

JUAN C. FERNANDEZ-MIRANDA, M.D., F.A.C.S.

*Professor of Neurosurgery, Medicine, and by courtesy, Otolaryngology/Head and Neck Surgery
Surgical Director, Stanford Brain Tumor Center
Co-Director, Stanford Skull Base Surgery Program
Surgical Director, Stanford Pituitary Center
Director, Surgical Neuroanatomy, Fiber Tractography, and Virtual Reality Research Center
Department of Neurological Surgery
Stanford University Medical Center*

BIOGRAPHICAL

Name:	Juan C. Fernandez-Miranda, MD, FACS	Birth Date:	December 23 rd , 1976
Business Address:	Department of Neurosurgery Stanford University Medical Center 875 Blake Wilbur Drive CC-2222 Stanford, CA 94305	Birth Place:	Madrid, Spain
Email:	drjfm@stanford.edu	Visa:	Permanent Resident
Business Phone:	(650) 723-2013	Business Fax:	(650) 498-4686

EDUCATION AND TRAINING**GRADUATE**

09/1994 – 08/2000	Complutense University of Madrid, Medical School Madrid, Spain	M.D.
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POST-GRADUATE

09/2000-06/2001	Department of Neurosurgery, University Hospital La Paz Autonomous University of Madrid Madrid, Spain	Microsurgery Training National Exam Preparation
07/2001 – 07/2006	Department of Neurosurgery, University Hospital La Paz Autonomous University of Madrid Madrid, Spain	Residency Neurosurgery
06/2005 – 06/2007	Department of Neurological Surgery University of Florida School of Medicine Gainesville, FL	Research Fellowship Surgical Neuroanatomy, <i>Program Director:</i> <i>Albert L. Rhoton Jr., MD</i>
07/2007 – 06/2008	Department of Neurological Surgery University of Virginia School of Medicine Charlottesville, VA	Clinical Fellowship Cerebrovascular Surgery <i>Program Director:</i> <i>Neal F. Kassell, MD</i>
07/2008 – 06/2010	Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA	Clinical Fellowship Endoscopic Endonasal and Open Skull Base Surgery

*Program Directors:
Paul A. Gardner, MD
Amin B. Kassam, MD*

APPOINTMENTS AND POSITIONS

07/2006 – 06/2007	Post-Doctoral Associate Department of Neurological Surgery University of Florida School of Medicine Gainesville, FL
07/2007 – 06/2008	Clinical Fellow Department of Neurological Surgery University of Virginia School of Medicine Charlottesville, VA
07/2008 – 06/2010	Clinical Instructor Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2010 – 06/2014	Assistant Professor Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2014-06/2018	Associate Professor Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2010 – 06/2018	Director Surgical Neuroanatomy Lab Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2010-06/2018	Director Research Fellowship Program in Skull Base and Surgical Neuroanatomy Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2012-06/2018	Director Fiber Tractography Lab Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2014-06/2018	Associate Director Center for Cranial Base Surgery Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2015-06/2018	Associate Professor

Department of Otolaryngology
University of Pittsburgh School of Medicine
Pittsburgh, PA

07/2014-06/2018	Director Complex Brain Surgery Program Department of Neurological Surgery University of Pittsburgh School of Medicine Pittsburgh, PA
07/2018- present	Professor Departments of Neurosurgery, Medicine, and by courtesy, Otolaryngology Stanford University Medical Center
07/2018- present	Surgical Director Stanford Brain Tumor Center
07/2018- present	Surgical Director Stanford Pituitary Tumor Center
07/2018- present	Co-Director Stanford Skull Base Surgery Program
07/2018-present	Director, Surgical Neuroanatomy, Fiber Tractography, and Virtual Reality Research Center

CERTIFICATION, LICENSURE, AND EXAMINATIONS

Medical Licensure and Certification:

Medical Physician and Surgeon License, Spanish Medical Council (Spain)	2000
ECFMG (Educational Commission for Foreign Medical Graduates) Certification	2006
Board Certified in Neurosurgery, Spanish Ministry of Education & Science (Spain)	2007
Training Medical License, Virginia Board of Medicine	2007-2008
Institutional Medical License, State Board of Medicine, Commonwealth of Pennsylvania	2008-2010
Medical Physician and Surgeon Unrestricted License, State Board of Medicine, Commonwealth of Pennsylvania	2010 – present
Fellow, American College of Surgeons	2017 – present
California Medical Board	2018 - present

Examinations:

USMLE Step1	2006
USMLE Step 2 CK	2006
USMLE Step 2 CS	2006
European Neurosurgical Board Certification Written Examination (EANS)	2008
USMLE Step 3	2009

MEMBERSHIPS IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

SENEC (Spanish Society of Neurological Surgeons)	2004 – present
AANS (American Association of Neurological Surgeons)	2006 – present

EANS (European Association of Neurosurgical Societies)	2008 – present
Tumor Section (AANS-CNS)	2008 – present
German Skull Base Society	2010 – present
The Cajal Club	2010 – present
CNS (Congress of Neurological Surgeons)	2012 – present
NASBS (North American Skull Base Society)	2012 – present
Pituitary Network Association	2013 - present
Pituitary Society	2015 - present
Pennsylvania Neurosurgical Society	2016 - present
Acoustic Neuroma Association	2017 - present
American College of Surgeons	2017 - present

HONORS AND AWARDS

Top 1%, Spanish Medical License Examination	2001
Synthes Anatomical Fellowship	2006
Pedro Mata Award of the Neurosurgical Society of Madrid – Best Neurosurgical Research	2006
Sanitas Award 2006 – Best Medical Post-Graduate Trainee in Spain	2006
Aesculap European (EANS) Research Award	2008
National Investigation Award (Barclays Foundation)	2009
Best Doctors in America	2013-2017
Annual Faculty Teaching Award, University of Pittsburgh School of Medicine	2017
Honorary Visiting Professor, Tianjin Huanhu Hospital (Tianjin, China)	2018

SERVICE

Chair Management Meetings University of Pittsburgh	2012-2018
AANS International Outreach Committee	2013-present
NASBS Awards Committee	2013-present
NASBS Education and Training Committee	2013-present
MRRC (Magnetic Resonance Research Center) University of Pittsburgh Committee	2014-2018
WFNS (World Federation of Neurological Surgeons), Neuroanatomy Committee	2015-17
Pituitary Society, Patient Engagement Committee	2017-present
Neurocirugia- Editorial Board	2013- present
Operative Neurosurgery- Editorial Board	2015-present
Journal of Neurological Surgery: Skull Base - Editorial Board	2016-present
Ad Hoc reviewer (selected):	
1. Neurosurgery	
2. Journal of Neurosurgery	
3. Cerebral Cortex	
4. Laryngoscope	
5. Neuroscience	
President, 1 st Rhoton Society Meeting, Tianjin (China)	2018
Vice-President, Rhoton Society	2018-present

PUBLICATIONS

Original Research Peer-Reviewed Articles:

1. Gomez-Sierra A, Perez-Lopez C, Budke M, Fernandez-Miranda JC, Prieto R, Alvarez F. Brain aneurysms: An infrequent cause of transient ischemic attacks. *Revista De Neurologia* 7(11):1044-1046, 2003.

