

ELIE D. AL-CHAER

Scientist, Lawyer, Strategist

CURRICULUM VITAE
(Updated September 2009)

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NAME

First: Elie (\ā-'lē\
Middle: Diab
Last: Al-Chaer (\ash- sha-'er\
Professional: Elie D. Al-Chaer, PhD, JD.

PRESENT ACADEMIC POSITION AND ADDRESS**Professor (Tenured)**

Departments of Pediatrics,
Internal Medicine / Gastroenterology
Neurobiology and Developmental Sciences

Director

Center for Pain Research
University of Arkansas for Medical Sciences

Physical Address:

Biomedical Research Center
Bldg II, Suite 406-2
4301 West Markham
Little Rock, AR 72205
USA

Electronic Address:

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BIOGRAPHICAL

Name: Elie Diab Al-Chaer
Date of birth: April 1968
Place of birth: Lebanon
Sex: Male
Citizenship: United States
Marital status: Married
Spouse: Nada B. Lawand, PhD (Neuroscience)
Children: Haddy E. AlChaer (Son; Grade 1)

LANGUAGES

English, French, and Arabic
All 3 fluently spoken, read and written

EDUCATION

After finishing High School at the "Collège des Frères, Mont La Salle" (a Private French Catholic Missionary School) Aïn Saadé, Lebanon,

1985-1988: Undergraduate student, Department of Mathematics, Faculty of Arts and Sciences, American University of Beirut (AUB), New York Universities Board, Beirut, Lebanon

1989-1991: Graduate student, Department of Physiology, Faculty of Medicine, American University of Beirut, New York Universities Board, Beirut, Lebanon

1993-1996: Ph.D. student, Graduate School of Biomedical Sciences (GSBS), University of Texas Medical Branch (UTMB), Galveston, Texas, USA

1997-2002: Law Student, South Texas College of Law (STCL), Houston, Texas, USA

DEGREES AND CERTIFICATES

B.S. (May 1988) Mathematics, Faculty of Arts and Sciences, American University of Beirut, New York Universities Board, Beirut, Lebanon

M.S. (Aug. 1991) Physiology, Faculty of Medicine, American University of Beirut, New York Universities Board, Beirut, Lebanon (*see CV-33*)

Ph.D. (Dec. 1996) Neuroscience, Graduate School of Biomedical Sciences, University of Texas Medical Branch, Galveston, Texas, USA (*see CV-33*)

J. D. (May 2002) Doctor of Jurisprudence, South Texas College of Law, Houston, Texas, USA

Certificate International Policy and Foreign Affairs Course, Clinton School of Public Service, Little Rock, Arkansas, USA (Jul. 2005)

Certificate Leadership Institute, University of Arkansas for Medical Sciences, Little Rock, Arkansas, USA (Jan. – Dec. 2007)

PROFESSIONAL WORK HISTORY

2009 - Professor with tenure, Departments of Pediatrics, Internal Medicine (Division of Gastroenterology), Neurobiology and Developmental Sciences, College of Medicine, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR, USA.

2007 (July) - 09 Secondary appointment - Associate Professor, Department of Internal Medicine, Division of Gastroenterology, College of Medicine, UAMS.

2005 (Mar) - Member, Graduate School, UAMS.

2004 (Sep) - Director, Center for Pain Research, College of Medicine, UAMS.

2004 (Sep) - 09 Associate Professor (Tenure Track), Departments of Pediatrics, and Neurobiology and Developmental Sciences, College of Medicine, UAMS.

- 1999 (Jan.) - 04 Associate member, Neuroscience Graduate Program, University of Texas Medical Branch (UTMB), Galveston, TX, USA.
- 1999 (Jan.) - 04 Associate member, Graduate School of Biomedical Sciences, UTMB.
- 1998 (Feb.) - 04 Associate member, Marine Biomedical Institute (MBI), UTMB.
- 1998 (Feb.) - 04 Assistant Professor (tenure track), Departments of Internal Medicine and Anatomy and Neurosciences; UTMB.
- 1997 (Jan.) Assistant member, Marine Biomedical Institute, UTMB.
- 1997 (Jan.) Post-Doctoral Fellow, UTMB (Wm. D. Willis, Supervisory Professor).
- 1994 - 96 Pre-Doctoral Fellow, UTMB (Wm. D. Willis, Supervisory Professor).
- 1993 - 94 Graduate assistant, Graduate School of Biomedical Sciences, UTMB.
- 1992 Instructor of "Biomechanics of Human Motion" at the Department of Orthopedics and Orthotics, Faculty of Medicine, American University of Beirut (AUB), Beirut, Lebanon.
- 1992 - 93 Research Assistant, Faculty of Medicine, AUB.
- 1988 - 89 Instructor of Mathematics for intermediate classes at a private high school, Lebanon.

TEACHING RESPONSIBILITIES / EXPERIENCE

A. Medical School

- 2005 - Lecturer, Neuroscience Course, MED I, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, USA. (April, 1 contact hour).
- 2003 - 2004 Lecturer and Laboratory teacher, Human Neuroscience and Behavior Course, MED I, Integrated Medical Curriculum, School of Medicine, University of Texas Medical Branch (UTMB), Galveston, Texas, USA. (Spring Term, 50 contact hours)
- 2000 - 2001 Lecturer, lecture on "Visceral Pain and Irritable Bowel Syndrome" GI and Nutrition Course, MED II, Integrated Medical Curriculum, School of Medicine, UTMB. (Fall Term, 2 contact hours)
- 1999 - 2002 Facilitator, Human Neuroscience and Behavior Course, MED I, Integrated Medical Curriculum, School of Medicine, UTMB. (Spring Term, 50 contact hours per year)
- 1999 Laboratory instructor, Human Neuroscience and Behavior Course, MED I, Integrated Medical Curriculum, School of Medicine, UTMB. (Spring Term, 50 contact hours)
- 1995 Teaching Assistant of Neuroscience, First Year Medical School (MED I), Faculty of Medicine, UTMB.

B. Graduate School

- 2007 - Lecturer, Cellular and Developmental Neuroscience, Graduate School, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR. Two

- lectures: "Neuroscience of Pain: Mechanisms and Pathways & Syndromes and Modulation" (Spring Term, 3 contact hours)
- 2006 - Lecturer, Graduate Neuroscience Course, Graduate School, UAMS. One lecture: "Pain" (Fall Term, 1 contact hour)
- 2006 - Lecturer, Cellular and Developmental Neuroscience, Graduate School, UAMS. Two lectures: "Release of Neurotransmitters" and "Neurotransmitter Receptors" (Spring Term, 3 contact hours)
I prepare the lectures and present them to the graduate students taking the Cellular and Developmental Neuroscience Course and the Graduate Neuroscience Course.
- 2000 - 2004 Course Director and Lecturer, Core Pain Conference (NEUX 6000-013), Neuroscience Graduate Program, Graduate School of Biomedical Sciences, University of Texas Medical Branch (UTMB), Galveston, Texas, USA. (Fall Term, 20 contact hours)
I oversee the admission process, organize and outline the curriculum, invite the participating faculty and monitor the progress and evaluate the conference.

C. Other

- 2003 (May) Invited chair and speaker, Professional Symposium on "Central sensitization in visceral pain" – Digestive Disease Week 2003, Title of talk: "*Animal models of central sensitization in visceral pain*" Orlando, FL, USA.
- 2003 (Mar.) Speaker, Professional Development Course "Stress and the Gut", British Society of Gastroenterology, Birmingham, UK.
- 2000 (Nov.) Moderator and Speaker, Professional Development Course on the Management and Pathophysiology of Visceral Pain, American Pain Society, 19th Annual Meeting, Atlanta, GA, USA.
- 1992 Instructor of "Biomechanics of Human Motion" at the Department of Orthopedics and Orthotics, Faculty of Medicine, American University of Beirut (AUB), Beirut, Lebanon.

