

Kevin J. Gingrich, M.D.  
Professor

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**CITY, STATE AND COUNTRY OF BIRTH:** Syracuse, New York, USA

**EDUCATION:**

College 1975; A.S. Engineering Science  
Mohawk Valley College, Utica, New York

1977; B.S. Electrical Engineering  
Cornell University, Ithaca, New York

Graduate 1988; M. Engr. Biomedical Engineering  
Rensselaer Polytechnic, Troy, New York

Medical School 1984; M.D. Medicine  
University of Pittsburgh, Pittsburgh, Pennsylvania

**POSTDOCTORAL TRAINING:**

Internship 1984-1985; General Surgery  
West Penn Hospital, Pittsburgh, PA

Residency 1985-1988; Anesthesiology  
Albany Medical Center, Albany, NY

**LICENSURE:**

1985-inactive New York Physician License, #171550  
1985-inactive Pennsylvania Physician License, #MD034927E

1988-inactive	Maryland Physician License, #D-37834
2000-inactive	Vermont Physician License, #042-0010081
2011-present	Texas Physician License, #P1868

**CERTIFICATION:**

Primary Specialty     Diplomate American Board of Anesthesiology, 1989  
Diplomate American Board of Anesthesiology Recertification, 2010

**ACADEMIC APPOINTMENTS:**

1989-1991	Assistant Professor, Biomedical Engineering, The Johns Hopkins University, School of Medicine
1991-1997	Assistant Professor, Anesthesiology & Physiology University of Rochester, School of Medicine
1997-2000	Associate Professor, Anesthesiology & Physiology University of Rochester, School of Medicine
2002-2004	Associate Professor, Anesthesiology Thomas Jefferson Medical College
2004-2012	Associate Professor, Anesthesiology New York University School of Medicine
2012-present	Professor, Anesthesiology and Pain Medicine UTSouthwestern School of Medicine

**HOSPITAL APPOINTMENTS:**

1988-1991	Attending Physician, Anesthesiology Bethesda Naval Hospital
1991-2000	Attending Physician, Anesthesiology/Neuroanesthesia University of Rochester Medical Center
2000-2001	Attending Physician, Anesthesiology Northwest Medical Center
2002-2004	Attending Physician, Anesthesiology/Neuroanesthesia Thomas Jefferson Medical College

2004-2012 Attending Physician, Anesthesiology/Neuroanesthesia  
New York University Langone Medical Center

2012-present Attending Physician, Anesthesiology and Pain Medicine/ Neuroanesthesia  
UTSouthwestern Medical Center

**OTHER PROFESSIONAL ACTIVITIES:**

1977-1980 Associate Director Research in Engineering,  
Alcoa Technical Center

2000-2001 Attending Physician, Private Practice  
Northwest Medical Center

2001-2003 Associate Director, Clinical Pharmacology  
Merck Research Laboratories

**ADMINISTRATIVE/LEADERSHIP APPOINTMENTS:**

1988-1991 Director of Neuroanesthesiology, Bethesda Naval Hospital

1991-2000 Director of Neuroanesthesiology, University of Rochester Medical Center

2003-2004 Co-Director of Anesthesia Program for Translational Research  
Thomas Jefferson University Medical Center

2003-2004 Director of Neuroanesthesiology, Thomas Jefferson University Medical Center

2008-2012 Director Basic Anesthesiology Research, New York University Langone Med. Ctr

**COMMITTEE SERVICE:**

1988-2000 Member, Medical Therapeutics Committee,  
University of Rochester Medical Center

1988-2000 Member, Scientific Review Committee  
University of Rochester Medical Center

2006-2012 Member, Resident Selection Committee  
New York University Langone Medical Center

**QA/QI/SAFETY RESEARCH PROJECTS THAT RESULT IN A CHANGE IN PRACTICE:**

**EDUCATIONAL INITIATIVES THAT ADVANCE THE EDUCATIONAL PROGRAM:**

Formal instruction of medical and graduate students, University of Rochester, School of Medicine:

