

Rhode Island Hospital
&
Brown University
Curriculum Vitae
CARL Y. SAAB, M.S., Ph.D.

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http://research.brown.edu/myresearch/Carl_Saab

Last updated 9/18/2013

EDUCATION

American University of Beirut
B.S. Environmental Health 1994
M.S. Neuroscience 1997
University of Texas Medical Branch
Ph.D. Neuroscience 2001

POSTGRADUATE TRAINING

Yale University, New Haven, CT
Postdoctoral Fellow, Department of Neurology 2001-2004
(Dr. Stephen Waxman)

HONORS AND AWARDS

Who's Who among Students in American Universities & Colleges 1998
University of Texas Medical Branch
Certificate of Achievement in Teaching
Physiology, Allied Health School Spring 1998
University of Wisconsin
Travel award
Symposium on Health and Emotion, Madison, Wisconsin 1998 & 1999
International Association for the Study of Pain
Travel award
9th World Congress on Pain, Vienna, Austria Aug 1999
International Society for Magnetic Resonance in Medicine
Travel award
7th meeting, Philadelphia, Pennsylvania May 1999
American Pain Society
Young Investigator Travel Support & Citation Poster award
19th Annual Scientific Meeting, Atlanta, Georgia Nov 2000
Young Investigator Travel Support
20th Annual Scientific Meeting, Phoenix, Arizona Apr 2001
Baltic Summer School, Kiel, Germany
Travel award Aug 2003
Rhode Island Hospital
Research Celebration, New Investigator Award Finalist 10/22/2009
Who's Who in Medicine Higher Education 5/22/2010
Lifespan Corporation
Executive Mentorship Program
(Mentor Mr. Dan Wall, CEO of Bradley Hospital) Mar-Dec 2010
Selected from 12,000 employees the Lifespan Health System to participate in its mentoring program. Individuals are nominated by their supervisors who believe the individuals have the potential to grow within the system and be the leaders of the future for the organization.
Keynote Speaker, Executive Mentorship Program Graduation 1/4/2011
Ceremony Ambassador Award, Executive Mentorship Program 1/4/2011

ACADEMIC APPOINTMENTS

| | |
|--|--------------------------|
| Brown University | |
| Assistant Professor (Research), Surgery | 7/1/05- 6/3/11 |
| Assistant Professor, Neuroscience | 7/1/2007- <i>present</i> |
| Assistant Professor (Research), Neurosurgery | 7/1/11- <i>present</i> |
| American University of Beirut | |
| Visiting Lecturer, School of Medicine | Spring 2004 |

HOSPITAL APPOINTMENTS

| | |
|-----------------------|---------------------------|
| Rhode Island Hospital | |
| Research Associate I | 10/13/2004- 5/11/2010 |
| Research Associate II | 5/12/2010- <i>present</i> |

OTHER APPOINTMENTS

| | |
|---|---------------------------|
| <i>Surgery: Current Research</i> | |
| Editorial Board member | Apr 2011- <i>present</i> |
| <i>Neurology and Neurophysiology</i> | |
| Editorial Board member | Apr 2011- <i>present</i> |
| <i>ISRN Neuroscience</i> | |
| Editorial Board member | May 2012- <i>present</i> |
| MD Anderson Cancer Research Institute | |
| Texas Medical Center, Houston, 'Pain Group', Consultant | 2000- 2001 |
| Clinical Advisors | |
| Orbimed Advisors (NY), Newron (Italy), Consultant | Mar 2004 |
| Stryker Development, Stryker | |
| Cambridge, MA, Consultant | Sep 2006 |
| Brintnall & Nicollini, Inc., Research and Consulting | |
| Consultant | Apr 2008 |
| Ardane Therapeutics, Inc. | |
| 75 Waterman Street, Suite GB473, Providence, RI 02912 | |
| http://www.ardanetherapeutics.com Scientific Advisory Board | 2009- <i>present</i> |
| Heartbeat Experts | |
| Pain Management expert leader survey, Participant | 1/13/2011 |
| Gerson Lehrman Group® (GLG), Healthcare & Biomedical Council member | |
| Consultant, Educator | 3/11/2011- <i>present</i> |
| Lampert Consultancy | |
| On behalf of Morgan & Claypool e-publication, Consultant | 2/27/12 |