CURRENT RESEARCH / FUNDING

A. Active Research Projects:

1. Impact of neonatal pain or injury on neural development and adult physiology and behavior.
2. The role of sex hormones in the gender differences seen in visceral pain.
3. Molecular and anatomical pathways and mechanisms of visceral pain.
4. The role of glial cells in the neuronal sensitization and associated behaviors.

Translating these findings into clinical application is done through collaboration with clinicians and pharmaceutical companies:

5. Effect of Allergan drugs on symptoms of irritable bowel syndrome in rats – in collaboration with Allergan, Inc, Irvine, CA.
6. Validation of an animal model of irritable bowel syndrome – in collaboration with GlaxoSmithKline (GSK), Harlow, UK (*completed*).

Funding for these projects comes from the National Institutes of Health in the USA and from interested pharmaceutical companies (see funding below).

For my *Research Philosophy*, see **Appendix** (page 32).

B. Trainees and Visiting Scientists

Current:

- 2009- Martin Watts (BS), MD/PhD student, UAMS
- 2008- Jennifer Leigh Atchison (BS), MD/PhD student, UAMS
- 2008- Krishnapraveen Yadlapalli (DVM, MS), Research Technician, UAMS (Dr. Yadlapalli is a patch clamp neurophysiologist)
- 2004- Kirsten Garner, (MS), Lab Manager (molecular biologist)
- 2004- Chunping Gu, (MD, PhD), Research Associate, UAMS (Dr. Gu is a molecular biologist)
- 2003- Jing Wang, (MD PhD), Visiting Scholar, UTMB, UAMS (Dr. Wang is a neurophysiologist)

Past:

- 2006 (Fall) Omar Rahal (MS), Graduate Student, UAMS
- 2005 - 2008 Parul Soni, (BS), Research Technician, UAMS
- 2002 - 2006 Xin Peng (B.S.), Research Assistant, UTMB, UAMS
- 2003 - 2004 Jiangang Xie (MD, PhD), Research Investigator, UTMB
- 2002 - 2004 Rodger Song (B.S.), Research Assistant, UTMB
- 2002 - 2003 Christine Hinze (M.S.), Research Scientist, UTMB
- 2001 - 2003 Chun Lin (MD, PhD), Visiting Scientist, UTMB
- 2001 Kimberly Hicks (B.S.), Trainee, UTMB
- 2001 - 2002 Huaxian Ma (MD), Research Scientist, UTMB
- 2000 - 2001 Kennichi Arai (MD, PhD), Postdoctoral Fellow, UTMB
- 1999 - 2000 Kawasaki, Motohiro (M.D., Ph.D.), Postdoctoral Fellow, UTMB
- 1999 Broussard, Robert (MED II), Medical Student Summer Training, UTMB

C. Grant Support

1) Active Research Grants:

A) INDUSTRY:

Allergan, Inc, Irvine, CA. \$639,530.00
Elie D. Al Chaer, PhD, JD: Principal Investigator 04/01/08 - 12/31/09

B) NATIONAL INSTITUTES OF HEALTH:

Grant 1:

"Sex Hormones and Visceral Hypersensitivity" \$1,800,000.00
Elie D. Al-Chaer, PhD: Principal Investigator (50%) 04/01/08-03/31/13
Agency: National Institute of Digestive Diseases and Kidney
Type: RO1 DK077733

In this study, we propose to identify the hormonal basis of the observed sexual dimorphism in visceral pain as well as the underlying physiological mechanisms. The central hypothesis is that **sex hormones play a crucial role in the sex-specific differences in visceral pain possibly via their action on pain pathways in the central nervous system.** Sex hormones modulate *visceral sensitivity* and *central neural sensitization* via *direct action on estrogen receptors located on PSDC neurons* or *regulation of glutamate receptors located on these neurons*. Defining the physiological and cellular mechanisms that contribute to sexual differentiation in persistent visceral hypersensitivity is of central importance to advancing our understanding of visceral hypersensitivity and to fostering a new approach to gastrointestinal disorders that leads to the development of new, gender-sensitive, therapeutic tools for the management of chronic visceral pain.

Grant 2:

"Role of Microglia in Chronic Visceral Pain" \$415,352.00
Elie Al-Chaer, Ph.D.: Principal Investigator (20%) 06/01/09-05/31/11
Agency: National Institute of Digestive Diseases and Kidney
Type: R21DK081628

In this proposal we hypothesize that **hyperactive microglia contribute to chronic VH and neuronal hyperexcitability in the spinal cord.** First, we propose to *establish a correlation between VH and a hyperactive phenotype of microglia in rats with CI* by identifying molecular targets selective for hyperactive microglia, and second, we propose to *reverse neuronal hyperexcitability and chronic VH by suppressing microglial activation using minocycline or by selectively blocking phosphorylated-p38 and P2X4 receptors*, two targets specifically expressed on hyperactive microglia. These studies will help expand the targets of pharmacological intervention to non-neuronal sites within the spinal cord, and improve the analgesic potency of biologic therapies, while minimizing undesirable side effects.

2) **Training Grants:**

A) NATIONAL INSTITUTES OF HEALTH:

Grant 1:

"Novel Mechanisms of Visceral Pain: Functional Properties of Microglia"

PI: Jennifer L. Watts, MD-PhD Student

Elie D. Al-Chaer, MS, PhD, JD: co-Investigator/mentor

Role: Sponsor / Supervisor

Agency: National Institutes of Health, NIDDK

Type: 1 F30 DK084606

3) **Institutional Grants:**

A) NATIONAL INSTITUTES OF HEALTH:

Grant 1:

"Institute for Clinical and Translational Science"

\$22,560,000.00

PI: Curtis L. Lowery, Jr., MD

09/01/09-08/31/14

Elie D. Al-Chaer, MS, PhD, JD: co-Investigator

10%

Role: Director of Planning, co-Director of Governance

Agency: National Institutes of Health, NCRR

Type: UL1 RR029884, CTSA application

Grant 2:

"Institute for Clinical and Translational Science"

09/01/06-08/31/07

PI: Philip Kern, MD

Elie D. Al-Chaer, MS, PhD, JD: co-Investigator (20%)

Role: Director of Planning

Agency: National Institutes of Health, NCRR

Type: P20, planning application

Grant 3:

"The Center for Translational Neuroscience"

09/01/04-07/31/09

PI: Edgar Garcia-Rill, PhD

Elie D. Al-Chaer, MS, PhD, JD: Member (6%)

Role: Mentor

Agency: National Institutes of Health, NCRR

Type: COBRE application

4) **Completed Research Grants:**

A) INDUSTRY:

Allergan, Inc, Irvine, CA.	\$1,426,530.00
Elie D. Al Chaer, PhD, JD: Principal Investigator	04/01/00 - 12/31/07
GlaxoSmithKline, UK.	\$360,000.00
Elie D. Al Chaer, PhD, JD: Principal Investigator	05/01/02-09/30/07

B) NATIONAL INSTITUTES OF HEALTH:

Grant 1:

"Mechanisms of Chronic Visceral Hyperalgesia"	\$1,450,000.00
Elie D. Al-Chaer, PhD: Principal Investigator	04/01/01-03/31/07
Agency: National Institute of Neurological Disorders and Stroke	
Type: 1 RO1 NS/DK 40434	

Grant 2:

"Visceral Pain"	
Project 1 of a Program Project Grant (6 individual projects):	
Program Director: William D. Willis, M.D., Ph.D.	
Elie D. Al-Chaer, PhD: Collaborator	08/01/01-07/31/04
Agency: National Institute of Neurological Disorders and Stroke	
Type: 5P01 NS 11255-24	08/15/96-07/31/06

LEADERSHIP / EXECUTIVE FUNCTIONS

National / International:

