

CURRICULUM VITAE

MRINALINI CHATTA RAO

Professor, Department of Physiology and Biophysics
University of Illinois at Chicago

Vice President for Academic Affairs
University of Illinois
(July 2007 – October 2011)

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Professor, Department of Physiology and Biophysics
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Formerly, Vice President for Academic Affairs (July 2007- October 2011)
University of Illinois

EDUCATION:

1969 B.Sc. (with honors) Botany, University of Delhi, India
1971 M.Sc. Botany, University of Delhi, India
1972 Diploma in Molecular Biochemistry, Indian Institute of Science, Bangalore, India
1974 M.S., Cellular and Molecular Biology, University of Michigan
1977 Ph.D., Cellular and Molecular Biology, University of Michigan

PROFESSIONAL EXPERIENCE:

Sept. 1996 - present Professor, Department of Physiology and Biophysics, University of Illinois at Chicago and Joint Appointment, Professor, Department of Medicine Section of Digestive Diseases and Nutrition, University of Illinois at Chicago

July 2007 – October 2011 Vice President for Academic Affairs, University of Illinois

Nov. 2002 - July 2007 Vice Provost for Faculty Affairs (75%), University of Illinois at Chicago

Dec. 2001 - Nov. 2002 Executive Associate Dean (75%), Graduate College, University of Illinois at Chicago

Sept. 1999 - Dec. 2001 Associate Dean (50%), Graduate College, University of Illinois at Chicago

Sept. 1989 - 1996 Associate Professor, Department of Physiology and Biophysics, and Joint Appointment, Department of Medicine Section of Digestive and Liver Diseases, University of Illinois at Chicago

Jan. 1984 - 1989 Assistant Professor, Department of Physiology and Biophysics, University of Illinois at Chicago

1980 - 1983 Research Associate (Assistant Professor), Department of Medicine, The University of Chicago

1977 - 1980 Research Associate/NIH Postdoctoral Fellow, Department of Medicine, The University of Chicago

1973 - 1977 Predoctoral Fellow, Ford Foundation

1966 - 1972 National Science Talent Scholar, Government of India

ADMINISTRATIVE POSITIONS:

Vice President for Academic Affairs (July 2007-October 2011), University of Illinois:

The University of Illinois is the best and most comprehensive public university in the state of Illinois. The institution has three campuses, in Chicago, Springfield and Urbana-Champaign, each with distinct priorities and aspirations. However, all share a commitment to missions of excellence in teaching, research, public service and economic development. The Chicago campus has a full complement of health science colleges and is the principal educator of health science professionals for the state. Fulfilling the land grant mission, the Urbana-Champaign campus includes agricultural and veterinary medicine colleges while being a world leader in engineering and super computing, whereas the Springfield campus aims to be among the best liberal arts public education institutions with a rich portfolio of award-winning online offerings. Over 70,000 students are enrolled in undergraduate, graduate and professional programs at the three campuses and thousands more take classes off-campus. Recent efforts focus on scholarship initiatives to continue providing access to excellent and affordable education. The university also offers more than 700 public service and outreach programs. The university employs more than 5,500 faculty, 29,500 staff and graduate assistants and has a budget of more than \$4 billion, including extramural research funding. The University is a critical asset to the state and its impact on Illinois' economy is roughly \$17 for every dollar the state has invested.

The Vice President for Academic Affairs (VPAA) is the chief academic officer of the University of Illinois and is one of four vice presidents reporting to the president. During my tenure, I served three Presidents [B. J. White: 2007-2010; S. O. Ikenberry: Jan 2010 – July 2010; M.J. Hogan July 2010-October 2011]. The functions of this office, some of which were formulated during my term are summarized below.

- Worked closely with the chancellors and provosts of the Chicago, Springfield, and Urbana-Champaign campuses in defining and shaping strategic academic priorities and directions for the University, leading key academic initiatives and guiding important academic policy.
- With the Vice-President and Chief Financial Officer/Comptroller, developed the budget for the university.
- Launched the first-ever system-wide initiative on examination of diversity issues across the three campuses by establishing the Diversity Task Force in 2007. Led this task force, with membership from each of the three campuses and central administration to share best practices and examine how diversity can be made foundational at the University of Illinois. Three direct outcomes of these efforts, funded by the office of the VPAA, were:
 - Hosted the university's inaugural Diversity Summit, bringing together leadership from each campus's faculty, administration, staff and students on October 15-16, 2009. This Summit became a bi-annual event to have an ongoing conversation on diversity, an opportunity to share best practices and to make diversity foundational at the university.
 - Launched the President's Research in Diversity Travel Award for students from across the three campuses. Intended as an annual offering, the overwhelming response rate (60 applications for 5 potential awards) resulted in making this a bi-annual offering.
 - Launched a new annual series entitled the Presidential Lecture on Diversity. The inaugural lecture was held on October 10, 2011 and the speaker was Professor Richard Tapia, Rice University and 2012 winner of the National Medal of Science.

- Led the campuses in reforming the policies associated with the Presidential Award Program, to support underrepresented students, including those from underserved counties and below the poverty line. This program, promoting access to excellence, was started in the early 1990's and had not seen any growth in resource allocation for a decade. Provided compelling data, new criteria and rationale to promote access and excellence, for the President to commit an additional 66% to the PAP budget by reallocation.
- Spear-headed the first system-wide Climate Survey; this census survey of nearly 100,000 participants, included all students, staff and faculty of the University of Illinois across its campuses. Charged by President Hogan in December 2010, this effort involved extensive discussions across various stake-holder groups and was administered in late October 2011.
- Led cross-campus discussions to share best practices and define areas of synergy on enrollment management, articulation agreements with community colleges and merit and need-based financial aid programs. These were folded into the external review process initiated by President Hogan in February 2011.
- With the CFO, was responsible for university-wide human resources, including addressing compliance with state and federal regulations.
- Worked with the Vice President for Research (formerly known as VP for Technology and Economic Development {VP-TED}), the provosts and the campus Vice Chancellors for Research, to foster inter-campus initiatives and to address university-wide regulatory issues such as management of conflicts of interest and commitment.
- Successfully led a 2-year effort culminating in the adoption of an extensively revised university-wide policy on the conflict of interest and commitment (last updated in 1998).
- From January 2009 – October 2011, the VPAA and CFO co-chaired a leadership team comprised of the VP-Research (VP-TED) and provosts in developing strategies for resource management so that more revenue could be allocated to the academic front lines – student instruction and support and faculty research. The fourth vice presidential position (VP for Health Affairs) was added to the President's cabinet in February 2011.
- The VPAA led a university-wide examination of human resource policies and practices, since 70-80% of expenditures are in personnel costs. This was triggered by the downturn in the economy and severely compounded by the State of Illinois delaying the payment of appropriated funds to the University. {In December 2009, the state had paid only \$46 million of the \$485 million billed /owed to the University of Illinois}. The discussions included representation from shared governance groups and the transparency allowed then President Ikenberry to launch an accepted, one-time tiered furlough plan with administration officials taking a larger furlough burden.
- Reported to the Board of Trustees and its subcommittees on matters pertaining to academic affairs, including diversification of the student population and the work force. Served as the chief coordinator for presentations pertaining to academic and student affairs, including diversity.
- Worked closely with the University Senates Conference, a faculty governance group spanning the three campuses on a variety of policies and issues central to the academic mission.
- Worked with the office of Governmental Relations to provide timely and accurate information to the legislature and its staff on matters pertaining to public higher education.