2. Choi C, Rubino P, **Fernandez-Miranda JC**, Rhoton AL Jr: Meyer's Loop and the Optic Radiations in the Transsylvian Approach to the Mediobasal Temporal Lobe. *Neurosurgery* 59:228-36, 2006.
3. De la Riva AG, Isla A, Perez-Lopez C, Ortega R, **Fernandez-Miranda JC**, Heredero J. Causes of reoperations in patients with lumbar spinal stenosis treated with instrumentations. *Neurocirugia* 17(3): 232-239, 2006.
4. Campero A, Trocoli G, Martins C, **Fernandez-Miranda JC**, Yasuda A, Rhoton AL Jr: Surgical Approaches to the Medial Temporal Region: an anatomical study. *Neurosurgery* 59:279-308, 2006.
5. **Fernandez-Miranda JC**, Rhoton AL Jr, Kakizawa Y, Choi C, Alvarez-Linera J: The claustrum and its projection system in the human brain: a microsurgical and tractographic anatomic study. *Journal of Neurosurgery* 108:764-774, 2008
6. El Khouly H, **Fernandez-Miranda JC**, Rhoton AL Jr: The petrosal artery in the middle fossa approach. *Neurosurgery* 62 (5 Suppl 2):ONS297-303, 2008
7. **Fernandez-Miranda JC**, Rhoton AL Jr, Alvarez-Linera J, Kakizawa Y, Choi C, de Oliveira E: Three-dimensional microsurgical and tractographic anatomy of the white matter of the human brain. *Neurosurgery* 62(6 Suppl 3):989-1028, 2008
8. **Fernandez-Miranda JC**, Prevedello DM, Madhok R, Barges-Coll J, Morera VA, Gardner PA, Snyderman CH, Carrau R, Kassam AB. Sphenoid Septations and the Internal Carotid Artery. *Laryngoscope* 119:1893-6, 2009
9. Prevedello DM, Barges-Coll J, **Fernandez-Miranda JC**, Morera VA, Gardner PA, Snyderman CH, Kassam AB, Carrau R. Middle turbinate pedicled flap for anterior skull base reconstruction: a cadaveric feasibility study. *Laryngoscope*,119:2094-8, 2009
10. **Fernandez-Miranda JC**, Engh JA, Pathak S, Madhok R, Boada F, Schneider F, Kassam AB. High-definition fiber tracking guidance for fully endoscopic intra-axial tumor resection. Technical note. *Journal of Neurosurgery* 2010;113:990-9.
11. Prevedello DM, **Fernandez-Miranda JC**, Gardner PA, Madhok R, Sigounas D, Snyderman CH, Carrau RL, Kassam AB. The transclival endoscopic endonasal approach for prepontine neuroenteric cysts: report of 2 cases. *Acta Neurochirur (Wien)* 2010;152:1223-9
12. Engh JA, Lunsford LD, Amin DV, Ochalski PG, **Fernandez-Miranda JC**, Prevedello DM, Kassam AB. Stereotactically guided endoscopic port surgery for intraventricular tumor and colloid cyst resection. *Neurosurgery*, 2010;67(3 Suppl Operative):198-204
13. Morera VA, **Fernandez-Miranda JC**, Prevedello DM, Madhok R, Barges-Coll J, Gardner P, Carrau R, Snyderman CH, Rhoton AL Jr, Kassam AB. "Far-medial" expanded endonasal approach to the inferior third of the clivus: the transcondylar and transjugular tubercle approaches. *Neurosurgery*. 2010 Jun;66(6 Suppl Operative):211-9, discussion 219-20
14. Barges-Coll J, **Fernandez-Miranda JC**, Prevedello DM, Gardner P, Morera V, Madhok R, Carrau RL, Snyderman CH, Rhoton AL Jr, Kassam AB. Avoiding injury to the abducens nerve during expanded endonasal endoscopic surgery: anatomic and clinical case studies. *Neurosurgery*. 2010 Jul;67(1):144-54, discussion 154.
15. **Fernandez-Miranda JC**, de Oliveira E, Rubino P, Wen HT, Rhoton AL Jr: Microvascular anatomy of the medial temporal lobe: Part 1: its application to arteriovenous malformation surgery. *Neurosurgery*, 2010 67(3 Suppl Operative):237-76

16. Pinheiro-Neto CD, Carrau RL, Prevedello DM, **Fernandez-Miranda JC**, Snyderman C, Gardner PA, Kassam AB. Use of acoustic Doppler sonography to ascertain the feasibility of the pedicled nasoseptal flap after prior bilateral sphenoidotomy. *Laryngoscope*. 2010 Sep;120(9):1798-801
17. Caicedo-Granados E, Carrau R, Snyderman CH, Prevedello D, **Fernandez-Miranda JC**, Gardner P, Kassam A. Reverse rotation flap for reconstruction of donor site after vascular pedicled nasoseptal flap in skull base surgery. *Laryngoscope*. 2010 Aug;120(8):1550-2.
18. Prevedello DM, Pinheiro-Neto CD, **Fernandez-Miranda JC**, Carrau RL, Snyderman CH, Gardner PA, Kassam AB. Vidian nerve transposition for endoscopic endonasal middle fossa approaches. *Neurosurgery*. 2010 Dec;67(2 Suppl Operative): 478-84
19. **Fernandez-Miranda JC**, Barges-Coll J, Prevedello DM, Engh J, Snyderman C, Carrau R, Gardner PA, Kassam AB. Animal model for endoscopic neurosurgical training: technical note. *Minim Invasive Neurosurg*. 2010 Oct;53(5):286-9
20. Rivera-Serrano CM, Terre-Falcon R, **Fernandez-Miranda JC**, Prevedello D, Snyderman CH, Gardner P, Kassam A, Carrau RL. Endonasal Dissection of the Pterygopalatine fossa, Infratemporal fossa, and Post-styloid compartment. Anatomical Relationships and Importance of Eustachian Tube in the Endoscopic Skull Base Surgery. *Laryngoscope*. 120(S4):S244, 2010.
21. Falcon RT, Rivera-Serrano CM, **Fernandez-Miranda JC**, Prevedello DM, Snyderman CH, Kassam AB, Carrau RL. Endoscopic endonasal dissection of the infratemporal fossa: Anatomic relationships and importance of eustachian tube in the endoscopic skull base surgery. *Laryngoscope*. 121(1):31-41, 2011.
22. Durmaz A, **Fernandez-Miranda JC**, Snyderman CH. Prevertebral corridor: posterior pathway for reconstruction of the ventral skull base. *J Craniofac Surg*. 2011 May;22(3):848-53.
23. Ochalski PG, **Fernandez-Miranda JC**, Prevedello DM, Pollack IF, Engh JA. Endoscopic port surgery for resection of lesions of the cerebellar peduncles: Technical note. *Neurosurgery* 2011 May;68(5): 1450-1.
24. Shin SS, Gardner PA, Stefko ST, Madhok R, **Fernandez-Miranda JC**, Snyderman CH. Expanded endoscopic endonasal approach for non-vestibular schwannomas. *Neurosurgery*. 2011 Nov., 69(5): 1046-57; discussion 1057.
25. Paluzzi A, **Fernandez-Miranda JC**, Pinheiro-Neto C, Barradas V, Alvarez-Lopez B, Gardner P, Snyderman CH. Endoscopic endonasal infrasellar approach to the sellar and suprasellar regions: technical note. *Skull Base*. 2011 October; 21(5): 335-342.
26. Pinheiro-Neto CD, Ramos HF, Peris-Celda M, **Fernandez-Miranda JC**, Gardner PA, Snyderman CH, Sennes LU. Study of the nasoseptal flap for endoscopic anterior cranial base reconstruction. *Laryngoscope*. 2011 Dec;121(12):2514-20.
27. Pinheiro-Neto CD, **Fernandez-Miranda JC**, Wang EW, Gardner PA, Snyderman CH. Anatomical correlates of endonasal surgery for sinonasal malignancies. *Clin Anat*. 2012 Jan;25:129-34.
28. Pinheiro-Neto CD, **Fernandez-Miranda JC**, Rivera Serrano CM, Paluzzi A, Snyderman CH, Gardner PA, Sennes LU. Endoscopic anatomy of the palatovaginal canal (palatosphenoidal canal): a landmark for dissection of the vidian nerve during endonasal transpterygoid approaches. *Laryngoscope*. 2012 Jan;122(1):6-12.
29. Sadr Hosseini SM, Razfar A, Carrau RL, Prevedello DM, **Fernandez-Miranda J**, Zanation A, Kassam AB. Endonasal transpterygoid approach to the infratemporal fossa: correlation of endoscopic and multiplanar CT anatomy. *Head Neck*. 2012;34(3):313-20

30. Scopel TF, **Fernandez-Miranda JC**, Pinheiro-Neto CD, Peris-Celda M, Paluzzi A, Gardner PA, Hirsch BE, Snyderman CH. Petrous apex cholesterol granulomas: endonasal vs. infracochlear approach. *Laryngoscope*. 2012 Apr;122(4):751-61
31. Paluzzi A, Gardner P, **Fernandez-Miranda JC**, Pinheiro-Neto CD, Scopel TF, Koutouriousou M, Snyderman CH. Endoscopic endonasal approach to cholesterol granulomas of the petrous apex: a series of 17 patients. *J Neurosurg*. 2012 Apr;116(4):792-8.
32. **Fernandez-Miranda JC**, Pathak S, Engh J, Jarbo K, Verstynen T, Yeh F, Mintz A, Boada F, Schneider W, Friedlander R. High-Definition Fiber Tractography of the Human Brain: Neuroanatomical Validation and Neurosurgical Applications. *Neurosurgery*. 2012 Aug; 71(2): 430-53.
33. **Fernandez-Miranda JC**, Morera VA, Snyderman CH, Gardner P. Endoscopic endonasal transclival approach to the jugular tubercle. *Neurosurgery*. 2012 Sep;71(1 Suppl Operative):ONS146-59.
34. Koutourousiou M, Gardner PA, Tormenti MJ, Henry SL, Stefko ST, Kassam AB, **Fernandez-Miranda JC**, Snyderman CH. Endoscopic endonasal approach for resection of skull base chordomas: outcomes and learning curve. *Neurosurgery*. 2012 Sep;71(3):614-25.
35. Paluzzi A, Gardner P, **Fernandez-Miranda JC**, Snyderman C. The expanding role of endoscopic skull base surgery. *Br J Neurosurg*. 2012 Oct;26(5):649-61.
36. Paluzzi A, **Fernandez-Miranda JC**, Gardner P. Retracing the Etymology of Terms in Neuroanatomy. *Clinical Anatomy*. *Clin Anat*. 2012 Nov; 25(8): 1005-14.
37. Ozturk K, Snyderman CH, Gardner PA, **Fernandez-Miranda JC**. The anatomical relationship between the Eustachian tube and petrous internal carotid artery. *Laryngoscope*. 2012 Dec;122 (12):2658-2662.
38. Dedhia RC, Lord CA, Pinheiro-Neto CD, **Fernandez-Miranda JC**, Wang EW, Gardner PA, Snyderman CH. Endoscopic endonasal pituitary surgery: impact of surgical education on operation length and patient morbidity. *J Neurol Surg B*. 2012 Dec;73(6):405-9.
39. **Fernandez-Miranda JC**, Tormenti M, Latorre F, Gardner P, Snyderman C. Endoscopic endonasal middle clinoidectomy: anatomical, radiological, and technical note. *Neurosurgery*. 2012 Dec;71[ONS Suppl 2]:ons233-ons239.
40. Koutourousiou M, Gardner PA, Kofler JK, **Fernandez-Miranda JC**, Snyderman CH, Lunsford LD. Rare infundibular lesions: clinical presentation, imaging findings and the role of endoscopic endonasal surgery in their management. *J Neurol Surg B*. 2013 Feb;74:1-11.
41. Gande A, Tormenti MJ, Koutourousiou M, Paluzzi A, **Fernandez-Miranda JC**, Snyderman CH, Gardner PA. Intraoperative computed tomography guidance to confirm decompression following endoscopic endonasal approach for cervicomedullary compression. *J Neurol Surg B*. 2013 Feb;74(B1):44-9.
42. Labib MA, Prevedello DM, **Fernandez-Miranda JC**, Sivakanthan S, Benet A, Morera V, Carrau R, Kassam A. The medial opticocarotid recess: an anatomic study of an endoscopic "key landmark" for the ventral cranial base. *Neurosurgery*. 2013 Mar;72(1 Suppl Operative):66-76
43. Koutourousiou M, Gardner PA, **Fernandez-Miranda JC**, Paluzzi A, Wang EW, Snyderman CH. Endoscopic endonasal surgery for giant pituitary adenomas: advantages and limitations. *J Neurosurg*. 2013 Mar; 118(3):621-31.
44. Chivukula S, Koutourousiou M, Snyderman CH, **Fernandez-Miranda JC**, Gardner PA, Tyler-Kabara EC. Endoscopic endonasal skull base surgery in the pediatric population. *J Neurosurg Pediatr*. 2013 Mar;11(3):227-41.