- 1993-1996 PSO 501, Medical Physiology, "Control of Ventilation", (2 hr),
- 1994 -1996 PSO 501, Medical Physiology, "Conference on Synapses", (1.5 hr),
- 1994 – 1995 PSO 501, Medical Physiology, "Lab Cardiac Electrophysiology", (1.5 hr),
- 1995-1997 PSO 501, Medical Physiology, "Synapses", (2hr),
- 1995-2000 PSO 501, Medical Physiology, "Neuromuscular Junction", (1hr),
- 1995-1998 PSO 501, Medical Physiology, "Excitation-contraction coupling", (1hr),
- 1996-2000 PSO 501, Medical Physiology, "Electrocardiogram", (1hr),
- 1998-1999 PSO 501, Medical Physiology, "Bioelectric Potentials", (1hr),
- 1998-2000 PSO 501, Medical Physiology, "Action potential", (1hr),
- 1998-2000 PSO 501, Medical Physiology, "Action potential propagation", (1hr),
- 1998 PSO 501, Medical Physiology, "Cardiac Electrophysiology", (1hr),
- 1998-1999 PSO 501, Medical Physiology, "APs and Demyelinating Disease", (1hr),
- 1995-2000 PSO 623, Medical Pharmacology, "Inhalational Anesthetics", (1hr),
- 1995-2000 PSO 623, Medical Pharmacology, "Local Anesthetics", (1hr),
- 1997-2000 PSO 407, Introduction to Physiology, "Synapses", (1hr),
- 1997-2000 PSO 407, Introduction to Physiology, "Neuromuscular Junction", (1hr),
- 1997-1999 PSO 407, Introduction to Physiology, "Action Potential", (1hr),
- 1997-2000 PSO 407, Introduction to Physiology, "Lab. on Electrophysiology", (2 hr)

Formal instruction of anesthesiology residents, University of Rochester, School of Medicine

- 1993-2000 "Local anesthetic action",
- 1993-1999 "Clinical use of local anesthetics",
- 1995 "Receptor coupling",
- 1993-1999 "Neuromuscular junction",
- 1993-2000 "Neuromuscular blocking agents",
- 1992-1997 "Evoked potential monitoring",
- 1991-2000 "General neuroanesthesiology",
- 1995-1998 "Mechanisms of general anesthesia",

Monthly informal instruction of residents rotating on neuroanesthesiology, University of Rochester, School of Medicine

- 1993-1999 "Basic Neurophysiology",
- 1993-2000 "Anesthesia for supratentorial tumor",
- 1993-2000 "Venous air embolization",
- 1993-2000 "Anesthesia for posterior fossa craniotomy in the sitting position",

Clinical anesthesiology conferences, Bethesda Naval Hospital

- 1987 "Neurophysiology and neuroanesthesia",
- 1988 "Anesthesia for supratentorial tumor resection",
- 1989 "Anesthesia for posterior fossa craniotomy",
- 1990 "Interaction of local anesthetics with Na channels",

Clinical anesthesia conferences, University of Rochester, School of Medicine

1992-2000 "Basic neurophysiology",  
 1993-2000 "Anesthesia for supratentorial tumor resection",  
 1993-2000 "Anesthesia for the sitting position",  
 1993 "Intraoperative evoked potential monitoring",  
 1994-2000 "Cerebral protection",

Monthly informal instruction of residents rotating on neuroanesthesiology, Thomas Jefferson University Hospital

2003-2004 "Basic neurophysiology",  
 2003-2004 "Anesthesia for supratentorial tumor resection",  
 2003-2004 "Anesthesia for the sitting position",  
 2003-2004 "Intraoperative evoked potential monitoring",  
 2003-2004 "Cerebral protection",

Educational Activities, NYU Langone Medical Center, Department of Anesthesiology

2004-2012 "Anesthesia for sitting craniotomy",  
 2007-2012 Journal Club,

Monthly informal instruction of residents rotating on neuroanesthesiology, NYU Langone Medical Center

2004-2012 "Basic neurophysiology",  
 2004-2012 "Anesthesia for supratentorial tumor resection",  
 2004-2012 "Anesthesia for the sitting position",  
 2004-2012 "Intraoperative evoked potential monitoring",  
 2004-2012 "Cerebral protection",

Educational Activities, UTSW Dept of Anesthesiology and Pain medicine,

2014-present Monthly neuroanesthesiology journal club

Monthly informal instruction of residents rotating on neuroanesthesiology, UTSW Dept of Anesthesiology and Pain medicine