- Served *ex officio* on the University of Illinois Foundation Stewardship Committee, a group that ensures that donor intent is respected and university interests are protected.
- Was responsible for the University's relations with the Illinois Board of Higher Education (IBHE), an agency responsible for providing a statewide perspective on higher education. Over the past three years the IBHE developed a planning blueprint, the "Illinois Public Agenda for College and Career Success" to address Illinois' significant educational attainment gap. The plan seeks a better integration of the current and future economic needs of the state, the higher education needs of the residents of Illinois and the intellectual and curricular offerings of public institutions for higher education. As VPAA I was instrumental in coordinating the university-wide response to this bold plan.
- Serve on the Diversifying Faculty of Illinois Board of the IBHE.
- Led the campuses' 2009 efforts in reforming the policies associated with Admissions inquiries, to ensure fairness and equity for all applicants. Although the inquiries focused on the Urbana campus, the university wished to ensure that all campuses were in compliance with the recommendations; the VPAA coordinated these admission reform activities. The reforms have successfully been in place for two years.
- Along with the Associate Vice President of Academic Affairs (University Academic Programs and Services) provided oversight to the successful transition of Global Campus programs to the campuses and coordinated cross-campus initiatives in online education. Led a cross-campus advisory group of faculty and students, to provide their input and concerns into the Global Campus initiative.
- Was responsible for the following units, which directly report to the VPAA: the Institute of Government and Public Affairs (IGPA), the University of Illinois Press (UIP), University-wide Student Programs (UWSP), University Academic Programs and Services (UAPS), Consortium of Academic and Research Libraries in Illinois ([CARLI](#)), and University Outreach and Public Service ([UOPS](#)). These units and the VPAA offices had a combined work force of 150 individuals.

Vice Provost for Faculty Affairs (November 2002-July 2007), University of Illinois at Chicago:

The University of Illinois at Chicago (UIC) is among the top 50 research universities in the nation and is the largest university in Chicago. Partnering with community organizations, government agencies, the business and civic sector, UIC is thoroughly engaged in its urban setting. With a comprehensive medical center and health science colleges, the Great Cities Commitment and Colleges of Architecture and the Arts, Business Administration, Engineering, Education, Liberal Arts and Sciences, Social Work and Urban Planning, UIC enrolls 25,000 graduate and undergraduate students and has 2,500 faculty and 12,000 professional staff and graduate assistants.

The Vice Provost for Faculty Affairs (VPFA), reports to the Provost. In an effort to provide faculty services and programs that integrated seamlessly with other campus-level work life processes, the following functions were developed:

- Faculty Advancement: Awards, Leadership Opportunities, and Development Programs.

- Faculty Awards – Moderated selection committees of the following prestigious awards: Award for Excellence in Teaching, Distinguished Professorship, and University Scholars.
- Committee on Institutional Cooperation (CIC) Academic Leadership Program (ALP) and Department Executive Officer (DEO) – Coordinated a year-long, on-campus program of monthly activities to complement the three extramural CIC ALP-organized seminars to develop the leadership and managerial skills of faculty/academic professionals. Served as liaison for program of leadership development opportunities for department heads and chairs.
- Heads Workshops and Brown Bags – Implemented three interactive Heads workshops and several brown bag lunches to occur annually. These focused on effective performance in administrative positions and targeted both seasoned and new heads/chairs.
- Faculty Development Programs – Set up programs for new faculty, mid-career faculty and emerita/us faculty. Coordinated a campus-wide mentoring program to provide guidance to probationary and mid-career faculty members, including Promotion and Tenure workshops.
- Under-Represented Faculty Mentoring Program – Organized the program, including writing groups and topical workshops on subjects such as time management, productivity and mentoring.
- Teaching – Oversaw the Teaching and Learning Center and the Council for Excellence in Teaching and Learning which offer various programs, resources and rewards to foster improved instruction and support excellent teaching and learning.
- Faculty Recruitment Program (UFRP) – The UFRP encouraged and assisted colleges and departments at UIC in hiring under-represented faculty. As Vice Provost, was instrumental in convening the UFRP Task Force, which evolved into a Diversity Advisory Committee chaired by the Provost and the appointment of a Special Assistant for Diversity.
- Policies, Procedures and Human Resources, Pertaining to Faculty:
 - Monitored and coordinated faculty promotion and tenure processes undertaken at the department, college, and university level. Provided debriefing sessions to faculty whose candidacy had not been reviewed favorably.
 - Monitored granting of sabbatical leaves and of emeritus status to retiring faculty.
 - Worked with the faculty Senate on policies and procedures related to faculty resulting in the revision of the Faculty Handbook.
 - During this period, Human Resources was reorganized and, as of October 1, 2005, all faculty-related processes were conducted in the offices of the Vice Provost for Faculty Affairs (e.g. guiding college/unit faculty and administrators in establishing new appointments, developing recruitment offers for faculty, negotiating tenure rollbacks, and implementing difficult termination decisions).

- Women in Science and Engineering System Transformation Initiative (WISEST): Served as P.I. of the team that procured funding from the National Science Foundation – ADVANCE program to address the long-term goal at UIC to increase the number and leadership status of women in academic science and engineering through institutional transformation. Fundamental to achieving this goal was the active participation of UIC administration at the highest level. The WISEST Executive Committee, chaired by the Provost and led by the Vice Provost for Faculty Affairs, focused on understanding the working conditions and climate for women in the 11 target science, technology, engineering and mathematics (STEM) departments. Efforts included promoting gender equity by educating and sensitizing STEM leaders, and facilitating excellence in scholarship. These efforts resulted in a \$3.3 million, five year award (August 2006-July 2011) from NSF. Implementation of these actions has had a positive impact on men and women of STEM and non-STEM disciplines effecting institutional transformation.

Executive Associate Dean (January-November 2002); Associate Dean (September 1999-November 2002) Graduate College:

- Chaired the Life Science Panel to analyze current and foster potential graduate training programs in interdisciplinary research
- Set up the first Interdisciplinary Training Program competition, which helped launch the first all-campus Neuroscience initiative
- Set up new interdisciplinary course rubrics that helped remove a major obstacle to establishing interdisciplinary course curricula
- Chaired and monitored the review process of the Graduate College Fellowship Programs
- Served as Graduate College liaison on an all-campus committee dealing with Human Research Subject restrictions and its after-math in 1999; helped ensure that delays to graduate student research were kept to the minimum
- Modified and taught a course on Research Ethics that was mandatory for all Life Science graduate students
- Helped the Graduate Dean launch the Provost's Research Award program for graduate students
- Helped the Graduate Dean in dealing with sensitive student-faculty issues and grievances.

AWARDS AND HONORS:

National Science Talent Merit Scholarship, Government of India (1966-1972)

Faculty of Science Exhibition Prize, University of Delhi, India (1968, 1969, 1970)

University Gold Medal in Botany, University of Delhi, India (1969)

Ford Foundation Predoctoral Fellow (1973-1977)

National Research Service Award (Postdoctoral), National Institute of Allergy and Infectious Diseases, National Institutes of Health (1978-1980)

New Investigator Research Award National Institute of Arthritis, Metabolism and Digestive Diseases, National Institutes of Health (1981-1984)

Lucille Markey Charitable Trust Fellowship, Mt. Desert Island Biological Laboratory, Maine (Aug - Sept 1985)

University Scholar 1992, University of Illinois

Philip L. Hawley Distinguished Faculty Award, 1994, University of Illinois, Department of Physiology and Biophysics

Philip L. Hawley Distinguished Faculty Award, 1997, University of Illinois, Department of Physiology and Biophysics

Teaching Recognition Program Award, 2000, University of Illinois at Chicago

Excellence in Teaching Award, 2000, University of Illinois at Chicago

Phi Kappa Phi (UIC Chapter), 2002

Fellow, Committee on Institutional Cooperation, Academic Leadership Program, 2001-2002

Fellow of the Year, Honors College, 2004, University of Illinois at Chicago

Woman of the Year, 2004, University of Illinois at Chicago

Philip L. Hawley Distinguished Faculty Award, 2005, University of Illinois, Department of Physiology and Biophysics

College of Medicine Distinguished Faculty Award, 2010, University of Illinois at Chicago

BIBLIOGRAPHY:

Publications Related To Academic Administration:

Rao MC and Evans CV. The Illinois Public Agenda for College and Career Success, A renewed look at higher education in Illinois. The Illinois Report 2010, Institute of Government and Public Affairs, January 2010.

