HOWARD BENJAMIN LEVENE, MD, PH.D., FAANS
UNIVERSITY OF MIAMI

Curriculum Vitae

1. Date: October 9, 2015

I. PERSONAL

2. Name: Howard Benjamin Levene, MD, Ph.D., FAANS
3. Home Phone:
4. Office Phone: (305) 243-6946
5. Home Address:

6. Current Academic Rank: Assistant Professor
6a. Current Track of Appointment: Clinical Educator
7. Primary Department: Neurological Surgery
8. Secondary or Joint Appointments: Clinical and Rehabilitation Medicine
9. Citizenship: United States
10. Visa Type (if non-citizen): N/A

II. HIGHER EDUCATION

11. Institutional:

August 1994- May 2001	University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School: MD (part of MD/Ph.D program)
August 1994- October 1999	Rutgers University and the University of Medicine and Dentistry of New Jersey Graduate School of Biomedical Sciences: Ph.D. in Biomedical Engineering. (part of MD/Ph.D program) Concentration: Biomechanics and Biomaterials.
September 1989- May 1993	University of Pennsylvania, The School of Engineering and Applied Mechanics. Bachelor of Science in Engineering Major: Mechanical Engineering Minor: Mathematics

12. Non-Institutional:

July 2008-June 2009	University of Miami/Jackson Memorial Hospital, Neurological Surgery Spine Fellow
July 2007-June 2008	Temple University Hospital, Chief Neurosurgical Resident
July 2002-June 2007	Temple University Hospital, Neurosurgical Resident
June 2001-June 2002	Temple University Hospital, Preliminary Surgical Internship

13. Certification, licensure:

2014	Certifications, BLS, ACLS
2013	Board Certified, American Board of Neurological Surgeons
2010	Certifications BLS, ACLS
2005	Reeve-Irvine Research Center Spinal Cord Injury Research Techniques Course: Certified in Small Rodent Animal Husbandry, Care, and Spinal Cord Laboratory Surgery

III. EXPERIENCE

14. Academic:

February 2013-present	Assistant Professor of Clinical Rehabilitation Medicine (secondary appointment) University of Miami/Jackson Memorial Hospital/Veterans Administration Hospital – Miami
November 2011-present	Research Faculty, The Miami Project to Cure Paralysis
August 2009-present	Assistant Professor of Clinical Neurological Surgery: University of Miami/Jackson Memorial Hospital/Veterans Administration Hospital – Miami
July 2008- June 2009	Neurosurgical Spine Fellow: University of Miami School of Medicine, Department of Neurological Surgery: Various lectures to medical students, residents; individual student supervision
Spring 2003- Spring 2008	Adjunct Assistant Professor: Temple University College of Engineering Survey Course on Bioengineering. Guest lecturer. "Tyrosine Derived Synthetic Polymer Devices for Tissue Engineering: with Specific Applications to Neurosurgery"; ENGR 320/520-Introduction to Bioengineering

15. Hospital Appointments

August 2009-Present	Veterans Administration; Miami, Florida Jackson Memorial Hospital; Miami, Florida University of Miami Hospital; Miami, Florida

16. Non-Academic

June 1995-June 2001	Private Instructor: Stanley H. Kaplan Educational Center: MCAT Instructor for Biology, Organic Chemistry, Verbal Reasoning, Writing Skills, Physics, and General Chemistry as well as private students and special sessions; also trained other MCAT instructors

17. Military N/A

IV. PUBLICATIONS

18. Books and monographs published:

Doctoral Thesis:

1. **Levene HB**: Analysis of Tyrosine-Derived Novel Synthetic Polymer Scaffold Devices for Guided tissue Regeneration: *Biomedical Engineering, Graduate School of Biomedical Sciences* New Brunswick, Rutgers University UMDNJ-Graduate School of Biomedical Sciences, 1999, p 167.

