

CURRICULUM VITAE

Mary Cynthia (Cindy) Farach-Carson, PhD
Professor of Diagnostic and Biomedical Sciences
Associate Dean for Research
Director of Clinical/Translational Research
UTHealth, The University of Texas Health Science Center at Houston
School of Dentistry

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Scholarship

Google Scholar H-index = 77 (May, 2024)

Key words: Extracellular matrix, perlecan, tissue engineering, salivary gland, bone metastasis

Citizenship

U.S.A., Luxembourg

Education

- 1983-86 **Postdoctoral Fellow**, Department of Biochemistry and Molecular Biology, University of Texas System Cancer Center, Houston, Texas. (sponsor: W. J. Lennarz, Ph.D., NRSA Fellow)
- 1983 **Postdoctoral Fellow**, Department of Physiological Chemistry, Johns Hopkins University, Baltimore, Maryland (sponsor: W. J. Lennarz, Ph.D.)
- 1982-83 **Postdoctoral Fellow**, Department of Biochemistry, Medical College of Virginia/Virginia Commonwealth University, Richmond, Virginia (sponsor: M. Martinez-Carrion, Ph.D.)
- 1982 **Ph.D.**, Biochemistry, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia. Thesis Title: *Molecular aspects of biological modulation of acetylcholine receptor function*. (director: M. Martinez-Carrion, Ph.D.)
- 1978 **B.S.**, Biology (Magna cum laude), University of South Carolina, Columbia, S.C.

Other Academic Appointments

- 2017-pres **Adjunct Professor**, Department of Bioengineering, Rice University, Houston, TX
- 2017-pres **Adjunct Professor**, Department of BioSciences, Rice University, Houston, TX
- 2011-2017 **Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology** Department of BioSciences, Rice University, Houston, TX (on leave of absence 2016-17)
- 2014-2017 **Professor (tenured)**, BioSciences (department name change), Rice University, Houston, Texas (on leave of absence 2016-17)
- 2009-2014 **Professor (tenured)**, Biochemistry and Cell Biology, Rice University, Houston, Texas [Department merged into BioSciences]
- 2013-pres **Senior Member**, The Center for Theoretical Biological Physics, a Physics Frontiers Center established by the NSF, Rice University, Houston, Texas
- 2009-pres **Adjunct Professor**, Department of Genitourinary Medical Oncology, Division of Cancer Medicine, University of Texas M.D. Anderson Cancer Center, Houston, Texas
- 2008-2016 **Joint Professor**, Bioengineering, Rice University, Houston, Texas
- 2012-pres **Adjunct Professor**, Molecular and Cellular Biology, Baylor College of Medicine, Houston, Texas
- 2012-2016 **Adjunct Professor**, Oral and Maxillofacial Surgery, University of Texas School of Dentistry at Houston
- 2008-2017. **Member**, Institute of Biosciences and Bioengineering, Rice University, Houston, Texas.
- 2009-pres **Adjunct Professor**, Biological Science, University of Delaware, Newark, DE
- 2006-2009 **Founding Director**, Center for Translational Cancer Research, a center “without walls” representing the University of Delaware, Helen F. Graham Cancer Center at Christiana Hospital, A.I. duPont Hospital for Children, and the Delaware Biotechnology Institute.
- 2003- 2009 **Professor** (secondary appointment) Department of Materials Science and Engineering, University of Delaware, Newark, Delaware

- 2002-2009 **Member**, Biomechanics and Movement Science Program (BIOMS), University of Delaware, Newark Delaware
- 2002 - 2009 **Adjunct Professor**, Department of Urology, Winship Cancer Institute of Emory University College of Medicine, Atlanta, Georgia
- 2000 - 2009 **Professor (tenured)**, Department of Biological Sciences, University of Delaware, Newark, Delaware
- 2000 - 2009 **Affiliated Faculty**, Delaware Biotechnology Institute, Newark, Delaware
- 1998 – 2007 **Adjunct Faculty**, University of Texas, Dental Branch, Houston, Texas
- 1998 - 2000 **Associate Professor (tenured)**, Department of Biological Sciences, University of Delaware, Newark, Delaware
- 1998 - 2002 **Associate Member**, University of Texas Health Science Center at Houston, Graduate School of Biomedical Sciences, Houston, Texas
- 1997-99 **Adjunct Associate Professor**, Department of Urogenital Oncology, University of Texas M.D. Anderson Cancer Center and Member, Prostate Cancer Research Program, UTMDACC, Houston, Texas
- 1995-98 **Associate Professor (tenured)**, Department of Basic Sciences, Section of Biochemistry, The University of Texas Health Science Center, Dental Branch, Houston, Texas
- 1993-95 **Assistant Professor (tenure-track)**, Department of Basic Sciences, Section of Biochemistry, The University of Texas Health Science Center, Dental Branch, Houston, Texas
- 1991-93 **Assistant Professor (tenure-track)**, Department of Biological Chemistry, The University of Texas Health Science Center, Dental Branch, Houston, Texas
- 1990-98 **Member**, University of Texas Health Science Center at Houston, Graduate School of Biomedical Sciences, Houston, Texas
- 1987-91 **Research Assistant Professor**, Department of Biological Chemistry, The University of Texas Health Science Center, Dental Branch, Houston, Texas
- 1986-87 **Research Instructor**, Department of Physiology and Molecular Biophysics, Baylor College of Medicine, Houston, Texas

Administrative Experience Highlights

2022-pres Associate Dean for Research, School of Dentistry, UTHealth

As Associate Dean for Research, responsibilities include direct oversight and management of all research programs and resources at the School of Dentistry. Effort focuses on growth of UTSD's basic, clinical, translational and educational research portfolios, facilitating collaborative research, fostering faculty, trainee and staff development and scholarly activities, and ensuring UTSD remains current in research trends and applications. Other responsibilities include directing, integrating and supporting the student research programs, promoting research events, and representing UTSD on the UTHealth Research Council and related university organizations. The Associate Dean represents the Office of Research to internal and external academic communities, alumni, business and industry, government, foundations patient and practitioner groups, and the general community. While cultivating an environment of inclusion and respect for others, the Associate Dean liaises with department chairs, other Associate Deans, and the Office of the Dean.

2016-pres Director, Clinical and Translational Research, School of Dentistry, UTHealth

As Director of Clinical and Translational Research at the UTHealth School of Dentistry, part of the Center for Craniofacial Research (CCR) at UTHealth, responsibilities include serving as a catalyst for translation of discoveries made by faculty in the School and associated departments focused on craniofacial biology including bone and cartilage, oral health, salivary biology, diagnostics, biomaterials, devices and biosensors. The Director works closely with faculty to identify pathways to the clinic, to meet regulatory requirements, to help with IRB protocol preparation, to meet manufacturing needs and suggest GLP/GMP practices, and to network with investors and industry partners interested in innovation. A primary goal is to partner with Sponsors to bring new clinical trials to the School of Dentistry and encourage faculty participation in such trials.

2014-2016 Strategic Advisor, Clinical and Basic Research, Texas Medical Center

As Strategic Advisor, responsibilities include developing a Central IRB that will support TMC-wide clinical trials and large clinical research studies and serve as a unique new resource for large-scale clinical research endeavors that span multiple institutions; working with the TMC Research Council and TMC Institutes to foster collaborations including shared use of Core Facilities for cooperative research to the extent this is possible and practical; working with the Stem Cell Institute and various Centers focused on Regenerative Medicine to build a world class Institute for Regenerative Medicine recognized for research and translation to the clinic; helping to establish a stronger more cooperative agreement between the TMC and the Gulf Coast Consortia (GCC) to avoid duplication of efforts and to enhance research and training opportunities among the seven key GCC institutions; working with TMC Institutions to create reciprocal agreements and processes to avoid redundancy in several key areas that impact collaboration: A) credentialing; B) background checks; C) human subjects training; D) effort reporting; E) immunization requirements.

2011-2015 Scientific Director, BioScience Research Collaborative, Rice University and Vice Provost, Translational Bioscience

As Scientific Director of the BioScience Research Collaborative (BRC) and as Vice Provost for Translational Bioscience, formal responsibilities included oversight of the scientific operations of the 477,000 gross square foot facility designed to facilitate and encourage interactions among researchers and broadly oversee the interactions between Rice University and her biomedical partners in the Texas Medical Center. The Scientific Director provided broad oversight of the scientific endeavors of the BRC, which serves as a hub linking Rice researchers with their neighbors in the Texas Medical Center (TMC). A primary function of the Scientific Director and Vice Provost was to build interdisciplinary research collaborations in the broad spectrum of biomedical and health research and education, and to build and develop sustainable support for building multidisciplinary basic and translational research programs, including working with Federal (NIH/NSF/DOD) and State (CPRIT) agencies. Additional responsibilities included assisting with space planning, working closely with the Director of Operations and the Vice Provost for Research to build programs that facilitated the scientific enterprise.