Rao, M.C. Chair, Report of the Life Science Panel, University of Illinois at Chicago, July 2001.

Publications Related To Research:

Rao MC, Sarathy (nee Venkatasubramanian) J, Ao M. Intestinal Water and Electrolyte Transport in Health and Disease Colloquium Series on Integrated Systems Physiology: From Molecule to Function to Disease, Lecture #31, (Series Editors Granger DN and Granger JP) Jan 2012, Vol. 4, No. 1, Pages 1-105, Morgan and Claypool Life Sciences Copyright © 2012

Ao M, Venkatasubramanian J, Boonkaewwan C, Ganesan N, Syed A, Benya RV, Rao MC. Lubiprostone activates Cl⁻ secretion via cAMP signaling and increases membrane CFTR in the human colon carcinoma cell line, T84. *DigDis Sci.* 2011 Feb;56(2):339-51. PMID: 21140215

Liu H, Singla A, Ao M, Gill RK, Venkatasubramanian J, Rao MC, Alrefai WA, Dudeja PK. Calcitonin Receptor-Mediated CFTR Activation in Human Intestinal Epithelial Cells. *J Cell Mol*

Med. 2011 Jan 20. doi:10.1111/j.1582-4934.2011.01264.x. [Epub ahead of print]PMID: 21251218

Venkatasubramanian J, Rao MC, and Sellin JH. Intestinal electrolyte absorption and secretion. In Sleisenger and Fordtran's Gastrointestinal and Liver Disease: Pathophysiology, Diagnosis, Management, 9th edition, Chapter 99, 1675-1694, 2010.

Venkatasubramanian J, Ao M and Rao MC. Ion transport in the small intestine. *Current Opinions in Gastroenterology*, 2010 Mar;26(2):123-8. PMID: 20010100

Matkowskyj K, Royan S, Blunier A, Hecht G, Rao M, Benya RV. Age dependent differences in galanin-dependent colonic fluid secretion after infection with *Salmonella typhimurium*. *Gut*. 2009 Sep;58(9):1201-6. PMID: 19671554

Boonkaewwan C, Ao M, Toskulkao C, Rao MC. Specific immunomodulatory and secretory activities of stevioside and steviol in intestinal cells. *J Agric Food Chem*. 2008 May 28;56(10):3777-84. PMID: 18433103

Kanchanapoo J, Ao M, Prasad R, Moore C, Kay C, Piyachaturawat P, and Rao MC. Role of protein kinase δ (pkc δ) in the age-dependent secretagogue action of bile acids in mammalian colon. *Am J Physiol Cell Physiol*. 2007 Dec; 293(6):C1851-61.Sep 26 [Epub ahead of print]

Carlos MA, Nwagwu C, Venkatasubramanian J, Prasad R, Khan Chowdhury SA, Vidyasagar D, Rao MC. Epidermal growth factor (egf) stimulates chloride transport in primary cultures of weanling and adult rabbit colonocytes. *Journal of Pediatric Gastroenterology and Nutrition, J Pediatr Gastroenterol Nutr*. 2007 Mar; 44(3):300-11.

Kanchanapoo J, Rao MC, Suksamrarn A, and Piyachaturawat P. Inhibitory effects of choleric hydroxyacetophenones on ileal bile acid transport in rats. *Life Sci*. 2006 Feb 28; 78(14):1630-6. Epub 2005 Oct 25.

Weihrauch D, Kanchanapoo J, Ao M, Piyachaturawat P, and Rao MC. Weanling but not adult rabbit colon absorbs bile acids: Flux linked to expression of putative bile acid transporters. *Am J Physiol (Gastrointest Liver Physiol)*. 2006 Mar; 290(3):G439-50. Epub 2005 Sep 15.

Prasad R, Venkatasubramanian J, Amde M, and Rao MC. Phospholipase C and src tyrosine kinases mediate neurotensin-stimulated Cl⁻ secretion in rabbit proximal colon. *Digestive Disease Sciences* 49: 1318-1326, 2004.

Matkowskyj KA, Nathaniel R, Prasad R, Weihrauch D, Rao MC, and Benya RV. Galanin contributes to the excess colonic fluid secretion observed in dextran sulfate sodium murine colitis. Contribution of the Galanin-1 Receptor (G1R) to the Excess Colonic Fluid Secretion in Murine DSS-Induced Colitis. *Inflammatory Bowel Disease* 10(4): 408-416, 2004

Rao MC. Oral rehydration therapy: New explanations for an old remedy. *Annual Review of Physiology*, 2004 Vol 66 :385-417. AR Reviews in Advance10.1146/annurev.physiol.66.032902.134726

Musch MW, Bookstein C, Rocha F, Lucioni A, Ren H, Daniel J, Xie Y, McSwine RL, Rao MC, Alverdy JJ, and Chang EB. Region-specific adaptation of apical Na/H exchangers after extensive proximal small bowel resection. *American Journal of Physiology (Gastrointestinal and Liver Physiology)*, 283: G975 – G985, 2002.

Bhat R, Chari G, Rao MC, Negrusz A, and Vidyasagar D. Cocaine permeability and metabolism in colonic T-84 epithelial cell line. *Life Sciences* 70:549-556, 2001.

Venkatasubramanian J, Selvaraj N, Carlos M, Skaluba S, Rasenick MM, and Rao MC. Differences In Ca^{2+} Signaling Underlies Age-Specific Effects of Secretagogues on Colonic Cl^- Transport. *American Journal of Physiology* 280; (Cell Physiology 49) C646-C658, 2001.

Nataraja SG, Omi E, Gibori G, and Rao MC. JAK2 regulates prolactin-mediated chloride transport in mouse mammary epithelial cell through tyrosine phosphorylation of $Na^+-K^+-2Cl^-$ cotransporter. *Molecular Endocrinology* 14:2054-2065, 2000.

Venkatasubramanian J, Sahi J, and Rao MC. Ion transport during growth and differentiation. *Annals of New York Academy Of Sciences* 915: 357-372, 2000.

Selvaraj NG, Prasad R, Goldstein JL, and Rao MC. Evidence for the presence of cGMP dependent protein kinase-II in human distal colon and in T84, the colonic cell line. *Biochimica et Biophysica Acta* 1498, 32-43, 2000.

Rao MC. Absorption and secretion of water and electrolytes. Invited Chapter Small Bowel Disorders. ed. R.R. Ratnaik, Arnold, (Hodder Headline Group), London, U.K. , 2000, pp. 116-134.

Bookstein C, Musch MW, Xie Y, Rao MC, and Chang EB. Regulation of intestinal epithelial brush border Na^+/H^+ exchanger isoforms, NHE2 and NHE3, in C2bbe cells. *Journal Membrane Biology* 171:87-95, 1999.

Bhartur SB, Musch MW, Chang EB, and Rao MC. A unique Na^+/H^+ exchanger, analogous to NHE1, in the chicken embryonic fibroblast. *American Journal of Physiology* 276 (Regulatory, Integrative and Comparative Physiology 45):R838-R846, 1999.

Sahi J, Nataraja SG, Layden TJ, Goldstein JL, Moyer MP, and Rao MC. Cl^- transport characteristics of an immortalized human epithelial cell line (NCM460) derived from the normal transverse colon. *American Journal Physiology* 275 (Cell Physiology 44):C1048-C1057, 1998.

McSwine RL, Musch MW, Bookstein C, Xie Y, Rao MC, and Chang EB. Regulation of apical membrane Na^+/H^+ exchangers NHE2 and NHE3 in intestinal epithelial cell line C2/bbe. *Am. J. Physiol.* 275 (Cell Physiol. 44): C693-C701, 1998.

Bookstein C, Musch MW, Dudeja PK, McSwine RL, Xie Y, Brasitus TA, Rao MC. and Chang EB. Inverse relationship between membrane lipid fluidity and activity of Na^+/H^+ exchanger isoforms NHE-1 and NHE-3 in transfected Chinese hamster fibroblasts. *J. Membrane Biology* 160:183-192, 1997.

