

**BIOGRAPHICAL SKETCH**

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NAME Lin Chang, M.D.	POSITION TITLE Professor of Medicine		
eRA COMMONS USER NAME changl2			
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
University of California, Los Angeles, CA	B.S.	1978-1982	Biochemistry
UCLA School of Medicine	M.D.	1982-1986	Medicine
Harbor-UCLA Medical Center	M.D.	1986-1989	Internal Medicine
UCLA Affiliated GI Fellowship Training Program	M.D.	1989-1992	Gastroenterology

**A. Positions and Honors.****Positions and Employment**

- 1992 – 1993 Associate Consultant, Gastroenterology, Mayo Clinic, Rochester, MN
- 1993 – 1997 Assistant Professor of Medicine, UCLA School of Medicine, Department of Medicine, Div. of Gastroenterology, Harbor-UCLA Medical Center
- 1997 – 2000 Adjunct Assistant Professor of Medicine, UCLA School of Medicine, Div. of Digestive Diseases, UCLA
- 2000 – 2006 Associate Professor of Medicine, David Geffen School of Medicine at UCLA, Div. of Digestive Diseases. Co-Director, Center for Neurovisceral Sciences and Women's Health
- 2006 – Present Professor of Medicine-in-Residence, David Geffen School of Medicine at UCLA, Div. of Digestive Diseases. Co-Director, Center for Neurovisceral Sciences and Women's Health

**Honors**

- 1995 Auxiliary Award, American College of Gastroenterology
- 2002 Janssen Award in Gastroenterology, Basic or Clinical Research
- 2002 Women in Gastroenterology and Wyeth Award for Gender Based Research, ACG

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

- Munakata J, Naliboff B, Harraf F, Kodner A, Lembo T, **Chang L**, Silverman DHS, Mayer EA. Repetitive sigmoid stimulation induces rectal hyperalgesia in patients with irritable bowel syndrome. *Gastroenterology* 1997;112:55-63.
- Naliboff BD, Munakata J, **Chang L**, Mayer EA. Toward a biobehavioral model of visceral hypersensitivity in irritable bowel syndrome. *J Psychosom Res* 1998;45:485-492.
- Schmulson M, Lee O, **Chang L**, Naliboff B, Mayer EA. Symptom differences in moderate to severe IBS patients based on predominant bowel habit. *Am J Gastroenterol* 1999;94:2929-2935.
- Mayer EA, Naliboff B, Lee O, Munakata J, **Chang L**. Gender-related differences in functional gastrointestinal disorders. *Aliment Pharmacol Ther* 1999;13:65-69.
- Chang L**, Mayer EA, FitzGerald L, Stains J, Naliboff B. Differences in somatic perception in patients with irritable bowel syndrome with and without fibromyalgia. *Pain* 2000;84:297-307.
- Schmulson M, **Chang L**, Naliboff B, Lee O, Mayer EA. Correlation of symptom criteria with perception thresholds during rectosigmoid distension in irritable bowel syndrome. *Am J Gastroenterol* 2000;95:152-156.
- Lee OY, FitzGerald LZ, Naliboff B, Liu C, Schmulson M, Fullerton S, Mayer EA, **Chang L**. Impact of advertisement and clinic populations in symptoms and perception of irritable bowel syndrome. *Aliment Pharmacol Ther* 2000;13:1631-1638.