PEER REVIEWER***(Funding agencies)***

| | |
|---|----------|
| National Institute of Health | |
| NINDS, RC1 | May 2009 |
| Wellcome Trust | |
| Programme Project University Award, UK | Jan 2010 |
| American University of Beirut | |
| Faculty of Medicine Sponsored Project, Lebanon | Feb 2010 |
| Agence Nationale de la Recherche | |
| Blanc SVSE 1, France | Mar 2010 |
| American Academy for the Advancement of Science (AAAS) | |
| "Pain Management", first Indo-US Science & Technology Forum | Aug 2011 |

(ad-hoc reviewer since 2004 with number of reviews)

| | | |
|-------------------------------------|---|--------------------------------------|
| <i>Anesthesia and Analgesia (1)</i> | <i>European Journal of Neuroscience (3)</i> | <i>Journal of Pain (2)</i> |
| | | <i>Journal of Pain Research (1)</i> |
| | | <i>Molecular Biology Reports (1)</i> |

| | | |
|--|---|---------------------------------|
| <i>Annals of Medicine</i> (1) | <i>International Immunopharmacology</i> (1) | <i>Molecular Pain</i> (1) |
| | <i>Expert Review of Neurotherapeutics</i> (1) | <i>NeuroImage</i> (1) |
| <i>Behavior and Brain Function</i> (1) | <i>Journal of Neural Engineering</i> (2) | <i>NeuroReport</i> (1) |
| <i>Brain Behavior and Immunity</i> (3) | <i>Journal of Neurophysiology</i> (1) | <i>Neuroscience</i> (6) |
| <i>Brain Research</i> (3) | <i>Journal of Neuroscience</i> (18) | <i>Neuroscience Letters</i> (6) |
| <i>Brain Research Bulletin</i> (2) | <i>Journal of Pharmacological and Toxicological Methods</i> (3) | <i>Neurosurgery</i> (1) |
| <i>Drug Discovery Today</i> (1) | | <i>Pain</i> (2) |
| | | <i>Shock</i> (1) |

HOSPITAL COMMITTEES

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|--|----------------------|
| Rhode Island Hospital | |
| Surgical Research Executive (“Genius”) Committee | 2006- 2011 |
| Lifespan Corporation | |
| Institutional Animal Care and Use Committee, voting member | 2007- 2010 |
| Research Advisory Committee | 2008- <i>present</i> |
| Executive Mentorship Program ad-hoc committee | 2010- 2011 |

MEMBERSHIP IN SOCIETIES

| | |
|---|----------------------|
| Society for Neuroscience | 1997- <i>present</i> |
| American Pain Society | 1997- 2006 |
| International Association for the Study of Pain | 1997- <i>present</i> |
| American Physiological Society | 1997- 1998 |
| International Society for Magnetic Resonance in Medicine | 1997- 1998 |
| φ κ φ Honor Society | 1997- <i>present</i> |
| Interest group in Science (neuroscience) & Society, (Brown) | 2009- 2012 |
| Association for Psychological Science | 2010- 2012 |
| New York Academy of Science | 2011- 2012 |

ORIGINAL PUBLICATIONS IN PEER REVIEWED JOURNALS

- Burton A.W., Lee D.H., Saab C.Y. and Chung J.M. Preemptive intrathecal ketamine injection produces a long-lasting decrease in neuropathic pain behaviors in a rat model. ***Reg Anes & Pain Med*** 24(3): 208-13, 1999.
- Saadé N.E., Kafrounni A.I., Saab C.Y., Atweh S.F. and Jabbur S.J. Chronic thalamotomy increases pain-related behavior in rats. ***Pain*** 83: 401-409, 1999.
- Saab C.Y., Makki A.A., Quast M.J., Wei J., Al-Chaer E.D., and Willis W.D. Is the Cerebellum Involved in Pain? ***Proceedings of the 9th World Congress on Pain***, Progress in Pain Research and Management, Vol 16, p 515-522, ed. M. Devor, IASP Press, Seattle, 2000.
- Saab C.Y., Kawasaki M., Al-Chaer E.D. and Willis W.D. Cerebellar cortical stimulation increases spinal nociceptive responses. ***J Neurophysiol*** 85: 2359-2363, 2001.
- Saab C.Y. and Willis W.D. Nociceptive visceral stimulation modulates the activity of cerebellar Purkinje cells. ***Exp Brain Res*** 140: 122-126, 2001.
- Saab C.Y. and Willis W.D. A visceral nociceptive input to the cerebellum: Possible functional significance? ***J Pain*** (2;sup1): 32, 2001.
- Saab C.Y. and Willis W.D. Cerebellar stimulation modulates the intensity of a visceral nociceptive reflex in the rat. ***Exp Brain Res*** 146: 117-21, 2002.
- Saab C.Y., Garcia-Nicas E. and Willis W.D. Stimulation in the rat fastigial nucleus enhances the responses of neurons in the dorsal column nuclei to innocuous stimuli. ***Neurosci Lett*** 327: 17-20, 2002.
- Saab C.Y., Cummins T.R., Dib-Hajj S.D. and Waxman S.G. Molecular determinant of Na_v1.8 sodium channel resistance to the venom from the scorpion *Leiurus quinquestriatus hebraeus*. ***Neurosci Lett*** 331: 79-82, 2002.
- Saab C.Y., Cummins T.R. and Waxman S.G. GTP_{γs} increases Na_v1.8 current in small diameter dorsal root ganglia neurons. ***Exp Brain Res*** 152: 415-419, 2003.
- Lo A.C., Saab C.Y., Black J.O. and Waxman S.G. Phenytoin protects spinal cord axons and preserves neurological function in experimental allergic encephalomyelitis. ***J Neurophysiol*** 90: 3566-3571, 2003.
- Hains B.C., Klein J.P., Saab C.Y., Craner M.J., Black J.A. and Waxman S.G. Upregulation of sodium