45. Pinheiro-Neto CD, **Fernandez-Miranda JC**, Prevedello DM, Carrau RL, Gardner PA, Snyderman CH. Transposition of the pterygopalatine fossa during endoscopic endonasal transpterygoid approaches. *J Neurol Surg B*. 2013 Oct;74:266-70.
46. Wang Y, **Fernandez-Miranda JC**, Verstynen T, Pathak S, Schneider W, Yeh FC. Rethinking the Role of the middle longitudinal Fascicle in language and auditory pathways. *Cereb Cortex*. 2013 Oct 23(10):2347-56.
47. Jusue-Torres I, Sivakanthan S, **Fernandez-Miranda JC**, Pinheiro-Neto CD, Gardner PA, Snyderman CH. Chicken wing training model for endoscopic microsurgery. *J Neurol Surg B*. 2013 Oct; 74:286-91.
48. Koutourousiou M, Gardner PA, **Fernandez-Miranda JC**, Tyler-Kabara EC, Wang EW, Snyderman CH. Endoscopic endonasal surgery for craniopharyngiomas: surgical outcome in 64 patients. *J Neurosurg*. 2013 Nov; 119(5): 1194-207.
49. Liu JF, Qu QY, Yang DZ, Han J, Zhang QH, Snyderman CH, **Fernandez-Miranda JC**. Transnasal endoscopic anatomy and approaches to the cavernous sinus (*article in Chinese*). *Zhonghua Er Bi Yan Hou Tou Jin Wai Ke Za Zhi*. 2013 Nov;48(11):901-7.
50. Gardner PA, Tormenti MJ, Pant H, **Fernandez-Miranda JC**, Snyderman CH, Horowitz MB. Carotid artery injury during endoscopic endonasal skull base surgery: incidence and outcomes. *Neurosurgery*. 2013 Dec; 73[ONS Suppl 2]:ons261-ons270
51. Peris-Celda M, Pinheiro-Neto CD, Funaki T, **Fernandez-Miranda JC**, Gardner P, Snyderman C, Rhoton AL. The extended nasoseptal flap for skull base reconstruction of the clival region: an anatomical and radiological study. *J Neurol Surg B*. 2013 Dec;74(B6):369-85.
52. Peris-Celda M, Pinheiro-Neto CD, Scopel TF, **Fernandez-Miranda JC**, Gardner PA, Snyderman CH. Endoscopic endonasal approach to the infraorbital nerve with nasolacrimal duct preservation. *J Neurol Surg B*. 2013 Dec;74(B6):393-8.
53. Vaz-Guimaraes Filho F, **Fernandez-Miranda JC**, Wang EW, Snyderman CH, Gardner PA. Endoscopic endonasal "far-medial" transclival approach: surgical anatomy and technique. *Operative Techniques in Otolaryngology-Head and Neck Surgery*, 2013 Dec; 24(4): 222-228.
54. Shin SS, Tormenti MJ, Paluzzi A, Rothfus WE, Chang YF, Zainah H, **Fernandez-Miranda JC**, Snyderman CH, Challinor SM, Gardner PA. Endoscopic endonasal approach for growth hormone secreting pituitary adenomas: outcomes in 53 patients using 2010 consensus criteria for remission. *Pituitary*. 2013 Dec;16(4):435-44.
55. Yeh FC, Verstynen TD, Wang Y, **Fernández-Miranda JC**, Tseng WY. Deterministic diffusion fiber tracking improved by quantitative anisotropy. *PLoS One*. 2013 Nov 15;8(11):e80713.
56. Vivas EX, McCall A, Raz Y, **Fernandez-Miranda JC**, Gardner P, Hirsch BE. ICP, BMI, surgical repair and CSF diversion in patients presenting with spontaneous CSF otorrhea. *Otol Neurotol*. 2014 Feb;35(2):344-7.
 - I contributed patients to the study, helped analyzing data, and critically revised the manuscript
57. Benet A, Prevedello DM, Carrau RL, Rincon-Torroella J, **Fernandez-Miranda JC**, Prats-Galino A, Kassam AB. Comparative Analysis of the Transcranial "Far Lateral" and Endoscopic Endonasal "Far Medial" Approaches: Surgical Anatomy and Clinical Illustration. *World Neurosurg*. 2014 Feb;81(2):385-96.
 - I contributed with study design and data analysis, and critically revised the manuscript
58. Pinheiro-Neto CD, Paluzzi A, **Fernandez-Miranda JC**, Scopel TF, Wang EW, Gardner PA, Snyderman CH. Extended dissection of the septal flap pedicle for ipsilateral endoscopic transpterygoid approaches. *Laryngoscope*. 2014 Feb;124(2):391-6
 - I contributed with study idea and design, and critically revised the manuscript

59. Rastelli Jr MM, Pinheiro-Neto CD, **Fernandez-Miranda JC**, Wang EW, Snyderman CH, Gardner PA. Application of ultrasonic bone curette in endoscopic endonasal skull base surgery: technical note. *J Neurol Surg B*. 2014 Apr;75:90-5.
- I contributed patients to the study, and critically revised the manuscript
60. Abhinav K, Yeh FC, El-Dokla A, Ferrando LM, Chang YF, Lacomis D, Friedlander RM, **Fernandez-Miranda JC**. Use of diffusion spectrum imaging in preliminary longitudinal evaluation of amyotrophic lateral sclerosis: development of an imaging biomarker. *Front Hum Neurosci*. 2014 Apr 29;8:270.
61. Koutourousiou M, **Fernandez-Miranda JC**, Stefko ST, Wang EW, Snyderman CH, Gardner PA. Endoscopic endonasal surgery for suprasellar meningiomas: experience with 75 patients. *J Neurosurg*. 2014 Jun;120(6):1326-39.
- I contributed with study design, data collection, provided patients to the study, helped analyzing data, and critically revised the manuscript
62. Abhinav K, Pathak S, Richardson RM, Engh J, Gardner P, Yeh FC, Friedlander RM, **Fernandez-Miranda JC**. Application of high definition fiber tractography in the management of supratentorial cavernous malformations: a combined qualitative and quantitative approach. *Neurosurgery*. 2014 Jun;74(6):668-80.
63. **Fernandez-Miranda JC**, Gardner PA, Rastelli MM Jr, Peris-Celda M, Koutourousiou M, Peace D, Snyderman CH, Rhoton AL Jr. Endoscopic endonasal transcavernous posterior clinoidectomy with interdural pituitary transposition. *J Neurosurg*. 2014 Jul;121(1):91-9.
64. Snyderman CH, Gardner PA, Wang EW, **Fernandez-Miranda JC**. Transcervical endoscopic approach for removal of parapharyngeal space masses. *Operative Techniques in Otolaryngology-Head and Neck Surgery*. 2014;25:265-73.
65. Shin SS, Pathak S, Presson N, Bird W, Wagener L, Schneider W, Okonkwo DO, **Fernandez-Miranda JC**. Detection of white matter injury in concussion using high-definition fiber tractography. *Prog Neurol Surg*. 2014;28:86-93.
66. Paluzzi A, **Fernandez-Miranda JC**, Stefko ST, Challinor S, Snyderman CH, Gardner PA. Endoscopic endonasal approach for pituitary adenomas: a series of 555 patients. *Pituitary*. 2014 Aug; 17(4):307-19.
- I contributed with study design, data collection, provided patients to the study, helped analyzing data, and critically revised the manuscript
67. Choby GW, Pinheiro-Neto CD, de Almeida JR, Cardenas Ruiz-Valdepenas EC, Wang EW, **Fernandez-Miranda JC**, Gardner PA, Snyderman CH. Extended inferior turbinate flap for endoscopic reconstruction of skull base defects. *J Neurol Surg B*. 2014 Aug;75(B4):225-30.
- I contributed with study idea and design, and critically revised the manuscript
68. Koutourousiou M, Vaz Guimaraes Filho F, Costacou T, **Fernandez-Miranda JC**, Wang EW, Snyderman CH, Rothfus WE, Gardner PA. Pontine encephalocele and abnormalities of the posterior fossa following transclival endoscopic endonasal surgery. *J Neurosurg*. 2014 Aug;121(2):359-66.
- I contributed patients to the study, and critically revised the manuscript
69. Wang C, Kundaria S, **Fernandez-Miranda J**, Duvvuri U. A description of arterial variants in the transoral approach to the parapharyngeal space. *Clinical Anat*. 2014 Oct;27(7):1016-22.
- I contributed with study design, provided specimens to the study, helped analyzing data, and critically revised the manuscript
70. Koutourousiou M, **Fernandez-Miranda JC**, Wang EW, Snyderman CH, Gardner PA. Endoscopic endonasal surgery for olfactory groove meningiomas: outcomes and limitations in 50 patients. *Neurosurg Focus*. 2014 Oct;37(4):E8.