- 2009 (Aug) *Panelist* on Brain-Gut Communications, Shaping the Future of Enteric Neurosciences, Strategic Planning Forum, Chicago, IL, USA.
- 2009 - Member, the National Steering Committee for the CTSA (Clinical and Translational Science Awards) Consortium, NIH, USA.
- 2009 (Mar) *Panelist* on Chronic Pain, National Women's Health Conference, Strategic Planning Forum, the NIH Office of Research in Women's Health, St. Louis, MO, USA.
- 2008 *Co-Chair*, NIH Special Emphasis Panel on Multi-disciplinary Approaches to the Study of Chronic Pelvic Pain (MAPP) Research Network (U01 grants).
- 2008 *Chair*, American Gastroenterological Association (AGA) Research Forum on Animal Models of Functional and Motility Disorders. Digestive Diseases Week, San Diego, CA, May 2008.
- 2007 - 2008 *Chair*, AGA abstract review committee on Animal Models of Functional and Motility Disorders for the Digestive Disease Week (DDW), the annual meeting for digestive diseases societies in the USA with an international membership.
- 2007 - Member, NIH Special Emphasis Panel to review Specialized Centers of Interdisciplinary Research (SCOR) on Sex and Gender Factors Affecting Women's Health (ZRG1 HOP-U).
- 2007 - Member, NIH Grant Application Review Council: Neural Sciences and Disorders (NSD-C).
- 2005 - Member, Advisory Board, International Foundation for Functional Gastrointestinal Disorders.
- 2005 - Member, NIH Grant Application Study Section: Somatosensory/Pain (ZRG1 IFCN-K).
- 2004 *Chair*, NIH Special Council on Mind-Body Interactions and Health (ZRG1 RPHB-B 50 R).
- 2003 Member, NIH Special Emphasis Panel on Behavioral and Social Sciences Research, a special study section to evaluate grant applications for the "Mind-Body Interactions and Health: Research Infrastructure Program".
- 2003 - 05 Member, NIH Grant Application Study Section: Clinical Neuroplasticity and Neurotransmitters (ZRG1 CNNT-01) / Brain Disorders and Clinical Neuroscience (ZRG1 BDCN2).
- 2003 - *Invited member and co-author*, Rome III Multinational Team on Functional Gastrointestinal Disorders Policy: a 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 (Membership by invitation only).
- 2001 - 2003 *Chair*, American Gastroenterological Association (AGA) abstract review committee on Colonic Motility and Disorders for the Digestive Disease Week (DDW), the annual meeting for all digestive diseases societies in the USA with an international membership.

Peer-review services:

- 2009 - *Editor-in-Chief, [International Journal of Women's Health](#).*
- 1999 - Ad-hoc reviewer for the following journals: Neuroscience, J. Neuroscience, J. Neurophysiology, Brain Research, Experimental Brain Research, Pain, J. Pain, European J. Pain, Gastroenterology, Neurogastroenterology (since 2003), GUT (since 2003).

Ad-hoc reviewer for the National Science Foundation (NSF), the Veterans Administration Health System (VAHS), the National Student Research Forum (NSRF) and a number of international scientific and funding organizations (British, Czech, Chinese, Japanese, etc.).

Institutional:

UAMS:

- 2009- *Associate-Director for Governance: Center for Clinical and Translational Research (CCTR), funded by NIH (NCRR) through a CTSA.*
- 2009- Executive Committee: CCTR
- 2007-2009 Co-Director of Governance: CCTR (*Title changed in '09 with NIH funding*)
- 2006-2008 Director of Planning: Planning phase, CCTR
- 2006-2008 Co-Director: Planning and Development, CCTR
- 2006-2008 Co-Director: Administrative Committee, CCTR
- 2006-2008 Chair, Strategic Planning Team, CCTR
- 2006-2008 Executive Committee, CCTR Planning
- 2005-2006 CUMG/Dean Grant review committee
- 2004- *Director, Center for Pain Research (CPR)*

UTMB:

- 2004 Chair, Examination Committee, Neuroscience Graduate Program, Graduate School of Biomedical Sciences
- 2001 - 2004 Member, Admissions Committee, School of Medicine
Review and evaluate hundreds of medical school applications and interview and rank hundreds of applicants every year.
- 2001 - 2004 Member, Examination Committee, Neuroscience Graduate Program, Graduate School of Biomedical Sciences
Oversee the Neuroscience Graduate Program Qualifying Exam, by evaluating the questions, the corrections and the grading.
- 2001 Coordinator, Seminars and Annual Meeting, Gulf Coast GI Research Forum
- 2000 - 2003 Member, Grant Review Committee, the Gastrointestinal Research Interdisciplinary Program (GRIP)
- 2000 - 2003 Member, Seminar Committee, GRIP

Departmental:

- 2005 - Member, Mentoring Committee, Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR, USA.

- 2005 - Member, Graduate Advisory Committee, Neurobiology and Developmental Sciences, College of Medicine, UAMS.
- 2000 - 2003 Chair, Postgraduate Pain Program Sub-Committee, Department of Anatomy and Neurosciences, University of Texas Medical Branch (UTMB), Galveston, TX, USA.
Objectives: Provide an interactive educational forum for scientists and clinicians interested in Pain management and Research.
- 1999 - 2002 Coordinator, Seminar Program for the Division of Gastroenterology, UTMB
Select, invite and host guest speakers from around the world.
- 1999 - 2004 Member, Program Project Grant Committee, Pain Group, Department of Anatomy and Neurosciences, UTMB
- 1998 - 2002 Webmaster of GI Web, The website development team for the Division of Gastroenterology, UTMB. <http://www2.utmb.edu/gastroenterology>

Other:

GRADUATE STUDENTS EXAM COMMITTEES

I mentored, co-mentored and served on the graduate exam committee of the following students:

- 2009 - Graduate School External Examiner
Hong Kong Baptist University
Doctor of Philosophy Degree Programme
Student: Zhang Jianliang
Supervisor: Dr. Zhang Hongqi
Thesis Title: Electroacupuncture vs Vagus Nerve Stimulation for Epilepsy
- 2009 - Mentor and PhD Thesis Supervisor, UAMS
Martin Watts, MD/PhD student
- 2008 - Mentor and PhD Thesis Supervisor, UAMS
Jennifer Leigh Atchison, MD/PhD student
- 2008 - Neuroscience Graduate Program Examiner, UAMS.
Student: Dong, Chaoxuan (Ph.D. Candidate).
Supervisor: Anand, Kanwaljeet S. MBBS, D Phil.
Thesis Title: "Effects of Ketamine on Apoptosis and Neurogenesis of Rat Fetal Cortical Neural Stem / Progenitor Cells (NSPCs)"
- 2007 - 09 Neuroscience Graduate Program Examiner, UAMS.
Student: Ye, Meijun (Ph.D. Candidate).
Supervisor: Garcia-Rill, Edgar Ph.D.
Thesis Title: "Cholinergic Modulation of Fast Synaptic Transmission in the Pedunculopontine and Parafascicular Nuclei: Implications for the Regulation of Cortical Arousal"

- 2008 Graduate School External Examiner
Hong Kong Baptist University
Doctor of Philosophy Degree Programme
Student: Zhang Xiaojun
Supervisor: Dr. Bian ZhaoXiang
Thesis Title: Analgesic Effect of Paeoniflorin in Rats with Visceral Hyperalgesia Induced by Neonatal Maternal Separation
- 2005 - 2006 Neuroscience Graduate Program Examiner, UAMS.
Student: Fann, Alice MD (Ph.D. Candidate).
Supervisor: Garcia-Rill, Edgar Ph.D.
Thesis Title: "Chronic Low Back Pain: Arousal, Attention, and Frontal Lobe Blood Flow Dysfunctions"
- 2000 - 2003 Neuroscience Graduate Program Faculty Examiner, UTMB.
Student: Vera-Portocarrero, Louis P. (Ph.D. Candidate).
Supervisor: Westlund-High, Karin N. Ph.D.
Thesis Title: "Descending modulation and visceral pain"
- 1999 - 2001 Neuroscience Graduate Program Faculty Examiner, UTMB.
Student: Hains, Bryan (Ph.D. Candidate).
Supervisor: Hulsebosch, Claire E., Ph.D.
Thesis Title: "Transplant therapy and cellular mechanisms contributing to chronic pain after spinal cord injury."
- 1999 - 2001 Neuroscience Graduate Program Faculty Examiner, UTMB.
Student: Saab, Carl (Ph.D. Candidate).
Supervisor: Willis, William D. M.D., Ph.D.
Thesis Title: "Role of the cerebellum in Pain."

