

## JOHN ROLSTON

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### EDUCATION AND TRAINING

University of California, San Francisco

**Residency in Neurological Surgery**

**6/2011 – 6/2017**

Emory University School of Medicine

**M.D. and Ph.D. (Neuroscience)**

**6/2003 – 5/2011**

Thesis: “Electrical stimulation of the intact and epileptic brain”

Advisors: Robert E. Gross, M.D., Ph.D., and Steve M. Potter, Ph.D.

Cum Laude

Columbia University

**B.S. in Computer Science**

**9/1999 – 5/2003**

Magna Cum Laude

### FACULTY APPOINTMENTS

University of Utah

Department of Neurosurgery, Functional Division

**Assistant Professor**

**2017 – present**

### AWARDS

Harold Rosegay Teaching Award, University of California San Francisco

**2017**

Best Senior Translational Research Paper, University of California San Francisco

**2017**

Resident Abstract Award, California Association of Neurological Surgeons

**2017**

NRSA F32 Fellowship from the NIDCD: “High-density electrocorticography to understand cortical speech arrest sites”

**2015 – 2016**

Congress of Neurological Surgeons (CNS) Socioeconomic Fellowship

**2013 – 2014**

Alpha Omega Alpha (National medical honor society)

**Inducted 2010**

Best Resident Presentation, American Society of Stereotactic and Functional Neurosurgery

**2010**

Selection for SfN Student Travel Award by the ACSFN

**2009**

NRSA F30 Fellowship from the NINDS: “Distributed Microstimulation for Epilepsy”

**2008-2011**

Travel Award for the 2008 Dynamical Systems in Biology Conference

**2008**

NINDS Fellowship: Training in Translational Research in Neurology

**2007-2008**

Travel Award for the 2007 NINDS/AUPN/ANA Careers in Neuroscience Symposium

**2007**

Full Scholarship and Travel Award for the Neuroinformatics Course at the Marine Biological Laboratory

**2007**

Travel Award for the 2006 Spike Train Analysis Workshop, Newcastle, England

**2006**

NIGMS Medical Scientist Training Program Scholarship (Emory University and Georgia Tech)

**2003-2011**

Extraordinary Teaching Assistant Award	<b>2003</b>
Magna Cum Laude Bachelor's Degree, Columbia University	<b>2003</b>
Russell Mills Award for Excellence in Computer Science	<b>2003</b>
Tau Beta Pi (National Engineering Honor Society)	<b>Inducted 2002</b>
Golden Key National Honor Society	<b>Inducted 2002</b>

## TEACHING EXPERIENCE

*Marine Biological Laboratory, Woods Hole, MA*  
**Faculty, Neuroinformatics** **2009-2010**  
 Lecturing, organizing syllabus, course logistics

**Teaching Assistant, Neuroinformatics** **2008-2009**  
 Organizing faculty and syllabus, aiding students with lecture material and tutorials

*Emory University, School of Medicine, Atlanta, GA*  
**Teaching Assistant, Medical Neuroscience** **2007**  
 Curriculum and exam development, aiding students with lecture materials

**Teaching Assistant, Medical Embryology** **2006**  
 Curriculum and exam development, aiding students with lecture materials

*Georgia Institute of Technology, Atlanta, GA*  
**Teaching Assistant, Introduction to Neuroscience** **2005**  
 Lecturing, collaborating on curriculum and exam development, meeting with students upon request, and grading written work.

*Columbia University, New York, NY*  
**Teaching Assistant, Scientific Computation I** **2003**  
 Collaborated on curriculum and exam development, met with students upon request, and graded all written work, including final exam papers.

## RELATED EXPERIENCE

*Axion Biosystems, Atlanta, GA*  
**Lead Software Engineer** **2008 – 2010**  
 Designed commercial software application for closed-loop recording and stimulation from next-generation microelectrode arrays

SAIC, Inc., Suffolk, VA  
**Analyst** **2000 – 2001**  
 Created analysis software for joint forces exercises for the Department of Defense