- I contributed with study design, data collection, provided patients to the study, helped analyzing data, and critically revised the manuscript
71. Liu J, Yang D, **Fernandez-Miranda JC**, Gardner PA, Snyderman CH. Transnasal endoscopic anatomy of the clivus and approaches consideration (*article in Chinese*). *Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi*. 2014 Oct;28(20):1550-4.
 - I contributed with study design, provided specimens to the study, helped analyzing data, and critically revised the manuscript
 72. Abhinav K, Yeh FC, Pathak S, Suski V, Lacomis D, Friedlander RM, **Fernandez-Miranda JC**. Advanced diffusion MRI fiber tracking in neurosurgical and neurodegenerative disorders and neuroanatomical studies: A review. *Biochim Biophys Acta*. 2014 Nov;1842(11):2286-2297.
 73. Liu J, Pinheiro-Neto CD, **Fernandez-Miranda JC**, Snyderman CH, Gardner PA, Hirsch BE, Wang E. Eustachian tube and internal carotid artery in skull base surgery: an anatomical study. *Laryngoscope*. 2014 Dec;124(12):2655-64.
 - I contributed with study idea and design, provided specimens to the study, helped analyzing data, and critically revised the manuscript
 74. Zeinalizadeh M, Habibi Z, **Fernandez-Miranda JC**, Gardner PA, Hodak SP, Challinor SM. Discordance between growth hormone and insulin-like growth factor-1 after pituitary surgery for acromegaly: a stepwise approach and management. *Pituitary*. 2015 Feb;18(1):48-59.
 - I contributed with study design, and critically revised the manuscript
 75. Choby GW, Mattos JL, Hughes MA, **Fernandez-Miranda JC**, Gardner PA, Snyderman CH, Wang EW. Delayed nasoseptal flaps for endoscopic skull base reconstruction: proof of concept and evaluation of outcomes. *Otolaryngol Head Neck Surg*. 2015 Feb; 152(2):255-9.
 - I contributed with study design, provided patients to the study, helped analyzing data, and critically revised the manuscript
 76. Paluzzi A, Gardner PA, **Fernandez-Miranda JC**, Tormenti MJ, Stefko ST, Snyderman CH, Maroon JC. “Round the clock” surgical access to the orbit. *J Neurol Surg B*. 2015 Feb;76(1):12-24.
 - I contributed with study idea and design, provided specimens to the study, helped analyzing data, and critically revised the manuscript
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 - I contributed with study idea and design, provided material to the study, helped analyzing data, and critically revised the manuscript
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8. Zenonos G, **Fernandez-Miranda JC**. Endoscopic Endonasal Trans-oculomotor Triangle Approach for Resection of a Pituitary Adenoma with Ambient Cistern Extension. *Skull Base: Operative Videos*, accepted for publication, December 2017.
9. Zenonos G, **Fernandez-Miranda JC**. Infraselar Endoscopic Endonasal Approach for a Pituitary Adenoma Extending into the 3rd Ventricle, with Anterior Displacement of the Pituitary Gland. *Skull Base: Operative Videos*, accepted for publication, December 2017.
10. Zwagerman NT, Geltzeiler MN, Wang EW, **Fernandez-Miranda JC**, Snyderman CH, Gardner PA. Endonasal Suturing of Nasoseptal Flap to Nasopharyngeal Fascia Using the V-Loc™ Wound Closure Device: 2-Dimensional Operative Video. *Oper Neurosurg* (Hagerstown). 2018 May 30
11. **Fernandez-Miranda JC**. Left Pan-Hippocampal Low-Grade Glioma-2-Stage Transsylvian Transventricular and Paramedian Supracerebellar Transtentorial Approaches: 2-Dimensional Operative Video. *Operative neurosurgery* (Hagerstown, Md.), 2018
12. **Fernandez-Miranda JC**. Paramedian Supracerebellar Approach in Semi-Sitting Position for Endoscopic Resection of Pineal Cyst: 2-Dimensional Operative Video. *Operative neurosurgery* (Hagerstown, Md.), 2018
13. Lavigne P, Wang EW, **Fernandez-Miranda JC**. Supratotal Resection of Residual Clival Chordoma With Combined Endoscopic Endonasal and Contralateral Transmaxillary Approaches: 2-Dimensional Operative Video. *Operative neurosurgery* (Hagerstown, Md.), 2018
14. Vaz-Guimaraes F, Gardner PA, **Fernandez-Miranda JC**. Endoscope-Assisted Retrosigmoid Approach for Cerebellopontine Angle Epidermoid Tumor. *J Neurol Surg B Skull Base*. 2018 Dec

Letters to the Editor

1. **Fernandez-Miranda JC**, Gardner PA, Prevedello DM, Kassam AB. The expanded endonasal approach for olfactory groove meningiomas. Letter to the Editor. *Acta Neurochirur* (Wien) 151:287-8, 2009
2. **Fernandez-Miranda JC**, Prevedello DM, Gardner P, Carrau R, Snyderman CH, Kassam AB. Endonasal endoscopic pituitary surgery: is it a matter of fashion? *Acta Neurochir* (Wien). 2010 Aug;152(8): author reply 1282.
3. **Fernandez-Miranda JC**, Pathak S, Schneider F. High-definition fiber tractography of the language pathways. Letter to the Editor. *Journal of Neurosurgery*, 2010;113:156-7, 2010.
4. **Fernandez-Miranda JC**, Gardner PA, Snyderman CH. Endoscopic endonasal approach for tuberculum sellae meningiomas. *Neurosurgery*. 2011 Jul;69(1):E260-1

5. Snyderman CH, Wang EW, **Fernandez-Miranda JC**, Gardner PA. Response to Letter to the Editor on “Extended inferior turbinate flap for endoscopic reconstruction of skull base defects”. *J Neurol Surg B* 2014;75(B4):225-30. *J Neurolog Surg B Skull Base*. 2015 Jun;76(3):248.
6. Gardner PA, **Fernandez-Miranda JC**, Snyderman CH, Wang EW. Letter to the Editor: Screw fixation technique. *J Neurosurg Spine*. 2015 Oct;23(4):536-7.
7. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**. Letter to Editor: Endoscopy or microscopy? *J Neurosurg Pediatr*. 2012 Mar; 9(3):336-7.
8. Gardner PA, Snyderman CH, **Fernandez-Miranda JC**, Wang EW. Letter to the editor: Supraorbital versus endoscopic endonasal approaches for olfactory groove meningiomas: a cost-minimization study. *World Neurosurg*, *World Neurosurg*. 2017 Oct;106:984-985.
9. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**. Letter to the editor: Shah RN, Leight WD, Patel MR, et al. A controlled laboratory and clinical evaluation of a three-dimensional endoscope for endonasal sinus and skull base surgery. *Am J Rhinol Allergy*. 2011 May-Jun;25(3): 141-4.