Bhartur SB, Bookstein C, Musch MW, Ballarin L, Chang EB, and Rao MC. Detection and regulation of a chicken-specific intestinal Na^+/H^+ exchanger. *Comparative Biochemistry and Physiology*, 118A, #3:883-889, 1997.

Bookstein C, Rabenau K, Xie Y, Musch MW, McSwine R, Rao MC, and Chang EB. Tissue distribution of Na^+/H^+ exchanger isoforms NHE-2 and NHE-4 in rat intestine and kidney. *American Journal Physiology* 273:(Cell Physiology 42):C1496-C1505, 1997.

Desai GN, Sahi J, Reddy PM, Vidyasagar D, and Rao MC. Chloride transport in primary cultures of mammalian colonocytes at different developmental stages. *Gastroenterology* 111:1541-1550, 1996.

Bookstein C, Musch MW, DePaoli A, Xie Y, Rabenau K, Villereal M, Rao MC, and Chang EB. Functional characterization of the rat Na/H exchanger isoform, NHE-4, in cultured NHE-deficient fibroblasts and localization in rat hippocampus. *American Journal of Physiology* 271:(Cell Physiology 40):C1629-C1638, 1996.

Soleimani M, Singh G, Bookstein C, Rao MC, Chang EB, and Dominguez JH. Inhibition of glycosylation decreases Na⁺/H⁺ exchange activity, blocks NHE-3 transport to the membrane, and increases NHE-3 mRNA expression in LLC-PK1 cells. *Journal Laboratory Clinical Medicine* 127:565-573, 1996.

Sahi J, Wiggins M, Gibori G, Layden TJ, and Rao MC. Ca²⁺ dependent Cl⁻ secretion in isolated adult rabbit colonocytes. *Journal of Cellular Physiology* 168:276-283, 1996.

Reddy PM, Sahi J, Desai G, Vidyasagar D, and Rao MC. Altered growth and attachment of rabbit colonocytes isolated from different developmental stages. *Journal Pediatric Research* 39:287-294, 1996.

Soleimani M, Bookstein C, Singh G, Rao MC, Chang EB, and Bastani B. Differential regulation of Na⁺/H⁺ exchange and H⁽⁺⁾-ATPase by pH and HCO₃⁻ in kidney proximal tubules. *Journal Membrane Biology* 144:209-216, 1995.

Shallat S, Schmidt L, Reaka A, Rao D, Chang EB, Rao MC, Ramaswamy K, and Layden TJ. NHE-1 isoform of the Na⁺/H⁺ antiport is expressed in the rat and rabbit esophagus. *Gastroenterology* 109:1421-1428, 1995.

Soleimani M, Bookstein C, Bizal GW, Musch MW, Hattabaugh YJ, Rao MC, and Chang EB. Localization and differential glycosylation of the Na⁺/H⁺ exchanger isoform NHE-3 in rabbit and canine kidney. *Biochimica et Biophysica Acta* 1195:89-95, 1994.

Bookstein C, Musch MW, DePaoli A, Xie Y, Rao MC, Villereal M, and Chang EB. A unique sodium-hydrogen exchange isoform (NHE-4) of the inner medulla of the rat kidney is induced by hyperosmolarity. *Journal Biological Chemistry* 269:29704-29704, 1994.

Cho JH, Musch MW, DePaoli AM, Bookstein CM, Xie Y, Burant CF, Rao MC, and Chang EB. Glucocorticoids regulate NHE-3, an apical sodium-hydrogen exchange, expression and activity in a region and tissue specific manner. *American Journal Physiology* 267:(Cell Physiology 36): C796-C803, 1994.

Goldstein JL, Sahi J, Bhuvu M, Layden TJ, and Rao MC. E.coli Heat stable enterotoxin (STa) mediated colonic Cl⁻ secretion is absent in cystic fibrosis (CF). *Gastroenterology* 107:950-956, 1994.

Soleimani M, Bookstein C, MaAteer JA, Hattabaugh YJ, Bizal GW, Musch MW, Villereal M, Rao MC, Howard RL, and Chang EB. Effect of high osmolality on Na⁺/H⁺ exchange in renal proximal tubule cells. *Journal Biological Chemistry* 269:15613-15618, 1994.

Suvitayavat W, Haas M, Dunham PB, and Rao MC. Molecular characterization of the intestinal brush border Na⁺-K⁺-2Cl⁻ cotransporter. *American Journal Physiology* 267:(Cell Physiology 36):C375-C384, 1994.

Sahi J, Goldstein JL, Layden TJ, and Rao MC. Cyclic AMP and phorbol ester regulated chloride permeabilities in primary cultures of human and rabbit colonocytes. *American Journal Physiology* 266:(Gastrointestinal and Liver Physiology 29):G846-G855, 1994.

Albarracin CT, Palfrey HC, Duan WR, Rao MC, and Gibori G. Prolactin regulation of the Ca²⁺/calmodulin-dependent protein kinase III - elongation factor 2 system in the rat corpus luteum. *Journal Biological Chemistry* 269:7772-7776, 1994.

Toskulkao C, Bhartur S, Musch MW, Chang EB, and Rao MC. Phorbol dibutyrate-specific protein phosphorylation in brush border membranes of chicken enterocytes. *Journal Cellular Physiology* 159::347-355, 1994.

Rao MC, Bissonnette GB, Mahaffey T, and Goldstein JL. Rectal epithelial expression of protein kinase A-phosphorylation of cystic fibrosis transmembrane conductance regulator. *Gastroenterology* 106:890-898, 1994.

Bookstein C, DePaoli AM, Xie Y, Niu P, Musch MW, Rao MC, and Chang EB. Na⁺/H⁺ exchangers, NHE-1 and NHE-3, of rat intestine: expression and localization. *Journal of Clinical Investigation* 93:106-113, 1994.

Suvitayavat W, Palfrey HC, Haas M, Dunham PB, Kalmar F, and Rao MC. Characterization of the endogenous Na⁺-K⁺-2Cl⁻ cotransporter in *Xenopus* oocytes. *American Journal Physiology* 266:(Cell Physiology: 35): C284-C292, 1994.

Chang EB, and Rao MC. Intestinal Water and Electrolyte Transport: Mechanisms of Physiological and Adaptive Responses. In: *Physiology of the Gastrointestinal Tract*, Third Edition. Edited by Leonard R. Johnson. Raven Press, New York, pp. 2027-2081, 1994.

Musch MW, Bookstein C, Arvans DL, Cragoe EJ, Rao MC, and Chang EB. Characterization of chicken intestinal brush border membrane Na/H exchange. *Comparative Biochemistry and Physiology* 103A: 439-444, 1992.

Musch MW, Drabik-Arvans DL, Rao MC, and Chang EB. Bethanechol inhibition of chicken intestinal brush border Na/H exchange: Role of protein kinase C and other Ca-dependent processes. *Journal of Cellular Physiology* 152:362-371, 1992

Goldstein JL, Shapiro AB, Rao MC, and Layden TJ. Second messenger mediated chloride but not potassium secretion is abnormal in cystic fibrosis rectal mucosa. *Gastroenterology* 101:1012-1019, 1991.

Benya RV, Layden TJ, Schmidt LN, and Rao MC. Isolation and characterization of, and attachment to different matrices by rabbit distal colon epithelial cells. *Gastroenterology* 101:692-702, 1991.

Chang EB. and Rao MC. "Intracellular mediators regulating intestinal ion transport". In: *Diarrheal Diseases*, Edited by M. Field. "Controversies in Gastroenterology" Series (Series Editor: David Zakin), Elsevier New York, pp. 49-72, 1991.

Chang EB, Musch MW, Drabik-Arvans D, and Rao MC. "Phorbol ester inhibition of chicken intestinal brush border sodium proton exchange". *American Journal Physiology* 260 (Cell Physiology 29):C1264-C1272, 1991.