2009-2011 Associate Vice Provost for Research, Rice University

As the first Associate Vice Provost for Research at Rice, primary responsibilities for this position included building collaborations between Rice and local biomedical research and educational institutions through the BioScience Research Collaborative (BRC), which opened July 1, 2009. The BRC serves as a hub linking Rice researchers with their neighbors in the Texas Medical Center (TMC). A primary function of the AVPR is to build interdisciplinary research collaborations in the broad spectrum of biomedical and health research and education. The AVPR helped provide scientific leadership and vision for the BRC and also helped expand the ability of the Office of Research to support faculty research activities.

2006- 2009 Founding Director, CTCR, University of Delaware

The CTCR is a formal alliance of the University of Delaware/Delaware Biotechnology Institute, the Helen F. Graham Cancer Center (HFGCC) at Christiana Care, and the Nemours/Al duPont Hospital for Children. The Center fosters a fully functional academic and research partnership with the Kimmel Cancer Center at Thomas Jefferson University, the official medical school for the State of Delaware established through the DIMER program in 1969. The CTCR was created as a center “without walls” to transform clinical, educational and basic scientific efforts in translational cancer research within the State of Delaware into a cohesive effort aimed to reduce the impact of cancer on Delaware families and businesses. As its ultimate goal, the CTCR seeks to enhance State efforts in advocacy, research, education, and community health to reduce the incidence, morbidity and mortality of cancer related disease in Delaware.

2006-2009 Member, Delaware Cancer Consortium, State of Delaware

In 2002, a task force was formed by Governor Ruth Ann Minner to learn why cancer incidence and mortality in Delaware were among the highest in the nation. Volunteers from medical communities, practitioners, legislators, the division of public health and cancer patients themselves were recruited to develop an actionable, measurable plan. As a member of the Early Detection and Prevention Committee, we developed five goals: 1) Enhance the Cancer Screening Nurse Navigator program to promote colorectal, prostate, breast and cervical cancer screening; 2) Reimburse colorectal, prostate, breast and cervical cancer screening for Delawareans who meet age and income eligibility guidelines; 3) Provide HPV vaccine to girls and women ages 9 through 26; 4) Expand Mobile Cancer Screening services to include cervical cancer screening in addition to mammography services; 5) Study the impact of barriers to cancer screening and put in place programs/services to screen at-risk populations. I served as the University of Delaware representative to the committee and worked to bring these efforts to the UD campus.

Memberships in Professional Organizations

American Association for the Advancement of Science (Fellow)

American Institute for Medical and Biological Engineering (Fellow)

American Society for Bone and Mineral Research

American Association for Cancer Research

American Society for Matrix Biology (Elected to Council 2002 - 2006)

American Dental Education Association

Association for Women in Science (Gulf Coast Chapter)

Daughters of the American Revolution, Independence Hall Chapter

Endocrine Society

International Association for Dental Research/American Association for Dental, Oral and Craniofacial Research

Phi Beta Kappa

Sigma Xi (inactive)

Honors and Awards

2023 D. Dudley and Judy White Oldham Faculty Award for excellence in service and leadership, UTMDAnderson/UTHealth Graduate School of Biomedical

- Sciences, Houston, TX
- 2021 Stephen M. Krane Award, American Society for Bone and Mineral Research, San Diego, CA
- 2018 Elected AIMBE Fellow, Washington, D.C.
- 2016 Translational STARS Award, The University of Texas System, Austin, TX
- 2016 Presidential Mentoring Award, Rice University, Houston, TX
- 2014 Hearts of Gold Honoree, Honoring Women in Health Care, The Health Museum, Houston, Texas
- 2010 Elected AAAS Fellow, Section on Biological Sciences, Washington, D.C.
- 2011 Plenary Poster Presentation, Assoc. Bone and Mineral Research, San Diego, California
- 2009-pres International Rett Syndrome Foundation, Scientific Review Board
- 2007 Sponsor, Dr. Ilka Nemere (Utah State), Visiting Professorship Award
- 2007 Sponsor, Dr. Susan Safford (Lincoln University), Visiting Professorship Award
- 2005-06 Community Services and Education Fellow, Christiana Care, Newark, DE
- 2004 Faculty opponent, Defense of Dissertation, Dr. Eszter Somogyi-Ganss, Center for Oral Biology, Karolinska Institutet, Stockholm, SWEDEN
- 2003 Faculty opponent, Defense of Dissertation, Dr. Patrik Lundquist, School of Dentistry, University of Goteborg, Goteborg, SWEDEN
- 2002 Sponsor, Dr. Marian Walters (Tulane University), American Physiological Society, Visiting Professorship Award
- 2001 Sponsor, Dr. Susan Safford (Lincoln University), ASCB Minority Affairs Committee, Visiting Professorship Award
- 2000 Plenary Poster Presentation, Assoc. Bone and Mineral Research, Toronto, Canada
- 1999 Plenary Poster Presentation, Assoc. Bone and Mineral Research, St. Louis, Missouri

- 1994-97 Dean's List for Teaching Excellence, The University of Texas Health Science Center Dental Branch and The University of Texas-Houston Graduate School of Biomedical Sciences, Houston, Texas
- 1995 John Freeman Outstanding Teacher Award, The University of Texas Health Science Center Dental Branch, Houston, Texas
- 1990-92 Deans List for Teaching Excellence, The University of Texas Health Science Center Dental Branch, Houston, Texas
- 1991 Young Investigator Award, Presented at Eighth Vitamin D Workshop, Paris, France
- 1983-86 NIH/NRSA Postdoctoral Fellowship, The University of Texas System Cancer Center, Houston, Texas
- 1978-79 A.D. Williams Fellowship for Graduate Study, Medical College of Virginia
- 1975-76 Outstanding Freshman, awarded by Phi Beta Kappa, University of South Carolina, Columbia, South Carolina

Reviewer Experience

- Currently Reviewer, manuscripts for the following representative journals: Biomaterials, Cancer Research, Journal of Bone & Mineral Research, Developmental Biology, Frontiers, Journal of Cellular Biochemistry, Journal of Cell Biology, Journal of Clinical Investigation, New England Journal of Medicine, Molecular Endocrinology, American Journal of Physiology, Bone, In Vitro, Matrix Biology, Tissue Engineering, The Prostate, Biology of Reproduction, Journal of Biological Chemistry, Bone, Journal of Dental Research, JPET, Journal of Orthopaedic Research, PLoS One, Scientific Reports, FASEB J, JOVE, Biomaterials, Biomolecules etc.
- 2023 Outstanding Reviewer, Acta Biomaterialia
- 2021 Reviewer, NIH/NCI Developmental Therapeutics Study Panel (two meetings)
- 2020 Reviewer, NIH/NCI, Developmental Therapeutics Study Panel
- 2019-20 Reviewer, Limited Submission, CPRIT grants, UTHealth
- 2019 Reviewer, RFA: Enabling Technologies to Accelerate Development of Oral Devices, NIDCR/NIH
- 2019 Reviewer, Grant Proposal, FWF Austrian Science Fund, Vienna, Austria

- 2019 Reviewer, Cancer Biotherapeutics Development (CBD) Oncology 2 - Translational Clinical IRG (OTC), STTR/SBIR grants
- 2019 Reviewer, Division Biology and Medicine, Swiss National Science Foundation
- 2018 Reviewer, NIH ZRG1 OBT-K (02) Member Conflict Study Panel, Oncology 1 – Basic Translational IRG
- 2017 Reviewer, NIH/NCI/ Cancer Biotherapeutics Development (CBD) Oncology 2 - Translational Clinical IRG (OTC), STTR/SBIR grants
- 2017 Reviewer, NIH/NCI Study Panel for “Biological Comparisons in Patient-Derived Models of Cancer”
- 2017 Chair, NIH/NIDCR Study Panel for RFA “Biosensors in the Oral Cavity”
- 2016 Reviewer, RettSyndrome Foundation, research grant applications
- 2016 Reviewer, NIH/NIDCR R35 applications, Sustaining Outstanding Achievement in Research (SOAR)
- 2016 Reviewer, Israel Science Foundation, research grant applications,
- 2015 Reviewer, Oncological Sciences F09B Fellowship Review Panel (NIH)
- 2006-13 ASBMR abstract reviewer
- 2011 TERMIS, abstract reviewer
- 2011 Judge, Rolanette and Berdon Lawrence Research Award Competition, Baylor College of Medicine
- 2010-11 Special Panel reviewer IRSF Translational Research Program Grants (IRSF = International Rett Syndrome Foundation)
- 2007 Reviewer, PO1 applications, NCI/NIH (Special Panel)
- 2004 Special Reviewer, University of Texas Medical Branch, Galveston, TX Bridge Grant Program
- 2002-05 NSF Reviewer (*ad hoc*)
- 2002-04 Regular Member OBM2, reorganized into SBDD Study Section [2004], NIH, CSR