2012-present "Basic neurophysiology"  
 2012-present "Anesthesia for supratentorial tumor resection"  
 2012-present "Anesthesia for the sitting position"  
 2012-present "Intraoperative evoked potential monitoring"  
 2012-present "Cerebral protection"  
 2012-present "Acute hyperkalemia"  
 2012-present "Electrophysiology of the EKG"  
 2012-present "Closing capacity"  
 2012-present "Pulmonary dead space"  
 2012-present "Venous air embolization and anesthesia for sitting craniotomies",  
 2012-present "Neuromuscular junction and paralytic drugs"

## **PROFESSIONAL SOCIETIES AND ACTIVITIES:**

*Memberships*

1985-present	American Society of Anesthesiologists
1985-present	International Brain Research Organization
1985-present	Society for Neuroscience
1998-present	Association of University Anesthesiologists
1995-2010	Biophysical Society

*Activities*

Biophysical Society Annual Meeting 1997  
Session Chairman, "Voltage-gated Sodium Channels"

Society for Neuroscience Annual Meeting 1998  
Session Chairman, "Chloride Channels"

American Society of Anesthesiologists  
Scientific Committee on Experimental Neuroscience and Biochemistry 1999-2001

NIH-NIGMS, Program project site review committee member 2004

The New York City Anesthesiology Residents Research at The New York Academy of Medicine  
Reviewer 2005

American Society of Anesthesiologist Annual Meeting 2005  
Session Moderator, "Mechanisms of Anesthesia - Cellular and Molecular"

IARS Annual Meeting 2006  
Abstract Reviewer for sessions on Pain and Pharmacology Basic Science

American Society of Anesthesiologist Annual Meeting 2006  
Session Moderator, "Mechanisms of Anesthesia - Cellular and Molecular"

IARS Annual Meeting 2006  
Abstract Reviewer for sessions on Pain, Neuroanesthesia and Pharmacology Basic Science

American Society of Anesthesiologist Annual Meeting 2007  
Session Moderator, "Mechanisms of Anesthesia - Cellular and Molecular"

IARS Annual Meeting 2008  
Abstract Reviewer for sessions on Pain, Neuroanesthesia and Pharmacology Basic Science

American Society of Anesthesiologist Annual Meeting 2008  
Session Moderator, "Mechanisms of Anesthesia - Cellular and Molecular"

IARS Annual Meeting 2009  
Abstract Reviewer for sessions on Neuroanesthesia and Pharmacology Basic Science

**GRANT REVIEW ACTIVITIES:**

2004 Program Project Site Review Committee, NIH-NIGMS

**GRANTS:**

- 7/16 – 7/20 NIH R01 GM58055, “Synaptic Mechanisms of General Anesthetic Action”, funded Consultant
- 1/15 – 9/16 NIH NIMH NCT01920555 “Double-blind, placebo-controlled trial of ketamine in treatment-resistant depression”, funded coinvestigator
- 2/98 - 1/01 NIH R01 GM56958, “Long-lived Blockade of Na<sup>+</sup> Channels by Local Anesthetics”, TDC - \$336,000, P.I.: Dr. Kevin Gingrich.
- 4/95 - 3/98 Whitaker Foundation, "Modeling the GABA<sub>A</sub> Receptor", TDC - \$150,000, P.I.: Dr. Kevin Gingrich.
- 7/92 - 6/97 NHLBI-CIDA K08-HL02777, "Polarized block of sodium channels in heart", TDC - \$327,400, (Sponsor: Dr. Robert Kass)

**EDITORIAL ACTIVITIES:**

Ad hoc reviewer for *Anesthesia & Analgesia*, *Anesthesiology*, *British Journal of Pharmacology*, *Clinical Journal of Pain*, *Journal of General Physiology*, *Journal of Neurophysiology*, *Laryngoscope*, *Molecular Pharmacology*, *Circulation Research*, *Proceedings of the National Academy of Science*, *BBA Biomembranes*, and *British Journal of Anesthesia*.