Steinschneider A, Rao MC, Khan I, McLean MP, and Gibori G. Calcium-calmodulin and calcium-phospholipid dependent phosphorylation of membranous proteins related to the tropic regulation of estradiol in the corpus luteum. *Endocrinology* 128:263-273, 1990.

Goldstein JL, Schmidt, LN, Brigham GR, Groves MJ, Rao MC, Al-Bazzaz FJ, and Layden TJ. Effects of dioctyl sodium sulfosuccinate on transport in rabbit esophageal mucosa. *Diseases of the Esophagus* III (1): 37-47, 1990.

Rao MC, and de Jonge HR. Ca and phospholipid-dependent protein kinases: Role in ion transport. In: *Secretory Diarrhea*, Edited by E. Lebenthal and M.E. Duffey, Raven Press, pp. 209-232, 1990.

de Jonge HR, and Rao MC. Cyclic nucleotide-dependent protein kinases: Role in ion transport. In: *Secretory Diarrhea*, Edited by E. Lebenthal and M.E. Duffey, Raven Press, pp. 191-207, 1990.

Toskulkao C, and Rao MC. Identification of a 50 kDa Ca; cAMP- and cGMP-dependent epithelial phosphoprotein as a cAMP binding protein. *American Journal Physiology* 258 (Cell Physiology: 27):C889-901, 1990.

Toskulkao C, Nash NT, Leach K, and Rao MC. Second messenger-specific protein kinases in a salt absorbing epithelium: The intestine of the winter flounder, *Pseudopleuronectes americanus*. *American Journal Physiology* 258 (Cell Physiology: 27):C879-C888, 1990.

Field M, Rao MC and Chang EB. Intestinal electrolyte transport and diarrheal disease. "Mechanisms of Disease" Series, *New England Journal of Medical Sciences* 321:800-806 (Pt. 1); 321:879-883 (Pt. 2), 1989.

Gibori G, Khan I, Warshaw ML, McLean MP, Puryear TK, Nelson S, Durkee TJ, Azhar S, Steinschneider A, and Rao MC. Placental derived regulators and the complex control of luteal cell function. *Recent Progress in Hormone Research* 44:377-429, 1988.

Rao MC. Bacterial enterotoxins: Molecular mechanisms. In: *Enteric Infection*. Edited by M.J.G. Farthings and G.T. Keusch) Chapman and Hall Ltd., London, pp 87-104, 1988.

Rao MC, and Nash NT. 8-Br-cyclic AMP decreases *Isc* but not Na/K/2Cl cotransport in winter flounder intestine. *American Journal Physiology* 255 (Cell Physiol: 24):C246-C251, 1988.

Goldstein JL, Nash NT, Al-Bazzaz F, Layden TJ, and Rao MC. Rectum has abnormal ion transport but normal cAMP binding proteins in cystic fibrosis. *American Journal Physiology* 254 (Cell Physiology: 23):C719-C724, 1988.

Rao MC, and Gibori G. The corpus luteum: Animal models of possible relevance to reproductive toxicology. *Reproductive Toxicology* 1:61-69, 1987.

Rao MC, Nash NT, Palfrey HC, Greisman A, Jayatilak PG, and Gibori G. Effects of estradiol on Ca-Calmodulin specific protein phosphorylation in the rat corpus luteum. *Endocrinology* 120:1010-1018, 1987.

O'Grady SM, Field M, Nash NT, and Rao MC. Atrial natriuretic factor inhibits Na-K-Cl cotransport in teleost intestine. *American Journal Physiology* 249 (Cell Physiology: 18):C531-534, 1985.

- Chang EB, Wang NS, and Rao MC. Phorbol ester stimulation of active anion secretion in intestine. *American Journal Physiology* 249 (Cell Physiology:18):C356-361, 1985.
- Rao MC. Toxins which activate guanylate cyclase: Heat-stable enterotoxins. In: *Microbial Toxins and Diarrhoeal Disease*. Ciba Foundation Symposium Vol 112, Pitman Publishing Co., London, 74-93, 1984.
- Gibori G, Kalison B, Basuray R, Rao MC, and Hunzicker-Dunn M. Endocrine role of the decidual tissue: Decidual luteotropin regulation of luteal adenylyl cyclase activity, LH receptors and steroidogenesis. *Endocrinology* 115:1157-1163, 1984.
- Gibori G, Khan MI, Sridaran R, Chen Y-DI, Azhar S, Rao MC, Jayatilak P, and Gruber JR. Secretion and action of steroids in luteal cell. In: *Hormonal control of the Hypothalamo-Pituitary Gonadal Axis*. Edited by K.W. McKerns. *Biochemical Endocrinology Series*, Plenum Press, New York, pp. 289-307, 1984.
- Guandalini S, Fasano A, Rao MC, Ferola A, Migliavacca M, Marchesano G, and Rubino A. Effects of loperamide on intestinal ion transport. *Pediatric Gastroenterology and Nutrition* 3:593-601, 1984.
- Langridge-Smith JL, Rao MC, and Field M. Chloride and sodium transport across bovine tracheal epithelium: Effects of secretagogues and indomethacin. *Pflugers Archiv* 402:42-47, 1984.
- Rao MC, Nash NT, and Field M. Differing effects of cGMP and cAMP on ion transport across flounder intestine. *American Journal Physiology* 246 (Cell Physiol:15): C167-171, 1984.
- Rao MC, and Field M. Enterotoxins and Ion Transport. *Biochemical Society Transactions* 12:177-180, 1984.
- Palfrey HC, and Rao MC. Na/K/Cl Co-transport and its regulation. *Journal of Experimental Biology* 106:43-54, 1983.
- Rao MC, and Field M. Role of Calcium and Cyclic Nucleotides in the Regulation of Intestinal Ion Transport. In: *Intestinal Transport: Fundamental and Comparative Aspects*. Edited by M. Gilles-Baillien and R. Gilles. Springer Verlag, Berlin, Heidelberg. N.Y., 227-239, 1983.
- Guandalini S, Rao MC, Smith PL, and Field M. Cyclic GMP modulation of ion transport in rabbit ileum: In vitro effects of heat-stable enterotoxin. *American Journal Physiology* 243 (Gastrointest. Liver Physiol:6):G36-G41, 1982.
- Rao MC, Orellana SA, Field M, Robertson DC, and Giannella RA. Comparison of the biological actions of three purified heat-stable enterotoxins: Effects on ion transport and guanylate cyclase activity in rabbit ileum in vitro. *Infection and Immunity* 33:165-179, 1981.
- Rao MC, Guandalini S, Smith PL, and Field M. Mode of action of heat-stable *Escherichia coli* enterotoxin: Tissue and subcellular specificities and role of cyclic GMP. *Biochimica et Biophysica Acta* 632:35-46, 1980.
- Rao MC, Guandalini S, Laird WJ, and Field M. Effects of heat-stable enterotoxin of *Yersinia enterocolitica* on ion transport and cGMP metabolism in rabbit ileum. *Infection and Immunity* 26:875-878, 1979.

Campbell KL, Bagavandoss P, Jonassen JA, Landefeld TD, Rao MC, Richards JS, and Midgley AR Jr. Gonadotropin Induction of Granulosa Cell Luteinization. In: Ontogeny of Receptors and Mode of Action of Reproductive Hormones. Edited by T.H. Hamilton, J.L. Clark, and W.A. Sadler, Raven Press, N.Y., pp. 149-163, 1979.

Rao MC. Hormone Receptor Regulation by LH: An Active, Inducible Process. In: Ovarian Follicular Development and Function. Edited by A.R. Midgley, Jr. and W.A. Sadler, Raven Press, N.Y., pp. 325-331, 1978.

Rao MC, Midgley AR Jr, and Richards JS. Hormonal regulation of cell proliferation in the ovary. *Cell* 14:71-78, 1978.

Richards JS, Rao MC, and Ireland JJ. The Action of Pituitary Gonadotropins in the Ovary. In: Control of Ovulation, University of Nottingham, 26th Easter School in Agricultural Science, 1977, pp. 197-216.