- channel Na_v1.3 and functional involvement in neuronal hyperexcitability associated with central neuropathic pain after spinal cord injury. *J Neurosci* 23: 8881-8892, 2003.
13. Saab C.Y. and Willis W.D. The cerebellum: organization, functions and its role in nociception. *Brain Res Rev* 42-1: 85-95, 2003 **(COVER)**.
 14. Saab C.Y., Craner M.J., Kataoka Y. and Waxman S.G. Abnormal Purkinje cell activity *in vivo* in experimental allergic encephalomyelitis. *Exp Brain Res* 158:1-8, 2004.
 15. Saab C.Y., Park Y.C. and Al-Chaer E.D. Thalamic modulation of visceral nociceptive processing in adult rats with neonatal colon irritation. *Brain Res* 1008: 186-192, 2004.
 16. Hains B.C., Saab C.Y., Lo A.C., Black J.A. and Waxman S.G. Sodium channel blockade with phenytoin protects spinal cord axons, and improves functional motor recovery after contusion SCI. *Exp Neurol* 188: 365-3777, 2004.
 17. Hains B.C., Saab C.Y., Klein J.P., Craner M.J., Black J.A. and Waxman S.G. Altered sodium channel expression in second-order spinal sensory neurons contributes to pain after peripheral nerve injury. *J Neurosci* 24: 4832-4839, 2004.
 18. Saab C.Y. and Waxman S.G. Potentiation of sural nerve A β action potential after neurogenic inflammation. *NeuroReport* 15: 1773-1777, 2004.
 19. Hains B.C.*, Saab C.Y.* and Waxman S.G. Changes in electrophysiologic properties and sodium channel Na_v1.3 expression in thalamic neurons after spinal cord injury. *Brain* 128: 2359-71, 2005 (* equal contribution).
 20. Hains B.C., Saab C.Y. and Waxman S.G. Alterations in burst firing of thalamic VPL neurons and reversal by Na_v1.3 antisense after spinal cord injury. *J Neurophysiol* 95:3343-3352, 2006.
 21. Owolabi S.A. and Saab C.Y. Fractalkine and minocycline alter neuronal activity in the spinal cord dorsal horn. *FEBS Lett* 580:4306-10, 2006.
 22. Black J.A., Liu S., Hains B.C., Saab C.Y. and Waxman S.G. Long-term neuroprotection of central axons with phenytoin in monophasic and chronic-relapsing murine EAE. *Brain* 129:3196-208, 2006.
 23. Morin N., Owolabi S.A., Harty M.W., Papa E.F., Tracy T.F. Jr., Shaw S.K.n, Kim M. and Saab C.Y. Neutrophils invade lumbar dorsal root ganglia after chronic constriction injury of the sciatic nerve. *J Neuroimmunol* 184:164-71, 2007.
 24. Saab C.Y., Wang J., Gu C., Garner K.N. and Al-Chaer E.D. Microglia: A newly discovered role in visceral hypersensitivity. *Neuron Glia Biol* 2:1-7, 2007.
 25. Saab C.Y., Waxman S.G. and Hains B.C. Alarm or curse? The pain of neuroinflammation. *Brain Res Rev* 58(1):226-35, 2008.
 26. Shaw S.K., Owolabi S.A., Bagley J., Morin N., Cheng E., LeBlanc B.W., Kim M., Harty P., Waxman S.G. and Saab C.Y. Activated polymorphonuclear cells promote injury and excitability of dorsal root ganglia neurons. *Exp Neurol* 210(2):286-94, 2008 **(COVER)**.
 27. Saab C.Y., Shamaa F., Sabban M.E., Safieh-Garabedian B., Jabbur S.J. and Saadé N.E. Transient increase in cytokines and nerve growth factor in the rat dorsal root ganglia after nerve lesion and peripheral inflammation. *J Neuroimmunol* 208:94-103, 2009.
 28. Saab C.Y. and Hains B.C. Remote neuroimmune signaling: a long-range mechanism of nociceptive network plasticity. *TINS* 32:110-7, 2009.
 29. Chang, Y.W., Tan A., Saab C.Y., Waxman S.G. Unilateral focal burn injury is followed by long-lasting bilateral allodynia and neuronal hyperexcitability in spinal cord dorsal horn. *J Pain* 11:119-30, 2010 **(COVER)**.
 30. LeBlanc B.W., Iwata M., Mallon A.P., Rupasinghe C.N., Goebel D.J., Marshall J., Spaller M.R., Saab C.Y. A Cyclic Peptide Targeted against PSD-95 blocks central sensitization and attenuates thermal hyperalgesia. *Neurosci* 167:490-500, 2010.
 31. LeBlanc B.W., Zerah M.L., Kadasi L.M., Noori, C., Saab C.Y. Minocycline injection in the ventral posterolateral thalamus reverses microglial reactivity and thermal hyperalgesia secondary to sciatic neuropathy. *Neurosci Lett* 498:138-42, 2011.
 32. Iwata M., LeBlanc B.W., Kadasi L.M., Zerah M.L., Cosgrove R.G. and Saab C.Y. High-frequency stimulation in the ventral posterolateral thalamus reverses electrophysiological changes and hyperalgesia in a rat model of neuropathic pain. *Pain* 152:2505-13, 2011.
 33. Shields S.D., Cheng X., Gasser A., Saab C.Y., Iwata M., Tyrell L., Eastman E., Zwinger P.J., Black J.A., Dib-Hajj S.D. and Waxman S.G. A channelopathy contributes to cerebellar dysfunction in a model of multiple sclerosis. *Annals Neurol* 71:186-94, 2012.
 34. Saab C.Y. Visualizing the complex dynamics of chronic pain. *J Neuroimm Pharm (special issue)* 8:510-7,