Co-Mentored Publications:

- 1) 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
- 2) Saab, C.Y., Kawasaki M., Masaad, C.A., Saadé, N.E., **Al-Chaer, E.D.** and Willis W.D. Is the cerebellum involved in analgesia or Pain? Society for Neuroscience, 2000
- 3) Saab C.Y., Kawasaki M, **Al-Chaer E.D.** and Willis W.D. Cerebellar modulation of spinal nociceptive responses: Can pain be influenced from the cerebellum? *American Pain society*, 19th Annual Scientific Meeting, Atlanta, Georgia, November 2-5, 2000

SOCIETIES AND AFFILIATIONS

- 2006 - DC Bar Association, member
- 2003 - 04 Galveston County Bar Association, member
- 2003 - 04 Galveston County Young Lawyers Association, member
- 2003 - Rome Foundation for Gastrointestinal Disorders, member
- 2002 - Texas Young Lawyers Association, member
- 2002 - American Bar Association (ABA), member
- 2002 - State Bar of Texas, member
- 2002 - 04 Chair, American Gastroenterological Association (AGA) committee on Colonic Motility and Disorders.
- 1998 - American Gastroenterological Association (AGA), member
- 1997 - 02 American Bar Association (ABA), student member
- 1996 - American Pain Society (APS), member
- 1996 - American Association for the Advancement of Science (AAAS), member
- 1995 - American Physiological Society, member
- 1995 - International Association for the Study of Pain (IASP), member
- 1993 - Society for Neuroscience, member

LICENSURE INFORMATION

- 2006 (Feb. 3) - Washington DC Bar, Licensed attorney by the District of Columbia Court of Appeals to practice in all the courts of the District of Columbia.
- 2002 (Nov. 6) - State Bar of Texas, Licensed attorney and counselor at law by the Supreme Court of Texas to practice in all courts of the State of Texas.

ADDITIONAL INFORMATION

A. Honors, Scholarships and Awards

Science related honors:

- 2009 Plenary speaker, The Institute of Chinese Medicine Forum on Irritable bowel syndrome: "When East Meets West", Title of talk: "*Irritable Bowel Syndrome: A Tale of Sex, Drugs and Pain*" The Golden Egg Auditorium, Hong Kong Science Park, Shatin, Hong Kong, China.
- 2006 Plenary speaker at the joint conference of the American Gastroenterological Association (AGA) and the British Society of Gastroenterology (BSG), Title of talk: "*Neuroplasticity in visceral pain*", Cambridge, UK.
- 2003 Plenary speaker, professional development course, the British Society of Gastroenterology
- 2003 Plenary speaker, Spring Brain Conference, Title of talk: "*The role of the dorsal columns in pain states*" Sedona, AZ, USA.

- 2002 Invited speaker on *"The art and science of visceral pain: from neonatal plasticity to adult perception"* the Pain Research Center, the Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.
- 2002 Invited to evaluate a \$7.5 Million Program Project Grant and to speak on *"Plasticity of visceral pain circuitry in adult rats with neonatal colon injury"*, Pain Program, University of Maryland Dental School, Baltimore, MD, USA.
- 2000 **The John C. Liebeskind Early Career Scholar Award**, for exceptional accomplishment and promise in pain scholarship, *American Pain Society*
- 1999 Outstanding Educator Award, Generalist Physician Investigator Program, UTMB
- 1998 American Pain Society, Young Investigator Travel Award
- 1997 The James E. Beall II Memorial Award in Anatomy and the Neurosciences
- 1997 The Stephen C. Silverthorne Memorial Award for outstanding research in neurology
- 1996 **The Mustard Seed Award** in Research for outstanding research and service in cancer pain, offered by the Sealy Society
- 1995 **Who's Who** Among Students in American Universities and Colleges
- 1990 Diana Tamari Sabbagh (DTS) Award for outstanding researchers in medical sciences

Law related awards:

- 2001 Phi Beta Phi, International Legal Fraternity, Highest Grade award In International Law.
- 2001 Who's Who among American Law Students
- 1999 - 2002 Dean's Honor List, South Texas College of Law
- 1999 Invited to write for Law Review, South Texas College of Law
- 1997 Outstanding Academic Achievement (1st Term), South Texas College of Law

Other awards:

- 1985 AUB scholarship for an outstanding undergraduate student

B. Professional Consultant

- 2005 - Member, Advisory Board, International Foundation for Functional Gastrointestinal Disorders (IFFGD), USA.
- 2004 - Member, Visceral Pain Advisory Board, Allergan Inc, Irvine, CA, USA
- 2003 - 2004 Strategic consultant, Governing Board, Sigma Health Care, Inc. Galveston, TX, USA.
- 2003 - Member, Pain Advisory Board, Allergan Inc, Irvine, CA, USA
- 2000 - 2004 Member, Professional Advisory Committee, Sigma Health Care, Inc. Galveston, TX, USA.
- 1999 - Biomedical research professional consultant, Allergan Inc, Irvine CA, USA

C. Invited Lectures

- 2009 (July) Invited seminar, Eli Lilly and Company Pain and Migraine Drug Hunting Team, Title of seminar: "Visceral Pain: Insights from the Platonic Fold" Indianapolis, IN, USA.
- 2009 (Apr) Invited workshop, the 8th International Symposium on Functional Gastrointestinal Disorders, Title of workshop: "*Pain Pathways*" Milwaukee, WI, USA.
- 2009 (Mar) Invited plenary speaker, The Institute of Chinese Medicine Forum on Irritable Bowel Syndrome: "When East Meets West", Title of Talk: "*Irritable Bowel Syndrome: A Tale of Sex, Drugs and Pain*" Hong Kong Science Park, Shatin, Hong Kong.
- 2008 (Oct) Invited speaker, Department of Medicine, State University of New York (SUNY) Downstate Medical Center, Title of Talk: "*Functional Abdominal Pain: a Gut Feeling in the Brain*", Brooklyn, NY, USA.
- 2008 (Apr) Invited speaker, Rural Hospital Program, Title of Talk: "*Pain: a Primer on Neural Mechanisms and Management*" (satellite broadcast) Little Rock, AR, USA.
- 2007 (Apr) Invited plenary speaker, the 6th International Symposium on Functional Gastrointestinal Disorders, Title of Talk: "*Neuroplasticity and Functional Pain*" Milwaukee, WI, USA.
- 2007 (Apr) Invited workshop, the 6th International Symposium on Functional Gastrointestinal Disorders, Title of workshop: "*Pain Pathways*" Milwaukee, WI, USA.
- 2006 (Oct) Distinguished lecture, the Oklahoma Center for Neuroscience and the Department of Physiology, Oklahoma University Health Science Center. Title of talk: "Visceral Pain: Reflections on Phylogeny, Physiology and Pathways", Oklahoma City, OK, USA.
- 2006 (Sep) Invited Speaker, Queen Mary, University of London and The Royal London Hospital, Title of Talk: "*Visceral Pain: The Rhapsody of a Nervous System*", invited speaker, London, England, UK.
- 2006 (Sep) Plenary lecture, the joint conference of the American Gastroenterological Association (AGA) and the British Society for Gastroenterology. Title of talk: "Neuroplasticity in Visceral Pain", Cambridge University, England, UK.
- 2006 (Jul) Plenary lecture, the Brain-Gut Symposium held at St. Anne's College, Oxford University. Title of talk: "*Animals Models of Visceral Pain*", Oxford, England, UK.
- 2005 (June) Invited Speaker, The University of Florida Comprehensive Center for Pain Research and the College of Dentistry Dean's Seminar Series, Title of talk: "*Functional Pain: the Rhapsody of a Nervous System*" The University of Florida, Gainesville, FL, USA.
- 2005 (Apr) Invited plenary speaker, the 6th International Symposium on Functional Gastrointestinal Disorders, Title of Talk: "*Neuroplasticity and Functional Pain*" Milwaukee, WI, USA.
- 2005 (Apr) Invited workshop, the 6th International Symposium on Functional Gastrointestinal Disorders, Title of workshop: "*Pain Pathways*" Milwaukee, WI, USA.