- 2001 OBM2 Special Panels
- 2001 NIH, NIDCR Special Panels
- 2000 Special Reviewer, NIH/OBM2 Special Panel
- 1999 Special Reviewer, Small Grants Program NIH/NIDCR (Panel Chair)
- 1999 Ad Hoc Reviewer NIH, Orthopaedics Study Section, Oral Biology and Medicine Study Section
- 1996-98 Reviewer, Special Panel Review NIH; NIAMS Core Center Review Panel
- 1995-98 Regular review member, Study Section, Oral Biology and Medicine 2 (OBM2), NIH, Division of Research Grants (now CSR)
- 1995-96 Grant Reviewer, National Science Foundation
- 1994 Ad hoc Reviewer, Small Grants Program, NIH
- 1993-94 Ad hoc Reviewer, Oral Biology & Medicine Study Section, NIH
- 1991 Ad hoc Reviewer, R01 grant, NIH

Boards, Consultantships & Editorial Responsibilities

- 2023-pres Editorial Board, Proteoglycans
- 2022-pres Editorial Board, J. Dental Research
- 2021-pres Scientific Advisory Board, Organamet Bio, Inc., a Delaware Corporation
- 2020-pres Chair, External Advisory Board for Biotechnology Program, Houston Community College, Houston, TX
- 2014-pres Center for Theoretical Biological Physics, Senior Scientist & Steering Committee
- 2020-pres Editorial Board, Biomolecules
- 2019 External Examiner, Doctoral Defense Allison Wilkin, Human Health and Nutritional Sciences, College of Biological Science, University of Guelph Guelph, ON

- 2018 External Advisor and Program Review, Biomedical Engineering Doctoral Program Boise State University,
- 2017-2023 Councilor, AADOCR representing the UTHealth School of Dentistry
- 2016 External Advisory Board and Advisor, Research Day for T32 “Training Program in Musculoskeletal Research”, Case Western Reserve University
- 2016-pres Editorial Board, Matrix Biology (rejoined)
- 2014-pres Strategic Advisor for Basic and Clinical Science, Texas Medical Center
- 2014-pres Advisor, TMCx business accelerator, Texas Medical Center
- 2012-pres Scientific Review Board, RettSyndrome.org
- 2010-2015 Rice representative to Gulf Coast Consortia, elected Vice Chair 2014, Houston, TX
- 2012-2017 CPRIT MIRA External Advisory Board, UT M.D. Anderson Cancer Center
- 2012-2017 Academic Advisory Panel, Baylor College of Medicine Orthotic and Prosthetic Program, Houston, TX
- 2011-2014 Advisory Committee, Center for Biomolecular Structure and Function, M.D. Anderson Cancer Center, Houston, TX
- 2010-2012 Editorial Board, Matrix Biology
- 2010-2012 Member of Advisory Board, Alliance for NanoHealth, Houston TX
- 2010-2012 Oversight Committee, Center for Biomolecular Structure and Function, Houston, TX
- 2010-2012 CTSA Scientific Advisory Board, Baylor College of Medicine, Houston, Texas
- 2010-2013 CPRIT MIRA Scientific Advisory Board, Baylor College of Medicine, Houston, Texas
- 2010-2011 External advisor, Search for Director, Institute of Biosciences and Technology (IBT)
- 2000 - 2014. Co-Editor, seven volume reference book work “Topics in Bone Biology”, Springer Verlag, Publisher, with Felix Bronner and volume guest editors as

noted 1. Bone Formation (Oct, 2003) 2. Bone Resorption (July, 2005) with J. Rubin 3. Skeletal Tissue Engineering (Mar, 2007) with A. Mikos 4. Bone and Osteoarthritis (Oct, 2007), 5. Cancer and Bone (Jun, 2009) 6. Bone and Development (Mar, 2010) with H.I. Roach (Volume 7 Bone-Metabolic Functions and Modulators (June, 2012).

2007-2009. Advisory panel member, Delaware Cancer Consortium, a public health based group sponsored by Delaware Department of Public Health.

2001 – 07 Editorial Board, The Scientific World, Bone Domain

2001-02 External Advisory Board, Osiris Therapeutics, Inc., Baltimore, MD, Bone projects

1999 - 2002 Editorial Board, Am. J. Physiol., Endocrin. and Metab.

Meetings Organized

Steering Committee, Gulf Coast Consortia, Integrative Development Regeneration and Repair Symposium, 2024

Co-Organizer Gulf Coast Consortia, Regenerative Medicine Workshop, 2022

Co-Organizer Gulf Coast Consortia, Symposium Regenerative Medicine, 2021

Co-Organizer Gulf Coast Consortia, Symposium Regenerative Medicine, 2019

Co-Organizer Gulf Coast Consortia, Symposium Regenerative Medicine in Aging, 2018

Co-Organizer Gulf Coast Consortia, Symposium Regenerative Medicine, 2017

Co-Organizer, International Bone Fluid Flow Conference, satellite of the American Society for Bone and Mineral Research Meeting, Houston, 2014

Co-Organizer, Electronic Health Research Summit, Houston, 2013

Member, Organizing Committee, TERMIS-NA Conference, Houston, 2011

Member, Program Committee and Session Chair, Osteoblasts: Differentiation and Function, ASBMR, 2010

Poster Session Chair, Cartilage, Bone and Matrix Biology ASBMR, 2008, 2009

Member, Program Committee, 13th Vitamin D Workshop, 2006, Victoria, Canada

Member, Advisory Board, 8th International Conference on the Chemistry and Biology of Mineralized Tissues, 2004, Banff, Alberta, Canada

Co-Organizer, FASEB Summer Res. Conference on Steroid Hormone Receptors 2004, Tucson, Arizona

Member, Organizing Committee, Biomaterials- The Next Frontiers: Biomedical, Bioelectronic, Biomineralization, Bioanalytical, 2002, Newark, Delaware

Member, Organizing Board, 3rd International Conference on Osteopontin, 2002, San Antonio, Texas

Member, Advisory Board, 7th International Conference on the Chemistry and Biology of Mineralized Tissues, 2001, Ponte Vedra Beach, Florida

Committee Service & Experience

American Association for Dental, Oral, and Craniofacial Research

Institutional Representative, AADOCR Mentoring an Inclusive Network for a Diverse Workplace of the Future (AADOCR Mind the Future) [with support NIDCR]

Mentor, Cohort III, Mind the Future, (2022-pres)

Texas Medical Center

Advisor, TMCx/TMC, 2015-2020

Co-Chair (with William McKeon), Council of Research Directors, 2018

Co-Chair (with Dr. Robert Robbins), Council of Research Directors, 2014-2016.

Council of Research Directors, Rice Representative 2011-14

Member, Strategic Design and Planning team, Institute for Regenerative Medicine, 2013-14

Gulf Coast Consortia

Co-Chair, Regenerative Medicine Consortium (2017-2022)

Member Steering Committee, Cluster in Regenerative Medicine (2015-17)

Rice University

Member/Chair, various search committees including faculty, staff, and high level administrative.

Co-Chair, eHRI Development Committee (Rice, BCM, UTMDACC), 2012-2015

Rice-Baylor College of Medicine Inter-Institutional Agreement Committee, 2012-2015.