8. **Chang L**, Munakata J, Mayer EA, Schmulson MJ, Johnson TD, Bernstein CN, Saba L, Naliboff B, Anton PA, Matin K. Perceptual responses in patients with inflammatory and functional bowel disease. *Gut* 2000;47:497-505.
9. Berman S, Munakata J, Naliboff B, **Chang L**, Mandelkern MA, Silverman D, Kovalik E, Mayer EA. Gender differences in regional brain response to visceral pressure in IBS patients. *Eur J Pain* 2000;4:157-172.
10. Naliboff B, Derbyshire SWG, Munakata J, Berman S, Mandelkern M, **Chang L**, Mayer EA. Cerebral activation in irritable bowel syndrome patients and control subjects during rectosigmoid stimulation. *Psychosom Med* 2001;63:365-375.
11. Lee OY, Mayer EA, Schmulson M, **Chang L**, Naliboff B. Gender related differences in irritable bowel syndrome symptoms. *Am J Gastroenterol* 2001;96:2184-2193.
12. **Chang L**, Lee OY, Naliboff B, Schmulson M, Mayer EA. Bloating and abdominal distension symptoms in patients with irritable bowel syndrome. *Am J Gastroenterol* 2001;96:3341-3347.
13. Mayer EA, Naliboff BD, **Chang L**, Coutinho SV. Stress and irritable bowel syndrome. *Am J Physiol Gastrointest Liver Physiol* 2001;280:G519-524.
14. Berman SM, **Chang L**, Suyenobu B, Derbyshire SW, FitzGerald L, Mandelkern M, Hamm L, Vogt B, Naliboff BD, Mayer EA. Condition-specific deactivation of brain region by 5-HT<sub>3</sub> receptor antagonist alosetron. *Gastroenterology* 2002;123:969-977.
15. Sach J, Bolus R, Fitzgerald L, Naliboff BD, **Chang L**, Mayer EA. Is there a difference between abdominal pain and discomfort in moderate to severe IBS patients? *Am J Gastroenterol* 2002;97:3131-8.
16. Heitkemper M, Elta G, Carter EG, Ameen V, Olden KW, **Chang L**. Women with Irritable Bowel Syndrome: Differences in Patients' and Physicians' Perceptions. *Gastroenterol Nurs* 2002;25:192-200.
17. **Chang L**, Heitkemper MM. Gender Differences in Irritable Bowel Syndrome. *Gastroenterology* 2002;123:1686-1701.
18. Naliboff BD, Berman S, **Chang L**, Derbyshire SW, Suyenobu B, Vogt BA, Mandelkern M, Mayer EA. Sex-related differences in IBS patients: Central processing of visceral stimuli. *Gastroenterol* 2003;124:1738-47.
19. **Chang L**, Berman S, Mayer EA, Suyenobu B, Derbyshire S, Naliboff B, Vogt B, FitzGerald L, Mandelkern MA. Brain responses to visceral and somatic stimuli in patients with irritable bowel syndrome with and without fibromyalgia. *Am J Gastroenterol* 2003;98:1354-1361.
20. Schwetz I, Naliboff B, Munakata J, Lembo T, **Chang L**, Matin K, Ohning G, Mayer EA. Anti-hyperalgesic effect of octreotide in patients with irritable bowel syndrome. *Aliment Pharmacol Ther* 2004;19:123-131.
21. Spiegel BM, Gralnek IM, Bolus R, **Chang L**, Dulai GS, Mayer EA, Naliboff B. Clinical determinants of health-related quality of life in patients with irritable bowel syndrome. *Arch Intern Med* 2004;164:1773-1780.
22. Mayer EA, Berman S, **Chang L**, Naliboff BD. Sex-based differences in gastrointestinal pain. *Eur J Pain* 2004;8:451-463.
23. Mayer EA, Berman S, Suyenobu B, Labus J, Mandelkern MA, Naliboff B, **Chang L**. Brain responses to visceral pain between male patients with irritable bowel syndrome and ulcerative colitis. *Pain* 2005;115(3):398-409.
24. **Chang L**, Ameen VZ, Dukes G, McSorley DJ, Mayer EA. A dose-ranging, phase II study of the efficacy and safety of alosetron hydrochloride (Lotronex®) in men with diarrhea-predominant IBS. *Am J Gastroenterol* 2005;100:115-123.
25. Tillisch K, Labus JS, Naliboff BD, Bolus R, Shetzline M, Mayer EA, **Chang L**. Characterization of the alternating bowel habit subtype in patients with irritable bowel syndrome. *Am J Gastroenterol* 2005; 100(4):896-904
26. Dunckley P, Wise R, Painter D, Brooks J, Tracey I, Aziz Q, **Chang L**. Cortical processing of visceral and somatic stimulation - differentiating pain intensity from unpleasantness. *Neurosci* 133(2):533-42, 2005.
27. Dunckley P, Wise RG, Fairhurst M, Hobden P, Aziz Q, **Chang L**, Tracey I. A comparison of visceral and somatic pain processing in the human brainstem using fMRI. *J Neurosci* 2005;25(32):7333-41.
28. Tillisch K, Mayer EA, Labus JS, Stains J, **Chang L**, Naliboff BD. Gender-specific alterations in autonomic function among patients with irritable bowel syndrome. *Gut* 2005;28: 54(10):1396-1401.
29. **Chang L**. Neuroendocrine and Neuroimmune Markers in IBS: Pathophysiological role or epiphenomenon? *Gastroenterology* 2006;130:596-600.
30. **Chang L**, Chey WD, Harris L, Olden K, Surawicz C, Schoenfeld P. Incidence of ischemic colitis and serious complications of constipation among patients using alosetron: Systematic review of clinical trials and post-marketing surveillance data. *Am J Gastroenterol* 2006; 101(5):1069-79.