- 2005 (Mar) Invited Physiology Seminar, Title of talk: "*Behavioral and Neural Changes in Adult Rats Exposed to Neonatal Colon Injury*" Department of Physiology, College of Medicine, UAMS.
- 2005 (Feb) Invited Neurology Grand Rounds, Title of talk: "*Pain: Reflections on Phylogeny, Physiology and Pathways*" Department of Neurology, College of Medicine, UAMS
- 2005 (Feb) Seminar, "*Pain: the Rhapsody of a Nervous System*" Pain Arkansas Club, UAMS.
- 2005 (Jan) Invited Neurosurgery Grand Rounds, Title of talk: "*Visceral Pain: Mechanisms, Pathways and Surgical Solutions*" Department of Surgery, College of Medicine, UAMS.
- 2003 (Nov) Guest Speaker, The Arkansas Children's Hospital and the Department of Pediatrics at the University of Arkansas Medical School, Title of talk: "*Neonatal injury: an etiology of functional pain in adults*" Little Rock, AR, USA.
- 2003 (May) Invited Chair and Speaker, Symposium on Central Sensitization, Title of talk: "*Animal models of sensitization*" Digestive Diseases Week 2003, Orlando, FL, USA.
- 2003 (Mar.) Invited Plenary Speaker, Postgraduate Professional Development Course - British Society of Gastroenterology, Title of talk: "*Neonatal stressors and adult visceral hypersensitivity in GI disease*" Birmingham, UK.
- 2003 (Mar.) Invited Plenary Speaker, Spring Brain Conference, Plenary Session III, Title of talk: "*The role of the dorsal columns in pain states*" Sedona, AZ, USA.
- 2003 (Feb.) Guest Speaker, The Pain Advisory Board for Allergan Inc, Title of Talk: "*Pharmacological validation of an animal model of chronic functional abdominal pain*" Irvine, CA, USA.
- 2002 (Sep.) Moderator, Symposium on Basic Science - American Motility Society. Galveston, TX, USA.
- 2002 (June) Guest Speaker, The Pain Research Center at the Brigham and Women's Hospital, Harvard University. Title of talk: "*The art and science of visceral pain: from neonatal plasticity to adult perception*" Boston, MA, USA.
- 2002 (April) Speaker, The Spring Pain Research Conference. Title of talk: "*Chronic abdominal pain: the ghost of a painful past*" Grand Cayman, British West Indies.
- 2002 (April) Speaker, GlaxoSmithKline/Cambridge University Symposium. Title of talk: "*Functional bowel disorders in an animal model of chronic visceral pain*" Harlow, UK.
- 2002 (Mar.) Speaker, NIH Symposium: Oral, Craniofacial and Persistent Deep Pain. Title of talk: "*Neural plastic changes initiated by neonatal injury: the culprit in chronic visceral pain*" Baltimore, MD, USA.
- 2002 (Mar.) Guest Speaker, University of Maryland Dental School, Pain Program. Title of talk: "*Plasticity of visceral pain circuitry in adult rats with neonatal colon injury*" Baltimore, MD, USA.
- 2001 (Nov.) Speaker, The 2nd Annual International Course and Workshop On Gastrointestinal Motility/Functional Disorders. Title of talk: "*Biological Basis of Abdominal Pain*" Galveston, TX, USA.

- 2001 (Sep.) Speaker, The 18th International Symposium on Neurogastroenterology and Motility. Title of talk: *"Painful neonatal memories and functional bowel disorders"* Madison, Wisconsin, USA.
- 2001 (July) Speaker, "2001: A Brain-Gut Odyssey" meeting of the International Society for Brain-Gut Studies. Title of talk: *"On the Journey of Pain: from Gut to Brain"* University of Oxford, Oxford, UK.
- 2001 (May) Speaker, "Evolving Animal Models for Functional Gastrointestinal Disorders" a research symposium at the Digestive Diseases Week, 2001. Title of talk: *"Rat Model of Persistent Visceral Hyperalgesia Following Early Life Gut Irritation"* Atlanta, GA, USA.
- 2001 (April) Speaker, Seminar series at CURE, University of California at Los Angeles. Title of talk: *"Chronic Abdominal Pain: The Wounds That Never Heal"* Los Angeles, CA, USA.
- 2000 (Dec.) Speaker, International Course on Motility and Functional Bowel Disorders. Title of talk: *"The Pathogenesis of Visceral Hyperalgesia."* Galveston, TX, USA.
- 2000 (Dec.) Coordinator and Speaker, Symposium on Gastrointestinal Pain. Title of talk: *"An Animal Model of IBS: The Key to the Puzzle in a Long Abandoned Challenge?"* University of Texas Medical Branch, Galveston, TX, USA.
- 2000 (Nov.) Chair and Speaker, Professional Development Course for the American Pain Society, Atlanta, GA, USA. Title of talk: *"Management of chronic visceral pain: an overview of basic research, psychophysics, symptoms, treatments and social correlates."*
- 1999 (Oct.) Chair and Speaker, Symposium for the American Pain Society, Ft. Lauderdale, FL: *"Pathogenesis, pathways and processing of colon pain: a "state of the science" address."*
- 1999 (Oct.) Speaker, Lecture for the Society for Neuroscience, *"Pain Research - On the Threshold of a New Millennium."* Miami, FL.
- 1999 (May) Speaker, Seminar given for the Neuroscience Graduate Program, University of Texas Medical Branch, Title of talk: *"Ode to an Empty Bowel"* Galveston, Texas.
- 1998 (May) Speaker, Seminar, Digestive Disease Week 98, Title of talk: *"A quantitative basis for the dorsal column dominant role in visceral pain"*. New Orleans, LA, USA.
- 1996 (Oct.) Speaker, Dissertation Defense Seminar, Dept. of Anatomy and Neurosciences, University of Texas Medical Branch, Title of talk: *"The role of the dorsal column in visceral pain"*; Galveston, Texas, USA.
- 1996 (Feb.) Speaker, Seminar given at the University of Oklahoma, Health Sciences Center. Title of talk: *"The role of the dorsal column in visceral pain"* Oklahoma City, OK.
- 1995 (Jan.) Speaker, Dissertation Proposal seminar for the degree of Doctor of Philosophy, Dept. of Anatomy and Neurosciences, UTMB, *"Visceral input into the ventral posterolateral nucleus of the thalamus: a pathway in the fasciculus gracilis involving the postsynaptic dorsal column system"* Galveston, Texas, USA.

- 1994 (Aug.) Speaker, Seminar given at the Dept. of Anatomy and Neurosciences, UTMB, title of talk: "*Viscero-somatic interactions in the thalamus: a possible role of the dorsal column*" Galveston, Texas, USA.
- 1991 (July) Speaker, Dissertation Defense seminar for the degree of Master of Sciences, Dept. of Physiology, Faculty of Medicine, AUB. Title of talk: "*Dorsal column input into the nucleus locus coeruleus*" Beirut, Lebanon.
- 1990 (June) Speaker, Seminar given at the dept. of Physiology, AUB. Title of talk: "*The role of the nucleus locus coeruleus in antinociception*" Beirut, Lebanon.

