

BIOGRAPHICAL SKETCH

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NAME Al-Chaer, Elie D.	POSITION TITLE Professor, Departments of Pediatrics, Internal Medicine, Neurobiology and Developmental Sciences		
eRA COMMONS USER NAME AlChaer			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
American University of Beirut, Beirut, Lebanon	BS	1988	Mathematics
American University of Beirut, Beirut, Lebanon	MS	1991	Physiology
University of Texas Medical Branch, Galveston	PhD	1996	Neuroscience
University of Texas Medical Branch, Galveston	Postdoc	1997	Pain/Neurobiology
South Texas College of Law, Houston	JD	2002	Law

A. Professional Positions:

- 1992-93 Research Assistant, Faculty of Medicine, American University of Beirut, Beirut, Lebanon.
- 1993-96 Graduate Assistant, Graduate school of Biomedical Sciences, University of Texas Medical Branch, Galveston, TX.
- 1997 Post-Doctoral Fellow, University of Texas Medical Branch, Galveston, TX.
- 1998-04 Assistant Professor (tenure track), Internal Medicine and Anatomy and Neurosciences, University of Texas Medical Branch, Galveston, TX.
- 2004- Associate Professor (tenure track), Pediatrics, Neurobiology and Developmental Sciences, University of Arkansas for Medical Sciences, Little Rock, AR.
- 2007- Associate Professor, Internal Medicine – Gastroenterology, University of Arkansas for Medical Sciences, Little Rock, AR.
- 2009- Professor (tenured), Pediatrics, Internal Medicine – Gastroenterology, Neurobiology and Developmental Sciences, University of Arkansas for Medical Sciences, Little Rock, AR.

Honors and Awards:

- 2007 Member, Special Emphasis Panel for Specialized Centers of Interdisciplinary Research (SCOR) on Sex and Gender Factors Affecting Women's Health
- 2007 Member, Neurological Sciences and Disorders (NSD-C NIH Study Section)
- 2004 Chair, NIH Special Council on Mind-Body Interactions and Health (ZRG1 RPHB-B 50 R).
- 2003 Member, Rome III Foundation for Functional Gastrointestinal Disorders: a multinational team of distinguished scientists and clinicians from around the world that meets every 10 years to shape the clinical and research policy of functional disorders for the next decade
- 2003 Plenary speaker, professional development course, the British Society of Gastroenterology, Birmingham, UK
- 2003 Plenary speaker, Spring Brain Conference, Sedona, AZ, USA
- 2000 The John Liebeskind Early Career Scholar Award by *the American Pain Society*
- 1999 Outstanding Educator Award by *the Generalist Physician Investigator Program*
- 1997 The James E. Beall II Memorial Award in Anatomy and Neurosciences
- 1997 The Stephen C. Silverthorne Memorial Award in Neurological Studies
- 1996 Who'sWho among Students in American Universities and Colleges
- 1995 The Sealy Society Mustard Seed Award for outstanding service in Research

In addition to a number of affiliations with scientific and legal societies, and peer-review services