U. S. Patents:

1. **Levene, HB**, Lhommeau, CM, & Kohn, JB (2002). USA Patent No. 6337198. U. S. Patent. Porous polymer scaffolds for tissue engineering

2. **Levene, HB**, Lhommeau, CM, & Kohn, JB (2000). USA Patent No. 6103255. U. S. Patent. Porous polymer scaffolds for tissue engineering

Book Chapters:

1. **Levene HB**, Wang MY, Green BA, and Emhoff TA, *Spinal Cord Trauma*, in *Irwin & Rippe's manual of intensive care medicine*, R.S. Irwin, J.M. Rippe, and C.M. Lilly, Editors. 2014, Wolters Kluwer Health/Lippincott Williams & Wilkins: Philadelphia. p. 924-932.

2. **Levene, HB**, Styliaras, JC, Vaccaro, AR, Jallo, JI, and Harrop, JS, *Occipital-Cervical Fusion*, in *Spine Surgery*, A.R. Vaccaro and E.M. Baron, Editors. 2012, Elsevier Saunders: Philadelphia. p. 61-68.

3. **Levene, HB**, Wang, MY, and Green, BA, *Spinal Cord Trauma*, in *Irwin and Rippe's intensive care medicine*, R.S. Irwin and J.M. Rippe, Editors. 2012, Wolters Kluwer/Lippincott Williams & Wilkins Health: Philadelphia. p. 1691-1704.

4. Loftus, CM and **Levene, HB**, *Tratamiento Quirúrgico de la Enfermedad Obstructiva Carotídea*, in *Neurocirugía. Aspectos Clínicos y Quirúrgicos*, G.C. Armando Basso, Juan José Mezzadri, Javier and M.S. Goland, Editors. 2010, Editorial Corpus: Rosario, Argentina.

5. **Levene, HB**, Wang, MY, and Green, BA, *Spinal Cord Trauma*, in *Manual of Intensive Care Medicine*, R.S. Irwin and J.M. Rippe, Editors. 2010, Wolters Kluwer / Lippincott Williams & Wilkins: Philadelphia. p. 804-812.

6. **Levene, HB** and Jallo, JI, *Lateral Extracavitary Approach*, in *Spine Surgery: Tricks of the Trade*, A.R. Vaccaro and T.J. Albert, Editors. 2009, Thieme Medical Publishers, Inc.: New York. p. 90-92.

7. **Levene, HB** and Jallo, JI, *Posterior Cervical Wiring*, in *Spine Surgery: Tricks of the Trade*, A.R. Vaccaro and T.J. Albert, Editors. 2009, Thieme Medical Publishers, Inc.: New York. p. 35-40.

8. **Levene, HB** and Jallo, JI, *Occipital-Cervical Fusion*, in *Spine Surgery*, A.R. Vaccaro and E.M. Baron, Editors. 2008, Saunders Elsevier: Philadelphia. p. 97-106.

9. Baty, DE, **Levene, HB**, Nalbach, SV, Baron, EM, and Dominique, DA, *Epidemiology of Spinal Injuries*, in *Neurotrauma and Critical Care of the Spine*, J. Jallo and A. Vaccaro, Editors. 2008, Thieme. p. 3-14.

10. James, K, **Levene, HB**, Kaufmann, EE, Parsons, JR, and Kohn, J, *Small Changes in Chemical Structure of a Polymer Can Have a Significant Effect on the Hard-Tissue Response in Vivo*, in *Bone Engineering*, Davies, J.E., Editor. 2000, EM Squared Incorporated: Toronto, Canada. p. 195-203.

19. Juried or refereed journal articles or exhibitions:

1. Gonzales S[1], Wang C, **Levene HB**, Cheung HS, Huang CY. *.ATP promotes extracellular matrix biosynthesis of intervertebral disc cells*. Cell and Tissue Res, 359(2):635-42, 2015.

2. Wang, C, Gonzales, S, **Levene, HB**, Gu, W, and Huang, CY, *Energy metabolism of intervertebral disc under mechanical loading.* J Orthop Res, 31(11):1733-1738, 2013.