**INVITED LECTURES:**

1. “Cerebral protection in low flow states during surgery and anesthesia”, University of Rochester, Department of Surgery, February, 1992.
2. “Deep polarized block of Na channels by local anesthetics”, University of Rochester, Department of Physiology, April, 1992.
3. “Drug modulation of ion channels”, University of Rochester, Department of Neurosurgery, March, 1994.
4. “Subunit dependent gating of the GABA<sub>A</sub> receptor”, The Johns Hopkins School of Medicine, Dept of Biomedical Engr., March, 1994.
5. “GABA<sub>A</sub> receptor gating depends on the alpha subunit”, University of Rochester, Department of Physiology, Dec, 1994.
6. “Barbiturates induce ternary effects on recombinant GABA<sub>A</sub> receptors”, Cornell University Medical College, Department of Anesthesiology, April, 1995
7. “Barbiturates induce ternary effects on the Cl<sup>-</sup> currents of recombinant GABA<sub>A</sub> receptors”, University of Rochester, Department of Pharmacology, April, 1995.

8. "The role of pore interactions in local anesthetic inhibition of voltage-gated sodium channels", University of Rochester, Department of Pharmacology and Physiology, March, 1996.
9. "Molecular pharmacology of voltage-gated ion channels", Emory University, Department of Anesthesiology, Jan, 1999.
10. "Awareness during anesthesia", Thomas Jefferson University, Department of Anesthesiology, Bermuda Anesthesia Update, May, 2004.
11. "Intraoperative monitoring of the central nervous system", Thomas Jefferson University, Department of Anesthesiology, Bermuda Anesthesia Update, May, 2004.
12. "Postoperative nausea and vomiting", Thomas Jefferson University, Department of Anesthesiology, Bermuda Anesthesia Update, May, 2004.
13. "Awareness during anesthesia", Lahey Clinic, Department of Anesthesiology, Colby Anesthesiology Update, August, 2004.
14. "Intraoperative monitoring of the central nervous system", Lahey Clinic, Department of Anesthesiology, Colby Anesthesiology Update, August, 2004.
15. "Postoperative nausea and vomiting", Lahey Clinic, Department of Anesthesiology, Colby Anesthesiology Update, August, 2004 .
16. "Neuroanesthesia Update", Post Graduate Assembly, NYSSA, New York, New York, 2005.
17. "Neuroanesthesia Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2006.
18. "Neuroanesthesiology Update", Post Graduate Assembly, NYSSA, New York, New York, 2007.
19. "Neuroanesthesiology Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2008.
20. "History of Medical Research with Human Subjects and the Internal Review Board Process at NYU", NYU Dept. of Anesthesiology, 2008.
21. "Neuroanesthesiology Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2008.
22. "Neuroanesthesiology Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2009.
23. "Neuroanesthesiology Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2010.
24. "Neuroanesthesiology Clinical Update", Post Graduate Assembly, NYSSA, New York, New York, 2011.
25. "Chronic Neuropathic Pain and Changes in Brain Electrical Activity: A Prospective Preclinical Model", UT Houston School of Medicine, Anesthesiology Grand Rounds, Houston, Texas, 2011.
26. "Aneurysmal Subarachnoid Hemorrhage and Delayed Cerebral Ischemia: Prospective Modalities of Bedside Monitoring and Therapy", UT Southwestern School of Medicine, Neurosurgery Grand Rounds, Dallas, Texas, 2012
27. "Protection of Human Subjects in Biomedical Research", UT Southwestern School of Medicine, Anesthesiology Grand Rounds, Dallas, Texas, 2013
28. "Chronic Neuropathic Pain and Changes in Brain Electrical Activity", University of Rochester Medical Center, Anesthesiology Grand Rounds, Rochester, NY, 2013.



29. "Chronic Neuropathic Pain and Changes in Brain Electrical Activity: A Prospective Preclinical Model", UT Southwestern School of Medicine, Anesthesiology Grand Rounds, Dallas, Texas, 2013.

## COMMUNITY SERVICE:

## BIBLIOGRAPHY:

### Journal Articles (peer reviewed journals)

**Gingrich, K.J.** and Byrne, J.H. Simulation of the synaptic depression, post-tetanic potentiation and presynaptic facilitation of synaptic potentials from sensory neuron mediating the gill-withdrawal reflex in aplasia. *J. of Neurophys.* 53:652-669, 1985.

**Gingrich, K.J.** and Byrne, J.H. Single cell neuronal model for associative learning. *J. of Neurophys.* 57:1705-1715, 1987.