Member, Board of Directors, Houston Area Translational Research Consortium (HATRC) a 501(c)(3) organization affiliated with Rice University, 2011-2015

Member, Operations and Governance Committees, BioScience Research Collaborative, 2009-2010

Chair, Institutional Biosafety Committee, 2009-2010

Member, BCB Graduate Curriculum Committee, 2010-2014

Chair, BCB Graduate Grievance Committee, 2010-2016

Member, GCC CPRIT Committee, 2010-2015

Member, Task Force on BioSciences and Human Health, 2010

Ad hoc Committee on Research Data Retention Policy

Faculty Associate, Lovett College

The University of Texas M.D. Anderson Cancer Center

Member, Structural Biology Biophysics Faculty Search Committee, 2010-11

Texas A & M Institute for Biosciences and Technology

Search Committee, Center Director, 2010-11

The University of Delaware

Planning Coordinator, Center for Translational Cancer Research, Pavilion Building
Project Christiana Care Health Systems 2007-2009

Member, Research Council, includes strategic planning for interdisciplinary research across the university, including IACUC and IRB infrastructure and planning 2008-2009

Chair, Faculty Search Committee, Cancer Genetics (Biology), 2008-09

Member, Faculty Search Committee, Molecular Physiology (Biology), 2007-08

Member, Faculty Search Committee, Biomath, 2007-08

Member, Faculty Search Committee, Chemistry and Biochemistry, 2005-06

Chair, Library Committee, 2001 – 2009(includes D-Space liason)

Member, Biological Sciences Steering Committee, 1999 - 2009

Member, *Ad hoc* Committee for Storeroom Outsourcing, 2004-05

“Renovation Coordinator, Biological Sciences”, Wolf Hall Renovation Team: major project that involved overseeing departmental needs in \$27 Million Dollar building renovation, 1998-2003

Preliminary & Qualifying Graduate Exam Committees, annually (1999-2009)

Promotion and Tenure Committee, 2001, College of Arts and Science

Member, Faculty Search Committee, 2000-2001

Special Project, web-based application for undergraduate research, 1999-2000

Member, Graduate Affairs & Admissions Committee, 1998 - 2001, (1999-2001, Committee Chair)

Member, Departmental Space Committee, 1998-2000

Member, IdeA Grant Faculty Search Committee, 1998-1999

Member, Graduate Director Faculty Search Committee, 1998-1999

The University of Texas Health Science Center

Member, Research Service Center Executive Committee, UTHealth, 2023-pres

Member, COVID-19 Clinical Research Review Committee, UTHealth, 2020-2022

Member, Search Committee, Director, Pediatric Research Center, 2022-23

Member, Search Committee, Assistant Professor, Pediatrics 2022-23

Member, Appointment, Promotion, and Tenure Committee, UTHealth School of Dentistry (2019-2022)

Member, UTHealth-wide Clinical Trials/Research Strategy Discussion Group, member working subgroup *Faculty Development and Incentivization* (2019-2021)

Chair, Clinical Research Committee, UTHealth School of Dentistry, 2017-present
 Member, Research Committee, UTHealth School of Dentistry, 2016-present (*ad hoc* 2023-pres)

Chair, Ad Hoc Inquiry Committee, 2018

Dean's Review Committee, UTHealth, 2017

Search Committee, Pediatrics Faculty, McGovern Medical School, 2016-17

Reviewer, Small Grants, Ted Nash Long Life Foundation, 2016

Member, The University of Texas System Committee on the Advancement of Women, 1994-1998

Member, The University of Texas Dental Branch Faculty Compensation Plan Committee
 Chair, 1995-1997

Member, The University of Texas Dental Branch Representative to The University of Texas-Houston Faculty Salary Equity Committee, 1994-1997

Committee on the Status of Women, 1992-96

Member, *ex-officio*, 1996

Chair of Committee, 1994-95

Co-organizer, Take your Daughter to Work Day, The University of Texas Health Science Center, 1994

Member, Professional Development Subcommittee, 1993-94

Member, Status of Women Subcommittee, 1992-93

The University of Texas Health Science Center, School of Dentistry

Faculty/Research Formal Mentor: Cameron Jeter (2017-pres), Kurt Kasper (2016-pres), Helder Jacob (2016 pres), Chun-Teh Lee (2017 pres), Neha Parikh (2017-pres), Alan Myers (2017-pres), Esther Kuyinu (2020-pres), Ji Wook Jeong (2020-pres).

CODA Ad Hoc Self-Study Committee/Standard 6/Research, 2018-19

Chair Clinical Research Subcommittee, 2017-pres

Research Committee, 2016-pres

Member, Diagnostic and Biomedical Sciences Department, Leadership Committee

SOD IT Procurement Team, 2017-pres

Search Committee, Physiology Faculty Search, 2017

Search Committee, Associate Dean for Professional Development and Faculty Affairs, 2016

Faculty Appointment, Promotion, Tenure Committee, 1997-98

Research Action Team, Department of Basic Sciences, 1996-1998

Research Committee 1990-1996

Co-Chair, Student Research Subcommittee, 1993-1995

Co-Organizer, Summer Research Orientation Program, 1992-1994

Member and Chair, Research Committee, Reviewer, BRSG grants, student fellowships, 1993

Member, Planning Committee - Research Day

Search Committee, Faculty, Dental Hygiene, 1995

Search Committee, Faculty, Periodontics, 1995

Search Committee, Director, Dental Hygiene, 1994

The University of Texas Health Science Center, Graduate School of Biomedical Sciences

Internal Reviewer, Neuroscience Program, 2023

Facilitator, Mentoring Works!, 2021-pres

Executive Committee, 2021-2023

Student Intercouncil (SIC) Faculty Advisor 2019-pres

Membership Committee, 2020-2023, Chair 2021-22

Panel Discussant, Faculty Workshop - Managing Expectations through the COVID-19 Pandemic, 2020

Biochemistry and Cell Biology Program, 2016-pres

Associate Member, Medical Physics Program, 2016-pres

Specialized Masters Committee, 1997-1998

UTHSC GSBS Review Committee, 1996-1998

Ombudsman, 1996-1998

Curriculum Committee, Chair, 1995-1996

Executive Committee, 1995-1996

Curriculum Committee, 1993-1996

Sponsorship of D.D.S., M.S. Students

Randy Snyder, D.D.S., M.S., 1995

Andrea Varesic, D.D.S., M.S., 1997

Mesaad Bahatheq, D.D.S., M.S., 1998

M.S. or Ph.D. Students Supervised to Degree

University of Texas Health Science Center (G.S.B.S.)

Robert E. Devoll, D.D.S., Ph.D., 1997

J. Gary Meszaros, Ph.D., 1997

Jeffrey Safran, Ph.D., 1999

Riting (Allan) Liu, Ph.D., 1999

Jeffrey Kiefer, Ph.D., 2001

Tristen Tellman, Ph.D., 2022

Saleh Ramezani (Ph.D., 2023); with co-advisor Dan Harrington

Caitlynn Barrows (Ph.D. candidate); with co-advisor Simon Young

University of Delaware

Joel Bergh, Ph.D., 2003

Yihuan (Catherine) Xu, M.S., 2003

Rania Al-Shami, Ph.D., 2004

Caroline Muir, M.S., 2004

Ying Shao, Ph.D., 2005

Jeff Wallis, M.S., 2005

Ben Rohe, M.S., 2006

Anissa Brown, Ph.D., 2008

Lynn Schwarting-Opdenaker, Ph.D., 2009

Rose Deeter, Ph.D. (with co-advisor Carolyn Schanen, M.D.,Ph.D.), 2009

Angela Petiak M.S., 2008

Curt Warren M.S., 2009; joined Rice Ph.D. program 2009

Swati Pradhan Ph.D., 2010

William Thompson Ph.D., 2010 (BIOMS program)

Lisa Gurski Ph.D. (DOD Fellowship), 2012

Brian Grindel (Ph.D. Candidate/CBI program); transferred to Rice 2009

Rice University

Ariel Diaz M.A., 2012

Derek Shenefelt M.A., 2012

Curt Warren Ph.D., 2014

Brian Grindel Ph.D., 2015

Eliza Fong Ph.D., 2015, Bioengineering, with Antonios Mikos; co-advisor

Jerahme Martinez Ph.D., 2016

Patricia Chapela Ph.D., 2017, with Daniel D. Carson; co-advisor

Mariane Martinez Ph.D., 2019, NSF Fellowship, with Dan Harrington; co-advisor

Kelsea Hubka Ph.D.,2019, NRSA Fellowship, Bioengineering, with Antonios Mikos; co-advisor

Lindsey Sablatura Ph.D., 2020

Alexandru Dan Grigore Ph.D., 2020, with Dr. Herbert Levine; co-advisor)

Fabio Brasil Ph.D., 2020 with Dan Carson; co-advisor

Caitlin McCowan, Ph.D., 2022 Electrical Engineering, with Dr. Pratip Bhattacharya

Maximilen DeLeon, (Ph.D. candidate) Bioengineering, with Dr. Danielle Wu; co-advisor

Sponsorship of Postdoctoral Fellows

Co-Director T32 *Neural Control of Organ Degeneration and Regeneration (NeuralCODR)* NINDS (2022-pres). Foster a new generation of faculty and scientists by creating new cross-disciplinary projects, through which postdoctoral trainees can acquire and develop techniques to bridge the gap between neuroscience and organ modeling or function. (With Dr. Phil Horner, Houston Methodist Research Institute)

University of Delaware/University of Texas Health Science Center/Rice University
Jeffrey Safran, Ph.D.