3. **Levene, HB**, Elliott, MB, Gaughan, JP, Loftus, CM, Tuma, RF, and Jallo, JI, *A murine model of hypertonic saline as a treatment for acute spinal cord injury: effects on autonomic outcome.* J Neurosurg Spine, 2011. **14**(1): p. 131-8.

4. **Levene, HB**, Nimmagadda, A, and Levi, AD, *An unusual case of footdrop: anterior disc herniation mimicking a nerve sheath tumor.* Neurosurgery, 2010. **66**(2): p. E419-20; discussion E420.

5. Liao, C-C, Solano, JP, **Levene, HB**, Padgett, KR, Nares, MA, and Gonzalez-Brito, M, *The Phosphodiesterase-4 Inhibitor, Rolipram, Decreases Progressive Tissue Pathology in a Porcine Model of Contusive Spinal Cord Injury*. The Spine Jounal, 2010. **10**(9): p. S105.

6. Hood, B, **Levene, HB**, and Levi, AD, *Transplantation of autologous Schwann cells for the repair of segmental peripheral nerve defects.* Neurosurg Focus, 2009. **26**(2): p. E4.

7. **Levene, HB**, Mohamed, FB, Faro, SH, Seshadri, AB, Loftus, CM, Tuma, RF, and Jallo, JI, *Small mammal MRI imaging in spinal cord injury: a novel practical technique for using a 1.5 T MRI*. J Neurosci Methods, 2008. **172**(2): p. 245-9.

8. **Levene, HB**, Zhang, M, Erb, CJ, Jallo, JI, Loftus, CM, and Tuma, RF, *Method to perform IV injections on mice using the facial vein.* J Neurosci Methods, 2007. **164**(2): p. 304-7.

9. **Levene, HB**, Erb, CJ, Gaughan, JP, Loftus, CM, Tuma, RF, and Jallo, JI, *Hypertonic saline as a treatment for acute spinal cord injury: effects on somatic and autonomic outcomes as observed in a mouse model.* Clin Neurosurg, 2007. **54**: p. 213-9.

10. **Levene, HB** and Harrop, J, *Athletics and Spinal Cord Injury: Cervical Stenosis Definition May Hold Key to Consensus.* Neurotrauma & Critical Care News, 2006.

11. Baron, EM, **Levene, HB**, Heller, JE, Jallo, JI, Loftus, CM, and Dominique, DA, *Neuroendoscopy for spinal disorders: a brief review.* Neurosurg Focus, 2005. **19**(6): p. E5.

12. James, K, **Levene, HB**, Parsons, JR, and Kohn, J, *Small changes in polymer chemistry have a large effect on the bone-implant interface: evaluation of a series of degradable tyrosine-derived polycarbonates in bone defects.* Biomaterials, 1999. **20**(23-24): p. 2203-12.

20. Other works, publications and abstracts:

1. Urakov, T and **Levene, HB**. *Novel Transcutaneous Transpedicular Approach to Vertebral Body Abscess Drainage in Chronic Spondylitis*. in *AANS*. 2015. Washington, DC.

2. Nanayakkara, A, Santamaria, J, Benavides, F, Guada, L, **Levene, HB**, Solano, J, and Guest, J. *The Comprehensive Mini Pig Model for Spinal Cord Injury (SCI) Research*. in *Canes Day*. 2014. University of Miami.

3. Gonzales, SD, Wang, C, Rodriguez, BL, Barrera, CM, Huang, CY, and **Levene, HB**. *ATP Treatment Promotes Collagen Deposition and Gene Expression in Intervertebral Disc Cells*. in *Orthopedic Research Society Annual Meeting*. 2014. New Orleans, LA.

4. Benavides, FD, Santamaria, AJ, Guada, LG, Padgett, K, Nunez, Y, Nasser, K, Solano, JP, **Levene, HB**, and Guest, JD. *Development of the Miami Porcine Impactor (MPI) to Create Reproducible Spinal Cord Contusion Injuries.* in *Society for Neuroscience*. 2013. San Diego, CA.