**Gingrich, K.J.** Baxter, D.A. and Byrne, J.H. Mathematical model of cellular mechanisms contributing to presynaptic facilitation. *Brain Res. Bull.* 21:513-520, 1988.

**Gingrich, K.J.** and Roy, R.J. Modeling the hemodynamic response to dopamine in acute heart failure. *IEEE Trans. Biomed. Engr.* 38:116-123, 1991.

**Gingrich, K.J.**, Beardsley, D. and Yue, D.T. Ultra-deep blockade of Na channels by a quaternary ammonium ion: Catalysis by a transition-intermediate state?, *J. Physiol.* 471:319-341, 1993.

**Gingrich, K.J.**, Roberts, W.A., and Kass, R.S. GABA A receptor gating kinetics depend on the alpha-subunit: implications for structure-function relations and synaptic transmission. *J. Physiol.* 489.2: 529-543, 1995.

Bangalore, R., Mehrke, G, **Gingrich, K.**, Hofmann, F., and Kass, R., Charge movement in HEK-293 cells transfected with L-type Ca-channel subunits: evidence for a functional role of the  $\alpha_2/\delta$  subunit and association of gating charge with transitions between non-conducting states of the channel protein. *Am. J. Physiol.* 270:H1521-H1528, 1996.

**Gingrich, K.J.** and Burkat, P.  $Zn^{2+}$  Inhibition of recombinant GABA<sub>A</sub> receptors: an allosteric state-dependent mechanism determined by the  $\gamma$ -subunit. *J. Physiol.* 506.3:609-625, 1998.

Wagner II, L, Eaton, M., Sabnis, S., and **Gingrich, K.J.** Meperidine and lidocaine block of recombinant voltage-dependent Na<sup>+</sup> channels: evidence that meperidine is a local anesthetic, *Anesthesiology* 91: 1481-1490, 1999.

Kimbrough, J. and **Gingrich, K.J.** Quaternary ammonium blockade of mutant Na<sup>+</sup> channels lacking fast inactivation; features of a transition-intermediate mechanism. *J. Physiol.* 529.1: 93-106, 2000.

Burkat, P., Yang, J. and **Gingrich, K.J.** Dominant gating governing transient GABA<sub>A</sub> receptor activity: latency and Po<sub>0</sub> analysis, *J. Neurosci.* 21:7026-7036, 2001.

Wagner II, L., **Gingrich K.J.**, and Yang, J. Ketamine modulation of recombinant voltage-dependent Na<sup>+</sup> channels, *Anesthesiology* 95: 1406-1413, 2001.

McCarthy, L.E., Mannelli, P., Niculescu, M., **Gingrich, K.J.**, Unterwald, E.M. and Ehrlich, M.E. The pharmacokinetics of psychostimulants in mice differ by age and strain, *J. Neurotox. And Teratol.* 26: 839-848, 2004.

Audu PB., Wilkerson C., Bartkowski R., **Gingrich, K.**, V Iscusi E., Andrews D. Plasma ropivacaine levels during awake intracranial surgery. *J. Neurosurg. Anes.* 17(3):153-5, 2005.

**Gingrich, K.J.**, Tran, S., Nikonorov, I, and Blanck, T.J.J. Volatile anesthetic inhibition of recombinant cardiac L-type Ca<sup>2+</sup> channels expressed in HEK-293 cells, *Anesthesiology* 103:1156-1166, 2005.

Gan, T., Apfel, C., Kovac, A., Philip, B., Singla, N., Minkowitz, H., Habib, A., Knighton, J., Carides, A., Zhang, H., Horgan, K., Evans, J. Lawson, F., **and The Aprepitant-PONV Study Group.** A randomized, Double-Blind Comparison of the NK<sub>1</sub> Antagonist, Aprepitant, Versus Ondansetron for the Prevention of Postoperative Nausea and Vomiting. *Anesth Analg* 104: 1082-9, 2007.

Bekker, A., Haile, M. M.D., **Gingrich, K.**, Wenning, L., Gorny, A., Quartermain, D., Blanck, T. Physostigmine reverses cognitive dysfunction caused by moderate hypoxia in adult mice. *Anesthesia & Analgesia* 105(3):739-43, 2007.