## PUBLICATIONS

*Journal Articles*

1. **Rolston JD**, Chang EF. "Critical language areas show increased functional connectivity in human cortex." (in press) *Cerebral Cortex*.
2. Muller L, **Rolston JD**, Fox N, Knowlton R, Rao V, Chang EF. "Direct electrical stimulation of the human cortex evokes high gamma activity that predicts conscious somatosensory perception." (in press) *Journal of Neural Engineering*
3. Krucoff MO, Chan AY, Harward SC, Rahimpour S, **Rolston JD**, Muh C, Englot DJ. "Rates and predictors of success and failure in repeat epilepsy surgery: a meta-analysis and systematic review." (in press) *Epilepsia*.
4. **Rolston JD**, Deng H, Wang DD, Englot DJ, Chang EF. "Multiple Subpial Transections for Medically Refractory Epilepsy: A Disaggregated Review of Patient-Level Data." (in press) *Neurosurgery*.
5. Harward SC, Chen WC, **Rolston JD**, Haglund MM, Englot DJ. "Seizure Outcomes in Occipital Lobe and Posterior Quadrant Epilepsy Surgery: A Systematic Review and Meta-Analysis." (in press) *Neurosurgery*.
6. Winkler EA, Rutledge WC, Kalani MYS, **Rolston JD**. "Pericytes regulate cerebral blood flow and neuronal health at a capillary level." (2017) *Neurosurgery* 81(5):N37-38.
7. **Rolston JD**. "The reticular activating system in the wake of temporal lobe epilepsy: dazed and confused." (2017) *Journal of Neurology, Neurosurgery, and Psychiatry* 88(11):900.
8. Burke JF, Peters A, **Rolston JD**. "Intracranial electroencephalography for Alzheimer's." (2017) *Neurosurgery* 81(3):N23-N24.
9. Englot DJ, Hassnain KH, **Rolston JD**, Harward SC, Sinha SR, Haglund MM. "Quality-of-life metrics with vagus nerve stimulation for epilepsy from provider survey data." (2017) *Epilepsy & Behavior* 66:4-9.
10. **Rolston JD**, Englot DJ, Starr PA, Larson PS. "An unexpectedly high rate of revisions and removals in deep brain stimulation surgery: Analysis of multiple databases." (2016) *Parkinsonism and Related Disorders* 33:72-77.
11. **Rolston JD**, Han SJ, Chang EF. "Systemic inaccuracies in the National Surgical Quality Improvement Program database: Implications for accuracy and validity for neurosurgery outcomes research." (2017) *Journal of Clinical Neuroscience* 37:44-47.
12. **Rolston JD**, Englot DJ, Knowlton RC, Chang EF. "Rates and complications of adult epilepsy surgery in North America: Analysis of multiple databases." (2016) *Epilepsy Research* 124:55-62.
13. Desai SA, **Rolston JD**, McCracken CE, Potter SM, Gross RE. "Asynchronous distributed multielectrode microstimulation reduces seizures in the dorsal tetanus toxin model of temporal lobe epilepsy." (2016) *Brain Stimulation* 9(1):86-100.
14. **Rolston JD**. "Surgical Strategies for Epilepsy in Eloquent Areas." (2016) *J Epilepsy* 2:103.
15. Michalak SM, **Rolston JD**, Lawton MT. "Incidence and Predictors of Complications and Mortality in Cerebrovascular Surgery: National Trends From 2007 to 2012" (2016) *Neurosurgery* 79(2):182-93.
16. **Rolston JD**, Han SJ, Aghi MK. "Nationwide shift from microscopic to endoscopic transsphenoidal pituitary surgery." (2016) *Pituitary* 19(3):248-50.
17. Englot DJ, **Rolston JD**, Wright CW, Hassnain KH, Chang EF. "Rates and Predictors of Seizure Freedom With Vagus Nerve Stimulation for Intractable Epilepsy." (2016) *Neurosurgery* 79(3):345-53.