Case Reports in Peer-Reviewed Journals

1. Koutourosiou M, Gardner PA, Stefko ST, Paluzzi A, **Fernandez-Miranda JC**, Snyderman CH, Maroon JC. Endoscopic endonasal transorbital approach for excisional biopsy of the optic nerve - technical note. *J Neurol Surg Rep*. 2012 Oct;73(1):52-6
2. Mon Sann Yu, Mahmud Hussain, Abbasi Munira, Murdoch Goeff, **Fernandez-Miranda JC**, Gardner PA, Challinor SM. A 23-Year-Old Female with a Mixed Germ Cell Tumor of the Pituitary Infundibulum: The Challenge of Differentiating Neoplasm from Lymphocytic Infundibuloneurohypophysitis. *Case Reports in Endocrinology*. 2014 Jun; 129471:1-8.
3. Vaz-Guimaraes F, Gardner PA, **Fernandez-Miranda JC**. Fully endoscopic retrosigmoid approach for posterior petrous meningioma and trigeminal microvascular decompression. *Acta Neurochir (Wien)*. 2015 Apr;157(4):611-5
4. Meola M, **Fernandez-Miranda JC**. Peduncles without cerebellum: The cerebellar agenesis. *Eur Neurol*. 2015; 74:162.
5. Fernandes-Cabral DT, Zenonos GA, Hamilton RL, Panesar SS, **Fernandez-Miranda JC**. High-definition fiber tractography in the evaluation and surgical planning of Lhermitte-Duclos disease: a case report. *World Neurosurg*. 2016 Aug;92:587..
6. Nakassa AC, Chabot JD, Snyderman CH, Wang EW, Gardner PA, **Fernandez-Miranda JC**. Complete endoscopic resection of a pituitary stalk epidermoid cyst using a combined infrasellar interpituitary and suprasellar endonasal approach: case report. *J Neurosurg*. 2017 Apr 14:1-7 [Epub ahead of print].
7. Fernandes-Cabral DT, Kooshkabadi A, Panesar SS, Celtikci E, Borghei-Razavi H, Celtikci P, **Fernandez-Miranda JC** Surgical management of vertex epidural hematoma: technical case report and literature review. *World Neurosurg*. 2017 Jul;103:475-483.
8. Fernandes Cabral DT, Zenonos GA, Nuñez M, Celtikci P, Snyderman C, Wang E, Gardner PA, **Fernandez-Miranda JC**. Endoscopic Endonasal Transclival Approach for Resection of a Pontine Glioma: Surgical Planning, Surgical Anatomy, and Technique. *Oper Neurosurg (Hagerstown)*. 2018 Nov 1

Invited Peer-Reviewed Editorials (Favorite 3 of 30)

1. **Fernandez-Miranda JC**, Rhoton AL Jr: Microneurosurgical sulcal key-points. *Neurosurgery* 59:210, 2006
2. **Fernandez-Miranda JC**, Kassell NF: *Microsurgical Anatomy of the Temporal Lobe. Part II: Sylvian Fissure Region and Its Clinical Application*. Neurosurgery, 2009
3. **Fernandez-Miranda JC**. Editorial: Beyond diffusion tensor imaging. *J Neurosurg*. 2013 Jun; 118(6):1363-5; discussion 1365-6.

Book Chapters (Favorite 5 of 40)

1. **Fernandez-Miranda JC**. Intracranial region (Chapter 27). *Gray's Anatomy, 41st Edition*, Elsevier, 2016
2. Zenonos GA, Lieber S, **Fernandez-Miranda JC**. Surgical anatomy of the skull base. In Harsh IV GR, Vaz Guimaraes F (eds): *Chordomas and Chondrosarcomas of the Skull Base and Spine: Diagnosis and Management, 2nd Edition*. Academic Press, San Diego, 2018.
3. Zwagerman NT, Lieber S, **Fernandez-Miranda JC**. Surgical anatomy of the sellar region. In Cohen-Gadol A, Sheehan J, Laws E, Schwartz T (eds): *Transsphenoidal Surgery: Techniques Including Complication Avoidance and Management*. Springer, New York, 2017.
4. Zenonos GA, Lieber S, **Fernandez-Miranda JC**. Cavernous sinus and Meckel's cave. In Evans JJ, Kenning TJ, Farrell CJ, Kshetry V (eds): *Endoscopic and Keyhole Cranial Surgery*. Springer, Cham, Switzerland, 2017.
5. Zenonos GA, Goldschmidt E, **Fernandez-Miranda JC**. Surgical anatomy of the cranial base: transcranial and endonasal approaches. In Hanna E, DeMonte F (eds): *Comprehensive Management of Skull Base Tumors, 2nd Edition*. Thieme, New York, 2018.

Published Abstracts (Most recent 5 of 123):

1. Ferrareze Nunes C, Lieber S, Zenonos G, Wang EW, Snyderman CH, Gardner PA, **Fernandez-Miranda JC**. Endoscopic endonasal transoculomotor triangle approach to the parapeduncular space: surgical anatomy, technical nuances and case series. *J Neurol Surg B*. 2017 Mar;78(S1):S103-S-104.
2. Borghei-Razavi H, Truong HQ, Fernandes-Cabral D, Celtikci E, Xun XC, Wang EW, Snyderman C, Gardner P, **Fernandez-Miranda JC**. Endoscopic endonasal maximal petrosectomy: anatomical investigation and surgical relevance. *J Neurol Surg B*. 2017 Mar;78(S1):S106.
3. Fernandes Cabral DT, Zenonos GA, Nunez M, Borghei-Razavi H, Celtikci E, Celtikci PN, Panesar SS, Wang EW, Snyderman CH, Gardner PA, **Fernandez-Miranda JC**. Endoscopic endonasal approach to intrinsic brainstem lesions: anatomical, radiological, and clinical study. *J Neurol Surg B*. 2017 Mar;78(S1):S119.
4. Lieber S, Zenonos G, Zwagerman NT, Chabot JD, Stefko S, **Fernandez-Miranda JC**, Gardner PA. Pushing the boundaries of the lateral orbitotomy through a lateral canthotomy approach: successful resection of two middle cranial fossa pathologies with extension into the posterior cranial fossa – an anatomical and technical note. *J Neurol Surg B*. 2017 Mar;78(S1):S131.
5. Duncan KE, Wang EW, **Fernandez-Miranda JC**, Yu JY. The utility of image guidance in developing minimally invasive periorbital approaches to the skull base. *J Neurol Surg B*. 2017 Mar;78(S1):S153-S154.

TEACHING

Invited Lectures: Local (Favorite 8 of 31)

1. Neurosurgical Perspectives on Skull Base and Brainstem Anatomy. 2013 MS-1 Neuroscience Course, University of Pittsburgh, March 26, 2013.
2. Neurosurgical Treatment of Brain Tumors. . 2014 MS-1 Neuroscience course, University of Pittsburgh, April 29, 2014.
3. Anterior and Middle Cranial Fossa in 3D. Ninth Annual Microscopic/Endoscopic Skull Base Surgery Course and Vascular Bypass Animal Lab. Allegheny General Hospital, Pittsburgh, PA, November 4, 2015.
4. Posterior Cranial Fossa in 3D. Tenth Annual Microscopic/Endoscopic Skull Base Surgery Course and Vascular Bypass Animal Lab. Allegheny General Hospital, Pittsburgh, PA, November 16, 2016.
5. Endoscopic Transnasal Approaches in 3D. Eleventh Annual Microscopic/Endoscopic Skull Base Surgery Course and Vascular Bypass Animal Lab. Allegheny General Hospital, Pittsburgh, PA, November 17, 2017.
6. The Importance of Surgical Neuroanatomy. Grand Rounds, Department of Neurosurgery. Stanford University School of Medicine. Palo Alto, CA, September 21, 2018
7. Endoscopic Endonasal Skull Base Surgery: Suprasellar Region. 3rd Stanford-Asia Rhinology Forum. Stanford, CA, November 10, 2018
8. Extended Middle Fossa Approach: The Hakuba-Dolenc-Kawase combined approach. Stanford Neurosurgery Residents Hands-on Course. Milpitas, CA, November 17, 2018

Invited Lectures: National (total: 105; selected from 2015)

1. Posterior Fossa and Cranial Nerve 3D Anatomy. USF Masters in Skull Base Surgery, February 5, 2015, Tampa, FL.
2. Endoscopic anatomy for expanded endoscopic approaches. USF Masters in Skull Base Surgery, February 6, 2015, Tampa, FL.
3. Endoscopic endonasal skull base surgery: from the lab to the OR. Pre-Meeting Course, 25th Annual Meeting of the North American Skull Base Society, Tampa, FL, February 18, 2015.
4. Endoscopic endonasal approach for petroclival meningiomas. 25th Annual Meeting of the North American Skull Base Society, Tampa, FL, February 22, 2015.
5. 3D Microsurgical anatomy of the white matter fiber tracts and the use of high-definition fiber tractography for intrinsic lesions. 2015 American Association of Neurological Surgeons Annual Meeting, May 2, 2015.
6. 3D Endoscopic endonasal approach to the sellar and suprasellar regions, cavernous sinus and middle fossa. 2015 American Association of Neurological Surgeons Annual Meeting, May 2, 2015
7. 3D Microsurgical anatomy and approaches to the cerebellum, CP angle, and IV ventricle. 2015 American Association of Neurological Surgeons Annual Meeting, May 3, 2015.
8. 3D Endoscopic endonasal transclival and transpterygoid approaches to the posterior skull base. 2015 American Association of Neurological Surgeons Annual Meeting, May 3, 2015.
9. General Scientific Session. 3D Cranial Cases: Surgical Nuances. American Association of Neurological Surgeons, Washington, DC, May 4, 2015.