Rao MC, Richards JS, Midgley AR Jr, and Reichert LE Jr. Regulation of gonadotropin receptors by LH in granulosa cells. *Endocrinology* 101:512-523, 1977.

Richards JS, Ireland JJ, Rao MC, Bernath GA, Midgley AR Jr, and Reichert LE Jr. Ovarian follicular development in the rat: Hormone receptor regulation by estradiol, FSH, and LH. *Endocrinology* 99: 1562-1570, 1976.

OTHER PUBLICATIONS:

Include nine Theses /Bulletin articles and over 95 abstracts, approximately 10 of which are currently being prepared for submission as full-length papers.

MEMBER OF NATIONAL/REGIONAL COMMITTEES:

Related to Administration:

Diversifying Faculty in Illinois (DFI) Board Member (2008-present)
Council of Academic Affairs, Association of Public and Land-Grant Universities, (APLU; formerly, National Association of State Universities and Land-Grant Colleges) (2007–2011)
Illinois Board of Higher Education (IBHE) Member, Public Agenda Advisory Group (2007-2008)
Committee on Institutional Cooperation, Liaison, UIC Diversity Officer (2004-2007)
Committee on Institutional Cooperation, Liaison, Academic Leadership Program (2002-2007)
Committee on Institutional Cooperation, Liaison, Departmental Executive Officer (2002-2007)
Council of Graduate Schools (1999-2002)

Related to Research:

Peer-Review Funding Study Sections:

National Institutes of Health, Clinical and Integrative Gastrointestinal Pathobiology Study Section (2004-2008)
Veteran's Administration, Ad Hoc Reviewer (1992-present)
National Institutes of Health, Ad Hoc Reviewer (1990-present)
NIH: Ad Hoc Member, GCMB Study Section (02/2004)

NIH: Ad Hoc Member, GMA-2 Study Section (1990, 06/1996; 10/2002; 06/2004)
National Institutes of Health, ZRG1 F10 Study Section (2001-2004); Chair (11/2002; 11/2003)
National Institutes of Health, Small Business Study Section, Special Emphasis Panel, Drug
Development and Delivery (ZRG1 SSS-Z) (1998-2002)
National Institutes of Health: Cystic Fibrosis RFA Study Section (June 1996)
Veteran's Administration Merit Grant Review Group - Gastroenterology (07/1994-06/1998)

Professional Societies:

American Physiological Society, Public Affairs Action Committee (2008-present)
American Gastroenterological Association, Gastroenterology Research Group, Steering Committee
(2005-present)
American Gastroenterological Association, Nominating Committee (2005-2006)
American Gastroenterological Association, PhD/DVM Committee (May 1999-May 2004); Chair
Elect (2000-2001), Chair (2001-2004)
American Physiological Society, Committee on Committees, Member (01/1998-12/31/2003)
American Physiological Society, Gastrointestinal Section Steering Committee, Member (1997-2003)
American Gastroenterological Association Abstract Selection Committee, Epithelial Transport
Group, (06/1995-present); Chair (2000-2001)
Nominating Committee, Intestinal Transport Group, American Gastroenterological Association
(06/1995-05/1997)
FASEB Wellcome Visiting Professorship Committee, Member (01/1994-12/1996)

MEMBER OF BOARDS:

UIC College Prep High School, Executive Board Member, Chicago (2011- present)
ScienceMakers Advisory Board, Member, HistoryMakers, Chicago (2010- present)
Diversifying Faculty in Illinois (DFI) Board Member (2008-present)
United Negro College Fund, Women Who Lead Board Member (2011 – present)

EDITORIAL/REVIEW SERVICES:

Editorial Board: American Journal of Physiology (Cell Physiology) (1990-present)
Ad Hoc Reviewer for a variety of journals, including: Journal of Biological Chemistry;
Gastroenterology; American Journal of Physiology (Gastrointestinal and Liver Physiology)
Extramural granting agencies such as Cystic Fibrosis Foundation, Agriculture and Food Research
Council (UK)
Intramural granting committees: College of Medicine Committee on Research. Member (1989-1998);
Chair (1993-1998); Campus Research Board

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

American Physiological Society (1988-present)
American Gastroenterological Association (1990-present)
Gastrointestinal Research Group (1992-present)
Mount Desert Island Biological Laboratory (Life-time member)
Sigma Xi Scientific Society (1997-present)
American Association of University Women (2000-present)
Phi Kappa Phi (2002-present)

The Chicago Network (2009-present)

UNIVERSITY COMMITTEES:

University of Illinois Foundation, Stewardship Committee (2008-2011)
University of Illinois, Resources Summit Steering Group, Co-Chair (2008-2011)
University of Illinois, Academic Affairs Management Team, Co-Chair (2007-2011)
University of Illinois, Global Campus Academic Council, Co-Chair (2007-2009)
University of Illinois, Institute for Government and Public Affairs, *ex officio*, Member External
Advisory Committee (2008-2011)
University of Illinois

The following pertain to committees at the University of Illinois at Chicago

Member, Search Committee, Vice Chancellor for Research (2011-present)
Member, Search Committee, Vice Provost for Planning and Programming (2012 – present)
Chair, Search Committee, Vice Provost for Health Affairs (2006-2007)
Member, Search Committee, Executive Director, Medical Center (2006)
Member, Senate (1997-2006)
Graduate College, Chair, Life Sciences Panel (2000-2002)
College of Medicine, Member, Search Committee for Chief of Department of Neurosurgery (2001-2002)
Member, Search Committee, Dean, Honors College (2001-2002)
Member, Search Committee, Associate Dean of Research, College of Nursing (2000-2001)
Member, Search Committee, Vice Chancellor for Research (2000-2001)
Member, General Education Task Force (1998-2000)
Member, Advisory Committee, Research Resources Center (1997-1999)
UIC Chapter of Sigma Xi Scientific Society, Research Forum Coordinator (1997)
Search Committee, Vice Chancellor for Administration and Human Resources (1996-1997)
Animal Care Committee, Primate and Exotic Animal Subcommittee (1996-1998)
Member, Ad Hoc Department Evaluation Committee (1998)
Graduate College Executive Committee Member (1996-1998)
College of Medicine, Chair, Department Evaluation Committee (1996-1997)
College of Medicine, Member, Search Committee for Chief of Division of General Surgery (1996-1997)
Graduate College, Member, Minority Task Force
College of Medicine, Executive Committee Member (1995-1996; 2010-present), Alternate Member (1997-1998; 1994-1995); Chicago Campus, Executive Committee, Member (1997-1998; 1995-1996; 1994-1995)
College of Medicine, Liaison Committee on Medical Education (LCME) Self-Study Task Force (1993-1994); Chair, Graduate Basic Science Education Sub-Committee; Chair, Basic Science Self Study Group.
College of Medicine, Committee on Research (1989-1998), Served as Chair (1993-1998)
Department of Physiology and Biophysics, Advisory Committee (1985-present), Chair (2005; 1994-1996) Secretary (1985-1986; 1988-1990; 1991-1994; 1996-1997; 2000-2001; 2007).
Department of Physiology and Biophysics, Education Enhancement Committee (1996-2005)
Department of Physiology and Biophysics, Graduate Committee, Alternate Director, In-Charge of Admissions, (1988-1996; 1984-1987); Director, Graduate Studies (1996-1999)

INVITED PRESENTER/PARTICIPANT:

Invited Participant in Meetings Related to Academic Administration (Selected):

Graduate College Orientation, University of Illinois at Chicago, Keynote Speaker: Title - "Why Graduate School? The Thrill of Inquiry", August 19, 2009

American Institute for Medical and Biological Engineering, Women's Leadership Symposium, Keynote Speaker: Title - "It's Your Responsibility! How to Lead and Impact Policy", December 4, 2008

NSF ADVANCE Participants Conference, Washington DC, June 19-20, 2007. Podium speaker on Minority Postdoctoral Program

