BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Chung Owyang, M.D.	Professor of Internal Medicine
eRA COMMONS USER NAME (credential, e.g., agency login) COWYANG	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
McGill University, Montreal, Canada	BS	1968	Biochem
McGill University, Montreal Canada	MD	1972	Medicine
Montreal General Hospital, Quebec	Intern/Res	1972-75	Medicine
Mayo Graduate School of Medicine, Rochester, MN	Fellowship	1975-1978	Medicine-Gastroenterology
American College of Physicians	FACP	1981	Int Med

1. Positions and Honors. .

1972-73: Intern in Internal Medicine, Montreal General Hospital, Quebec, Canada
1978-1984: Assistant Professor, University of Michigan, Ann Arbor, MI
1983-93: Director, Gastrointestinal Physiology Laboratory, University of Michigan, Ann Arbor, MI
1984-1988: Associate Professor, University of Michigan, Ann Arbor, MI
1984-1995: Associate Director, Michigan Gut Peptide Research Center, Univ of Michigan, Ann Arbor, MI
1988-present: Professor, University of Michigan, Ann Arbor, MI
1991-present: Chief, Division of Gastroenterology, University of Michigan, Ann Arbor, MI
1992-present: Director, Digestive Health Institute, University of Michigan, Ann Arbor, MI
1995-present: Director, Michigan Gut Peptide Research Center, University of Michigan, Ann Arbor, MI

Honors and Awards:

NIH (General Medicine Study Section II) (1988-1993)
Editorial Boards: Am J Physiology, Gastroenterology, Pancreas, Textbook of Gastroenterology
Associate Editor, Am J Physiol (1999-2003)
Member of Am Society of Clin Investigation and Am Assoc of Physicians
Council, Am Gastroenterological Association
JB Kirsner Award for Distinguished Achievement in Clinical Research in Gastroenterology (AGA 1995)
Janssen Award in Gastroenterology (AGA 1995)
H. Marvin Pollard Chair in Gastroenterology (University of Michigan, 1996)
President, American Motility Society (2000-2004)
Milford Rouge Lecture, Baylor University, Dallas, Texas (2005)
Kramer Lecture, Boston University Medical Center (2006)
American Pancreatic Association Annual Meeting, State of the Art Lecture, Chicago, IL (2007)

2. Selected peer-reviewed publications. A selected list of recent representative publications since 1995 follows:

1. Takahashi T, Owyang C. Vagal control of nitric oxide and vasoactive intestinal polypeptide release in the regulation of gastric relaxation. J Physiol (Lond), 484:481-492, 1995.
2. Li Y, Hao YB, Owyang C. Evidence for autoregulation of CCK secretion during diversion of bile pancreatic juice in rats. Gastroenterology 109:231-238, 1995.
3. Chey WD, Kim M, Hasler WL, Owyang C. Hyperglycemia alters perception of rectal distention and blunts the rectoanal inhibitory reflux in healthy volunteers. Gastroenterology 108:1700-1708, 1995.
4. Lu Y, Owyang C. Secretin at physiological doses inhibits gastric motility via a vagal afferent pathway. Am J Physiol 268:G1012-G1016, 1995.