5. Santamaria, AJ, Benavides, FD, Guada, LG, Nunez, Y, Nasser, K, **Levene, HB**, Solano, JP, and Guest, JD. *Minimum Preserved White Matter Associated with Recovery of Hindlimb Locomotion After Thoracic Contusive SCI in Micropigs. Correlation of Locomotor Score with Axonal Preservation, and Electrophysiological Conduction.* in *Society for Neuroscience*. 2012. New Orleans, LA.

6. Guest, J, **Levene, HB**, Padgett, K, Garcia-Canet, C, Benavides, F, Santamaria, J, and Solano, J. *Tolerance of Three Volumes of Injected Schwann Cells in to the contused Porcine Spinal Cord. Maximum Tolerated Dose Study*. in *National Neurotrauma Symposium*. 2011. Fort Lauderdale, FL.

7. **Levene, HB**, Solano, J, Benavides, F, Athauda, G, Padgett, K, Levi, AD, Dietrich, D, and Guest, J. *Schwann Cell (SC) Transplantation for Spinal Cord Injury in Mini Pigs: A Preliminary Report*. in *Congress of Neurological Surgeons Annual Meeting*. 2011. Washington, D.C.

8. Santamaria, J, Benavides, F, Athauda, G, Garcia-Canet, C, Solano, J, **Levene, HB**, and Guest, J. *Histological Assessment of Allogenic and autologous Schwann Cell grafts in a Porcine Spinal Cord Injury Contusion Model*. in *Neuroscience*. 2011. Washington, DC.

9. Parr, A, **Levene, HB**, and Levi, AD. *Superparamagnetic Iron Oxide Nanoparticles for Identification of Schwann Cells In Vivo After Transplantation in a Porcine Model of Spinal Cord Injury*. in *AANS/CNS Section of Disorders of the Spine and Peripheral Nerves*. 2010. Orlando, FL.

10. Markert, M, Levene, HB, and Levi, AD. *Morphometry of Experimental Spinal Cord Injury: A Multiple Species Comparison*. in *AANS Annual Meeting*. 2009. San Diego, California.
11. Levene, HB and Levi, AD. *Methods of Therapeutic Cellular Injection into the Spinal Cord: A Literature Review*. in *25th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves*. 2009. Phoenix, Arizona.

12. Dominique, D, Donald, G, and **Levene, HB**, *Clinical Case Series - MIS Spine Surgery with Miniature Robotic Guidance.* The Internet Journal of Minimally Invasive Spinal Technology, 2008. **1**(2): p. Supplement.

13. **Levene, HB**, Baty, DE, and Jallo, JI. *Endoscopic Thoracic Approaches to the Spine.* in *12th Asian Congress of Neurological Surgeons*. 2006.

14. **Levene, HB**, Erb, CJ, Gaughan, JP, Loftus, CM, Tuma, RF, and Jallo, JI. *The Autonomic and Somatic Effect of Hypertonic Saline Administration in SCI in a Murine Model as a Function of Administration Time.* in *The Congress of Neurological Surgeons Annual Meeting*. 2006. Chicago, IL.

15. **Levene, HB**, Erb, CJ, Gaughan, JP, Loftus, CM, Jallo, JI, and Tuma, RF. *The Effect of Hypertonic Saline Administration in SCI is dependent on Administration Time in a Murine Model*. in *National Neurotrauma Society Symposium*. 2006. St. Louis, MO.

16. **Levene, HB**, Erb, CJ, Gaughan, JP, Loftus, CM, Jallo, JI, and Tuma, RF. *Hypertonic Saline Administration in SCI has effects dependent on Administration Time as Seen in a Murine Spinal Cord Contusion Model*. in *Pennsylvania Neurosurgical Society Annual Meeting*. 2006. Hershey, PA.