18. Ramos A, **Rolston JD**, Gauger GE, Larson PS. "Spinal subdural abscess following laminectomy for symptomatic stenosis: A report of two cases and review of the literature." (2016) *American Journal of Case Reports* 17:476-83.
19. **Rolston JD**, Englot DJ, Cornes S, Chang EF. "Major and minor complications in extraoperative electrocorticography: a review of a national database." (2016) *Epilepsy Research* 122:26-9.
20. Englot DJ, Nagarajan SS, Wang DD, **Rolston JD**, Mizuiri D, Honma SM, Mantle M, Tarapore PE, Knowlton RC, Chang EF, Kirsch HE. "The sensitivity and significance of lateralized interictal slow activity on magnetoencephalography in focal epilepsy." (2016) *Epilepsy Research* 121:21-28.
21. **Rolston JD**, Chang EF. "Stereotactic Laser Ablation for Hypothalamic Hamartoma." (2016) *Neurosurgery Clinics of North America* 27(1):59-67.
22. Wang DD, Knox R, **Rolston JD**, Englot DJ, Barkovich AJ, Tihan T, Auguste KI, Knowlton RC, Cornes SB, Chang EF. "Surgical management of medically-refractory epilepsy in patients with polymicrogyria." (2016) *Epilepsia* 57(1):151-61.
23. Michalak SM, **Rolston JD**, Lawton MT. "Prospective, Multidisciplinary Recording of Perioperative Errors in Cerebrovascular Surgery: Is error in the eye of the beholder?" (2016) *Journal of Neurosurgery* 124(6):1794-804.
24. Han SJ, **Rolston JD**, Zygorakis CC, Sun MZ, McDermott MW, Lau CY, Aghi MK. "Preventing Delays in First-Case Starts on the Neurosurgery Service: A Resident-Led Initiative at an Academic Institution." (2016) *Journal of Surgical Education* 73(2):291-5.
25. Birk HS, Han SJ, **Rolston JD**, Rowland NC, Lau C, Theodosopoulos PV, McDermott MW. "Resident-led Implementation of a Standardized Handoff System to Facilitate Transfer of Postoperative Neurosurgical Patients to the ICU" (2016) *Cureus* 18;8(1):e461
26. **Rolston JD**, Ramos A, Heath S, Englot DJ, Lim DA. "Thalamotomy-like effects from partial removal of a ventral intermediate nucleus deep brain stimulator lead in a patient with essential tremor: Case Report." (2015) *Neurosurgery* 77(5):E831-7.
27. **Rolston JD**, Englot DJ, Wang DD, Garcia PA, Chang EF. "Corpus callosotomy versus vagus nerve stimulation for atonic seizures and drop attacks: A systematic review." (2015) *Epilepsy & Behavior* 51:13-17.
28. **Rolston JD**, Englot DJ, Benet A, Li J, Cha S, Berger MS. "Frontal Operculum Gliomas: Language Outcome following Resection." (2015) *Journal of Neurosurgery* 122(4):725-34.
29. **Rolston JD**, Han SJ, Parsa AT. "Quality Improvement in Neurosurgery." (2015) *Neurosurgery Clinics in North America* 26(2):xiii-xiv.
30. **Rolston JD**, Bernstein M. "Errors in Neurosurgery." (2015) *Neurosurgery Clinics in North America* 26(2):149-55.
31. Han SJ, **Rolston JD**, Lay CY, Berger MS. "Improving patient safety in neurologic surgery." (2015) *Neurosurgery Clinics in North America* 26(2):143-7.
32. Asher AL, Parker SL, **Rolston JD**, Selden NR, McGirt MJ. "Using clinical registries to improve the quality of neurosurgical care." (2015) *Neurosurgery Clinics of North America* 26(2):253-63.
33. **Rolston JD**, Ouyang D, Englot DJ, Wang DD, Chang EF. "National trends and complication rates for invasive extraoperative electrocorticography in the USA." (2015) *Journal of Clinical Neuroscience* S0967-5868(14)00717-6.