2013.

35. Saab C.Y. Pain-related changes in the brain: diagnostic and therapeutic potentials. *TINS* 35:629-37, 2012.

BOOKS

1. Carl Y. Saab. The Spinal Cord. Gray Matter. Chelsea House Publishers, Philadelphia, 2006 (ISBN 0791085112).
2. Carl Y. Saab. The Hindbrain. Gray Matter. Chelsea House Publishers, Philadelphia, 2006 (ISBN 0791085104).
3. Carl Y. Saab. Seeing, Hearing and Smelling the World. Brain Works. Chelsea House Publishers, Philadelphia, 2006 (ISBN 0791089452).
4. Carl Y. Saab. Ed. Chronic Pain and Brain Abnormalities, Elsevier, 2013.

PUBLICATIONS SUBMITTED/IN PREPARATION

1. John Bickle. Ed. The Oxford Hand Book of Philosophy and Neuroscience. Oxford University Press. Carl Y. Saab. Ed., Arabic Translation (Chap.s 8, 18, 19).
2. LeBlanc et al. Pain Increases Theta Oscillations in Thalamus and Cortex and Decreases Thalamocortical Theta Coherence (*In Revision*).
3. Saab et al. Spinal microglia and purinergic receptors modulate visceral hypersensitivity secondary to experimental inflammatory bowel disease (*In Preparation*).