17. **Levene, HB**, Erb, CJ, Gaughan, JP, Loftus, CM, Jallo, JI, and Tuma, RF. *Hypertonic Saline Administration in SCI has effects dependent on Administration Time as seen in a Murine Spinal Cord Contusion Model*. in *Annual Meeting of the Philadelphia Area Chapter of the Society for Neuroscience*. 2006. Philadelphia, PA.

18. **Levene, HB** and Jallo, JI. *A Department's Experience with Occipito-Cervical Fusion*. in *Proceedings of the 13th World Congress of Neurological Surgery*. 2005. Marrakech, Morocco.

19. **Levene, HB**, James, K, Abramson, S, Parsons, JR, and Kohn, J. *Comparison of Bone Biocompatibility of PLLA and Poly(DTE carbonate) Bone Pins in a 4-Year Study*. in *27th Annual Meeting of the Society For Biomaterials*. 2001. St. Paul, MN.

20. **Levene, HB** and Kohn, J. *A Novel Scaffold Architecture Consisting of a Bimodal Pore Distribution for Tissue Regeneration*. in *27th Annual Meeting of the Society For Biomaterials*. 2001. St Paul, MN.

21. **Levene, HB** and Kohn, J. *Using a Novel Scaffold in Guided Tissue Regeneration: Incorporating a Bimodal Pore Structure and Biodegradable Tyrosine-Derived Polymers in a Delayed Healing Defect Model within Rabbit Calvaria*. in *The 15th Annual National MD/Ph.D. Student Conference*. 2000. The Given Institute: Aspen, Colorado.

22. James, K, **Levene, HB**, and Kohn, J. *Designing Materials for Use in Bone*. in *Materials Research Society Fall Meeting*. 2000. Boston, MA: The Materials Research Society.

23. Abramson, S, Bolikal, D, **Levene, HB**, Simon, J, and Kohn, J. *Small Changes in Polymer Structure Can Dramatically Increase Degradation Rates: The Effect of Free Carboxylate Groups on the Properties of Tyrosine-Derived Polycarbonates*. in *26th Annual Meeting of the Society For Biomaterials*. 2000. Kamuela (Big Island) Hawaii: The Society for Biomaterials.

24. Lhommeau, CM, **Levene, HB**, Cahn, F, Kenmitzer, J, and Kohn, J. *New Scaffold Morphologies for Tissue Engineering Implants*. in *Symposium on Synthetic Bioabsorbable Polymers for Implants*. 1999. Kansas City, MO.

25. **Levene, HB**, Phuvanartnuruks, V, Abramson, S, James, K, and Kohn, J. *Chelation of Calcium Ions by Some Tyrosine-Derived Polymers May Be Related to Improved Bone Biocompatibility*. in *25th Annual Meeting of the Society For Biomaterials*. 1999. Providence, RI: The Society for Biomaterials.

26. Lhommeau, CM, **Levene, HB**, Abramson, S, and Kohn, J. *Preparation of Highly Interconnected Porous Tyrosine-Derived Polycarbonate Scaffolds*. in *Second Bi-annual Meeting of the Tissue Engineering Society*. 1998. Orlando, FL.

27. **Levene, HB**, Abramson, S, James, K, and Kohn, J. *Biocompatibility of Novel Tyrosine-Derived Polycarbonates in a Long-Term In Vivo Bone Implant Study*. in *Second Bi-annual Meeting of the Tissue Engineering Society*. 1998. Orlando, FL.

28. **Levene, HB**, Drzewiecki, G, Field, S, Li, J-J, Kedem, J, and Noordergraff, A. *Nonlinear Viscoelastic Properties of Collapsible Blood Vessels*. in *Experimental Biology 96 (tm)*. 1996. Washington, D.C.: Lancaster Press.

29. **Levene, HB**. *Ultrasonic Measurement of the Relative Concentration o f Gases in a Binary Gas Mixture*. in *1994 International Mechanical Engineering Congress and Exposition*. 1994. Chicago, IL: The American Society of Mechanical Engineers.