10. Anatomy of the Anterior Cranial Fossa, Sinonasal Cavity and Pituitary Fossa. NASBS Summer Course, New Orleans, LA, July 10, 2015.
11. Anatomy of the Middle Fossa and Cavernous Sinus. NASBS Summer Course, New Orleans, LA, July 10, 2015.
12. Anatomy of Cavernous Sinus, Sella, Clivus. 3-D Surgical Anatomy Course for Senior Residents, Houston, TX August 20, 2015.
13. Ventricular Anatomy. 3-D Surgical Anatomy Course for Senior Residents, Houston, TX August 21, 2015.
14. 3-D Video Presentation. 3-D Session: Techniques to Advance Safety and Efficacy in Microneurosurgery. 2015 CNS Annual Meeting. New Orleans, LA, September 28, 2015.
15. 3D Video Techniques. NASBS. Scottsdale, AZ, February 12, 2016.
16. Master Surgeon 1: Approaches to the Cavernous Sinus. NASBS. Scottsdale, AZ, February 12, 2016.
17. Innovation in Education. NASBS. Scottsdale, AZ, February 12, 2016.
18. Cavernous sinus invasion. Endoscopic Series Webinar: Pituitary Tumors and CSF Leaks, Congress of Neurological Surgeons, November 29, 2016.
19. Expert Debate: Chordomas: Optimal Approach and Multidisciplinary Management. NASBS Annual Meeting, New Orleans, LA, March 3, 2017.
20. From the Anatomy Lab to the OR: The Value of Time Spent with Dr. Rhoton. NASBS Annual Meeting, New Orleans, LA, March 3, 2017.
21. "EEA" Petroclival Meningioma. NASBS Annual Meeting, New Orleans, LA, March 3, 2017.
22. Transclival approach for meningiomas. Endoscopic Series Webinar: Transclival/Transodontoid Approaches, Congress of Neurological Surgeons, April 4, 2017.
23. 3D Microsurgical anatomy of the white matter fiber tracts and surgery for intrinsic lesions. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 22, 2017.
24. 3D Multicorridor Skull Base Surgery: Selection of Transcranial and/or Endoscopic Endonasal Approaches. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 22, 2017.
25. 3D Microsurgical anatomy and approaches to the cerebellum, CP angle, IV ventricle and pineal region. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 23, 2017.
26. 3D Endoscopic endonasal transclival approaches to the posterior skull base. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 23, 2017.
27. Anatomy of the anterior skull base/cribriform. Endoscopic Series Webinar: Endoscopic Endonasal Transcribriform Approaches, Congress of Neurological Surgeons, May 3, 2017.
28. Craniopharyngioma – what’s new? Brigham and Women's Hospital Cerebrovascular and Skull Base Symposium. Brigham Women’s Hospital, October 6, 2017.
29. Anatomy of the Anterior Cranial Fossa, Sinonasal Cavity, and Pituitary Fossa. AANS/NREF Skull Base Techniques for Senior Residents. Memphis, TN, October 26, 2017.

30. Designing an Endonasal Midline Anterior Skull Base Approach. AANS/NREF Skull Base Techniques for Senior Residents. Memphis, TN, October 26, 2017.
31. Anatomy of the Middle Fossa and Cavernous Sinus. AANS/NREF Skull Base Techniques for Senior Residents. Memphis, TN, October 27, 2017.
32. Complex Adenoma with Subarachnoid Invasion. Brigham and Women's Skull Base and Cerebrovascular Symposium, Boston, MA, September 22, 2018

Invited Lectures: International (Total 74; Selected from 2016)

1. A decade of training and innovation in neurosurgery in the US: 2005-2015. Madrid, Spain, June 28, 2016.
2. Live Surgery. Suprasellar meningioma. Madrid, Spain, June 28, 2016.
3. Endonasal endoscopic surgery of the sellar region, parasellar, suprasellar, and retroinfundibular. Endoscopy Endonasal skull base surgery course. Madrid, Spain, June 28, 2016.
4. Endoscopic endonasal surgery clival region, petroclival, and foramen magnum. Endoscopy Endonasal skull base surgery course. Madrid, Spain, June 28, 2016.
5. Anatomical basis for the selection and combination surgical to the skull base approaches. Endoscopy Endonasal skull base surgery course. Madrid, Spain, June 28, 2016.
6. Endoscopic endonasal approach to the sellar region and cavernous sinus. 31st Brazilian Congress of Neurosurgery (CBN2016), September 6, 2016.
7. Endoscopic endonasal approach to the suprasellar region and anterior skull base. 31st Brazilian Congress of Neurosurgery (CBN2016), September 6, 2016.
8. Endoscopic endonasal approach to the clival and petroclival region. 31st Brazilian Congress of Neurosurgery (CBN2016), September 6, 2016.
9. Olfactory groove meningiomas: critical analysis of the surgical approaches. 31st Brazilian Congress of Neurosurgery (CBN2016), September 7, 2016.
10. Multicorridor Skull Base Surgery. 31st Brazilian Congress of Neurosurgery (CBN2016), September 7, 2016.
11. "Rhoton Memorial Lecture" – Prof. Rhoton: Master and Mentor. 31st Brazilian Congress of Neurosurgery (CBN2016), September 7, 2016.
12. Anatomy of the sella turcica and parasellar region, skull base surgery and endoscopic surgery. Dr. Rhoton's Memorial Session in the Annual Meeting, Fukuoka, Japan, September 29, 2016.
13. Cirugia Endoscopica de los Craneofaringiomas. Neuropinamar, Buenos Aires, Argentina, December 2, 2016.
14. Cirugia de base de craneo, seleccion y combinacion de abordajes transcranial y endonasal. Neuropinamar, Buenos Aires, Argentina, December 2, 2016.
15. Casos Complejos de base de craneo videos 3D. Neuropinamar, Buenos Aires, Argentina, December 3, 2016.

16. Cirugia Endoscopica Endonasal de los meningiomas petroclivales. Neuropinamar, Buenos Aires, Argentina, December 3, 2016.
17. Endoscopic Endonasal pituitary and cavernous sinus surgery, Annual Scientific Meeting of the Royal College of Neurological Surgeons of Thailand, Bangkok, Thailand, February 14, 2017.
18. Endoscopic endonasal surgery for suprasellar meningiomas and craniopharyngiomas. Annual Scientific Meeting of the Royal College of Neurological Surgeons of Thailand, Bangkok, Thailand, February 14, 2017.
19. Endoscopic endonasal surgery for chordomas, chondrosarcomas, and petroclival meningiomas. Annual Scientific Meeting of the Royal College of Neurological Surgeons of Thailand, Bangkok, Thailand, February 14, 2017.
20. 3D Surgical Anatomy Lecture: Sinonasal, Sellar and Parasellar Regions. National Skull Base Endoscope Conference, Xi'an, China, April 7, 2017.
21. Live Surgery. Complex pituitary adenoma. National Skull Base Endoscope Conference, Xi'an, China, April 8, 2017.
22. 3D Surgical Anatomy Lecture: Sinonasal, Sellar, and Parasellar Regions, 3D Surgical Anatomy Lecture: Sinonasal, Sellar and Parasellar Regions, National Skull Base Endoscope Conference, Xi'an, China, April 9, 2017.
23. 3 D Surgical Anatomy Lecture: Middle and Infratemporal Fossa. National Skull Base Endoscope Conference, Xi'an, China, April 9, 2017..
24. Anatomia endoscopica 3D de la base craneal anterior. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 22, 2017.
25. Anatomia endoscopica 3D de la base craneal posterior. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 22, 2017.
26. Training and learning curve in endoscopic endonasal surgery. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 22, 2017.
27. Cirugia endoscopica endonasal: principios, equipamiento y tecnica quirurgica. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 22, 2017.
28. Endoscopic endonasal surgery from Neurosurgery perspective surgical anatomy and technique. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 23, 2017.
29. Cirugia endoscopica endonasal para cordomas, condrosarcomas y meningiomas petroclivales. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 23, 2017.
30. Live Surgery. Suprasellar Dermoid Tumor. Cirugia Endoscopica Endonasal De Base De Craneo, Madrid, Spain, June 23, 2017.
31. 3D Endoscopic Endonasal Surgical Anatomy: Sinonasal, Sellar and Parasellar Regions. 2017 Advanced Endoscopic Skull Base Surgery Course, Shanghai, China, September 9, 2017.
32. 3D Endoscopic Endonasal Surgical Anatomy: Suprasellar Region and Anterior Skull Base. 2017 Advanced Endoscopic Skull Base Surgery Course, Shanghai, China, September 9, 2017.