5. Li Y, Owyang C. Peptone stimulates CCK-releasing peptide secretion by activating intestinal submucosal cholinergic neurons. J Clin Invest 97:1463-1470, 1996.
6. Takahashi T, Owyang C. Impaired intracellular signal transduction in gastric smooth muscle of diabetic BB/W rats. Am J Physiol 270:G411-G417, 1996.
7. Herzig KH, Schön I, Tatemoto K, Ohe Y, Li Y, Fölsch UR, Owyang C. Diazepam binding inhibitor is a potent cholecystokinin releasing peptide in the intestine. Proc Natl Acad Sci (USA) 93:7927-7932, 1996.
8. Takahashi T, Owyang C. Characterization of vagal pathways mediating gastric accommodation reflex in rats. J Physiol (Lond) 504.2:479-488, 1997.
9. Li Y, Hao YB, Owyang C. High affinity CCK-A receptors on the vagus mediate CCK-stimulated pancreatic secretion in rats. Am J Physiol 273:G679-G685, 1997.
10. Li Y, Zhu J, Owyang C. Electrical physiological evidence for high- and low-affinity vagal CCK-A receptors. Am J Physiol 277 (Gastrointest Liver Physiol) (40): G469-G477, 1999.
11. Yazdani A, Takahashi T, Bagnol D, Watson SJ, Owyang C. Orphanin FQ-a newly discovered neuropeptide; its distribution and functional significance in rat gastrointestinal tract. Gastroenterology 116:108-117, 1999.
12. Li Y, Hao Y, Owyang C. Diazepam-binding inhibitor mediates feedback regulation of pancreatic secretion and postprandial release of cholecystokin. J Clin Invest 105:351-359, 2000.
13. Takahashi T, Mizuta Y, Owyang C. Orphanin FQ, but not dynorphin A, accelerates colonic transit in rats. Gastroenterology 119:71-79, 2000.
14. Ladabaum U, Minoshima S, Owyang C. Pathobiology of visceral pain: Molecular mechanisms and therapeutic implications. V. Central nervous system processing of somatic and visceral sensory signals. Am J Physiol 279 (Gastrointest Liver Physiol) G-1-G6, 2000.
15. Zhu JX, Wu XY, Owyang C, Li Y. Intestinal serotonin acts as a paracrine substance to mediate vagal signal transmission evoked by luminal factors in the rat. J of Physiol (Lond) 530.3:341-442, 2001.
16. Curro D, Yoo JH, Anderson M, Song I, Del Valle J, Owyang C. Molecular cloning of the orphanin FQ receptor gene and differential tissue expression of splice variants in rat. Gene 266:139-145, 2001.
17. Sun WM, Hasler WL, Lien HC, Montague J, Owyang C. Nizatidine enhances the gastrocolonic response and the colonic peristaltic reflex in humans. J Pharm Exp Ther 299:159-163. 2001.
18. Bjornsson E, Chey WD, Hooper F, Woods M, Owyang C, Hasler W. Impaired gastrocolonic response and peristaltic reflex in slow transit constipation: Role of $5HT_3$ pathway. Am J Physiol 283: G400-G407, 2002.
19. Lankisch TO, Tsunoda Y, Lu YX, Owyang C. Characterization of CCKA receptor affinity states and Ca2+ signal transduction in vagal nodose ganglia. Am J Physiol 282: G1002-G1008, 2002.
20. Lankisch TO, Tsunoda Y, Lu YX, Owyang C. Characterization of CCKA receptor affinity states and Ca2+ signal transduction in vagal nodose ganglia. Am J Physiol 282: (Gastrointest Liver Physiol) G1002-G1008, 2002.
21. Owyang C, Hasler WL. Physiology and pathophysiology of the interstitial cells of cajal: From bench to bedside VI. Pathogenesis and therapeutic approaches to human gastric dysrhythmias. Am J Physiol 283 (Gastrointest Liver Physiol) G8-G15, 2002.
22. LiY, Owyang C. Musing on the wanderer: What's new in our understanding of vago-vagal reflexes? Remodeling of the vagus and enteric neural circuitry after vagal injusry. Am J Physiol 285:G461-G469, 2003.
23. Li Y, Wu X, Zhu J, Yan J, Owyang C. Hypothalamic regulation of pancreatic secretion is mediated by central cholinergic pathways in the rat. J Physiol (Lond) J Physiol 552.2:571-587, 2003.
24. DiMagno MJ, Hao Y, Tsunoda Y, Williams JA, Owyang C. Secretagogue-stimulated pancreatic secretion is differentially regulated by constitutive nitric oxide synthase isoforms in mice. Am J Physiol (Gastorintest Liver Physiol) 286(3):G428-36, 2004.
25. Tsunoda Y, Song I, Taylor LP, Owyang C. Structure-activity function for binding and signaling in CHO-K1 and COS-7 cells expressing the cholecystokinin A receptor. Biochem & Biophys Research Comm 314:861-869, 2004.
26. Gonlachanvit S, Coleski R, Owyang C, Hasler WL. Inhibitory actions of a high fiber diet on intestinal gas transit in healthy humans. Gut. 53: 1577 – 1582, Nov 2004.
27. Owyang C, Logsdon CD. New insights into neurohormonal regulation of pancreatic secretion. Gastroenterology127:957-969, 2004.