OTHER NON-PEER REVIEWED PUBLICATIONS

1. Saab C.Y. and Harty M.W. Letter to Editor. *J Neuroimmunol* 187(1-2):214-15, 2007.

ABSTRACTS***(Since 2011, Excluding Society of Neuroscience annual conferences)***

1. LeBlanc BW, Zerah ML, Kadasi LM, Chai N, Iwata M, Saab CY. Pain Frontier: How to fix a broken brain. World Pharma Congress. Drug Discovery Summit: Targeting pain with novel therapeutics, 2011.
2. LeBlanc BW, Zerah ML, Kadasi LM, Chai N, Iwata M, Saab CY. Pain-induced plasticity is reversed by pharmacology and neurotechnology. NY Academy of Science. Chronic neuropathic and inflammatory pain, 2011.
3. Wang J, Saab CY, Al-Chaer ED. P2X7 receptors facilitate visceral hypersensitivity through activation of spinal cord microglia. Digestive Disease Week, 2012.
4. Lii T, LeBlanc BW, Saab CY. Altered connectivity between the thalamus and somatosensory cortex during chronic pain. American Pain Society, 2013.
5. Saab CY, LeBlanc BW, Lii TR, Vera-Portocarrero LP. The effects of spinal cord stimulation on local field potentials from somatosensory cortex in a rodent model of neuropathic pain. North American Neuromodulation Society, 2013.

(Selected exclusively from Society of Neuroscience annual conferences 2000-present)

6. Saab CY, Kawasaki M, Massaad CA, Saadé NE, Al-Chaer ED, Willis WD. Is the cerebellum involved in analgesia or pain? Society for Neuroscience, 2000.
7. Saab CY, Willis WD. Cerebellar cortical stimulation increases abdominal nociceptive reflexes. Society for Neuroscience, 2001.
8. Saab CY, Cummins TR, Dib-Hajj, SD, Waxman SG. The sodium channel Nav1.8 is resistant to the scorpion venom from *Leiurus quinquestriatus hebraeus*. Society for Neuroscience, 2002.
9. Saab CY, Cummins TR, Waxman SG. GTP γ S increases nav1.8 current in small diameter dorsal root ganglia neurons. Society for Neuroscience, 2003.
10. Hains BC, Klein JP, Saab CY, Craner MJ, Dib-Hajj S, Black JA, Waxman, SG. Upregulation of voltage-gated sodium channel Nav1.3/brain type III after spinal cord contusion injury and involvement in chronic central pain. Society for Neuroscience, 2003.
11. Hains BC, Saab CY, Klein JP, Craner MJ, Waxman SG. Abnormal sodium channel expression in second-order spinal sensory neurons contributes to pain after peripheral nerve injury. Society for Neuroscience, 2004.
12. Saab CY, Waxman SG. Potentiation of sural nerve A β action potential after neurogenic inflammation. Society for Neuroscience, 2004.
13. Hains B C, Saab CY, Waxman SG. The Nav1.3 sodium channel alters electrophysiologic properties of the thalamic generator-amplifier after spinal cord injury. Society for Neuroscience, 2005.