34. Zygourakis CC, **Rolston JD**, Lee HS, Partow C, Kunwar S, Aghi MK. "Pituicytomas and Spindle Cell Oncocytomas: Modern Case Series from the University of California, San Francisco." (2015) *Pituitary* 18(1):150-8.
35. Scheer JK, Smith JS, Clark AJ, Lafage V, Kim HJ, **Rolston JD**, Eastlack R, Hart RA, Protosaltis TS, Kelly MP, Kebaish K, Gupta M, Klineberg E, Hostin R, Shaffrey CI, Schwab F, Ames CP, International Spine Study Group (ISSG). "Comprehensive study of back and leg pain improvements after adult spinal deformity surgery: analysis of 421 patients with 2-year follow-up and of the impact of the surgery on treatment satisfaction." (2015) *Journal of Neurosurgery: Spine* 22(5):540-53.
36. Scheer JK, Mundis GM, Klineberg E, Hart RA, Deviren V, Burton DC, Protosaltis TS, Gupta M, **Rolston JD**, Bess S, Shaffrey CI, Schwab F, Lafage V, Smith JS, Ames CP, International Spine Study Group (ISSG). "Recovery following adult spinal deformity surgery: the effect of complications and reoperation in 149 patients with 2-year follow-up." (2015) *European Spine Journal*.
37. **Rolston JD**, Zygourakis CC, Han SJ, Lau CY, Berger MS. "Medical Errors in Neurosurgery." (2014) *Surgical Neurology International* 5(Suppl 10):S435-40.
38. **Rolston JD**, Han SJ, Bloch O, Parsa AT. "What clinical factors predict incidence of Deep Venous Thrombosis and Pulmonary Embolism in Neurosurgical Patients?" (2014) *Journal of Neurosurgery* 121(4):908-18.
39. Zygourakis CC, **Rolston JD**, Treadway J, Chang S, Kliot M. "What do hotels and hospitals have in common? How we can learn from the hotel industry to take better care of patients." (2014) *Surgical Neurology International* 5(Suppl 2):S49-53.
40. Han SJ, **Rolston JD**, Molinaro AM, Clarke JL, Prados MD, Chang SM, Berger MS, Desliva A, Butowski NA. "Phase II Trial of 7days on/7 days off temozolomide for recurrent high-grade glioma." (2014) *Neuro-oncology* 16(9):1255-62.
41. **Rolston JD**, Han SJ, Lau CY, Berger MS, Parsa AT. "Frequency and predictors of complications in neurological surgery: national trends from 2006-2011." (2014) *Journal of Neurosurgery* 120(3):736-45.
42. **Rolston JD**, Han SJ, Cotter JA, El-Sayed IH, Aghi MK. "Gangliogliomas of the optic pathway." (2014) *Journal of Clinical Neuroscience* 21(12):2244-9.
43. Englot DJ, Han SJ, **Rolston JD**, Ivan ME, Kuperman RA, Chang EF, Gupta N, Sullivan JE, Auguste KI. "Epilepsy surgery failure in children: a quantitative and qualitative analysis." (2014) *Journal of Neurosurgery: Pediatrics* 14(4):386-95.
44. Han SJ, **Rolston JD**, Jahangiri A, Aghi MK. "Rathke's cleft cysts: review of natural history and surgical outcomes." (2014) *Journal of Neuro-oncology* 117(2):197-203.
45. Wang DD, Lau D, **Rolston JD**, Englot DJ, Sneed PK, McDermott MW. "Pain experience using conventional versus angled anterior posts during stereotactic head frame placement for radiosurgery." (2014) *Journal of Clinical Neuroscience*.
46. Han SJ, Saigal R, **Rolston JD**, Cheng JS, Lau CY, Mistry RI, McDermott MW, Berger MS. "Targeted reduction in neurosurgical laboratory utilization: resident-led effort at a single academic institution." (2014) *Journal of Neurosurgery* 120(1):173-7.
47. Smart O, **Rolston JD**, Epstein CM, Gross RE. "Hippocampal seizure-onset laterality can change over long timescales: A same-patient observation over 500 days." (2013) *Epilepsy & Behavior Case Reports* 1:56-61.