National Center for Institutional Diversity, The University of Michigan, Ann Arbor, June 15-16, 2006

NSF ADVANCE Participants Conference, Washington DC, May 17-19, 2006

Workshop on Enhancing the Postdoctoral Experience, Sponsored by The National Academies Committee on Science, Engineering and Public Policy (COSEPUP), Washington DC, December 1999

Office of Research on Women's Health, NIH, Invited Participant, "Beyond Hunt Valley: Research on Women's Health for the 21st Century", Bethesda, Maryland November 1997

AAMC Professional Development Seminar for Senior Women in Medicine, June 29-July 1, 1996

Invited Participant in Meetings Related to Research from a List of over 25 Presentations (Selected):

European Society for Pediatric Gastroenterology Hepatology and Nutrition: Symposium – Orchestration of the Intestinal Epithelial Response to Microorganisms, Taormina, Italy, June 2002

American Gastroenterological Association (Digestive Diseases Week), Convenor and Participant: Session on Intestinal Disorders: Compartmentalization: Kinases, Phosphatases and their Anchoring Proteins, Orlando, FL, May 1999

International Meeting on "Epithelial Transport and Barrier Function: Pathomechanisms in GI Disorders" Organizers: Intestinal Mucosa Function Group of the German Society of Gastroenterology, Berlin, Germany, March 1999

American Gastroenterological Association (Digestive Diseases Week), Chair, Session on Intestinal Disorders: Intestinal Transport, Orlando, FL, May 1999

American Gastroenterological Association (Digestive Diseases Week), Chair, Session on Intestinal Disorders Na/H Exchanger in the Intestine, New Orleans, LA, May 1998

10th International Conference on Second Messengers and Phosphoproteins,

Workshop on cGMP Signaling, Jerusalem, Israel, November 1998

American Gastroenterological Association (Digestive Diseases Week), Chair, Session on Intestinal Disorders Na/H Exchanger in the Intestine, Washington D.C., May 1997

American Gastroenterological Association (Digestive Diseases Week), Chair, Session on Regulation and Transport of Intestinal Nutrients and Minerals and Chair, Session on Regulation of Ion Transporters, San Francisco, CA, May 1996

International Meeting on "GI Transport and Barrier Function in Health and Disease" Organizers: German Gastroenterological Society the European Society of Gastroenterology, Berlin, Germany, Sept. 1995

International Symposium on "Gastrointestinal Barrier Functions" "Gastrointestinale Barriere" Sonderforschungsbereich 280, der Tierärztlichen Hochschule und der Medizinischen Hochschule Hannover, Hannover, Germany, Feb. 1995

Experimental Biology Meetings, Chair, Session on pH_i and Volume Regulation, Anaheim, CA, April 1994

Selected Invited Seminars from a List of over 73 Presentations:

Department of Pathology, University of Cincinnati, Cincinnati, Ohio, May 11, 2007, "Bile Acid Action: A Role for Protein Kinase C Delta"

Department of Medicine, Texas A & M University System Health Science Center College of Medicine Temple, Texas, April 13, 2006, "To Secrete or not to Secrete: Lessons from the Developing Colon"

Governor's State University, University Park, Illinois, Annual GSU Student Research Conference, Key Note Speaker, May 24, 2006, "The Thrill of Research: To Secrete or not to Secrete: Lessons from the Developing Colon"

Department of Physiology, Faculty of Science, Mahidol University, Bangkok, Thailand, June 2005 "Bile Acid Action in the Developing Colon"

Center for Biochemical and Biophysical Studies, Northern Illinois University, DeKalb, Illinois, April 18, 2003, "To Secrete or Not to Secrete: Lessons in Molecular Signaling during Development"

Department of Physiology, Wright State University Dayton, Ohio, February 17, 2003. "Developmental and Segmental Differences in Signaling"

College of Medicine, University of Illinois at Chicago, January 22, 2003, Annual Awards Presentation, "What is Research"

Department of Surgery, University of Cincinnati, October 28, 2002. "To Secrete or Not to Secrete - How the Developing Colon Copes"

Department of Medicine, IBD Retreat, The University of Chicago, July 30, 2002

European Society of Pediatric Gastroenterology, Hepatology and Nutrition, Taormina, Sicily, Italy, June 7, 2002; "To Secrete or Not to Secrete: Ontogeny of Colonic Chloride Transport"

Department of Medicine and Department of Physiology, University of Michigan, February 13,

2002. "To Secrete or Not to Secrete - Lessons in Signaling"

Dept. of Microbiology & Biotechnology, Bangalore University, Bangalore, India, December 29, 2001
"Cholera and Cystic Fibrosis - Opposite Ends of the Spectrum"

Department of Medicine, IBD Retreat, The University of Chicago, July 30, 2001 "Pathophysiology of Diarrheal Diseases –Role of cyclic GMP"

Department of Cellular Biology and Anatomy, Institute of Molecular Medicine and Genetics, Medical College of Georgia, Augusta, May 2001, "Signaling in the Developing Colon"

Department of Physiology, Faculty of Science, Mahidol University, Bangkok, Thailand, April 2001;
Series of three lectures on Epithelial Ion Transport Processes; Prolactin Regulation of Mammary Epithelial Ion Transport and Second Messenger Signaling in Colonic Chloride Transport

Center for Reproductive Biology and Molecular Endocrinology, Indian Institute of Science, Bangalore, India, April 1999, "Cyclic GMP Signaling in the Mammalian Colon"

Department of Physiology, Faculty of Science, Mahidol University, Bangkok, Thailand, July 1999, "Bile Acid Signal Transduction – Lessons from the Mammalian Colon"

Department of Veterinary Pathobiology/Animal Biotechnology Seminar Program, University of Minnesota, St. Paul, MN, May 1998, "Signal Transduction in the Mammalian Colon"

Max-Planck-Institut für Molekulare Physiologie, Abt. Epithelphysiologie, Dortmund, Federal Republic of Germany, Sept. 1995

RECENT FUNDING:

Related To Administration:

National Science Foundation, WISEST Initiative; P.I. M.C. Rao, Total Costs: \$62,500, 09/01/2003-08/31/2005

National Science Foundation, ADVANCE Institutional Transformation Award, Women in Science and Engineering System Transformation (WISEST), Total Costs: \$3,300,000; 08/01/2006 – 07/31/2011. (*Due to potential cross-campus conflict of commitment, resigned as P.I., in July 2007*).

Related to Research:

NIH Program Project: PI: Gail Hecht; Co-PI for Project 3, M.C. Rao, 09/01/2006-08/31/2011. TDC of project: \$625,000

NIH RO1 DK 58135, "Calcium Signaling in Developing Intestinal Epithelium", P.I.: M.C. Rao, 06/01/2001-05/31/2008. TDC: \$855,000

NIH T32 HL 07692 (10-15): Training in Cellular Signaling in the Cardiovascular System", Trainer, 07/01/00-06/30/05. A.D.C. \$521,461

NIH 1T32 DK 07739 Training in Signal Transduction and Cellular Endocrinology; Trainer; 07/01/92-06/30/07; A.D.C. \$120,805

TEACHING AND ADVISING:

Selected Listing of Formal Instruction:

In addition to teaching in the medical school curriculum, taught extensively in the graduate and dental schools' curricular offerings of the Department of Physiology and Biophysics.

Medical School Physiology: Topic Chairperson (1985-2007): Gastrointestinal Physiology, (First Year Medical Physiology)

Graduate Courses: Course Director: Human Physiology (1985-2007)
 Coordinator and Specialization: Gastrointestinal Physiology
 Course Director: Ethics in Research; (1999-2002)
 Team Taught Courses
 Tactics and Strategy on Research in Physiology
 Cell Physiology
 Techniques in Cellular Physiology
 Physiology of the Endocrines
 Biochemistry of Cellular Regulation
 Cell Biology and Integrative Physiology
 Research Methods

New Graduate Courses: Cellular Aspects of Gastrointestinal Physiology (1990-2006)
 (Mandatory for Gastroenterology Fellows)
 Journal Review: Recent Advances in Gastrointestinal Physiology

Member Of Thesis/Preliminary Examination Committees:
 Currently serve on the thesis committees of three graduate students and have served as a chair or member of the thesis committee of at least 48 other Ph.D. students at UIC and the University of Chicago.
 Served as an External Examiner for the Indian Institute of Science.
 Served on the Preliminary Examination Committee of 60 students.