**Gingrich, K.J.**, Burkat, P., and Roberts, W. Pentobarbital produces activation and block of  $\alpha_1\beta_2\gamma_2\delta$  GABA<sub>A</sub> receptors in rapidly perfused whole cells and membrane patches: Divergent results can be explained by pharmacokinetics. *J. Gen Physiol.* 133:171-188, 2009.

Haile, M. M.D., Limson, F., **Gingrich, K.**, Wenning, L., Quartermain, D., Blanck, T. Bekker, A., Nimodipine prevents transient cognitive dysfunction after moderate hypoxia in adult mice. *J. Neurosurg. Anes.* 21(2) :140-144. 2009.

J.R. Atack, K. A. Mauback, K. A. Wafford, D. O'Conner, A.D. Rodrigues, D. Evans, F.D. Tattersall, M.S. Chambers, A.M. MacLeod, W. Eng, C. Ryan, E. Hostetler, S.M. Sanabria, R.E. Gibson, S. Krause, H. D. Burns, R.J. Hargreaves, N. G.B. Agrawal, R.M. McKernan, M.G. Murphy, **K.J. Gingrich**, G.R. Dawson, D.G. Musson and K.J. Petty. In vitro and in vivo properties of MRK-016, a GABA<sub>A</sub> receptor  $\alpha_5$  subtype-selective inverse agonist *J. Pharmacol. Exp. Ther.* 331:470-484, 2009.

Heath, B., **Gingrich, K.** and Kass, R. S. Ion Channels in the Heart: Cellular and Molecular Properties of Cardiac Na, Ca, and K channels. Comp.Phys. 548-567, 2010.

Schober, A., Sokolova, E., and **Gingrich, K.J.** Pentobarbital Inhibits Human  $\alpha_{1A}$  Recombinant P/Q-type Voltage-gated Calcium Channels by Slow, Open Channel Block, Brit. J. Pharm 161:365-383, 2010.

Yeh, J.S., Mooney, K.L., **Gingrich, K.J.**, Kim, J.T., and Lalwani, A.K. Anesthetic Complications in Pediatric Patients Undergoing Cochlear Implantation, Laryngoscope 121:2240-2242, 2011.

Purtell, K., **Gingrich, K.J.**, Ouyang, W., Herold, K.F., and Hemmings, H.C. Activity-dependent depression of neuronal sodium channels by the general anaesthetic isoflurane, Br. J. Anaesth. 115 (1): 112-121, 2015.

**Gingrich, K.J.**, and Wagner, L. Fast-Onset Lidocaine Block of Rat  $NaV_{1.4}$  Channels Suggests Involvement of a Second High-Affinity Open State, Biochim. Biophys. Acta 1858: 1175–1188, doi:10.1016/j.bbamem.2016.02.033, 2016.

Sand, R.M., **Gingrich, K.J.**, Machardze, T., Herold, K.F., and Hemmings, H.C. Jr. Isoflurane modulates activation and inactivation gating of the prokaryotic  $Na^+$  channel NaChBac, J Gen. Phys. 149: 1-16, doi.org/10.1085/jgp.201611600, 2017.

**Gingrich, K.**, Sokolova, E., Lee, S., Blanck, T.J.J, Divergent effects of spared sural and tibial selective nerve injury chronic neuropathic pain models on EEG and behavioral endpoints in rat, *in review*.

**Gingrich, K.**, Rickert, K., Whittemore, B., Zhang, R., Heravi, H., Schneider, S., Mulindi, M., and Malikman, E. Transfer function analysis of cerebral pressure-flow dynamics following aneurysmal subarachnoid hemorrhage, *in preparation*.

Bhoja R, Fox A, Minhajuddin A, Melikman E, Kosemund M, Gardner A, Guttman O., and **Gingrich K.**, TeamSTEPPS® effects on work load, anxiety, and autonomic activation in anesthesia residents during ACLS simulation, *in preparation*.

### *Book Chapters*

Byrne, J.H., and **Gingrich, K.J.** Mathematical model of cellular and molecular processes contributing to associative and nonassociative learning In Aplysia. In Byrne, J.H.; Berry, W. (eds), Neural models of plasticity. Orlando, FL: Academic Press, p58-72, 1988.