Invited Commentary:

1. **Levene, HB** and Loftus, CM, *Editorial comment on "Repair and Regeneration of Vertebral Body After Antero-lateral Partial Vertebrectomy Using Beta-Tricalcium Phosphate"*. Neurologia Medico-Chirurgica (Tokyo), 2008. **48**(8): p. 337-342.

2. **Levene, HB** and Loftus, CM, *Editorial comment on "Prediction of Postoperative Alignment in Patients Undergoing Anterior Cervical Fusion Using Autologous Vertebral Bone Grafting"*. Neurologia Medico-Chirurgica (Tokyo), 2008. **48**(5): p. 201-207.

3. **Levene, HB** and Loftus, CM, *Editorial comment on "Clinical Characteristics and Surgical Management for Juxtafacet Cysts of the Lumbar Spine"*. Neurologia Medico-Chirurgica (Tokyo), 2007. **47**(6): p. 257.

4. **Levene, HB** and Loftus, CM, *Editorial comment on "Morphometry of the Cervical Vertebral Pedicles as a Guide for Transpedicular Screw Fixation"*. Neurologia Medico-Chirurgica (Tokyo), 2007. **47**(3): p. 107-8.

21. Other works <u>accepted</u> for publication:

1. Zhu, Q, Gao, X, **Levene, H**B, Brown, M, and Gu, W, *Influences of Nutirition Supply and Pathways on the Degenerative Patterns in Human Intervertebral Disc*. Spine (Phila Pa 1976), pending. pending(pending).

2. **Levene, HB**, Styliaras JC, Vaccaro AR, Jallo JI, Harrop, JS. *Occipital-Cervical Fusion.* In Spine Surgery, 3rd Ed. Chapter 9., Pending

3. **Levene, HB**. *Neurotrauma Critical Care: Spine.* Introduction, Epidemiology, History. Pending.

4. **Levene, HB**, Ghobrial, GM, and Jallo, JI, *Posterior Cervical Wiring,* in *Spine Surgery: Tricks of the Trade*, A.R. Vaccaro and T.J. Albert, Editors. 2014, pending, Thieme Medical Publishers, Inc.: New York. p. TBD.

5. **Levene, HB**, Ghobrial, GM, and Jallo, JI, *Lateral Extracavitary Approach,* in *Spine Surgery: Tricks of the Trade*, A.R. Vaccaro and T.J. Albert, Editors. 2014, pending, Thieme Medical Publishers, Inc.: New York. p. TBD.

V. PROFESSIONAL

22. Funded Research Performed:

Research Protocols

Principal Investigator:

1. University of Miami School of Medicine, Department of Neurological Surgery: Translation of Novel PDE4 Inhibitors for the Treatment of Acute Spinal Cord Injury (SCI)., DOD Protocol #W81XWH-11-1-0802 // M1100975, 2011-present. Grant Total: $587,789

2. University of Miami College of Engineering, Department of Biomedical Engineering: Isolation of Intervertebral Disc Cells. NIH 1R21AR066240-01A1. 10/2015 (as PI) -present. Grant Total: $349,317

3. University of Miami School of Medicine, Department of Neurological Surgery: Schwann Cell Transplants after Spinal Cord Injury in Adult Miniature Pigs**,** Protocol 10-298, 2008-2011

4. Temple University School of Medicine, Department of Neurosurgery: Experimental Spinal Cord Injury, Protocol #1319 (from ACUP), 2005-2008

Co-Investigator/Participant:

5. University of Miami, School of Medicine: Corticospinal excitability of Leg muscles after Spinal Cord Injury. PI: Dr. Monica Perez

6. University of Miami, School of Medicine: Circulating Microparticles as Potential Predictors of Blood Loss and Postoperative Complications in Spine Surgery. PI: Dr. Glen Manzano

7. University of Miami, School of Medicine: Neural Control of Bilateral Hand, Arm and Leg Movements after Spinal Cord Injury. PI: Dr. Monica Perez

8. University of Miami, Department of Biomedical Engineering: Quantitative analysis of degenerative progression of human intervertebral disc. Protocol # pending, in submission for R01 PI: Gu, Weiyong