Selected Listing of Advisees:

In addition to directing postdoctoral fellows and graduate students (listed below), served as an advisor of undergraduate, dental and medical students. Since 1984, nearly 30 students (12 undergraduates) each have spent 6 months –3 years in the laboratory participating part-time in research projects. Another component of mentoring involves advising Honors College and MD/PhD students on routine matters of time management, goals and career plans.

Post-Doctoral Fellows/Visiting Scholars:

Scott M. O'Grady, Ph.D. (1984-1985), UIC, Role of Atrial Natriuretic Factor in Osmoregulation.
 Professor, University of Minnesota.

- Jay L. Goldstein, M.D. (1985-1987), UIC, Development of the Human Rectal Mucosa as a Model for Cystic Fibrosis. Professor, Vice Chair, Dept. of Medicine, UIC.
- Chaivat Toskulkao, D.V.M., Ph.D. (1986-1988), UIC, Role of Protein Phosphorylation in Intestinal Ion Transport. Professor, Mahidol University, Deputy Permanent Secretary, Ministry of Science and Technology, Thailand.
- Richard V. Benya, M.D. (1989-1990), UIC, Development of Primary Cultures of Colonocytes-Study of Growth and Differentiation. Professor, Section of Digestive Diseases and Nutrition Department of Medicine, UIC.
- Gail A. Hecht, M.D. (1988-1992), UIC, Second Messenger Regulation of Ion Transport. (Faculty Sponsor for Dr. Hecht's Clinician Scientist Award). Professor and Chief, Section of Digestive Diseases and Nutrition, Department of Medicine, UIC.
- Jasminder Sahi, Ph.D. (1990-1996), UIC, Characterization of Ion Transport in Primary Cultures of Colonocytes-Studies of Growth and Differentiation. Recipient of NRSA Individual Postdoctoral Fellowship. Research Specialist, Pfizer, Ann Arbor, MI.
- Gaurang Desai, M.D. (1993-1995), UIC, Alterations in Second-Messenger-Mediated Cl Transport in the Developing Colon. Neonatologist, Private Practice, Sacramento, CA.
- Ece Baris, M.D. (1994-1995), UIC, Alterations in Second-Messenger-Dependent Cl Transport in the Developing Colon: Differences Along the Cephalocaudal Axis. Pediatrician, Private Practice, Chicago, IL
- P. Mohan Reddy, M.D. (1993-1996), UIC, Growth and Attachment of Rabbit Colonocytes Isolated from Different Development Stages. Neonatologist Providence Hospital, Chicago, IL.
- Maria Carlos, M.D. (1995-2000), Illinois Masonic Hospital and Rush Medical School, Mucosal Growth and Differentiation in the Developing Colon. (Faculty Sponsor for Dr. Carlos' research program); Sheridan Health Corporation, Texas
- Selvaraj G. Nataraja, Ph.D. (1996-2000), UIC, Regulation of Cl- Transport in the Human Colon. Sero Reproductive Biology Institute, Randolph Massachusetts
- Gopal Chari, Ph.D. (1997-2000), UIC, Transport of Cocaine and Metabolites across Intestinal Epithelia. Department of Pediatrics.
- Jayashree Venkatasubramanian, (1999-2001), UIC, "Developmental Differences in the Regulation of Colonic Chloride Transport", Research Asst. Professor, UIC; Assistant Professor (effective August 2012) Illinois Benedictine College.

Dirk Weihrauch, Ph.D. (2001-2003), UIC, Mechanism of Action of Taurodeoxycholate in Colonic Chloride Transport”, Faculty, Department of Biology, University of Osnabrueck, Osnabrueck, Germany

Ph.D. Thesis Advisees:

These students won many local and national awards for their scientific work.

Wisuda Suvitayavat: (Ph.D. 1993). Characterization of the Sodium-Potassium-Chloride Cotransporter in Flounder Intestinal Mucosa. Professor, Department of Physiology, Faculty of Pharmacy, Mahidol University, Thailand.

Sheela G. Bhartur: (Ph.D. 1995). "Na/H Exchangers in Chicken Epithelial and Non-Epithelial Tissues". Physician, Department of Medicine, Shreveport, LA.

Grace R. Bissonnette: Role of Signal Transduction in the Human Rectal Mucosa in Cystic Fibrosis.

Jayashree Venkatasubramanian: (Ph.D. 1999). "Segmental and Developmental Differences in the Regulation of Colonic Chloride Transport", (See above).

Roli Prasad: (Ph.D. 2005) Second Messenger Signalling in the Colon. Lecturer, Illinois Benedictine College

Jainuch Kanchanapoo: (Ph.D. 2005) Student of Mahidol University, Bangkok, Thailand. Bile Acid Metabolism in the Colon. Joint supervisor, Major supervisor: Prof. Pawinee Piyachaturawat, Division of Biopharmacy, Faculty of Pharmaceutical Sciences, Ubon Ratchathani University, Ubol Rathchathani, Thailand

Chaiwat Boonkaewwan: (Ph.D. 2007) Student of Mahidol University, Bangkok, Thailand. Effect of Stevioside on Immunomodulatory Function of Epithelial Cells. Joint Supervisor, Major Supervisor: Prof. Chaivat Toskulkaeo. Faculty, Department of Animal Science, Faculty of Agriculture, Kasetsart University, Thailand

Utchariya Anantamongkol: (Ph.D. 2008) Student of Mahidol University, Bangkok, Thailand. Effect of Prolactin on Calcium Secretion from Mammary Epithelia. Joint Supervisor, Major Supervisor: Prof. Nateetip Krishnamra

Jada Dominique: (Current student): “Bile acids stimulate Cl⁻ secretion in the colonic epithelia via a receptor-mediated activation of CFTR”.

CURRENT ACADEMIC INTERESTS:

Related To Academic Administration:

In the 21st century, educational excellence in a global society can only be achieved if institutions of higher education, and especially public institutions, dedicate themselves to “providing educational

opportunity and promoting educational success for all of our children". Compelling evidence in the literature supports the notion that institutional commitment to diversity benefits all students. Diversity can be broadly defined to include all aspects of human differences, including gender, race, sexual orientation, disability, socio-economic status, status as a veteran, geographical diversity and religion. My interests rest in how to create an academic climate that will foster diversity and will weave diversity into the core values and curriculum of an institution. To this end I instituted the Diversity summit series which brings together faculty, staff and students from the three University of Illinois campuses to engage in how we can better support and foster diversity. I continue to be engaged in these conversations at the University of Illinois at Chicago.

Related To Research:

I lead a small research program, with a graduate student, a part-time Research Assistant Professor and a research specialist. This was critical in helping my administrative work over the past decade. My overall research interests are in understanding the molecular and cellular mechanism(s) underlying hormonal and neurotransmitter regulation of physiological processes. I am particularly interested in elucidating, at a molecular level, the processes that modulate ion transport across epithelia. Epithelia such as those lining the gastrointestinal tract are multi-faceted and complex. In these tissues, ion transport processes are involved both in the vectorial movement of salt and water and in general "housekeeping" functions such as regulation of volume, pH and growth. As a consequence, epithelial cells exhibit multiple layers of complexity, ranging from compartmentalization of transporters to different forms of transporters and multiple signaling cascades with extensive cross-talk. Our recent work focuses on discerning the biochemical basis of developmental differences in how the gut regulates chloride transport. This has implications in our understanding of infectious diarrheal diseases such as cholera and inherited diseases such as cystic fibrosis.