Ronald Gomes, Ph.D. (NRSA Fellow, Delaware Biotechnology Institute, NRSA Fellow)

Riting (Allan) Liu, Ph.D. (with Dr. Daniel Carson)

Kamil Akanbi, Ph.D.

Jean Weber, D.M.D.

Wei Li, Ph.D.

Cristiana Savoré, Ph.D.

Van Tanh Ta, Ph.D. (with Dr. Daniel Carson)

Weidong (William) Yang, Ph.D. (with Dr. Daniel Carson)

Chu Zhang, Ph.D. (with Dr. Daniel Carson) (DOD postdoctoral fellowship awardee)

Nikki Delk, Ph.D. (NRSA fellow; K award, Faculty Fellow), now tenure track at University of Texas, Dallas

Daniel Harrington, Ph.D. (Faculty Fellow)

Danielle Wu, Ph.D. (NRSA Fellow)

Valeria Ferrer, Ph.D. (CNPq Scholar)

Brian Grindel, Ph.D.

Lisette Cruz, Ph.D. (CPRIT Computation Cancer Training Program Fellow)

Kelsea Hubka, Ph.D.

Shivanand Pudakalakatti, Ph.D. (CPRIT Fellow with Dr. Pratip Bhattacharya, UTMDACC)

Jiasong Li, Ph.D. (CPRIT Fellow with Dr. Steven Wong, Houston Methodist)

Lindsey Sablatura, Ph.D.

Undergraduate Honors with Distinction Theses Supervised, University of Delaware

Katherine Gambleé Wallendjack, 2001

Erwin Puente, 2003

Dave Nation, 2004

Erin Kenaley, winner best senior thesis in biological sciences, 2005

Sonali Joshi, winner Sigma Xi thesis award, 2006

Brian Grindel, 2008, winner of Johnson Award and Goldwater Scholarship

Amber Majid, 2009

Matt Richards, 2009

Mark Sausen, 2009

Neeta Jain, 2010

Undergraduate Research Supervised

In a typical semester and during the summer, there are 4-8 undergraduate students working in the laboratory for independent credit or as fellows of undergraduate programs.

Research Grants for Undergraduate Education

Transforming Undergraduate Education Award: “Exploring A Career in Cancer Genetics with the Family Cancer Risk Registry”; funding for three students per year to participate in this project during the summer. \$25,000.

Community Service

Member, Comprehensive Cancer Control Community, Smoking Working Group, 2010-2012, Houston, Texas

Member, Delaware Cancer Coalition, Early Detection and Prevention Committee (state sponsored)

League of Women Voters, New Castle County, Delaware

Sponsor, Senior Research Project, Charter High School Science Department

Biotechnology Summit, Invited speaker, New Castle School Districts, New Castle County, Delaware

Speaker, Delaware Aerospace Academy, Newark, Delaware

Science Alliance Outreach, Speaker on “Careers in Biology”, 1999, Marbrook Program, Elementary School, Wilmington, Delaware

Houston Independent School District, Houston, Texas

VIPS Program, Volunteers in Public Schools, Houston, Texas

Participant, Career Day, Houston, Texas

Judge, Science and Engineering Fair, Houston, Texas

Lecturer, La Escuela Rice, Houston, Texas

Judge, Student Research Presentations, Graduate School of Biomedical Sciences, Houston, Texas

Judge, Three Minute Thesis Competition, Houston Methodist Research Institute Postdoctoral Association (MAPTA)

Teaching Responsibilities

Rice University

Co-coordinator, Responsible Conduct of Research, UNIV 594, Fall, annual 2011-15

Coordinator and Instructor, BIOC/BIOE 460/560 Cancer Biology, Spring, 2011-16.

Instructor, BIOC 588 Cellular Interactions (3 lectures), Spring, 2013-16, Spring, 2022 (1 lecture)

Guest Instructor, RUSP (1 lecture), Spring, 2012-15

Co-Instructor FWIS 160 “Demystifying Bioscience for the Public”, Spring, 2013

Lecturer, Rice University, Advances in Tissue Engineering, 1996-present (summer course)

University of Delaware

Coordinator and Instructor, BISC 413 Advanced Genetics Laboratory; Fall, 2004

Co-coordinator and Lecturer, BISC 612 Advanced Cell Biology; (½ of course) Spring (annual); full responsibility for course from Spring, 2007 to 2009

Lecturer, Human Anatomy & Physiology; 1 lecture, Winter, 2000

Coordinator & Lecturer: BISC 806, Advances in Cell & Organ Systems; “Topics in Extracellular Matrix”, Spring 1999 and every other odd year thereafter through 2009.

Coordinator & Lecturer: BISC 833, Translational Biology, course for graduate students and residents instituted Spring, 2007

Lecturer, BISC 665, Advanced Molecular Biology & Genetics; 5 lectures, Fall (annual)

Lecturer BISC 605, Physiology, 2 lectures, Fall (annual)

Lecturer, Rice University, Advances in Tissue Engineering, 1999 - present (invited)

University of Texas Health Science Center-Houston

Module Presenter, 1991: Introduction to Dental Informatics, UTHealth School of Dentistry. 2019-present

Lecturer, Endocrine Block (five lectures), 1510: Biomedical Science Core, UTHealth School of Dentistry. 2017-present

Lecturer, Fundamentals of Biology (six lectures), Medical Physics Program, G.S.B.S. 2017-present

Co-Organizer and Lecturer: Topics in Extracellular Matrix, G.S.B.S. 1992-98

Organizer: Basic and Applied Nutrition, U.T.D.B. 1997-98

Co-PI: Training Grant for Pre- Professional [Dental] Students (with John Powers, PI)

Lecturer, Molecular Basis of Hormone Action and Signal Transduction, G.S.B.S., 1994-98

Lecturer, Cell Biology, G.S.B.S., 1992-98

Lecturer, Oral Biology II, U.T.D.B., 1991-96

Lecturer, Physiology (Blood Module), U.T.D.B., 1997-98

Lecturer, Biochemistry 1010 and 1529, U.T.D.B., 1990-98

Lecturer, Advanced Biochemistry, G.S.B.S., 1989-95

Lecturer, Topics in Pharmacology and Regulatory Biology, G.S.B.S., 1993

Presentations

Invited Seminars/Talks/Oral Presentations

- 1) "Antibody probes to the acetylcholine receptor." National Institute of Arthritis, Metabolism, and Digestive Diseases, National Institutes of Health, Bethesda, Maryland, 1982
- 2) "Calcification in the sea urchin embryo." Sea Urchin Symposium, Woods Hole Study Center, Woods Hole, Massachusetts, 1985
- 3) "1,25(OH)₂D₃ activates osteoblast Ca²⁺ channels." Annual Meeting of the ASCB, Subgroup Meeting on Osteoblast and Osteoclast Function in Bone Remodeling, Houston, Texas, 1989
- 4) "Bone 60K protein is α_2 HS glycoprotein." Department of Physiology, University of Texas Medical School, Houston, Texas, 1990
- 5) "Rapid effects of 1,25(OH)₂D₃ on osteoblasts." Texas Mineralized Tissues Society, Kerrville, Texas, 1990
- 6) "Non-genomic effects of vitamin D on osteoblasts." Dept. of Orthopaedic Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania, 1990
- 7) "Activation of Ca²⁺ channels by 1,25(OH)₂D₃." Texas Mineralized Tissues Society, Galveston, Texas, 1991