9. Temple University School of Medicine, Department of Neurosurgery: A Multi-Center, Feasibility Study of Recruitment for a Phase 2 Study on the Effects of SLV334 in Moderate and Severe Traumatic Brain Injury. Protocol Number (from sponsor): S334.2.001 Protocol

Number (from IRB): 11381, 2007-2008 PI: Jallo, Jack

10. Temple University School of Medicine, Department of Neurosurgery: Citicoline Brain Injury Treatment (COBRIT) Trial Protocol Number (from IRB): 10905, 2007-2008 PI: Jallo, Jack

11. Temple University School of Medicine, Department of Neurosurgery: Retrospective Analysis: Review of Patient Outcomes Following Occipito-Cerivcal Fusion Procedure over the Last 13 Years PI Jallo, Jack

12. Temple University School of Medicine, Department of Neurosurgery: Clot Lysis: Evaluating Accelerated Resolution of Intraventricular Hemmorhage. IRB 4287, 2005-2007 PI Jallo, Jack

23. Editorial responsibilities:

August 1995- June 1996	Assistant Editor, Weekly RW Johnson

24. Professional and Honorary Organizations:

American Board of Neurological Surgery	Member, 2013-present
American Association of Neurological Surgeons	Member, 2009-present
Congress of Neurological Surgeons	Member,
Sigma Xi Scientific Society	Member,
Tau Beta Pi Engineering Academic Honor Society	Member, 1992-present
Pi Tau Sigma Mechanical Engineering Honor Society	Member, 1992-present
Pi Mu Epsilon Mathematics Honor Society	Member, 1992-present

25. Honors and Awards:

August 4, 2015	Invited Speaker, Mexican Neurosurgical Society 23rd Annual Meeting "Minimally Invasive Approaches in Thoracic Disk Herniation." Mazatlan, Mexico
August 3, 2015	Invited Speaker, Mexican Neurosurgical Society 23rd Annual Meeting "Biomaterials and Biologic Implants in Spine Surgery" Mazatlan, Mexico
January 31, 2015	Invited Speaker, Humana CAC CME symposium. "Back Pain: The Old, The Odd, The Known, and The Unknown"
September 23, 2011	Invited Speaker, Temple University Hospital Spine Symposium. "An Evidence Based Approach to the Surgical Management of Low Back Pain"
July 25, 2010	Invited Panelist, 25th Annual National MD/PhD Student Conference Keystone, Colorado
July 8, 2010	Invited Speaker, Grand Rounds, Jackson North Medical Center. "Spinal Cord Injury: Treatment, Controversies, and New Frontiers"
January 19, 2007	Invited Judge, Senior Design Projects. Department of Mechanical Engineering, University of Pennsylvania.

October, 2006	Synthes Award for Resident Research on Spinal Cord and Spinal Column Injury: CNS Abstract Award Winner. "The Autonomic and Somatic Effect of Hypertonic Saline Administration in SCI in a Murine Model as a Function of Administration Time." CNS Annual Meeting
July 14-15, 2006	The Annual Scientific Meeting of The Pennsylvania Neurosurgical Society Hershey, PA. Pennsylvania Neurosurgical Society Award for Resident Research Presentation, 2nd Place. "Hypertonic Saline Administration in SCI Has Effects Dependent on Administration Time as Seen in a Murine Cord Contusion Model"
1999	Rutgers University Department of Biomedical Engineering Samuel Welkowitz Award for Outstanding Ph.D. research
1998-1999	NJ Center for Biomaterials and Medical Devices Whittaker Fellowship for Doctoral Study
1997-1998	Rutgers University Excellence Fellowship for Doctoral Study
1997	NJ Center for Biomaterials and Medical Devices Biomaterials Summer Award
1993	University of Pennsylvania Benjamin Franklin Honors Scholar
1993	University of Pennsylvania Magna Cum Laude
1993	Engineering Academic Honor Society Tau Beta Pi