33. 3D Endoscopic Endonasal Surgical Anatomy: Posterior Skull Base and Transpterygoid approach. 2017 Advanced Endoscopic Skull Base Surgery Course, Shanghai, China, September 9, 2017.
34. 3D Endoscopic Endonasal Surgical Anatomy: Selection of Transcranial and Endonasal Approaches. 2017 Advanced Endoscopic Skull Base Surgery Course, Shanghai, China, September 9, 2017.
35. From the Lab to the OR: Endoscopic Endonasal Skull Base Surgery. 1st Rhoton Society Meeting, Tianjin, China, June 30th, 2018
36. Fiber Tracts: Facts, Myths, and Surgical Innovation. 1st Rhoton Society Meeting, Tianjin, China, July 1st, 2018
37. Innovations in Endoscopic Endonasal Skull Base Surgery. 1st Rhoton Society Meeting, Tiantan Neurosurgery Hospital, Beijing, China, July 4th, 2018
38. Endoscopic Endonasal Cavernous Sinus Surgery. Skull Base Symposium. Samsung Medical Center, Seoul, South Korea, November 2nd, 2018
39. Endoscopic endonasal approaches to the hypothalamus and brainstem. Skull Base Symposium. Samsung Medical Center, Seoul, South Korea, November 2nd, 2018
40. Pituitary adenoma invading cavernous sinus: Surgical Anatomy and Technique. INTENSE Korea-Japan Workshop, Seoul, South Korea, November 3rd, 2018
41. Endoscopic Endonasal Extreme Medial Approach. INTENSE Korea-Japan Workshop, Seoul, South Korea, November 3rd, 2018
42. Endoscopic Endonasal Interdural Pituitary Transposition and Posterior Clinoidectomy. INTENSE Korea-Japan Workshop, Seoul, South Korea, November 3rd, 2018
43. Endoscopic Endonasal Approach to Foramen Magnum Meningiomas. INTENSE Korea-Japan Workshop, Seoul, South Korea, November 4th, 2018

Webinar Presentations

1. Pituitary Network Association Webinar. “Minimally invasive endoscopic surgery for prolactinomas: when to operate and what to expect”. December 10, 2014
2. Cavernous sinus invasion. Endoscopic Series Webinar: Pituitary Tumors and CSF Leaks, Congress of Neurological Surgeons, November 29, 2016.
3. Endoscopic Endonasal Anterior Skull Base Surgery: Anatomy and Surgical Correlates. Grand Rounds, The Neurosurgical Atlas, December 28, 2016
4. Endoscopic Endonasal Surgery for Tuberculum Sella Meningiomas. Grand Rounds, The Neurosurgical Atlas, February 12, 2017
5. Transclival approach for meningiomas. Endoscopic Series Webinar: Transclival/Transodontoid Approaches, Congress of Neurological Surgeons, April 4, 2017.
6. Anatomy of the anterior skull base/cribriform. Endoscopic Series Webinar: Endoscopic Endonasal Transcribriform Approaches, Congress of Neurological Surgeons, May 3, 2017.
7. Endoscopic Resection of Craniopharyngiomas. Grand Rounds, The Neurosurgical Atlas, June 11, 2017

8. Pituitary Network Association Webinar. “Approach to the Pituitary Tumor Patient”. September 26, 2018

Course Director (Total 62; selected from 2015)

1. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Endoscopic Endonasal Surgery of the Cranial Base and Pituitary Fossa. University of Pittsburgh School of Medicine, Pittsburgh, PA, April 15-18, 2015.
2. de Oliveira E, **Fernandez-Miranda JC**. 3D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base. American Association of Neurological Surgeons, Washington, DC, May 2, 2015.
3. de Oliveira E, **Fernandez-Miranda JC**. 3D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base. American Association of Neurological Surgeons, Washington, DC, May 3, 2015.
4. Cohen-Gadol A, **Fernandez-Miranda JC**. 3D Tackling Challenging Cranial Cases. American Association of Neurological Surgeons, Washington, DC, May 3, 2015.
5. Gardner PA, **Fernandez JC**, Engh JA. Innovations in Endoscopic Intracranial Surgery: A Hands-On Course. University of Pittsburgh School of Medicine, Pittsburgh, PA, July 15-17, 2015.
6. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Endoscopic Endonasal Surgery of the Cranial Base and Pituitary Fossa. University of Pittsburgh School of Medicine, Pittsburgh, PA, August 16-19, 2015.
7. **Fernandez-Miranda JC**. 3-D Surgical Neuroanatomy (Supratentorial) Course. 2015 Annual CNS Meeting, New Orleans Louisiana, September 26, 2015.
8. **Fernandez-Miranda JC**. 3-D Surgical Neuroanatomy (Infratentorial) Course. 2015 Annual CNS Meeting, New Orleans, Louisiana, September 26, 2015.
9. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Endoscopic Endonasal Surgery of the Cranial Base and Pituitary Fossa. University of Pittsburgh School of Medicine, Pittsburgh, PA, November 18-21, 2015.
10. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Comprehensive Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, April 13-16, 2016.
11. Gardner PA, **Fernandez JC**, Engh JA. Innovations in Endoscopic Intracranial Surgery: A Hands-On Course. University of Pittsburgh School of Medicine, Pittsburgh, PA, June 22-24, 2016.
12. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Advanced Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, August 18-20, 2016.
13. **Fernandez-Miranda JC**. Complex Skull Base and Bran Tumor Surgery: 3D Surgical Anatomy and Technical Nuances. Congress of Neurological Surgeons, San Diego, CA, September 24, 2016.
14. **Fernandez-Miranda JC**. Surgical Neuroanatomy I (Supratentorial). Congress of Neurological Surgeons, San Diego, CA, September 25, 2016.
15. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Comprehensive Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, December 7-10, 2016.

16. **Fernandez-Miranda JC.** Rhoton Lecture Series: 3-D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 22, 2017.
17. **Fernandez-Miranda JC.** Rhoton Lecture Series: 3-D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base. American Association of Neurological Surgeons Annual Meeting, Los Angeles, CA, April 22, 2017.
18. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Comprehensive Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, May 10-13, 2017.
19. **Fernandez-Miranda JC**, Wang EW. II Curso Científico Cirugía Endoscópica Endonasal de Base de Craneo, Hospital Universitario La Paz, Madrid, Spain, July 22-23, 2017.
20. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Complex Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, August 17-19, 2017.
21. **Fernandez-Miranda JC.** 3D Surgical Neuroanatomy (Supratentorial). Congress of Neurological Surgeons meeting, Boston, MA, October 8, 2017.
22. **Fernandez-Miranda JC.** 3D Surgical Neuroanatomy (Infratentorial). Congress of Neurological Surgeons meeting, Boston, MA, October 8, 2017.
23. Snyderman CH, Gardner PA, **Fernandez-Miranda JC**, Wang EW. Comprehensive Endoscopic Endonasal Surgery of the Skull Base. University of Pittsburgh School of Medicine, Pittsburgh, PA, November 8-11, 2017.
24. **Fernandez-Miranda JC.** Rhoton Lecture Series: 3-D Anatomy and Approaches to the Supratentorial Area and Anterior Skull Base. American Association of Neurological Surgeons Annual Meeting, New Orleans, LA, April 22, 2018.
25. **Fernandez-Miranda JC.** Rhoton Lecture Series: 3-D Anatomy and Approaches to the Posterior Fossa and Posterior Skull Base. American Association of Neurological Surgeons Annual Meeting, New Orleans, LA, April 22, 2018.
26. **Fernandez-Miranda JC.** 3D Surgical Neuroanatomy (Supratentorial). Congress of Neurological Surgeons meeting, Houston, TX, October 6, 2018.
27. **Fernandez-Miranda JC.** 3D Surgical Neuroanatomy (Infratentorial). Congress of Neurological Surgeons meeting, Boston, MA, October 6, 2018.

Course Faculty (Favorite 6 of 39):

1. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX August 22-25, 2013.
2. USF Masters in Skull Base Surgery Course, Tampa, FL February 5-7, 2015.
3. AANS/NREF Skull Base Course. Memphis, TN March 7, 2014.
4. Nuts and Bolts of Posterior Fossa Surgery: How I Do It. American Association of Neurological Surgeons, San Francisco, CA, April 6, 2014.

5. Pituitary Surgery: Indications, Techniques and Outcomes. Congress of Neurological Surgeons, San Diego, CA. September 25, 2016.
6. Operative Nuances I: Handling Difficult Intraoperative Moments. American Association of Neurological Surgeons, Los Angeles, CA. April 24, 2017.