- 8) "Activation of Ca²⁺ channels by 1,25(OH)₂D₃." 8th Workshop on Vitamin D, Paris, France, 1991
- 9) "Alternative pathways for activation of osteoblasts by 1,25(OH)₂D₃." Dept. of Biochemistry, University of California at Riverside, Riverside, California, 1992
- 10) "Vitamin D analogs: Dissection of genomic and non-genomic pathways." Dept. of Biochemistry and Molecular Biology, UT MD Anderson Cancer Center, Houston, Texas, 1992
- 11) "Rapid effects of 1,25(OH)₂D₃ on osteoblast function." Renal Division, Jewish Hospital of St. Louis, Washington University Medical School, St. Louis, Missouri, 1992
- 12) "Alternative pathways for activation of osteoblasts by 1,25(OH)₂D₃." Dept. of Physiology, and Cell Biology, University of Texas-Houston, Medical School. Houston, Texas. 1992
- 13) "Vitamin D analogs." Dept. of Laboratory Medicine, UT MD Anderson Cancer Center, Houston, Texas, 1992
- 14) "Non-genomic regulatory mechanisms." Texas Mineralized Tissues Society. San Antonio, Texas, 1992
- 15) "Rapid effects of 1,25(OH)₂D₃ on osteoblast function." Nutrition Sciences, University of Alabama at Birmingham, Birmingham, Alabama, 1992
- 16) "Regulation of osteoblast function by 1,25(OH)₂D₃." Division of Cytokine Research, University of Texas Cancer Center, Houston, Texas, 1993
- 17) "Vitamin D₃ signaling pathways in osteoblasts." Division of Life Sciences, University of Missouri, Kansas City, Kansas City, Missouri, 1993
- 18) "Dissection of genomic and non-genomic responses to 1,25(OH)₂D₃ in osteoblasts." Dept. of Endocrinology, University of Texas Medical Branch, Galveston, Texas, 1993
- 19) "Vitamin D₃ signaling pathways in osteoblasts." Dept. of Endocrinology and Metabolism, University of Texas Health Science Center, San Antonio, Texas, 1993
- 20) "Vitamin D₃ signaling pathways in osteoblasts." Houston Matrix Assembly, Texas Medical Center, Houston, Texas, 1993
- 21) "Rapid actions of vitamin D analogs" 1994, (FASEB), Symposium on Pleiotropic Actions of Vitamin D, Los Angeles, California, 1994

- 22) "Dissection of genomic and nongenomic pathways in osteoblasts with vitamin D analogs." 9th Workshop on Vitamin D, Orlando, Florida, 1994. (Speaker and Discussion Leader)
- 23) "Vitamin D signaling in osteoblasts." Dept. Of Anatomy, Indiana University School of Medicine, Indianapolis, Indiana, 1994
- 24) "Use of Vitamin D analogs as therapeutic agents." Eli Lilly Pharmaceuticals. Indianapolis, Indiana, 1994
- 25) "Vitamin D effects on calcium channels in osteoblasts." International Congress on hormonal steroids, Dallas, Texas, 1994
- 26) "Organ selective actions of steroid hormones." Workshop, Schering Research Foundation, Berlin, Germany, 1995
- 27) "Vitamin D, calcium channels, and bone." John Blaffer Lecture Series, The University of Texas M.D. Anderson Cancer Center, Houston, Texas, 1996
- 28) "Bone proteins and prostate cancer." Urology research, The University of Texas M.D. Anderson Cancer Center, Houston, Texas, 1996
- 29) "Bone matrix proteins and vitamin D" NASA space science consortium. Clear Lake, Texas, 1996
- 30) "Vitamin D, calcium, and bone." University of Tulsa. Tulsa, Oklahoma, 1996
- 31) "Extracellular matrix." Advances in Tissue Engineering, Rice University. Houston, Texas, 1996
- 32) "Vitamin D, calcium channels, and bone." Blaffer Lecture Series, UTMDACC, Biochemistry Dept, Houston, Texas, 1996
- 33) "Bone proteins and prostate cancer." UTMDACC, Urology Dept, Houston, Texas, 1996
- 34) "Modulation of osteoblastic calcium channels by 1,25(OH)₂D₃." Texas Tech University, Lubbock, Texas, 1997
- 35) "Extracellular matrix." Advances in Tissue Engineering, Rice University, Houston, Texas, 1997
- 36) "Vitamin D and calcium signals in osteoblasts." Department of Biochemistry and Molecular Biology, Penn State University, University Park, Pennsylvania, 1997

- 37) "Vitamin D modulation of calcium channels in osteoblasts." Department of Biological Sciences, Duquesne University, Pittsburg, Pennsylvania, 1997
- 38) "Modulation of osteoblast calcium responses by 1,25-dihydroxyvitamin D₃." University of Delaware, Newark, Delaware, 1998
- 39) "Modulation of osteoblast calcium responses by 1,25-dihydroxyvitamin D₃." Institute of Biosciences and Technology, Texas A&M University, Houston, Texas. 1998
- 40) "Extracellular matrix structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 1998
- 41) "Modulation of osteoblast function by 1,25(OH)₂D₃." Department of Biochemistry, University of Pennsylvania School of Dental Medicine, Philadelphia, Pennsylvania, 1999
- 42) "Vitamin D effects on osteoblasts." Chemistry-Biology Interface Program, University of Delaware, Newark, Delaware, 1999
- 43) "Vitamin D effects on bone and cartilage." FASEB Summer Conference: Steroid Receptor Family Members in the Plasma Membrane, Copper Mountain, Colorado, 1999
- 44) "Tissue engineering: progress and problems." BISCITS Program, Clarion University, Clarion, Pennsylvania, 1999
- 45) "Dissection of vitamin D responses in osteoblasts." Symposium on Chemistry and Biology of Vitamin D₃ Analogs, Providence, Rhode Island, 1999
- 46) "Extracellular matrix structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 1999
- 47) "Extracellular matrix and biointegration of implanted materials." Biomaterials: The New Frontiers, Newark, Delaware, 2000
- 48) "Workshop on pre-award procedures for preparing a successful grant." NCURA, Annual Meeting, Washington, D.C., 2000
- 49) "New concepts in membrane vitamin D receptor action." Endocrine Society Annual Meeting, Toronto Canada, 2000
- 50) "Actions of 1,25(OH)₂D₃ on calcium homeostasis in bone cells." 11th Vitamin D Workshop, Nashville, Tennessee, 2000
- 51) "1,25(OH)₂D₃ regulates calcium signaling and matrix production in osteoblasts." Thomas Jefferson University, Philadelphia, Pennsylvania, 2000

- 52) "1,25(OH)₂D₃ regulates calcium signaling and matrix production in osteoblasts." Wyeth Ayerst, Philadelphia, Pennsylvania, 2000
- 53) "Extracellular matrix structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2000
- 54) "Successful grant writing." Workshop on Faculty Development: Delaware Biotechnology Institute, 2001
- 55) "Microarray detection of gene expression changes induced by 1,25(OH)₂D₃ and a Ca²⁺ influx activating analog in osteoblastic cells." 2nd International Meeting: Rapid Responses to Steroid Hormones, Denver, Colorado, 2001
- 56) "Workshop on pre-award procedures for preparing a successful grant." NCURA, Annual Meeting, Washington, D.C., 2001
- 57) "Extracellular matrix structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2001
- 58) "Cell and molecular engineering strategies that facilitate controlled tissue growth and differentiation" Dupont Conference, Chesapeake Conference Center, Chesapeake, Virginia, 2002
- 59) "Extracellular matrix structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2002
- 60) "Regulation of osteoblast function by 1,25-dihydroxyvitamin D₃." NEOUCOM, Rootstown, Ohio, 2003
- 61) "Regulation of osteoblast function by 1,25-dihydroxyvitamin D₃." Case Western Reserve University, Cleveland, Ohio, 2003
- 62) "Heparan sulfate proteoglycans in bone stromal metastases." Graham Cancer Center, Christiana Hospital, Newark, Delaware, 2003
- 63) "1,25D₃-MARRS: Identification of a novel surface receptor for 1,25(OH)₂D₃." 12th Vitamin D Workshop, Maastricht, The Netherlands, 2003
- 64) "Tissue engineering: The possible and the probable." Delaware State University, Dover, Delaware, 2003
- 65) "Extracellular matrix: structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2003