26. Post-Doctoral Fellowships:

Temple University Hospital, School of Medicine: Infolded Post-Doctoral fellowship during Neurosurgical Residency. Project: Hypertonic Saline as a treatment for SCI in a murine model. Advisors: Dr. Ronald F. Tuma, Dr. Jack I. Jallo. April 2005-June 2006, Jan 2007-June 2008

27. Other Professional Activities:

October 20, 2015	(Pending) Guest for 880AM radio "The Grey Zone"
August 2-5, 2015	Mexican Neurosurgical Society Speaker.
May 6, 2015	AANS Breakfast Seminar Panelist *Current Use of Biologic Graft Extenders for Spinal Fusion.* Substituted for Dr. Allan Levi.
December 2014-present	Congress of Neurological Surgeons' Fellowships Committee Member
Summer 2005	Spinal Cord Injury Research Techniques course, 2005 at the Reeve-Irvine Research Center. Participant

VI. TEACHING

28. Teaching Awards Received: N/A

29. Teaching Specialization:

October 2015 – Present	University of Miami, School of Medicine: Recruited Spinal Cord Injury fellows to my VA clinic.
August 2011 – Present	University of Miami, School of Medicine: Recruited PM&R residents participating in my Neurosurgical Clinic
July 2008- Present	University of Miami School of Medicine, Department of Neurological Surgery: Various lectures to medical students, residents; individual student supervision
March 2013	University of Miami, School of Medicine: Introduction to Neurosurgery course: Management of Head Trauma
Spring 2003- Spring 2008	Temple University College of Engineering Survey Course on Bioengineering. Guest lecturer. "Tyrosine Derived Synthetic Polymer Devices for Tissue Engineering: with Specific Applications to Neurosurgery"; ENGR 320/520- Introduction to Bioengineering
August 2001- June2008	Temple University School of Medicine, Department of Neurosurgery: Various lectures to medical students, residents; individual student supervision
June 1995-June 2001	Stanley H. Kaplan Educational Center MCAT Instructor for Biology, Organic Chemistry, Verbal Reasoning, Writing Skills, Physics, and General Chemistry as well as private students and special sessions; also trained other MCAT instructors

30. Thesis and Dissertation Advising/Post-doctoral student supervision:

April 2013- Present	Thesis Panel Member: *In Proposal Defense – Title TBD* Student: Silvia Daniele Gonzales. Through the University of Miami, Department of Biomedical Engineering. Thesis Advisor: Dr. Chun-Huh Charles Huang.
March 2013-April 2013	Thesis Panel Member: *Energy Metabolism of Intervertebral Disc under Mechanical Loading*. Student: Chong Wang. Through the University of Miami, Department of Biomedical Engineering. Thesis Advisor: Dr. Chun-Huh Charles Huang.
August 2008-February 2010	Thesis Panel Member. *Biological Evaluation of Anti-Adhesion Device for Neurosurgery*. Student: Charlie Florek. Through Rutgers University, Department of Biomedical Engineering Thesis Advisor: Dr. Joachim Kohn

VII. SERVICE

31. University Committee and Administrative Responsibilities:

October 2011-present	Admissions Committee, University of Miami School of Medicine
September 2002-June 2003	Resident Delegate, Temple University Hospital Performance Improvement Committee
1997-1998	Scribe, Society for Biomaterials for Rutgers University
1994-1997	President and Founder, JMSS the UMDNJ-RWJ Medical School Jewish Medical Students Society
1997-1999	President, HaBoGer the Rutgers University Jewish Graduate Student Society

32. Community Activities:

December 2014	Silver Founding Patron: YEHUDI (A Jewish Outreach Organization)
December 10, 2014	Invited Lecturer – "Medicine in the Torah (Bible)" for "L'Chaims and Learning: A Speed Torah Experience." Sponsored through the Jewish Federation of Miami.
Summer 2008-Present	Active Member, Chabad on Wheels Miami Beach Synagogue
Jan 2010-Present	Maimonides Society, The Jewish Federation of Miami, Board Member