MENTORING

List of **Clinical Fellows** that have undergone formal clinical training in Skull Base Surgery under direct supervision:

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|---|---|
| 1. Alessandro Paluzzi, MD (UK) 2010-2012 | 6. Robert Miller, MD (US) 2013-2015 |
| 2. Mathew Tormentti, MD (US) 2010-2012 | 7. Joseph Chabot, DO (US) 2014-2016 |
| 3. Mary Koutourousiou, MD (Greece) 2011-2013 | 8. Nathan Zwagerman, MD (US) 2014-2016 |
| 4. Francisco Vaz Guimaraes, MD (Brazil) 2012-2014 | 9. Georgios A. Zenonos MD (US) 2015-2017 |
| 5. Ali Kooskabadi, MD (US) 2013-2015 | 10. Pradeep Setty, DO (US) 2016-2017 |
| | 11. Debraj Mukherjee, MD (US) 2017-2018 |
| | 12. Ezequiel Goldschmidt, MD (US) 2017-2018 |

List of **Research Fellows** that have undergone formal training at the Surgical Neuroanatomy Lab and Fiber Tractography Lab (2008-2018):

- | | |
|---|--|
| 1. Kumar Abhinav, MD (UK) | 34. David Mato, MD (Spain) |
| 2. Yancy Acosta, MD (Dominican Rep.) | 35. Antonio Meola, MD (Italy) |
| 3. Victor Barradas Alcocer, MD (Mexico) | 36. Victor Morera, MD (Colombia) |
| 4. Abdelhay Ali, MD (Egypt) | 37. Edinson Najera, MD (Spain) |
| 5. Beatriz Lopez Alvarez, MD (Spain) | 38. Maximiliano Nunez, MD (Argentina) |
| 6. Tiago Alves, MD (Brazil) | 39. Yujiro Obikane, MD (Japan) |
| 7. Pablo Barcelo, MD (Argentina) | 40. Paolo Pacca, MD (Italy) |
| 8. Juan Barges Coll, MD (Mexico) | 41. Sandip Panesar, MD (UK) |
| 9. Cristobal Blanco, MD (Spain) | 42. Igor Paredes, MD (Spain) |
| 10. Luis R. Bonilla, MD (Dominican Rep.) | 43. Zhou Peizhi, MD (China) |
| 11. Hamid Borghei-Razavi, MD(Germany) | 44. Carlos Pinheiro, MD (Brasil) |
| 12. Rodrigo Cavalcante, MD (Brasil) | 45. Felix Quezada, MD (Dominican Republic) |
| 13. Eugenio Cardenas, MD (Spain) | 46. Omar Ramirez, MD (Colombia) |
| 14. Emrah Celtikci, MD (Turkey) | 47. Milton Rastelli, MD (Brazil) |
| 15. Salomon Cohen, MD (Mexico) | 48. Seyed Samini, MD (Iran) |
| 16. Ayhan Cömert, MD (Turkey) | 49. Kamran Sattarov, MD (Ukraine) |
| 17. Leo Ditzel, MD (Brasil) | 50. Daniel Seclen, MD (Argentine) |
| 18. Abdullah Durmaz, MD (Turkey) | 51. Tiago Scopel, MD (Brasil) |
| 19. Tomasz Dzedzic, MD (Poland) | 52. Zhao Hui Shi, MD (China) |
| 20. Cristian Ferrareze Nunes, MD (Brazil) | 53. Ramon Terre, MD (Spain) |
| 21. Eduardo Flores, MD (Mexico) | 54. Ronaldo Toledo, MD (Brazil) |
| 22. Sergio Gomez, MD (Columbia) | 55. Denildo Verissimo, MD (Brazil) |
| 23. Fabio Guerra, MD (Spain) | 56. Xu Hui Wang, MD (China) |
| 24. Quang Huy Truong, MD (Vietnam) | 57. Ming Dong Wang, MD (China) |
| 25. Sukdeep Jawar, MD(India) | 58. Wei-Hsin Wang, MD (Taiwan) |
| 26. Weihong Jiang, MD (China) | 59. Yibao Wang, MD (China) |
| 27. Mohamed Labib, MD (Canada) | 60. Zhong-Wren Wang, MD (China) |
| 28. Fernando Latorre, MD (Argentina) | 61. Hongquan Wei, MD (China) |
| 29. Stefan Lieber, MD (Switzerland) | 62. Dali Wu, MD (Taiwan) |
| 30. Jianfeng Liu, MD (China) | 63. Zhiqun Wu, MD (China) |
| 31. Chiyuan Ma, MD (China) | 64. Zhang Xian, MD, PhD (China) |
| 32. Joao Mangussi, MD (Brazil) | 65. Wu Xiaojun, MD (China) |
| 33. Roger Mathias, MD (Brazil) | 66. Sun Xicay, MD (China) |

67. Wenping Xiong, MD (China)
68. Bo Yan, MD (China)
69. Robert Zanabria, MD (Spain)

MEDIA APPEARANCES:

1. PNA Spotlight: Pituitary Network Association. September 2018.
2. PNA Spotlight: Pituitary Network Association. December 2015.
3. PITT. "Brain Terrain", Winter 2013.
4. PITTMED. "Missing Links", Fall 2012
5. Science Illustrated. "What Is Consciousness". May/June 2009, pages 52-57.
6. Illustreret Videnskab (Science illustrated, Danish edition). "What Is Consciousness". Nov-Dec 2008.
7. Diario Medico. "Tractography and fiber dissection 'open' the brain" 3/3/2008
8. UF Health Science News. "Distinctions: Juan C. Fernandez-Miranda, MD" Feb, 2007
9. ABC Semanal. "A GPS to 'circulate' inside the head". 02/25/2007
10. Gaceta de los Negocios. "The diet has an unknown effect on the brain". 12/12/2006
11. Que! "The best medical resident (in Spain) is from Madrid and misses its traditions". 12/1/2006
12. Diario Medico. "The tractography of the white matter 'shows' its anatomy". 11/09/2006
13. Diario Medico. "A neurosurgeon from Madrid, Sanitas Prize to the best medical resident". 11/30/2006

RESEARCH SUPPORT

Active

NIH-NIDCD	R01 DC013803-01A1	Fernandez-Miranda (PI)	4/1/15-3/31/20
		3.00 Calendar (25%)	\$251,369.00/year

Language Connectivity Pathways and Neuroplasticity in Aphasic Stroke Patients

In this proposal our strategy is to combine innovative diffusion imaging techniques, behavioral assessment, and intensive speech therapy in patients with chronic stroke-related aphasia in order to establish the role of fiber tracts in language function, identify the consequences of their disruption, investigate the potential neuroplastic changes after treatment, and characterize the white matter structural factors that may influence recovery.

Department of Defense	W81XWH-16-1-075	Washington K (PI)	9/30/16-9/29/20
Joint Joint Warfighter Medical Research Program		Fernandez-Miranda (Co-I)	
		0.60 Calendar (5%)	\$15,475.00/year

A Comprehensive Approach to Whole Eye Transplantation: Building a Scientific Foundation for New Therapies in Vision Restoration

Our overarching goal is to restore vision following ischemic, traumatic, or degenerative damage to the eye or optic nerve with whole eye transplantation (WET). The next phase of the work will involve a comprehensive approach to further addressing the challenges of whole eye transplantation including 1) defining and controlling immune rejection and inflammation, 2) improving retinal ganglion cell survival 3) implementing immunomodulatory and local drug delivery strategies for graft and retinal ganglion cell survival 4) integrating the donor eye with the host brain by stimulating optic nerve regeneration 5) optimization of a non-human primate pre-clinical model.

Completed

The Walter L. Copeland Fund of the Pittsburgh Foundation	Fernandez-Miranda (PI)	7/1/09-7/1/10
<i>Advanced Magnetic Resonance Imaging Techniques in Minimally Invasive Brain Surgery</i>		\$15,000

The goal of this study was to investigate the application of high-definition fiber tracking techniques for the presurgical planning of minimally invasive brain surgery procedures.

The Walter L. Copeland Fund of the Pittsburgh Foundation	Fernandez-Miranda (PI)	7/1/10-7/1/11
<i>High-Definition Fiber Tractography in Neurosurgery</i>		\$15,000

The goal of this study was to investigate the application of high-definition fiber tracking techniques for the presurgical planning, preoperative estimation of structural impact caused by brain lesions, and postoperative study of structural changes caused by a surgical procedure.

The Walter L. Copeland Fund of the Pittsburgh Foundation Fernandez-Miranda (PI) 8/1/12-7/31/13
Animal Model for Anatomic Validation of High-Definition Fiber Tracking White Matter Structural Damage Assessment \$15,000

The goal of this project was to reproduce fiber disruption (sharp transection) and fiber displacement (balloon dilatation) through a neurosurgical procedure in live pigs and study the effects of these interventions using in-vivo HDFT and post-mortem histological analysis.

The Fine Foundation Fernandez-Miranda (PI) 6/1/13-5/31/15
White Matter Mapping to Study Neurodegenerative Conditions \$50,000

The goal of this project was to apply High-Definition Fiber Tracking for the study of neurodegenerative diseases such as Huntington disease and ALS, looking for longitudinal changes in fiber tracts and their correlation with clinical progression.

The Hellmund Fund Fernandez-Miranda (PI) 1/1/14-12/31/15
High Definition Fiber Tracking in Skull Base Tumors \$20,000

The aim of this project was to investigate the application of HDFT for prediction of visual pathway outcome after surgery and presurgical localization of displaced cranial nerves.

University of Pittsburgh Brain Institute Fernandez-Miranda (PI) 4/1/14-3/31/18
0.60 Calendar (5%) \$296,777.74 total

High-Definition Fiber Tractography (HDFT)

This grant is funded by the University of Pittsburgh Brain Institute (UPBI) to support High-Definition Fiber Tractography (HDFT) research in the Department of Neurological Surgery, including projects in the Fiber Tractography Laboratory, the neuroanatomy of fiber tracts, presurgical assessment of fiber tracts and surgical planning, fiber tract integrity and damage progression in neurodegenerative disorders.