28. Grabauskas G, Zhou SY, Das S, Lu Y, Owyang C, Moises HC. Prolactin-releasing peptide affects gastric motor function in rat by modulating synaptic transmission in the dorsal vagal complex. J Physiol. 561.3:821-839, 2004.
29. Li Y, XY Wu, Owyang C. Serotonin and cholecystokinin synergistically stimulate rat vagal primary afferent neurons. Am J Physiol. Gastrointest Liver Physol 289:G745-G752, 2005.
30. Wu XY, Zhu JX, Gao J, Owyang C, Li Y. Neurochemical phenotype of vagal afferent neurons activated to express C-FOS in response to luminal stimulation in the rat. Neurosci 130(3):757-767, 2005.
31. DiMagno MJ, Lee SH, Hao Y, Zhou SY, McKenna BJ, Owyang C. A proinflammatory, antiapoptotic phenotype underlies the susceptibility to acute pancreatitis in cystic fibrosis transmembrane regulator (-/-) mice. Gastroenterology 129:665-681, 2005.
32. Li Y, Wu XY, Yao H, Owyang C. Secretin activates vagal primary afferent neurons in the rat: evidence from electrophysiological and immunohistochemical studies. Am J Physiol (Gastrointest Liver Physiol) 289:G745-G752, 2005.
33. Gao J, Wu XY, Owyang C, Li Y. Enhanced responses of the anterior cingulated cortex neurons to colonic distension in viscerally hypersensitive rats. J Physiol 570:169-183, 2006.
34. Li Y, Wu X, Zhao Y, Chen S, Owyang C. Ghrelin acts on the dorsal vagal complex to stimulate pancreatic protein secretion. Am J Physiol (Gastrointest Liver Physiol) 290:G1350-1358, 2006.
35. Coleski R, Owyang C, Hasler WL. Modulation of intestinal gas dynamics in healthy human volunteers by the 5-HT receptor agonist tegaserod. Am J Gastroenterol 101:1858-1865, 2006.
36. Gonlachanvit S, Coleski R, Owyang C, Hasler WL. Nutrient modulation of intestinal gas dynamics in healthy humans: dependence on caloric content and meal consistency. Am J Physiol (Gastrointest Liver Physiol) 291:G389-G395, 2006.
37. Reddy RC, Hao Y, Lee SH, Gangireddy SR, Owyang C, DiMagno MJ. Pioglitazone reverses insulin resistance and impaired CCK-stimulated pancreatic secretion in eNOS (-/-) mice: therapy for exocrine pancreatic disorders? Am J Physiol Gastrointest Liv Physiol 293:G112-G120, 2007.
38. Zhou SY, Lu YX, Yao HR, Owyang C. Spatial organization of neurons in the dorsal motor nucleus of the vagus synapsing with intragastric cholinergic and nitric oxide/VIP neurons in the rat. Am J Physiol Gastrointest Liver Physiol 294:G1201-9, 2008.
39. Zhou SY, Lu YX, Owyang C. Gastric relaxation induced by hyperglycemia is mediated by vagal afferent pathways in the rat. Am J Physiol Gastrointest Liver Physiol 294:G1158-64, 2008.
40. Cao Z, Wu X, Chen S, Zhang R, Owyang C, Li Y. Anterior cingulated cortex modulates visceral pain as measured by visceromotor responses in viscerally hypersensitive rats. Gastroenterology 134:535-543, 2008.
41. Wu X, Gao J, Yan J, Fan J, Owyang C, Li Y. Role for NMDA receptors in visceral nociceptive transmission in the anterior cingulated cortex of viscerally hypersensitive rats. Am J Physiol Gastrointest Liver Physiol 294:G918-27, 2008.
42. Owyang C. Recent advances and future research directions on neurogastroenterology and endocrinology. Neurogastroenterol Motil 20;1189-1203, 2008.
43. Chen S, Wu X, Cao Z, Fan J, Wang M, Owyang C, Li Y. Subdiaphragmatic vagal afferent nerves modulate visceral pain. Am J Physiol Gastrointest Liver Physiol 294:G1441-9, 2008.
44. Fan J, Wu X, Cao Z, Chen S, Owyang C, Li Y. Up-regulation of anterior cingulate cortex NR2B receptors contributes to visceral pain responses in rats. Gastroenterology, 136:1732-1740e.3, 2009.
45. Lu Y, Owyang C. Secretin-induced gastric relaxation is mediated by vasoactive intestinal polypeptide and prostaglandin pathways. Neurogastroenterol Motil, 21:754-e47, 2009.