D. Making News

- 2006: Interviewed on the live broadcast of Voice of America's (VOA) daily international radio discussion "Talk to America", Nov. 14, 2006, on the topic of Pain. "Talk to America" is the world's only international daily call-in/discussion program, broadcast in English Monday through Friday and aired over VOA's global short-wave transmitter network, as well via satellite, local radio stations overseas and the Internet. <http://www.voanews.com/talk>.
- 2005: Featured in "the Buzz", a UAMS Newsletter.
- 1999: Interviewed by *Science News* for an article entitled "Pain, Pain, Go Away" *Science News* 155: 108-110, February 1999.
- 1999: Interviewed by *BioPhotonics International* for an article entitled "Functional MRI shows pathway for visceral pain" *BioPhotonics International* pp. 26-28, March/April 1999.
- 1999: Featured in the *UTMB Quarterly*, pp. 18-21, Fall 1999.
- 1999: Interviewed by the British Broadcasting Corporation (BBC), Science Department, for a program entitled BBC Horizon on October 07, 1999.
- 1999: Interviewed by Medscape, CBS on October 23rd, 1999.
- 1998: Interviewed by *IMPACT* (UTMB Newsletter) for an article entitled "Researchers determine how gut pain affects the brain. *IMPACT* 22 (20): 3, November 16, 1998.
- 1998: Interviewed by *Radiology and Imaging Letter* for a Feature Article entitled "Researchers use Brain fMRI to find New Pathway to Resolve Pelvic Pain." *RIL* 18 (21): 163 – 165, December 1, 1998.
- 1996: Featured in *the Galveston County Daily News* under "UTMB Society awards 5 for services" *The Galveston County Daily News* 154 (61): 7-A, Monday June 10, 1996.
- 1996: Featured in *IMPACT* (UTMB Newsletter) as the recipient of the Sealy Society Mustard Seed Award in Research for 1995. *IMPACT* 20 (12): 1-2, June 17, 1996.
- 1988: Interviewed by "*Le Nouveau Magazine*" (weekly political, economical and cultural Middle Eastern magazine in French) for an article entitled "Le Club Culturel de L'OCP en mission diplomatique." *Le Nouveau Magazine* No. 1591, January 30 1988.

PUBLICATIONS

A. Articles in Peer-Reviewed Journals

1. **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.* 76:2661-2674, 1996.
2. **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.
3. 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.
4. **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Potentiation of thalamic responses to colorectal distension by visceral inflammation. *NeuroReport* 7:1635-1639, 1996.
5. **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. The dorsal column: A possible role in visceral hyperalgesia. In Jensen, T.S., Turner, J.A. and Wiesenfield-Hallin, Z. (ed): *Proceedings of the 8th world congress on pain*, vol. 8, 1997, pp. 839-853.
6. **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.
7. **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.
8. **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.
9. 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.
10. **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.
11. 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.

12. Saab C.Y., Makki A., Quast M., Wei J., **Al-Chaer E.D.**, Willis W.D. Is the cerebellum involved in pain? In: *Proceedings of the 9th World Congress on Pain*, vol 16. IASP Press, Seattle, pp 515–522, 2000.
13. **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.
14. 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.
15. 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.
16. 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.
17. 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.
18. Kawasaki, M. and **Al-Chaer, E.D.** Intradermal capsaicin inhibits lumbar dorsal horn neuronal responses to colorectal distension. *NeuroReport* 14 (7): 985-9, 2003.
19. 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.
20. 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.
21. 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.
22. 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.
23. 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.

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 Biology* 2: 271-277, 2006.
25. Hayar A.M., 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.
26. 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(1): 28, 2008.

B. Reviews

1. **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.
2. **Al-Chaer, E.D.** and Traub R.J. Biological basis of visceral pain: recent developments. *Pain* 96: 221-225, 2002.
3. Grundy D, **Al-Chaer ED**, Aziz Q, Collins SM, Ke M, Tache Y, Wood JD. Fundamentals of neurogastroenterology: basic science. *Gastroenterology* 130(5):1391-1411, 2006.

C. Articles Submitted / In Press

Wang, J., Gu, C., Garner K.N. and **Al-Chaer, E.D.** Sex differences in the processing of viscerosensory information.

Chaloner, A., Aao, A., **Al-Chaer, E.D.** and Greenwood-van Meerveld B. Repetitive colorectal distention in neonatal rats induces colonic mucosal and muscular dysfunction in adulthood.

D. Other (Book Chapters)

1. Willis, W.D., **Al-Chaer, E.D.**, Quast, M. J. and Westlund, K. N. Evidence for the presence of a visceral pain pathway in the dorsal column of the spinal cord. In *Somatosensory processing: from single neuron to brain imaging*. Editors: Rowe, M.J. and Iwamura Y. pp. 51-75, 2001. Harwood Academic Publishers, Amsterdam, The Netherlands.
2. K. J. S. Anand, A. T. Bhutta, R. W. Hall, C. R. Rovnaghi, and **E. D. Al-Chaer.** Long-term effects of repetitive pain in the neonatal period: neuronal vulnerability, imprinting, and plasticity. In *Neonatal Pain*, Hodgson DM (Ed), Section IV, Chapter 15, pp. 197 – 210, Taylor and Francis Medical Books, London, 2005.

3. **Al-Chaer, E.D.** Descending Modulation of Visceral Pain. In *Descending Modulation of Spinal Nociceptive Processing*. Section Editor: Ronald Dubner. Encyclopedia of Pain. Schmidt R. and Willis W.D. Springer-Verlag, Heidelberg, Germany, 2006, pp. 576-578.
4. **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. Encyclopedia of Pain. Schmidt R. and Willis W.D. Springer-Verlag, Heidelberg, Germany, 2006, pp. 2623-2626.
5. Wood JD, Grundy D, **Al-Chaer ED**, Aziz Q, Collins SM, Ke M, Tache Y. Fundamentals of neurogastroenterology: basic science. In ROME III, The Functional Gastrointestinal Disorders, 3rd Ed. (Drossman et al. Eds.), Degnon Associates, Inc. McLean, VA, pp. 31-88, 2006.
6. **Al-Chaer, E.D.** Postsynaptic Dorsal Column Neurons, Responses to Visceral Input. In *Ascending Transmission of Nociceptive Signals*. Section Editor: Glenn J. Giesler Jr. Encyclopedia of Pain. Schmidt R. and Willis W.D. editors. Springer-Verlag, Heidelberg, Germany, 2006, pp. 1954-1956.
7. **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), Chapter 4, pp. 33-44, Informa Health Care, Inc. New York, NY, 2007.
8. Anand KJS, **Al-Chaer ED**, Bhutta AT and Hall RW. Development of Supraspinal Pain Processing. In: 3rd Edition of "Pain in Neonates & Infants" (Anand, Stevens, McGrath Eds.) Pain Research and Clinical Management, Chapter 3, Elsevier Churchill-Livingstone, Edinburgh, pp. 25-44, 2007.
9. Sternberg W.F. and **Al-Chaer, E.D.** Long-term Consequences of Neonatal and Infant Pain from Animal Models. In: 3rd Edition of "Pain in Neonates & Infants" (Anand, Stevens, McGrath Eds.) Pain Research and Clinical Management, Chapter 5, pp. 57-66, Elsevier Churchill-Livingstone, Edinburgh, 2007.
10. **Al-Chaer, E.D.** and Hyman, P.E. Visceral pain in infancy, In: 3rd Edition of "Pain in Neonates & Infants" (Anand, Stevens, McGrath Eds.) Pain Research and Clinical Management, Chapter 14, pp. 201-210, Elsevier Churchill-Livingstone, Edinburgh, 2007.
11. **Al-Chaer, E.D.** Visceral Pain. In "*Mechanisms of Pain in Peripheral Neuropathy*" (Maxim Dobrestov and Jun Ming Zhang, Eds), chapter 2, pp 29 – 45, 2008.
12. **Al-Chaer, E.D.** The Neuroanatomy of Pain and Pain Pathways, In "*Biobehavioral Approaches to Pain*" (Rhonda J. Moore, Editor), Chapter 2, pp 17 - 44, Springer, New York, 2009.