B. Selected peer-reviewed publications (in chronological order):

- Al-Chaer, E.D.**, Lawand, N.B., Westlund, K.N. and Willis, W.D. Visceral nociceptive input into the ventral posterolateral nucleus of the thalamus: a new function of the dorsal column. *J Neurophysiol.* 76:2661-74, 1996.
- Al-Chaer, E.D.**, Lawand, N.B., Westlund, K.N. and Willis, W.D. Pelvic visceral input into the nucleus gracilis is largely mediated by the postsynaptic dorsal column pathway. *J. Neurophysiol.* 76: 2675-2690, 1996.
- Hirshberg, R.M., **Al-Chaer, E.D.**, Lawand, N.B. Westlund, K.N. and Willis, W.D. Is there a pathway in the dorsal funiculus that signals visceral pain? *Pain* 67:291-305, 1996.
- Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. The nucleus gracilis: an integrator for visceral and somatic information. *J. Neurophysiol.* 78:521-527, 1997.
- Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Effects of colon inflammation on the responses of postsynaptic dorsal column cells to visceral and cutaneous stimulation. *NeuroReport* 8: 3267-3273, 1997.
- Al-Chaer, E.D.**, Feng, Y. and Willis, W.D. A role for the dorsal column in nociceptive visceral input into the thalamus of primates. *J. Neurophysiol.* 79 (6): 3143-3150, 1998.
- Al-Chaer, E.D.**, Feng, Y. and Willis, W.D. Visceral pain: a disturbance in the sensorimotor continuum? *Pain Forum* 7 (3): 117-125, 1998.
- Feng, Y., Cui, M., **Al-Chaer, E.D.** and Willis, W.D. Epigastric antinociception by cervical dorsal column lesion in rats. *Anesthesiology* 89 (2): 411-420, 1998.
- Willis, W.D., **Al-Chaer, E.D.**, Quast, M. J. and Westlund, K. N. A visceral pain pathway in the dorsal column of the spinal cord. In: *The Neurobiology of Pain. By: The National Academy of Sciences (USA).* *PNAS* 96 (14): 7675-7679, 1999.
- Al-Chaer, E.D.**, Feng, Y. and Willis, W.D. A comparative study of viscerosomatic input onto postsynaptic dorsal column and spinothalamic tract neurons in the primate. *J. Neurophysiol.* 82 (4): 1876-1882, 1999.
- Willis, W.D., **Al-Chaer, E.D.**, Quast, M. J. and Westlund, K. N. A visceral pain pathway in the dorsal column of the spinal cord. In: *The Neurobiology of Pain. By: The National Academy of Sciences (USA).* *PNAS* 96 (14): 7675-7679, 1999.
- Al-Chaer, E.D.**, Kawasaki, M. and Pasricha, P.J. A new model of chronic visceral hypersensitivity: in adult rats induced by colon irritation during postnatal development. *Gastroenterology* 119: 1276–1285, 2000.
- Saab C.Y., Kawasaki M., **Al-Chaer E.D.** and Willis, W.D. Cerebellar cortical stimulation increases spinal visceral nociceptive responses. *J. Neurophysiol.* 85(6): 2359-2363, 2001.
- Zhang, H.Q., **Al-Chaer, E.D.** and Willis, W.D. Effect of tactile inputs on thalamic responses to noxious colorectal distension in rat. *J. Neurophysiol.* 88:1185-1196, 2002.
- Ma, H., Park, Y. and **Al-Chaer, E.D.** Functional outcomes of neonatal colon pain measured in adult rats. *J Pain* 3(2) Supp.1: page 27, #707. 2002.
- Park, Y. and **Al-Chaer, E.D.** Thoracolumbar neuronal sensitization to colon stimuli in Al-Chaer's animal model of chronic visceral pain. *J Pain* 3(2) Supp.1: page 27, #708. 2002.
- Al-Chaer, E.D.** and Traub R.J. Biological basis of visceral pain: recent developments. *Pain* 96: 221-225, 2002.
- Zhang, H.Q., Rong, P.J., Zhang, S.P., **Al Chaer, E.D.** and Willis, W.D. Noxious visceral inputs enhance cutaneous tactile responses in rat thalamus. *Neurosci. Lett.* 336:109-112, 2003.
- Lin, C. and **Al-Chaer, E.D.** Long-term sensitization of primary afferents in adult rats exposed to neonatal colon pain. *Brain Res.* 971: 73-82, 2003.
- Kawasaki, M. and **Al-Chaer, E.D.** Intradermal capsaicin inhibits lumbar dorsal horn neuronal responses to colorectal distension. *NeuroReport* 14 (7): 985-9, 2003.
- Lin, C. and **Al-Chaer, E.D.** Long-term sensitization of primary afferents in adult rats exposed to neonatal colon pain. *Brain Res.* 971: 73-82, 2003.
- Arai, Y-C.P., Ueda, W. and **Al-Chaer, E.D.** Pre-anesthetic maternal separation increases pups' locomotor behavior during emergence from anesthesia in rats. *Acta Anaesthesiol Scand* 48: 174-177, 2004.
- Saab, C.Y., Arai, Y-C.P. and **Al-Chaer, E.D.** Modulation of visceral nociceptive processing in the lumbar spinal cord following thalamic stimulation or inactivation and after dorsal column lesion in rats with neonatal colon irritation. *Brain Res.* 1008 (2): 186-192, 2004.
- Arai, Y-C.P., Ueda, W and **Al-Chaer, E.D.** Pre-anesthetic presence of an injured dam influences pups' locomotor behavior during emergence from anesthesia in rats. *Acta Anaesthesiol Scand* 49: 166-169, 2005.
- Lin, C and **Al-Chaer, E.D.** Differential effects of glutamate receptor antagonists on dorsal horn neurons responding to colorectal distension in a neonatal colon irritation rat model. *World J Gastroenterol* 41:6495-6502, 2005.