48. **Rolston JD**, Han SJ, McDermott MW. "Keyhole revision after failed subdural craniostomy for chronic subdural hematoma: technical note." (2013) *Curēus*.
49. Wang DD, Ouyang D, Englot DJ, **Rolston JD**, Molinaro AM, Ward M, Chang EF. "Trends in surgical treatment for trigeminal neuralgia in the United States of America from 1988 to 2008." (2013) *Journal of Clinical Neuroscience* 20(11):1538-45.
50. Englot DJ, **Rolston JD**, Wang DD, Sun PP, Chang EF, Auguste KI. "Seizure outcomes after temporal lobectomy in pediatric patients." (2013) *Journal of Neurosurgery: Pediatrics* 12(2):134-41.
51. Englot DJ, Ouyang D, Wang DD, **Rolston JD**, Garcia PA, Chang EF. "Relationship between hospital surgical volume, lobectomy rates, and adverse perioperative events at US epilepsy centers." (2013) *Journal of Neurosurgery* 118(1):169-74.
52. Englot DJ, **Rolston JD**, Wang DD, Hassnain KH, Gordon CM, Chang EF. "Efficacy of vagus nerve stimulation in posttraumatic versus nontraumatic epilepsy." (2012) *Journal of Neurosurgery* 117(5):970-7.
53. **Rolston JD**, Blevins LS Jr. "Gamma knife radiosurgery for acromegaly." (2012) *International Journal of Endocrinology* 2012:821579
54. **Rolston JD**, Englot DJ, Wang DD, Shih T, Chang EF. "Comparison of seizure control outcomes and the safety of vagus nerve, thalamic deep brain, and responsive neurostimulation: evidence from randomized controlled trials." (2012) *Neurosurgical Focus* 32(3):E14.
55. Englot DJ, Wang DD, **Rolston JD**, Shih TT, Chang EF. "Rates and predictors of long-term seizure freedom after frontal lobe epilepsy surgery: a systematic review and meta-analysis." (2012) *Journal of Neurosurgery* 116(5):1042-8.
56. Quigg M, **Rolston J**, Barbaro NM. "Radiosurgery for epilepsy: clinical experience and potential antiepileptic mechanisms." (2012) *Epilepsia* 53(1):7-15.
57. Pastrana EA, Saavedra FM, Murray G, Estronza S, **Rolston JD**, Rodriguez-Vega G. "Acute adrenal insufficiency in cervical spinal cord injury." (2012) *World Neurosurgery* 77(3-4):561-3.
58. **Rolston JD**, Desai SA, Laxpati NG, Gross RE. "Electrical stimulation for epilepsy: experimental approaches." (2011) *Neurosurgery Clinics of North America* 22(4):425-42.
59. **Rolston JD**, Quigg M, Barbaro NM. "Gamma knife radiosurgery for mesial temporal lobe epilepsy." (2011) *Epilepsy Research and Treatment* 2011:840616.
60. **Rolston JD**, Laxpati NG, Gutekunst CA, Potter SM, Gross RE. "Spontaneous and evoked high-frequency oscillations in the tetanus toxin model of epilepsy." (2010) *Epilepsia* 51(11):2289-96.
61. **Rolston JD**, Gross RE, Potter SM. "Closed-loop, open-source electrophysiology." (2010) *Frontiers in Neuroscience* 2010;4.
62. Hales CM, **Rolston JD**, Potter SM. "How to culture, record and stimulate neuronal networks on micro-electrode arrays (MEAs)." (2010) *Journal of Visualized Experiments* 30;(39)
63. Desai SA, **Rolston JD**, Guo L, Potter SM. "Improving impedance of implantable microwire multi-electrode arrays by ultrasonic electroplating of durable platinum black." (2010) *Frontiers in Neuroengineering* 2010;3:5.
64. **Rolston JD**, Gross RE, Potter SM. "NeuroRighter: closed-loop multielectrode stimulation and recording for freely moving animals and cell cultures." (2009) *Conference Proceedings of the IEEE Engineering in Medicine and Biology Society* 2009:6489-92.

65. **Rolston JD**, Gross RE, Potter SM. "Common median referencing for improved action potential detection with multielectrode arrays." (2009) *Conference Proceedings of the IEEE Engineering in Medicine and Biology Society* 2009:1604-7.
66. Jiménez L, Pastrana EA, Rodriguez-Vega G, **Rolston JD**. "Ventilator bundle compliance: Report from a neurosurgical intensive care unit." (2009) *Critical Care & Shock* 12:109-116.
67. Schacter SC, Gutttag J, Schiff SJ, Schomer DL, **Summit Contributors**. "Advances in the Application of Technology to Epilepsy: The CIMIT/NIO Epilepsy Innovation Summit." (2009) *Epilepsy & Behavior* 16(1):3-46.
68. **Rolston JD**, Gross RE, Potter SM. "A low-cost multielectrode system for data acquisition enabling real-time closed-loop processing with rapid recovery from stimulation artifacts." (2009) *Frontiers in Neuroengineering* 2009;2:12.
69. Gross RE, **Rolston JD**. "The clinical utility of methods to determine spatial extent and volume of tissue activated by deep brain stimulation." (2008) *Clinical Neurophysiology* 119(9):1947-50.
70. **Rolston JD**, Wagenaar DA, Potter SM. "Precisely timed spatiotemporal patterns of neural activity in dissociated cortical cultures." (2007) *Neuroscience* 148(1):294-303.

