4, 1996, San Diego, California.
- **25.** Dujovny M, Misra M, <u>Alp MS</u>, Ausman JI: Application of transcranial cerebral oximetry in neurosurgery. The XXIV Scientific Meeting of International Society for Pediatric Neurosurgery, July 8-13, 1996, Ottawa, Canada.
- 26. Ausman JI, Dujovny M, Charbel FT, Alp MS, Misra M, Goldberg A: Image-guided surgery and head registration techniques in pediatric age group. The XXIV Scientific Meeting of International Society for Pediatric Neurosurgery, July 8-13, 1996, Ottawa, Canada.
- **27.** Agner C, Misra M, Dujovny M, Aletich V, Debrun G, <u>Alp MS</u>, Ausman JI: Changes in cerebral oxygen saturation during endovascular treatment. XXI Congress of Brazilian Neurosurgical Society, September 4-10, 1996, Curitiba, Brazil.
- 28. Ausman JI, Dujovny M, Charbel FT, <u>Alp MS</u>, Misra M, Agner C: Clinical experience with the Carl Zeiss MKM robotic microscope. XXI Congress of Brazilian Neurosurgical Society, September 4-10, 1996, Curitiba, Brazil.
- 29. Misra M, Stark J, Dujovny M, <u>Alp MS</u>, Widman R, Ausman JI: Transcranial cerebral oximetry in random normal adult subjects. Symposia of The International Society of Society for Optical Engineering, February 8-14, San Jose, California.
- **30.** Alp MS, Misra M, Dujovny M, Debrun G, Ausman JI: Application of transcranial cerebral oxygen saturation monitoring during the balloon occlusion test. Symposia of The International Society of Society for Optical Engineering, February 8-14, San Jose, California.
- 31. Dujovny M, Misra M, Alp MS, Debrun G, Charbel FT, Aletich V, Ausman JI: Evaluation of cerebral oximetry during endovascular treatment of carotid-cavernous fistula. Symposia of The International Society of Society for Optical Engineering, February 8-14, San Jose, California.
- **32.** Charbel FT, Clark, ME, Misra M, <u>Alp MS</u>, Debrun G, Aletich V, Ausman JI: Tolerance of carotid artery sacrifice: A computerized predictor. 5th International Workshop on Cerebrovascular Surgery, March 3-5, 1997, Fukuoka, Japan.
- **33.** Alp MS, Dujovny M, Debrun G, Aletich V, Misra M, Charbel FT, Ausman JI: Balloon occlusion test. 5th International Workshop on Cerebrovascular Surgery, March 3-5, 1997, Fukuoka, Japan.
- **34.** Alp MS, Misra M, Dujovny M, Debrun G, Aletich V, Charbel FT, Ausman JI: Monitoring during the balloon occlusion test. 8th Annual Meeting of North American Skull Base Society & 2nd International Congress on the Cerebral Venous System, March 21-25, Little Rock, Arkansas.
- 35. Ausman JI, Charbel FT, Alp MS, Dujovny M, Abood CJ, Misra M: Image-guided surgery

- for the treatment of skull base tumors. The 65th Annual Meeting of the American Association of Neurological Surgeons, April 12-17, 1997, Denver, Colorado.
- **36.** Dujovny M, Dujovny N, Gundamraj NR, <u>Alp MS</u>, Misra M, Ausman JI: Magnetic quantification of aneurysm clips. The 65th Annual Meeting of the American Association of Neurological Surgeons, April 12-17, 1997, Denver, Colorado.
- **37.** Alp MS, Dujovny M, Misra M, Ausman JI: Monitoring during the balloon occlusion test. Minimaly Invasive Neurosurgery, July, 1997, Paris, France.
- 38. Charbel FT, Clark ME, Misra M, <u>Alp MS</u>, Debrun G, Aletich VA, Ausman JI: Tolerance of carotid artery sacrifice: A computerized predictor. 11th International Congress of Neurological Surgery, July 6-11, 1997, Amsterdam, Holand.
- **39.** Charbel FT, Clark ME, Misra M, <u>Alp MS</u>, Debrun G, Aletich VA: Tolerance of carotid artery sacrifice: A computerized predictor. 47th Annual Meeting of the Congress of Neurological Surgeons, September 27- October 2, 1997, New Orleans, Louisiana.
- **40.** Dujovny M, Agner C, Misra M, <u>Alp MS</u>, Gundamraj NR, Ausman JI: Carotid occlusion tests: Historical perspectives. 47th Annual Meeting of the Congress of Neurological Surgeons, September 27- October 2, 1997, New Orleans, Louisiana.
- **41.** Ausman JI, Sadler L, Charbel FT, Misra M, <u>Alp MS</u>: Virtual reality in neurosurgery today and tomorrow. 49th Annual Meeting of the German Society of Neurosurgery, June 12-16, 1998, Hannover, Germany.
- **42.** Ausman JI, Charbel FT, Misra M, <u>Alp MS</u>: Image guided surgery for intracranial metastasis. 11th European Congress of Neurosurgery, September 19-24, 1999, Copenhagen, Denmark.
- **43.** Ausman JI, Charbel FT, <u>Alp MS</u>, Misra M: Clinical experience with Zeiss MKM stereotactic microscope. 11th European Congress of Neurosurgery, September 19-24, 1999, Copenhagen, Denmark.
- **44.** Roitberg BZ, Khan N, <u>Alp MS</u>, Hersonskey T, Charbel FT, Ausman JI: Bedside ventriculostomy in the neurosurgical ICU for the treatment of acute hydrocephalus. 50th Annual Meeting of the Congress of Neurological Surgeons, September 23-28, 2000, San Antonio, Texas.
- **45.** Engelhard H, Juarez A, <u>Alp MS</u>, Duncan H, Rosen F: Clinical value of chemosensitivity testing for intracranial tumors. Neurosurgery in the Rockies, March 4, 2001, Aspen, Colorado.
- **46.** Alp MS, Roitberg B, Slavin K, Engelhard H, Ausman JI: Image-guided surgery in metastatic brain tumors. September 29-October 4, 2001, San Diego, California.