- Grundy, D., **Al-Chaer, E.D.**, Aziz, Q., Collins, S.M., Ke, M., Tache, Y., Wood, J.D. Fundamentals of neurogastroenterology: basic science. *Gastroenterology* 130(5):1391-1411, 2006.
- 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 Biology* 2(4): 271-277, 2007.
- Wang J., Gu C. and **Al-Chaer E.D.** Altered behavior and digestive outcomes in adult male rats primed with minimal colon pain as neonates. *Behav Brain Funct.* 4:28, 2008.
- Hayar A., Gu C. and **Al-Chaer E.D.** An improved method for patch clamp recording and calcium imaging of neurons in the intact dorsal root ganglion in rats. *J Neurosci Methods* 173(1): 74-82, 2008.

Selected book chapters (in chronological order):

- Anand KJS, Bhutta AT, Hall RW, Rovnaghi CR and **Al-Chaer ED.** Long-term effects of repetitive pain in the neonatal period: neuronal vulnerability, imprinting, and plasticity. In *Neonatal Pain*, Hodgson D. and Coe C. Eds. Chapter 15, 2005.
- Al-Chaer, E.D.** Visceral Pain / Irritable Bowel Syndrome Model. In *Animal Models and Experimental Tests to Study Nociception and Pain*. Section Editor: Jin Mo Chung. Encyclopedic Reference of Pain. Schmidt R. and Willis W.D. Springer-Verlag, Heidelberg, Germany, 2006.
- Al-Chaer, E.D.** Postsynaptic Dorsal Column Neurons, Responses to Visceral Input. In *Ascending Transmission of Nociceptive Signals*. Section Editor: Glenn J. Giesler Jr.. Encyclopedic Reference of Pain. Schmidt R. and Willis W.D. editors. Springer-Verlag, Heidelberg, Germany, 2006.
- Al-Chaer, E.D.** and Willis, W.D. Neuroanatomy of visceral pain: Pathways and processes. In “*Chronic abdominal and visceral pain: theory and practice*” PJ Pasricha, WD Willis and GF Gebhart (Eds). Informa Healthcare, New York, 2006.
- Sternberg W.F. and **Al-Chaer, E.D.** Long-term Consequences of Neonatal and Infant Pain from Animal Models. In K.S. Anand, B.Stevens, P.McGrath (Eds.) *Pain in Neonates & Infants* 3rd Edition. Elsevier, Philadelphia, 2006.
- Al-Chaer, E.D.** and Hyman, P.E. Visceral pain in infancy, In “*Pain in Neonates & Infants*”, 3rd edition, Anand, Stevens, McGrath (Eds.), Elsevier, Philadelphia, 2006..
- Anand KJS, Bhutta AT, Hall RW and **Al-Chaer ED.** Development of Supraspinal Pain Processing. In: 3rd Edition of “*Pain in Neonates & Infants*” (Anand, Stevens, McGrath Eds.) Elsevier, Philadelphia, 2006.
- Al-Chaer, E.D.** Neuropathic Visceral Pain. In “Mechanisms of Pain in Peripheral Neuropathy” Eds. Maxim Dobrestov and Jun Ming Zhang, 2008.
- Al-Chaer, E.D.** Pain Pathways, In “Biobehavioral Approaches to Pain” Ed. Rhonda J. Moore, Springer, 2008.