14. Owolabi SA, Morin NA, Janowski JW, Kim M, Saab CY. Neutrophils invade dorsal root ganglia following chronic constriction injury. Society for Neuroscience, 2005.
15. Saab CY, Hains BC, Owolabi SA. Sensitization of spinal cord dorsal horn neurons following administration of fractalkine. Society for Neuroscience, 2005.
16. Owolabi SA, Morin NA, Elphick GF, Shaw SK, Kim M, Saab CY. Neutrophils are excitatory and neurotoxic to primary afferents: potential contribution to neuropathic pain. Society for Neuroscience, 2006.
17. Black JA, Liu S, Hains BC, Saab CY, Waxman SG. Long-term protection of central axons with phenytoin in monophasic and chronic-relapsing EAE. Society for Neuroscience, 2006.
18. Wang J, Gu C, Saab CY, Al-Chaer ED. Glial cells: a newly-discovered role in visceral hypersensitivity? Society for Neuroscience, 2006.
19. Chang YW, Tan AM, Saab CY, Waxman SG. Unilateral focal burn injury is followed by chronic allodynia and neuronal hyperexcitability in spinal cord dorsal horn. Society for Neuroscience, 2009.
20. Wang J, Saab CY, Al-Chaer ED. P2X and p38 MAPK activate spinal cord microglia in rats with visceral hypersensitivity. Society for Neuroscience, 2009.
21. Gu C, Wang J, Watts JL, Saab CY, Al-Chaer ED. p38 MAPK inhibitor ameliorates chronic visceral hypersensitivity in rats with neonatal colon irritation. Society for Neuroscience, 2010.
22. Watts JL, Gu C, Saab CY, Al-Chaer ED. The effect of minocycline on the activation state of microglia in the spinal cord of rats with colon inflammation induced by 2,4,6-trinitrobenzenesulphonic (TNBS) acid. Society for Neuroscience, 2010.
23. LeBlanc BW, Iwata M, Nguyen QG, Crego AG, Shoukeir H, Watts JL, Al-Chaer ED, Saab CY. Hyperactive microglia and central sensitization in a model of colon inflammation. Society for Neuroscience, 2010.
24. Saab CY, Iwata M, Zerah ML, Kadasi LM, Hong LH, LeBlanc BW. Thalamic injection of minocycline attenuates thermal hyperalgesia in a model of sciatic neuropathy. Society for Neuroscience, 2010.
25. Wang J, Saab CY, Al-Chaer D. P2X receptors activate spinal cord microglia in rats with chronic visceral hypersensitivity. Society for Neuroscience, 2011.
26. LeBlanc, BW, Chai N, Al-Chaer D, Saab CY. Reactive gliosis in colitis. Society for Neuroscience, 2011.
27. Shields, SD, Cheng X, Gasser C, Saab CY, Tyrell L, Eastman EM, Iwata M, Zwinger PJ, Black JA, Dib-Hajj SD, Waxman SG. Nav1.8 channelopathy contributes to symptom burden in a model of multiple sclerosis. Society for Neuroscience, 2011.
28. Saab CY, Iwata M, LeBlanc, BW. Microstimulation in the ventral posterolateral thalamus reverses pain-induced ectopic firing and hyperalgesia. Society for Neuroscience, 2011.
29. LeBlanc BW, Chai N, Saab CY. Neurodegeneration in the spinal cord: Unexpected side effects of inflammatory bowel disease? Society for Neuroscience, 2012.

SCHOLARLY WORK PUBLISHED IN OTHER MEDIA

1. Who Among Us Is Prepared To Make The Moral Judgment? OMNI, University of Texas Medical Branch, Nov 22, 2000.
2. Pain in the Little Brain. Painonline, Feb 15, 2002. <http://painonline.org/LittleBrain.htm>
3. Opinion, Pain Update. Painonline, Nov 14, 2003. <http://www.painonline.com/mtstatic/archives/000034.html#more>
4. What Scientific Progress? Brown Faculty Bulletin, Vol VII/ #2, July 2008. <http://facgov.brown.edu/bulletins/FacBullJuly08.pdf>

MEDIA COVERAGE

1. Cerebellar Processing Of Pain Signals Confirmed In Rats; If the study results are confirmed, they will open up a new area of research. **Medical Tribune**, by Shoshana Miriam Frei, Oct, 1999.
2. Human Cells Make Morphine; Whether the body can use it to treat pain still unknown, researchers say. **Health Scout**, by Steven Reinberg, *HealthDay Reporter*, Sep 21, 2004. <http://news.healingwell.com/index.php?p=news1&id=521292>
3. Society for Neuroscience Annual Meeting, D.C. Symposium "Chronic pain and brain abnormalities", Symposium chair, inclusion in Neuroscience 2011's pool of newsworthy research, 11/15/2011.
4. La 41e conférence de la Société des neurosciences: le Liban de la découverte et des jeunes chercheurs. **L'Orient Le Jour**, by Irène Mosalli, Nov 29, 2011. http://www.lorientlejour.com/category/Santé/article/733815/Carl_Saab+%3A+douleur+chronique+et+%3C%3C%3C+BrainGate+%3E%3E.html