CHAPTERS

- Orbay T, <u>Alp MS</u>, Tosun H, Alp H, Kadioglu D: Approach to Lateral Clivus and Mid- and Lower Basilar Artery via Petrous Apex Resection, in Samii M (ed): <u>Skull Base Surgery</u>. <u>Anatomy</u>, <u>Diagnosis and Treatment</u>. Basel, Karger, 1994 pp 1049-1052.
- 2. Fernandez P, Dujovny M, Alp MS, Ausman JI: Differences in 2-D and 3-D Stereotactic

Planning, in Gildenberg PL, Tasker RR (eds): Textbook of Stereotactic and Functional Neurosurgery. McGraw-Hill Inc., 1996 pp 363-371.

- 3. Akdemir G, Misra M, Dujovny M, Alp MS: Microanatomy of Thoracic Spine Foramina and Ligaments, in Dickman CA, Rosenthal DJ, Perin NI (eds): Thoracoscopic Spine Surgery. Thieme, 1999 pp 69-78.
- 4. Misra M, Dujovny M, Alp MS, Aletich V, Ausman JI: Transcranial cerebral oximetry in endovascular procedures, in Litscher G, Schwarz G (eds): Transcranial Cerebral Oximetry. Pabst, 1998 pp 98-109.

BOOK REVIEWS

- Alp MS: Perspectives in Neurological Surgery, Volume 4, Number 2, Hadley MN (ed), St. Louis, Quality Medical Publishing, 1993. Neurol Res 16:151, 1994.
- 2. Alp MS: Growth Factors of the Vascular and Nervous Systems. Functional Characterization and Biotechnology, Lenfant C, Paoletti R, Albertini A (eds), Basel, Karger, 1992. Neurol Res 17:159, 1995.
- 3. Alp MS: Essentials of Neurosurgery: A Guide to Clinical Practice, Allen MB, Miller RH (eds), New York, McGraw-Hill Inc., 1995. Surg Neurol 44:502, 1995.
- 4. Alp MS, Slavin KV: The Practice of Neurosurgery (CD-ROM version), Tindall, Cooper, Barrow (eds), Williams & Wilkins, 1997. Surg Neurol.

RESEARCH EXPERIENCE		
January 89 - January 90	Research Fellowship at Department of Neurosurgery, The National Hospitals For Nervous Diseases, Queen Square, London, England on focal cerebral ischemia and the effects of MK 801	
February 1994 - July 1997	Research Fellowship at Department of Neurosurgery, University of Illinois at Chicago on: Experimental hydrocephalus Correlation of transcutaneous cerebral oximeter and other cerebral blood flow measurement techniques Magnetic characteristics of aneurysm clips Image-guided surgery Evaluation of accuracy in image-guided surgery Cadaver dissection for thoracic spine anatomy Computer archives in neurosurgery	
July 2003 - June 2004	Microsurgical cadaver dissection for skull base approaches at Department of Neurological Surgery, Oregon Health & Science University, Portland, Oregon	
Jan 2005 – Dec 2007	Co-Director of Microsurgery & Endoscopic Surgery Laboratory, University of Texas, Houston, Texas	