Research Support

ONGOING

R01 DK058913 (Owyang) 04/01/07–03/31/12
NIH
Mechanism of Glucose Sensing in Nodose Ganglia in GI Motility
This study examines the hypothesis that glucose sensory neurons responsive to hyper- and hypo-glycemia are present in the nodose ganglia and utilize the product of intracellular glucose metabolism to regulate their activities and transmitter release

R01 DK048419 (Owyang) 04/01/04-09/30/09 (NCTX)
NIH
Vagal Action of CCK in Mediating GI Function
This proposal examines whether CCK mediates pancreatic secretion and satiety using two different vagal afferent signaling pathways.

P30 DK034933 (Owyang) 12/01/05-11/30/10
NIH
Gastroenterology Hormone Research Core Center
This grant funds seven core laboratories, program enrichment activities, and pilot feasibility projects.

RO1 NS051466 (Owyang) 1/15/09-12/30/09
NIH
ACC sensitization in visceral hypersensitive rats
The major goals of this project are to investigate anterior cingulate cortex (ACC) neuronal plasticity and functional implications in the viscerally hypersensitive animal models

T32 DK007367 (Owyang) 07/01/05–06/30/10
NIH
Training for Research in Gastroenterology
The objective of this program is to educate qualified physicians and Ph.D.'s in research techniques to prepare them for careers in independent gastroenterological research as faculty members in academic institutions.

U54 CA136429 Wang (PI) 10/1/08–9/30/13
NIH
Role: Co-I
In Vivo Detection of Neoplasia in the Digestive Tract
The broad, long-term objective of this research plan is to establish a Network for Translational Research to develop a novel integrated optical imaging methodology that uses fluorescent-labeled peptides to target the presence of pre-malignant (dysplastic) tissue in vivo for the early detection of cancer in the GI tract.

Olympus Corp. (Owyang) 7/1/09-6/30/10
A toxicology study of fluorescence labeled peptides
This study conducts pre-clinical studies to evaluate the use of a peptide to support an IND application.

RECENT

1 R21 DK074477 (Hoogerwerf) 05/15/07 – 03/31/09
NIH
Role of Clock Genes in Colonic Motility
Role: Co-Investigator
This award aims to test the hypothesis that changes in the light/dark cycle and feeding schedule affect colonic motility through clock genes.

R01 DK061423 (Owyang) 04/01/03 - 02/28/07
NIH
Control of Vagal Neurons & Gastric Function by Hypocretin
The major objective of this study is to define the cellular and synaptic actions of HCRT peptides and OT in the DMV and ascertain how they relate to the more global influence that these peptidergic inputs have on gastric related functions.