INVITED PRESENTATIONS

| | |
|--|------------|
| MD Anderson Cancer Research Institute, Houston, Dept. Symptom Research Pain, analgesia and the cerebellum | 4/13/2000 |
| University of California San Diego, San Diego, Anesthesiology Research Lab The cerebellum as a microprocessor of nociceptive information | 7/26/2000 |
| California Institute of Technology, Pasadena, Dept. Biology The cerebellum as a microprocessor of nociceptive information | 1/9/2001 |
| Yale University, West Haven, Dept. Neurology The cerebellum and the modulation of nociception | 6/18/2001 |
| Johnson & Johnson Pharm R&D, Spring House, PA Nociception, pain, and the cerebellum | 7/22/2002 |
| American University of Beirut, Beirut, Lebanon, Sch. Medicine Targeting sodium channels in the EAE mouse model of MS | 6/13/2003 |
| Brown University, Providence, Div of Surgical Research One protein, one pain | 2/27/2004 |
| | 5/10/2004 |
| | 8/23/2005 |
| Yale University, West Haven, Dept. Neurology Neutrophils invade the DRG following CCI | 9/14/2005 |
| Dartmouth College, Dartmouth, Dept. Pharmacology Contribution of microglia and neutrophils to neuropathic pain | 4/11/2006 |
| Colorado University, Boulder, Dept. Psychology Pain genealogy: From cells and proteins to human suffering | 2/12/2007 |
| Dartmouth College, Dartmouth, Dept. Pharmacology Pathophysiological Basis of Brain Diseases lecture series A few ladders to climb down the pain tree | 8/31/2009 |
| Regeneron, Tarrytown, NY A bench-side look at intractable pain | 2/1/2010 |
| University of New England, Maine, Center for Excellence in Neurosciences Biomedical Research Seminar Series A bench-side look at persistent pain | 3/11/2010 |
| Forum talk, Medtronic, Minneapolis Deep Brain Stimulation for pain revisited | 7/23/2010 |
| Stanford University, San Francisco, Dept. Anesthesia Pain frontier: How to fix a broken brain | 5/23/2011 |
| SRI Int'l, Menlo Park, Center for Neurosciences Neurotechnology and Drug Discovery | 8/5/2011 |
| Society for Neuroscience Annual Meeting, D.C. Symposium: Chronic pain and brain abnormalities Speaker (& <i>Symposium chair</i>) | 11/15/2011 |
| Reflex Sympathetic Dystrophy Syndrome Association Imaging Neuroinflammation and Neuropathic Pain Workshop Hyatt, Tamaya Resort, Albuquerque Keynote speaker (<i>video: flyingecko.com/html/111051CarlSaab.html</i>) | 10/14/2011 |
| American University of Beirut, Beirut, Lebanon, Sch. Medicine Brains suffer from chronic pain | 4/27/2012 |
| University of Maryland, Baltimore Pain; from nociceptors, to brain, to... nowhere | 12/20/2012 |
| Amgen, Cambridge MA Peripheral and Central Targets in Preclinical Pain Models | 4/25/2013 |

GRANTS***(Completed)***

- Mechanisms of Neutrophil Recruitment to Dorsal Root Ganglia after Nerve Injury
Rhode Island Foundation; (PI Saab) 2006- 2007

2. N-type Calcium Channels in Nociceptive Neurons
NIH, R01NS055251; (PI Diane Lipscombe, Brown) 2006- 2010
 3. Electrophysiological mapping of gastric stimuli to vagal afferent activities in rats
Stryker, Stryker Development; (PI [Saab](#)) 2006- 2007
 4. Development of Neuroprotective PDZ-domain Inhibitors for the Treatment of MS
NIH, R21NS061176; (PI John Marshall, Brown) 2008- 2010
 5. Mechanisms of Microglia in Visceral Pain
NIH, R21DK081628; (PI Elie Al-Chaer, University of Arkansas) 2008- 2010
 6. Spinal Microglial Mechanisms of Visceral Hypersensitivity
NIH, R21DK081845; (PI [Saab](#)) 2010- 2012
 7. Non-invasive EEG Pain Biomarker
Brown Institute for Brain Science; (PI [Saab](#)) Jun 2011- Jun 2012
 8. EEG pain biomarker: a preclinical study
Boston Scientific; (PI [Saab](#)) Jul 2012- Jul 2013
- (Active)**
9. Pain signature in the brain and reversal thereof using Medtronic's neurostimulation device
Medtronic; (PI [Saab](#)) Jun 2012- Jun 2014
 10. Thalamic Reticular Pain Bursting
Norman Prince Neuroscience Institute
& Brown Institute for Brain Science (co-PI [Saab](#) & Chris Moore) Jan 2013- Jan 2014
 11. CNS mechanisms of spinal cord stimulation for pain
Norman Prince Neuroscience Institute
& Brown Institute for Brain Science (co-PI [Saab](#) & Julie Kauer) Jun 2013- Jun 2014
 12. Analgesic calcium channel blocker Z944
Zalocus, Inc. (PI [Saab](#)) Sep 2013- Feb 2104
- (In revision)**
13. Theta oscillations predict pain (PI [Saab](#))
NIH, R01
 14. Migraine Disrupts Brain Rhythms (PI [Saab](#))
Migraine Research Foundation