Byrne, J.H., **Gingrich, K.J.**, and Baxter, D.A. Computational capabilities of single neurons: Relationship to simple forms of associative and nonassociative learning in Aplysia. In Hawkins,

R.D.; Bower, G.H.(eds), The Psychology of Learning and Motivation, Vol 23, San Diego, CA: Academic Press, p31-63, 1989.

Dooley, J., and **Gingrich, K.J.** Intracranial hypertension. In Roizen, M.F. and Fleisher, L.A.(eds), Essence of Anesthesia Practice, Philadelphia, PA: W.B. Saunders, p192, 1997.

**Gingrich, K.J.** Neuroanesthesiology. In Shah, S.M.; Kelly, K.M.(eds), Emergency Neurology: Principles and Practice, Orlando, FL, Cambridge University Press, p350-355, 1999.

B. Heath, **K. Gingrich**, and Kass, R. Ion Channels in the Heart: Cellular and Molecular Properties of Cardiac Na, Ca, and K Channels. In Fozzard, H.(ed); Cardiac physiology, Sinauer, 1999.

**Gingrich, K.J.** and Yang, J. Molecular Physiology. In Hopkins, P.M.; Hemmings, H.C.(eds), Basic and Applied Science for Anesthesia, London, England, Mosby, FL, 1999

B. Heath, **K. Gingrich**, and Kass, R. Ion Channels in the Heart: Cellular and Molecular Properties of Cardiac Na, Ca, and K Channels. In Ernest Page; Harry A Fozzard; R John Solaro (eds); Handbook of Physiology, Section 2: The Cardiovascular System, Vol I: The Heart, Oxford, 2002.

Carpenter, C., **Gingrich, K.J.**, Wilberger, J.E., Warren, L., and Shah, S.H. Traumatic Brain Injury. In Shah, S.M.; Kelly, K.M.(eds), Principles and Practice of Emergency Neurology; Handbook for Emergency Physicians, Orlando, FL, Cambridge University Press, p350-355, 2003.

**Gingrich, K.J.** and Yang, J. Molecular Physiology. In Hopkins, P.M.; Hemmings, H.C.(eds), Basic and Applied Science for Anesthesia, 2<sup>nd</sup> edition, London, England, Mosby, FL, 2005.

**Gingrich, K.J.** and Dooley, J. Intracranial hypertension. 2<sup>nd</sup> Ed In Roizen, M.F. and Fleisher, L.A.(eds), Essence of Anesthesia Practice, Philadelphia, PA: W.B. Saunders, p192, 2009.

#### *Abstract Presentations (last 5 years)*

**Gingrich, K.**, Sokolova, E., Lee, S., Blanck, T.J.J, Divergent Effects of Spared Sural and Tibial Selective Nerve Injury Chronic Neuropathic Pain Models on EEG and Behavioral Endpoints in Rat. A532, ASA Annual Meeting, Washington, D.C., 2012.

**Gingrich, K.**, and Wagner, L., Lidocaine Open Channel Block of Na<sup>+</sup> Channels: A Priming Mechanism for Long-Lived Inactivated Block A1317, ASA Annual Meeting, San Francisco, CA, 2013.

**Gingrich, K.**, Rickert, K., Whittemore, B., Zhang, R., Heravi, H., Schneider, S., Mulindi, M., and Malik, E. Transfer Function Analysis of Cerebral Pressure-Flow Dynamics Following Aneurysmal Subarachnoid Hemorrhage, A2237, ASA Annual Meeting, New Orleans, LA, 2014.

**Gingrich K**, Bhoja R, Fox A, Minhajuddin A, Melikman E, Kosemund M, Gardner A, Guttman O. TeamSTEPPS® effects on work load, anxiety, and autonomic activation in anesthesia residents during ACLS Simulation, A1080, ASA Annual Meeting, Chicago, IL, 2016.

**Gingrich K**, Sands R , Macharadze T , Herold K , Hemmings H. Isoflurane modulates activation and inactivation gating of the prokaryotic Na<sup>+</sup> channel NaChBac. A1510, AUA Annual Meeting, Washington, DC, 2017.

**Gingrich K**, Sands R , Macharadze T , Herold K , Hemmings H. Isoflurane modulates activation and inactivation gating of the prokaryotic Na<sup>+</sup> channel NaChBac. Post Graduate Assembly of the New York State Society of Anesthesiology Annual Meeting, New York, NY, 2017.