- 66) "Heparan sulfate proteoglycans in prostate cancer bone metastasis." Thomas Jefferson University, Philadelphia, Pennsylvania, 2003
- 67) "Novel pathways to the nucleus." Third International Meeting on Rapid Responses to Steroid Hormones, Florence, Italy, 2003
- 68) "Regulation of osteoblast function by 1,25(OH)₂D₃." A.I. duPont Hospital for Children, Wilmington, Delaware, 2003
- 69) "Regulation of osteoblast function by 1,25-dihydroxyvitamin D₃." University of Texas Medical Branch, Galveston, Texas, 2004
- 70) "Hormonal regulation of calcium signaling in osteoblasts." Pennsylvania State University Medical School, Hershey, Pennsylvania, 2004
- 71) "Localization, functional signaling and targeted disruption of 1,25(OH)₂D₃ receptors." FASEB Summer Conference on Cross Talk and Steroid Hormone Receptors, Tucson, Arizona, 2004
- 72) "Calcium, vitamin D, and bone" University of Delaware, Department of Nutrition and Dietetics, Newark, Delaware, 2004
- 73) "Extracellular matrix: structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2004
- 74) "Bone metastasis of prostate cancer" Department of Biology, University of South Carolina, Columbia, South Carolina, 2004
- 75) "Heparan sulfate proteoglycans and bone metastasis of prostate cancer" Department of Chemistry and Biomedical Sciences, University of Kalmar, Kalmar, Sweden, 2004
- 76) "Heparan sulfate proteoglycans and bone metastasis of prostate cancer" Division of Pathology, Department of Laboratory Medicine, Karolinska Institutet, Huddinge University Hospital, Huddinge, Sweden, 2004
- 77) "Prostate cancer and extracellular matrix" Department of Biology, University of the Sciences in Philadelphia, Philadelphia, Pennsylvania, 2005.
- 78) "Heparan sulfate proteoglycans and bone metastasis of prostate cancer" Department of Biochemistry and Cell Biology, SUNY-Stony Brook, Stony Brook, New York, 2005
- 79) "1,25(OH)₂D₃ receptors: controversies, and challenges" Endocrine Society Meeting, San Diego, California, 2005

- 80) "Extracellular matrix: structure and function." Advances in Tissue Engineering Course, Rice University, Houston, Texas, 2005, 2006
- 81) "Mining the Extracellular Matrix for Active Motifs Regulating Chondrogenesis: Role of Heparan Sulfate Proteoglycans", Medical College of Georgia, Augusta, Georgia, 2006
- 82) "New Biomarkers for Hepatoma" Helen F. Graham Cancer Center, Christiana Care, Newark, DE, 2006.
- 83) "1,25D₃-MARRS: A Redox Sensitive Receptor for 1,25-Dihydroxyvitamin D₃" FASEB Summer Conference, Tucson, AZ, 2006.
- 84) "Heparan Sulfate Proteoglycans and Prostate Cancer Metastasis to Bone" University of Alabama at Birmingham, Birmingham, AL, 2006.
- 85) "Calcium Channels and Signals in Bone Cells" University of Pennsylvania, Philadelphia, PA, 2006.
- 86) "Biomarkers of Bone Activity" ANP Technologies, Newark, DE, 2006
- 87) "Translational Research Approaches to Cancer Treatment" Agilent, Newark, DE 2006
- 88) "A Center for Translational Cancer Research" meeting of INBRE networks, Washington, D.C. 2006
- 89) "Heparan Sulfate Proteoglycans Support Prostate Cancer Growth in the Bone Metastatic Niche" University of Michigan, Ann Arbor, MI, 2007.
- 90) "Calcium Channels and Signals in Bone Cells" UMDNJ, Newark, NJ, 2007.
- 91) "Hypoxia in Bone Metastasis of Prostate Cancer: Activation of Heparan Sulfate Dependent Signals" Skeletal Complications of Malignancy, sponsored by the Paget Foundation, Philadelphia, 2007.
- 92) "Development of New Biomarkers for Identifying High Risk Cancer Patients" Delaware Cancer Consortium, Dover DE, 2007.
- 93) "Heparan Sulfate Proteoglycans in Prostate Cancer Bone Metastases" Prostate Cancer Skeletal Metastases Joint Retreat (PO1/SPORE/DoD) Stone Mountain, GA, 2008.
- 94) "Heparan Sulfate Proteoglycans in Prostate Cancer Bone Metastases" Texas A & M University, College Station, TX, 2008.

- 95) "Role of Heparan Sulfate Proteoglycans In Bone Metastasis of Prostate Cancer" Spirit of Courage Symposium, Thomas Jefferson University, Kimmel Cancer Center, Philadelphia, PA, 2008.
- 96) "Breast Cancer Oncotyping" Translational Research Meeting, Helen F. Graham Cancer Center, Newark, DE 2008.
- 97) "Heparan Sulfate Proteoglycans in Prostate Cancer Bone Metastases" IBB Symposium, Rice University, Houston, TX 2009.
- 98) "Role of Tumor Microenvironment in Prostate Cancer Progression" Biochemistry and Cell Biology, Rice University, Houston, TX 2009.
- 99) "Heparan Sulfate Proteoglycans in Bone Metastasis of Prostate Cancer" IBT Information Exchange Seminar, IBT, TAMU, Houston, TX 2009.
- 100) "Heparan Sulfate Proteoglycans in Prostate Cancer Metastasis to Bone" Prostate Cancer Series, Baylor College of Medicine, Houston, TX 2010
- 101) "Heparan Sulfate Proteoglycans as Modulators of the Bone Cancer Microenvironment" Texas Children's Hospital, Houston, TX 2010.
- 102) "Heparan Sulfate Dependent Interactions in Bony Metastases of Prostate Cancer" University of Washington, Seattle, WA 2010.
- 103) "Heparan Sulfate Proteoglycans in Prostate Cancer Metastasis to Bone" Koch Seminar, M.D. Anderson Cancer Center, Houston, TX 2010.
- 104) "Welcome Address" The Nexus of Research on Cancer, Radiation, and Supercomputing: Dawn of a Golden Age?" A Joint Meeting of Rice University and MD Anderson Cancer Center, Houston, TX 2010
- 105) "Perlecan/HSPG2 Helps Maintain the Pericellular Space of the Lacuno-Canalicular System Surrounding Osteocytic Processes in Murine Cortical Bone" 11th Bone Fluid Flow Workshop, Toronto, Ontario, Canada, [talk given by William Thompson, graduate student], 2010
- 106) "Toward Creation of an Artificial Salivary Gland: A Realistic Look at Progress and Challenges" Workshop: HA Biomaterials for Cell Therapy, TERMIS-NA, Orlando, FL, 2010.
- 107) "Heparan Sulfate Proteoglycans in Bone Metastasis of Prostate Cancer" Bone Program, Baylor College of Medicine/UTMDACC, Houston, TX, 2010.
- 108) "Heparan Sulfate Proteoglycans and Bone Metastasis of Prostate Cancer: Studies in 3D", Cancer Biology Seminar Series, UTMDACC, Houston, TX, 2010.

- 109) "Stepping Stones: I Got By With a Little (Lotta!) Help From My Friends" ADVANCE Workshop "Negotiating the Ideal Faculty Position", Keynote, Rice University, Houston, TX, 2010.
- 110) "Building Interdisciplinary Collaboration in Translational Biosciences" FASEB/HHMI Engaging Basic Scientists in Translational Research, Washington, D.C., 2011
- 111) "Building Translational Research at an Academic University without a Medical School", Annual Meeting of the AAU Board Secretaries, Houston, TX, 2011
- 112) "Cell Culture in ECM Modified 3D Hydrogels: Getting Out of the Flat" 7th International Proteoglycan Conference, Sydney, AU, 2011
- 113) "Role of Heparan Sulfate Proteoglycans in Bone Metastasis of Prostate Cancer: Studies in 3D" Queensland University, Brisbane, AU, 2011
- 114) "Role of Heparan Sulfate Proteoglycans in Bone Metastasis of Prostate Cancer: Studies in 3D" University of Texas Medical Branch, Galveston, TX, 2011
- 115) "Scientific Discoveries Improving Healthcare" Houston Museum of Natural Sciences, International Year of Chemistry Lecture Series, Houston, TX 2011
- 116) "Role of Heparan Sulfate Proteoglycans in Bone Metastasis of Prostate Cancer: Studies in 3D", Department of Genetics, MD Anderson Cancer Center, Houston, TX 2012
- 117) "Marrow Stromal Paracrine Factors Regulating Neuroendocrine Differentiation" Joint Meeting on Prostate Cancer Skeletal Metastases, Symposium sponsored by University of Michigan, Ann Arbor, MI, 2012
- 118) "Building World Class Biomedical Research Programs at an Institution without a Medical School." Building Global Engagements in Research Symposium, Swansea, Wales, U.K., 2013
- 119) "3D Hydrogel Systems for Cytotoxicity Testing in Prostate Cancer" TxSACT Conference on Advanced Models of Imaging Based Drug Screening, Houston, TX 2013
- 120) "Two Sides of the Same Coin: Perlecan Functions in Health and Disease", University of North Carolina, Chapel Hill, Chapel Hill, NC, 2013
- 121) "Perlecan: Border Patrol in Skeletal (and some other) Tissues" Bone Club, Houston, TX, 2013
- 122) "Two Sides of the Same Coin: Perlecan Functions in Health and Disease", University