UNIVERSITY TEACHING ROLES

- American University of Beirut
Teaching Assistant
Neuroanatomy and Neurophysiology, School of Medicine
(~80 students) 1996- 1997
- University of Texas Medical Branch
Teaching (10-hrs)
Muscle Physiology, School of Allied Health
(~60 students) Spring 1998
- Teaching (private tutoring)
Human Behavior and Neuroscience, School of Medicine
(~200 students) Spring 1999
- American University of Beirut
Visiting Professor
School of Medicine (Med I)
Neuroanatomy and Neurophysiology (12 hrs)
(~80 students) Feb-Mar 2004
- Brown University
Visiting Lecturer (12 hrs)
BN205: Advanced Systems Neuroscience
(6 students) Apr 2006
- Boston University
Visiting Lecturer (2 hrs)
Pharmacologic Intervention in Inflammatory Responses
(~25 students) Nov 2007

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| Dartmouth College Visiting Lecturer (2 hrs) Pathophysiological Basis of Brain Diseases (~35 students) | Aug 2009 |
| Wheeler School, Providence, RI Lecturer/Moderator (1 hr), SPARK science program (~30 students) | Aug 2009 |
| American University of Beirut Visiting Professor School of Medicine (Med I) Neuroanatomy and Neurophysiology (15 hrs) (~80 students) | Feb-Mar 2010 |

LABORATORY MENTORSHIP

Senior trainees:

- Brian LeBlanc, Ph.D. **Postdoctoral Fellow** (2007- present)
- Masashi Iwata, Ph.D. Takeda Pharmaceutical Int'l, **Visiting Scholar** (Nov 2008- Nov 2009)
- Andrew Mallon, Ph.D. **Postdoctoral Fellow** (May-August 2008)
- Todd Bromberg, M.D. **Resident Y2 Neurology** (September 2008)
- Owolabi Samuel, M.D. **Postdoctoral Fellow** (2004- 2008)
- Nicole Morin, **Research Technician** (2006)

Medical students:

- Rabih Geha (Fall-Sum 2011) Summer Research Assistantship Award (NIH training grant)
- Theresa Lii (Sum 2013) Scholarly Concentration in Medical Technology and Innovation award

Undergraduate students:

- Andrew Silverman (Sum 2012- Sum 2013) Summer Research Assistantship Karen T. Romer UTRA Award
- Robert Alleyne (Sum 2013) Dean's Discretionary fund
- Theresa Lii (Sum 2012) PLME- Summer Research Assistantship Award
- Mangaladevi Patil (Sum 2012) PLME
- Noori Chai (Fall 2010-Fall 2012) Dean's Award
- Olivia Humbarger (Fall-Spring 201)
- Stephanie Koo (Fall-Spring 2011)
- David Stein (Fall-Spring 2011)
- Manu Venkat (Spring 2011)
- Connie Wu (Fall-Spring 2011)
- Sigrid YoungLarry Hong (Fall-Spring 2009)
- Michelle Zerah (Fall-Spring 2009) Honors Thesis
- Adam Crego (Fall-Spring 2009) Honors Thesis
- Leith Kadasi (Fall-Spring 2009) Honors Thesis
- Jiaqi Guan (Sum-Fall-Spring 2009) Honors Thesis
- Quynh-Giao Nguyen (Sum-Fall-Spring 2009) Honors Thesis
- Wendy Kwartin (Sum 2009)
- Catherine Paniszyn (Sum 2009)
- Tran Le (Fall-Sum 2008) Honors Thesis
- Matthew Amarante (Fall- 2007)
- Christen Sylvester (Fall- 2007)
- Elise Cheng (Spring 2006)
- Zachary Jaffa (Spring 2006)
- Jacob Bagley (Spring 2006)
- Christopher Ursillo (Spring 2005)

MENTOR/ADVISOR

Brown University,
Biomedical Engineering Graduate Program
Brent Cross, MS

Sep 2013-

DISSERTATION ADVISORY COMMITTEE

University of Arkansas Medical System

Jennifer Atchinson, MD, PhD

“Novel Mechanisms of Visceral Pain: Functional Properties of Microglia”

2009- Jun 2011

INTELLECTUAL PROPERTY

U.S. Patent Application “Pain Management” Serial No. 61/328,583 (*filed jointly with Rhode Island Hospital*)

Provisional Application

Apr 27-2010

Utility Application (*pending*)

Apr 27-2011

U.S. National Phase

Oct 27-2012