#### Book Chapters

1. **Rolston JD**, Lau CY, Berger MS. "Improving Patient Safety." (2016) *Youmans and Winn Neurological Surgery*, 7<sup>th</sup> edition. Philadelphia, PA: Elsevier.
2. Harward SC, **Rolston JD**, Englot DJ. "Seizures in Meningioma." (in press) *McDermott and Theodosopoulos: Meningiomas*. Philadelphia, PA: Elsevier.
3. **Rolston JD**, Berger MS. "Intraoperative Patient Safety." (in press) *Quality and Safety in Neurosurgery*. Philadelphia, PA: Elsevier.
4. Wang DD, **Rolston JD**, Berger MS. "Cortical and subcortical stimulation and mapping." (in press) *Pediatric Epilepsy Surgery: Preoperative Assessment and Surgical Treatment*. New York, NY: Thieme.

#### Book Reviews

1. **Rolston JD**. "Neuroengineering by D.J. DiLorenzo and J.D. Bronzino." (2009) *Stereotactic and Functional Neurosurgery* 87:199-201.

## FUNDING

### Ongoing Funding

1. **National Science Foundation** 1531003 (Butson PI) 9/15/2015-8/31/2018  
*Remote Management of Deep Brain Stimulation (DBS) Patients Using Utah Telehealth Network (UTN)*  
 This project uses an iOS-based system employing patient-specific computational models of electrical stimulation to enable remote programming of DBS systems.  
 Role: Co-investigator
2. **Neuroscience Initiative Grant, University of Utah** (Butson PI) 7/1/2017-6/30/2018  
*Differentiating Neural Circuits Modulated During Therapeutic Versus Ineffective Deep Brain Stimulation*

This project uses magnetic resonance imaging (MRI) tractography and resting-state functional MRI to formulate patient-specific computational models for the efficacy of deep brain stimulation (DBS).

Role: Co-investigator

#### Completed Funding

1. **NINDS** F30 NS 060392 (Rolston PI) 8/1/2008-5/9/2011  
*Closed-loop distributed microstimulation for epilepsy*  
 The goal of this project was to develop a closed-loop multielectrode stimulation system for use in freely moving animals, and then use stimulation to suppress seizures.  
 Role: PI
2. **Congress of Neurological Surgeons** Fellowship (Rolston PI) 7/1/2013-6/30/2014  
*Complications in neurological surgery: evidence-based quality improvement*  
 The goal of this project was to use the ACS NSQIP and NIS databases to document the frequency and predictors of complications in neurosurgical procedures.  
 Role: PI
3. **NIDCD** F32 DC 013953 (Rolston PI) 7/1/2015-6/30/2016  
*High-density electrocorticography to understand cortical speech arrest sites*  
 The goal of this project was to use functional connectivity and electrical stimulation to predict the location of critical speech arrest sites as they occurred during invasive language mapping.  
 Role: PI

#### MEMBERSHIPS

Congress of Neurological Surgeons (CNS)  
 American Association of Neurological Surgeons (AANS)  
 Society for Neuroscience (SfN)  
 American Epilepsy Society (AES)  
 American Medical Association (AMA)  
 Institute of Electrical and Electronics Engineers (IEEE)

#### POSITIONS HELD

Resident Education Committee (University of California, San Francisco)	<b>2015 – 2017</b>
Patient Safety Committee (University of California, San Francisco)	<b>2015 – 2016</b>
Unit-Based Leadership Team (University of California, San Francisco)	<b>2015 – 2016</b>
Morbidity and Mortality Committee (University of California, San Francisco)	<b>2012 – 2013</b>
MD/PhD Admissions Committee (Emory University)	<b>2004 – 2005, 2010 – 2011</b>
MD/PhD Executive Committee (Emory University)	<b>2004 – 2005, 2010 – 2011</b>
Liaison Committee on Medical Education (Emory University)	<b>2007</b>
Medical School Senate: President (Emory University)	<b>2006 – 2007</b>
Medical School Senate: Vice-President	<b>2005 – 2006</b>
Medical School Senate: Treasurer	<b>2004 – 2005</b>
Medical School Senate: Senator	<b>2003 – 2007</b>
University Budget Committee (Emory University)	<b>2004 – 2005</b>