### **C. Research Support**

#### **Ongoing Research Support**

R01 AR46122-01 Chang (PI) 07/01/99 – 01/31/11 55% effort

NIH  
Neuroendocrine Alterations in Fibromyalgia and IBS  
Initial grant: This study has the goal of comparing perceptual, neuroendocrine, autonomic, and CNS responses in irritable bowel syndrome (IBS) and fibromyalgia.  
Renewal grant: This study assesses the role of enhanced pain amplification mechanisms of heightened attention and symptom-specific anxiety in IBS and fibromyalgia.  
Role: PI

1P50 DK64539-01 Mayer (PI) 09/30/02 – 08/31/07 30% effort

NIH P50 Center Grant  
Women's Center for Functional Visceral Disorders  
Project 3: Sex differences in neuroendocrine and immunologic responses in IBS  
The goals of this project are: 1) To identify if the basal levels of the central stress response systems, the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system (SNS), differ in men and women with irritable bowel syndrome (IBS). 2) To determine stress-induced responsiveness of the HPA axis and SNS differ in men and women with IBS. 3) To determine if IBS patients have altered plasma and mucosal cytokine production during IBS symptom exacerbation and if these responses are associated with changes in HPA and SNS responsiveness and visceral sensitivity.  
Role: PI – Proj. 3

M01-RR00865 Levey (PI) 12/01/01 – 11/30/06 10% effort

NIH/NCRR  
General Clinical Research Center  
The aim of this study is to participate in the general clinical research center for clinical research projects.  
Role: Co-I

GlaxoSmithKline – Investigator-initiated Chang (PI) 11/01/03-12/31/07 5% effort

Study # RA03-18  
Colonic mucosal immune markers in IBS  
The aims of this study are to determine in colonic mucosal tissue specimens taken from IBS patients, compared to controls: 1) the number of colonic tissue enterochromaffin cells, lymphocytes and mast cells 2) gene microarray analysis for cytokines in colonic mucosal tissue, and 3) distribution of a variety of neurotransmitters, receptors, ion channels, and enzymes in the colonic mucosal tissue samples including peptides and receptors of the CRF system, calcium activated potassium channels (SK and IK channels), receptors for 5-HT, and receptors of the PAR family, and levels of iNOS.  
Role: PI

#### **Completed Research Support**

14278 Mayer (PI) 01/01/97 – 06/30/03

AstraZeneca  
Basic and Clinical Studies in Functional GI Disorders  
The major goals of this program are to develop new pharmacological treatments for functional digestive diseases. Specific research projects address: 1) development of techniques for visceral sensitivity testing in rats, mice and humans; 2) examination of potential treatment compounds in animal models; 3) cellular and molecular mechanisms of visceral sensation; and 4) human trials.  
Role: Co-Investigator

R01 NR04881 Naliboff (PI) 07/01/98 – 06/30/01

NIH

**Gender Related Differences in Visceral Sensitivity in IBS**

The major goals of this project are: 1) Compare symptoms, visceral sensitivity and regional brain activation using PET in male and female patients with IBS; 2) Compare symptoms, visceral sensitivity and regional brain activation in female patients with IBS at two time points during their menstrual cycle.

Role: Co-Investigator

GlaxoWellcome Investigator Initiated Chang (PI) 09/01/00 – 12/31/01

A Pilot Study to Assess Nocturnal Autonomic Arousal in Female Subjects with Diarrhea-Predominant Irritable Bowel Syndrome as Compared with Healthy Controls

The aim of this study is to compare sleep patterns, autonomic and neuroendocrine responses, and colonic motility in female subjects with IBS and healthy controls.

Role: PI

Novartis Investigator Initiated Chang (PI) 07/01/03 – 06/30/05

Characterization of Irritable Bowel Syndrome with Alternating Bowel Habits

The aim of this study is to characterize symptoms in the IBS subgroup with alternating bowel habits and to compare symptom severity, extraintestinal and psychological symptoms and health related quality of life with the other two IBS subgroups with diarrhea predominance and constipation predominance.

Role: PI

R01 DK48351 Mayer (PI) 07/01/01 – 05/31/06

NIH

Perception and Modulation of Visceral Sensations

The major goals of this project are: 1) Compare rectal sensitivity in patients with IBS, inflammatory bowel disease and controls; 2) Compare rectal and esophageal sensitivity in IBS patients; 3) Using PET imaging, examine the brain regions associated with rectal and esophageal stimulation in patients with IBS, inflammatory bowel disease, and controls; 4) Examine opioid mechanisms of visceral sensitivity using naloxone challenge.

Role: Co-Investigator