Selected Recent Abstracts (in chronological order):

- Wang J, Gu C, Peng X, Garner K and **Al-Chaer ED.** Estrogen modulates visceral sensitivity in rats. Program No. 52.7, *2005 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2005.
- Wang J, Garner K and **Al-Chaer ED.** Gonadal hormones modulate stress-induced visceral hypersensitivity in rats. DDW 2006. *Gastroenterology* 130 (4) S2: S1773, p. A-254, 2006.
- Gu C., Wang J. and **Al-Chaer ED.** Neonatal intracolonic zymosan: a new model of post-inflammatory chronic visceral hypersensitivity in adult rats. Program No. 142.14. *2006 Neuroscience Meeting Planner*. Atlanta, GA: Society for Neuroscience, 2006.
- Wang J, GU C, Saab CY and **Al-Chaer ED.** Glial cells: a newly-discovered role in visceral hypersensitivity? Program No. 142.15. *2006 Neuroscience Meeting Planner*. Atlanta, GA: Society for Neuroscience, 2006.
- Jing Wang, Kirsten Garner, Chunping Gu, Carl Y. Saab, and **ED Al-Chaer.** Glial cells: a newly-discovered role in visceral hypersensitivity? DDW 2007, *Gastroenterology* 132 (4) S2: T2001, p. A-600, 2007.
- ED Al-Chaer,** C. Gu, A. Hayar. An improved method for patch clamp recording of neurons in the intact dorsal root ganglion (DRG) in rats. Program No. 725.16. *2007 Neuroscience Meeting Planner*. San Diego, CA: Society for Neuroscience, 2007.
- J. Wang, **E.D. Al-Chaer.** Sex hormones modulate primary afferent responses to colorectal distension (CRD) in rats. Program No. 725.15. *2007 Neuroscience Meeting Planner*. San Diego, CA: Society for Neuroscience, 2007.

Al-Chaer E.D., Gu C., Soni P., Garner K.N., Fann A., Wang J. Neonatal Cuddling Prevents the Development of Adverse Consequences of Neonatal Injury in Rats. Pediatric Academic Societies Meeting, Honolulu, Hawaii, #4454.14, 2008.

Archana Rao, **Elie D. Al-Chaer**, and Beverley Greenwood-Van Meerveld. Repetitive Colorectal Distension in Neonatal Rats Induces Colonic Mucosal and Muscular Dysfunction in Adulthood. Abstract #807, Digestive Disease Week, San Diego 2008

Jing Wang, Chunping Gu, and **Elie D. Al-Chaer**. Sex Differences in the Characteristics and Role of the Postsynaptic Dorsal Column (PSDC) Pathway in Visceral Pain. Abstract #T1434, Digestive Disease Week, San Diego 2008.

C. Research Support:

Ongoing Research Support:

Allergan Inc. Irvine, CA Al-Chaer 01/01/00-12/31/09
Reversing Symptoms of Irritable Bowel Syndrome (IBS) by Allergan Compounds
These studies examine the effect of a number of Allergan compounds on the symptoms seen in adult rats with neonatal colon irritation and study their mechanisms of action in the peripheral and central nervous system.
Role: PI

1 RO1 DK077733 Al-Chaer 04/01/08-03/30/13
Sex Hormones and Visceral Hypersensitivity
These studies will examine the role of sex hormones in visceral pain and associated neuronal sensitization.
Role: PI

1 R21 DK081628 Al-Chaer 06/01/09-05/31/11
Role of Microglia in Chronic Visceral Pain
These studies will explore the role of microglia in visceral pain and associated neuronal sensitization.
Role: PI

Recently Completed Research

GlaxoSmithKline, Harlow, UK. Al-Chaer 07/15/02-09/01/07
Pharmacological Validation of an Animal Model of Irritable Bowel Syndrome (IBS)
These studies examine the effect of Lotronex (Alosetron) and other drugs approved for IBS treatment on the behavioral and metabolic outcomes in adult rats treated with neonatal colon irritation.
Role: PI

P20, planning application Kern (PI) 09/01/06-08/31/07
National Institutes of Health, NCCR
Institute for Clinical and Translational Science - UAMS
Role: co-Investigator, Planning Director

1 RO1 NS/DK 40434 Al-Chaer 04/01/01-03/31/07
NINDS
Mechanisms of Chronic Visceral Hyperalgesia
The long-term objective is to show that persistent visceral hyperalgesia, residual to neonatal colon irritation, is associated with central neural sensitization maintained by an interactive exchange of information between the spinal gray matter and the thalamus. This sensitization occurs as a result of colon irritation during a window of time in postnatal development.
Role: PI