13. **Elie D. Al-Chaer** and Shelley A. Weaver. Early life trauma and chronic pain. In *"Functional Pain Syndromes: Presentation and Pathophysiology"*, (Emeran A. Mayer and M. Catherine Bushnell, Editors), Chapter 20, pp 423 – 454, IASP press, Seattle, WA, 2009.

E. Abstracts

1. Jabbur, S.J., **El-Chaer, E.**, Atweh, S.F. and Saadé, N.E. Activation of locus coeruleus neurons by dorsal column (DC) stimulation (st). Society for Neuroscience Abstracts, 1991, 17:292.

2. **Al-Chaer, E.D.**, Saadé, N.E., Atweh, S.F. and Jabbur, S.J. Dorsal column input into the nucleus locus coeruleus in cat. Lebanese Association for the Advancement of Science Abstracts, 1992, 11:194.

3. Jabbur, S.J., Atweh, S.F., **Al-Chaer, E.D.** and Saadé, N.E. Modulation of discharges of cuneate neurons (CN) by conditioning stimuli to the lateral and medial vestibular nuclei. Society for Neuroscience Abstracts, 1993, 19:329.

4. Rees, H., Tsuruoka, M., **Al-Chaer, E.D.** and Willis, W.D. Excitation and inhibition of STT cells by stimulation of the pretectal region in the anesthetized primate. J. Physiol. Proc. 4760: 47, 1994.

5. **Al-Chaer, E.D.**, Rees, H., Tsuruoka, M. and Willis, W.D. Facilitation of superficial STT cells by stimulation of the pretectal region in the primate. Society for Neuroscience Abstracts, 1994, 20:548.

6. 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? 10th European Congress of Neurosurgery Abstracts, Berlin 1995.

7. **Al-Chaer, E.D.**, Lawand, N.B., Westlund, K.N. and Willis, W.D. The dorsal column is more important for visceral pain than the spinothalamic tract? Society for Neuroscience Abstracts, 1995, 21:644.

8. Lawand, N.B., **Al-Chaer, E.D.**, Westlund, K.N. and Willis W.D. Administration of morphine and CNQX in the rat sacral cord blocks the responses of dorsal column nuclei (DCN) cells to visceral but not to cutaneous stimulation. Society for Neuroscience Abstracts, 1995, 21:644.

9. **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. The dorsal column: a possible role in visceral hyperalgesia. International Association for the Study of Pain Abstracts, 1996

10. Westlund, K.N., Hirshberg, R.M., Lawand, N.B., **Al-Chaer, E.D.** and Willis, W.D. Anatomical evidence for a visceral pain pathway in the dorsal column. International Association for the Study of Pain Abstracts, 1996

11. **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Modulation of viscerosomatic interactions in the thalamus by dorsal column input. Society for Neuroscience Abstracts, 1996.
12. Westlund, **Al-Chaer, E.D.** and Willis, W.D. The nucleus gracilis (NG): a cross road for pelvic visceral and cutaneous inputs into the thalamus. Society for Neuroscience Abstracts, 1996.
13. **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Effects of colon inflammation on neuronal responses to colorectal distension and cutaneous stimuli. Gulf Coast GI Research Forum, 1996.
14. Rees, H., Houghton, K.A. Chen, P.-S., **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Anterior pretectal inhibition is blocked by spinal administration of strychnine but not blocked by ν_2 -adrenoceptor antagonists in the anaesthetized primate. J. Physiol. Lon. 4950: 20, 1996.
15. **Al-Chaer, E.D.**, Feng, Y., Westlund, K.N. and Willis, W.D. The dorsal column: a role in nociceptive viscerosensory processing in the primate. Society for Neuroscience Abstracts, 1997.
16. Lawand, N.B., **Al-Chaer, E.D.**, Willis W.D. and Westlund, K.N. Metabotropic glutamate receptors in the knee joint: a possible role in peripheral sensitization. Society for Neuroscience Abstracts, 1997.
17. Willis, W.D., Westlund, K.N. and **Al-Chaer, E.D.** Spinal pathways for colorectal input into the solitary nucleus. Society for Neuroscience Abstracts, 1997.
18. Chen, P.S., Houghton, A.K., **Al-Chaer, E.D.**, Westlund, K.N. and Willis, W.D. Responses of primate STT cells and rat dorsal horn cells to noxious cutaneous mechanical and thermal stimulation are inhibited by chemical stimulation of the anterior pretectal nucleus. Society for Neuroscience Abstracts, 1997.
19. **Al-Chaer, E.D.**, Feng, Y., Westlund, K.N. and Willis, W.D. Visceral pain in the primate: a pathway in the dorsal column. Gulf Coast GI Research Forum, 1997.
20. **Al-Chaer, E.D.**, Feng, Y., Wei, J., Gondesens, K., Willis, W.D. and Quast M. Brain activity during noxious visceral stimulation. Experimental Biology 1998 (FASEB).
21. Quast, M.J., **Al-Chaer, E.D.**, Wei, J., Feng, Y., Illangasekare, N., Gonzalez, J.M., Deyo, D., Sell, S., Gondesens, K.J. and Willis, W.D. High resolution fMRI in a monkey model of visceral pain. International Society for Magnetic Resonance in Medicine, 1998.
22. **Al-Chaer, E.D.** and Willis, W.D. Peripheral muscarinic receptors: a role in neuronal sensitization associated with colon inflammation. American Pain Society Abstracts, 1998.

23. **Al-Chaer, E.D.**, Quast M., Feng, Y., Wei, J., Gondesens, K. Illangasekare, N., Deyo, D. and Willis, W.D. Visceral pain: an asymmetric function of the brain? Neurosci. Abstr. 24, p. 1389, 1998.
24. **Al-Chaer, E.D.**, Feng, Y. and Willis, W.D. Quantitative basis for the dorsal column dominant role in visceral pain in the primate. Digestive Diseases Week Abstract, p A-900, 1998.
25. Winston, J., Shenoy, M., Micci, M.A., Toma, H., **Al-Chaer, E.D.**, Hellmich, Embesi, H. J. and Pasricha, P.J. Tumor necrosis factor- α sensitizes primary neonatal sensory neurons in culture: the potential role of NF- κ B in nociception. Gastroenterology 116 (4): G2854.
26. **Al-Chaer, Elie D.** and Pasricha, P.J. Transient colorectal irritation in the neonatal period produces long lasting visceral sensitization in rats: a potential model for IBS and other painful functional bowel disorders. Gastroenterology 116 (4): G4139.
27. Lu, C.L., Winston, J., Shenoy, M., Hellmich, H., **Al-Chaer, Elie D.**, Saban, R., Saban, M., Lai, C.R. and Pasricha, P. J. Changes in neurotransmitter levels and gene expression after noxious mechanical stimulation of the rectum. Gastroenterology 116 (4): G4486.
28. **Al-Chaer, E.D.**, Quast M., Feng, Y., Wei, J., Gondesens and Willis, W.D. Brain imaging of the long term effect of a midline myelotomy on the processing of visceral and somatic pain using fMRI. Ninth World Congress on Pain, Abstracts, p. 391, IASP Press, Vienna, Austria 1999.
29. Pasricha, P.J. and **Al-Chaer, E.D.** Neonatal colon irritation produces long lasting visceral hyperalgesia: a potential model for IBS in rats. Ninth World Congress on Pain, Abstracts, p. 392, IASP Press, Vienna, Austria 1999.
30. 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? Ninth World Congress on Pain, Abstracts, p. 174, IASP Press, Vienna, Austria 1999.
31. **Al-Chaer, E.D.** and Pasricha, P.J. Recurring visceral hyperalgesia is mediated by a dynamic neural exchange along a dorsal horn – thalamus sensitized axis: a new model of IBS in rats. Society for Neuroscience, 29th Annual Meeting, Ft. Lauderdale, FL. Abstracts, p. 400, 1999.
32. Saab, C., Makki, A., Quast, M. J., Wei, J., **Al-Chaer, E. D.** and Willis, W. D. What might be the implications of pain processing by the cerebellum? Society for Neuroscience, 29th Annual Meeting, Ft. Lauderdale, FL. Abstracts, p. 145, 1999.

33. Zhang, H.Q., **Al-Chaer, E.D.**, W.D. Willis and Chen, P.S. Electrophysiological evidence for referred pain in colorectal distension in rat. Society for Neuroscience, 29th Annual Meeting, Ft. Lauderdale, FL. Abstracts, p. 145, 1999.
34. **Al-Chaer, Elie D.** and Pasricha, P.J. A new animal model for chronic visceral hyperalgesia in rats. American Pain Society, 18th Annual Scientific Meeting, Program Book, p. 187, 1999.
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MANUSCRIPTS IN PREPARATION

A. Book Chapters

1. Elie D. Al-Chaer. The neuroanatomy of pain and pain pathways. In "*Handbook of Pain and Palliative Care: Biobehavioral Approaches for the Life Course*", Rhonda J. Moore, Editor, Springer.

B. Original Scientific Articles

1. Wang, J., Peng, X., and Al-Chaer, E.D. Role of N-methyl-D-aspartate (NMDA) receptors in the visceral hypersensitivity to colorectal distension (CRD) in adult rats exposed to neonatal colon irritation (CI).
2. Wang, J., Gu C. and Al-Chaer, E.D. Sex differences in the role of the postsynaptic dorsal column in visceral pain.
3. Chen, P.S., Houghton, A.K., Rees, H., Al-Chaer, E.D., Tsuruoka, M., Westlund, K.N. and Willis, W.D. Evidence of anterior pretectal nucleus evoked inhibition of primate spinothalamic cells using both electrical and chemical stimulation.
4. Al-Chaer, E.D. and Willis, W.D. Visceral information flow into the nucleus *tractus solitarius*: spinal and extraspinal pathways.

RECREATION

You can build your mind, you can build your body and you can build your CV.

[I said that]

Besides a few visits to the gym every now and then, a game of tennis when a partner is available or a hike to the nearest trail when the weather permits, I am not much of a body builder. So, when I am not engaged in activities that build my CV, I immerse myself in problems of geometry, philosophy, knowledge and existence; "mental gymnastics." The mathematician in me likes to draw logical deductions that the philosopher likes to challenge. The geometrician likes to draw lines and to sketch plans in an attempt to realize a nagging idea or give shape to a fleeting dream. The strategist often calls for another game of chess. At the end of the day (or the night), I find myself with an idiosyncratic house plan, a highly critical opinion written in a blog on a website of my design, or on my knees praying for a revelation that will bring me closer to the Truth.

Having said all that, I find the most rewarding activity to be the play-time and quality-time that I spend with my son. Seeing the world through the fresh eyes of a six year old never fails to give me a renewed perspective on life.

APPENDIX

A. Research Philosophy and Approach:

As a scientist, I come from the land of the high-minded yet often curiously parochial primate. I believe that science starts with human interactions: if we want theory and experimental neuroscience to strengthen each other, we must hope for people with different cultures, expertise, perspectives and footwear to leave their prejudices at the door and learn to better appreciate each other's strengths. This is not easy to achieve when human nature makes us shun the unfamiliar and puts us face to face with some of the most bewildering questions in life's highly sophisticated machine "the living organism". Yet, the makeup of my lab team embodies the philosophy of outstanding diversity. We are a group of excellent scientists from different areas of the globe guided by the Truth and limited by our imagination. As their leader, I promote high standards of research so as to advance knowledge and scholarship and encourage improvement and innovation in an environment of excellence, open mindedness, and outreach.

As a neuroscientist, I would consider most of what we do in the lab as descriptive; we try to tie one observation to another through some causal link. Causal links are usually pretty short and linear, even when experiments to establish them are horrendously complex. However, to understand the brain and its collective behavior, we will have to understand a system of interacting elements of befuddling size and combinatorial complexity. Comprehension of the nervous system is very difficult to deduce from knowledge of its basic components; this is when we begin to theorize and bring about a new dimension of explanatory power.

My research explores the neural changes associated with or residual to neonatal injury. Over the past three years, my laboratory has developed an animal model of chronic hypersensitivity and functional disorders. In this model, we expose newborn rat pups to inflammatory or nociceptive treatments and follow their development. The model is used to study the development and plasticity of sensory-motor circuitry, particularly the developmental and sometimes permanent structural, functional and behavioral alterations in the adult organism. In my work, I often collaborate with many of the outstanding research teams in the USA and beyond. My research has important clinical implication, in that many functional behavioral disorders find their roots in neonatal sensory overload or deprivation. The adult animals we study provide a useful tool to model some of the most puzzling human functional disorders (e.g. irritable bowel syndrome) in rats and study the underlying pathology. The long-range aim of my research is to identify specific functional circuits in the nervous system and the neurotransmitters they employ in an attempt to explain some of the complex syndromes of adult functional behaviors in terms of neonatal developmental anomalies.

B. Graduate Research Degrees:

MASTER OF SCIENCE (MS)

American University of Beirut
Field of Research: Neurophysiology
Supervisor: Suhayl J. Jabbur, M.D., Ph.D.

THESIS

Title: Dorsal column input into the nucleus locus coeruleus in cats.
Defense date: July 19, 1991
Advisors: Suhayl J. Jabbur M.D. Ph.D.
Professor, Department of Physiology, AUB
Nayef E. Saadé D.Sc.
Professor and Chairman, Department of Human Morphology, AUB
Committee: Samir Atweh M.D.
Professor and Chairman, Department of Internal Medicine, AUB
Camille Nassar Ph.D.
Professor and Chairman, Department of Physiology, AUB

DOCTOR OF PHILOSOPHY (Ph.D.)

University of Texas Medical Branch at Galveston
Field of Research: Neuroscience
Supervisor: William D. Willis, M.D., Ph.D.

DISSERTATION PROPOSAL

Title: Visceral input into the ventral posterolateral nucleus of the thalamus: a pathway in the fasciculus gracilis involving the postsynaptic dorsal column system.
Presentation date: January 18, 1994

DISSERTATION

Title: The dorsal column: a dynamic interactive polymodal channel for visceral and somatic information
Defense date: October 24, 1996
Supervisor: William D. Willis Jr., M.D., Ph.D.
Cecil H. and Ida M. Green Professor
Chairman, Dept. Anatomy and Neurosciences,
Director, Marine Biomedical Institute, UTMB
Committee: Jin Mo Chung, Ph.D.
Professor, Dept. of Anatomy and Neurosciences, UTMB
Robert D. Foreman, Ph. D.
Professor and Chairman, Dept. of Physiology and Biophysics,
University of Oklahoma
Haring Nauta, M.D., Ph.D.
Director, Division of Neurosurgery, UTMB
Luis Reuss, M.D.
Professor and Chairman, Dept. of Physiology and Biophysics,
UTMB
Karin N. Westlund, Ph.D.
Professor, Dept. of Anatomy and Neurosciences, UTMB