of Texas-Health Science Center [UT-Health], Dept. of Pediatrics Houston, TX 2013

- 123) "Translational Research: An Idea 150 Years in the Making" Keynote address, Regional Symposium for Undergraduate Research, Houston, TX 2013
- 124) "Building a Translational Research Hub: The BioScience Research Collaborative at Rice University" Pancreatic Cancer Seminar Series, UT MD Anderson Cancer Center, Houston, TX 2014
- 125) "Two Sides of the Same Coin: Perlecan Functions in Health and Disease", Cedars-Sinai Medical Center, Los Angeles, CA 2014
- 126) "Two Sides of the Same Coin: Perlecan Functions in Health and Disease", Baylor College of Dentistry, Texas A & M, Dallas, TX 2014
- 127) "Hydrogel Co-Culture Systems for Growing Patient-Derived Xenografts: Use in Selective Drug Screening" FAST: Functional Analysis & Screening Technologies Conference: Screening and Functional Analysis of 3D Models (2nd conference), Boston, MA 2014
- 128) "Two Sides of the Same Coin: Perlecan Functions in Health and Disease", University of Texas-Health Science Center [UT-Health], Dept of Biochemistry & Molecular Biology, Houston, TX 2014
- 129) "Perlecan/HSPG2 and Border Patrol in Tissues: Applications to Tissue Engineering and Cancer Biology" Institute for Molecular Medicine; University of Texas-Health Science Center, Houston, TX, 2015
- 130) "Perlecan/HSPG2 in Health and Disease: Two Sides of the Same Coin", Keck Seminar Series, Houston, TX 2015
- 131) "How Collaboration and Innovation Can Transform Graduate Education" [Luncheon Keynote] Annual Conference: HESI (Health and Environmental Sciences Institute), Washington, D.C. 2015
- 132) "Perlecan/HSPG2 and Border Patrol in Tissues: Applications to Tissue Engineering and Cancer Biology", Sidney Kimmel Center for Prostate and Urologic Cancers, Memorial Sloan Kettering Cancer Center, New York, NY, 2015
- 133) "Use of Stem Cells in Salivary Gland Replacement: Restoring Function to Patients with Post-Radiation Xerostomia" Image Guided Therapies program, Houston Methodist Research Institute, Houston, TX, 2015
- 134) "Engaging Clinicians in Discovery-Based Research in Cancer and Tissue Engineering", Something New for Lunch, Rice University, Houston, TX 2015

- 135) "Use of Stem Cells in Salivary Gland Replacement: Restoring Function to Patients with Post-Radiation Xerostomia" Regenerative Medicine at the Texas Medical Center, TMC, Houston, TX 2015
- 136) "Two Sides of the Same Coin: Perlecan/HSPG2 in Health and Disease" Breast Disease Research Group, Baylor College of Medicine, Houston, TX, 2016
- 137) "Perlecan/HSPG2: Border Patrol for Health and Disease in Bone" Orthopaedic Grand Rounds, University Hospitals, Case Western Reserve University Medical Center, Cleveland, OH, 2016
- 138) "Perlecan and Tissue Border Patrol in Health and Disease" Department of Anatomy and Cell Biology, Indiana University School of Medicine, Indianapolis, IN, 2016
- 139) "Perlecan/HSPG2 and Tissue Border Patrol in Health and Disease." UTHealth School of Dentistry, Department of Orthodontics, Houston, TX 2016
- 140) "Building Salivary Gland Microtissues for Relief of Xerostomia (Dry Mouth)" Regenerative Medicine Workshop, McGovern School of Medicine, UTHealth, Houston, TX 2017
- 141) "CTBP Partnerships in the Texas Medical Center: Bringing Theory into Practice" Center for Theoretical Biological Physics, NSF, Rice University CTBP, Houston, TX 2017
- 142) "Building Salivary Gland Microtissues for Relief of Xerostomia: Progress and Challenges", UTHealth School of Dentistry, Houston, TX 2017
- 143) "Salivary Stem Cell-Based Solutions for Relief of Xerostomia", Gulf Coast Consortia Conference in Regenerative Medicine, Houston, TX 2017
- 144) "Recreating the Tissue Microenvironment Using ECM-Modified Hydrogels in Cancer Biology and Tissue Engineering" Dan L. Duncan Comprehensive Cancer Center Distinguished Lecture Houston, TX 2017
- 145) "Building Interdisciplinary Collaboration in Translational Biosciences" Cameron Business Symposium, St. Thomas University, Houston, TX 2018
- 146) "Perlecan/HSPG2 and Border Patrol in Tissues: Applications to Tissue Engineering and Cancer Biology" Dept. Biological Sciences, University of Texas at Dallas, Dallas, TX 2019
- 147) "Restoring Salivation in Patients With Xerostomia" Looking Back and Facing the Future: From NIDR to NIDCR A Legacy of 70 Years of Research Advances Improving Dental, Oral and Craniofacial Health, NIH/NIDCR, Bethesda, MD 2019

- 148) "The Legacy of William (Bill) Butler" Dentin and Bone Matrix Biology: Inspiration from William Butler Symposium, International Association for Dental Research, Vancouver, B.C., Canada 2019
- 149) "Dynamic Assembly of Salivary Stem/Progenitor Cell Microstructures in Permissive 3D Hydrogels" Center for Theoretical Biological Physics (CTBP) Lecture Series, Rice University, Houston, TX 2019
- 150) "Building a Tissue-Engineered Replacement Salivary Gland for Patients with Xerostomia/ Dry Mouth" Biomedical Science Seminar Series, Houston Community College, Houston, TX 2019
- 151) "What is Translational Research?" Summer Health Professions Education Program, UTHealth, Houston, TX 2019
- 152) "Building Interdisciplinary Collaboration in Clinical/ translational Biosciences & Bioengineering" UTHealth Urology Grand Rounds, Houston, TX 2020
- 153) "Interdisciplinary Approaches to Clinical/Translational Research" Summer Research Program, UTHealth School of Dentistry, Houston, TX 2020
- 154) "Looking to the Future: Vision, Challenges, and Opportunities for Leading Research Universities" Georgia State University, Atlanta, GA 2020
- 155) "Engineering a Stem-Cell Based Salivary Gland Neotissue for Relief of Xerostomia (Dry Mouth)" Houston Methodist Research Institute, Zusman International Workshop on Neuroregeneration Symposium, Houston, TX 2021
- 156) "Preclinical Models for Testing the 3D Salivary Tissue (3D-ST) for Treatment of Xerostomia" IADR/AADR/CADR Virtual Symposia Title: New Insights into Salivary Gland Biology and Regeneration, 2021
- 157) "Extracellular Matrix: Structure and Function; Applications to Tissue Engineering" Advances in Tissue Engineering Short Course (Virtual), Rice University, Houston, TX, 2021
- 158) "Looking to the Future: Vision, Challenges, and Opportunities for Leading Research in the School of Dentistry", UTHealth School of Dentistry (Virtual), UTSD, Houston, TX, 2021
- 159) "Stepping Stones: I Got By With a Little (Lotta!) Help From My Friends" Gulf Coast Consortia CCBTP Trainee Talk (Virtual), Rice University, Houston, TX 2022
- 160) "From Salivary Avatars to Preclinical Animal Models: Strategies to Restore Salivary Function, Evaluate Sialogogues and Evaluate SARS Cov-2 Infections", Center for Craniofacial Research Retreat, Houston, TX, 2022

- 161) Keynote Address “Tissue Engineered Avatars for Regenerative Medicine and Preclinical Research” Cancer Systems Imaging 2022 Scientific Symposium/Retreat at the San Luis in Galveston, Galveston, TX, 2022
- 162) “Tissue Engineered Avatars for Regenerative Medicine and Preclinical Research” OsteoScience Symposium at IAOP, Chicago, IL, 2022
- 163) “From Salivary Avatars to Preclinical Animal Models: Cell-based Strategies to Restore Salivary Function” Webinar, NCOO Head and Neck Cancer Support Group, 2023
- 164) “Stepping Stones: I Got by With a Little (Lotta!) Help from My Friends” Mind the Future Trainee Symposium, IADR/AADOCR/CADR meeting, New Orleans, LA, 2024

Service as organizer, session chair, panelist or discussant at professional meeting

Panelist, Women in Surgery and Science: Strategies to Promote Gender Equality, sponsored by: Oral and Maxillofacial Surgery IADR/AADOCR/CADR meeting, New Orleans, LA, 2024

Discussion Leader, Gordon Research Conference, Salivary Glands and Exocrine Biology, Ventura, CA 2023

Panelist, Faculty Perspectives on Pre-Award Activities, NCURA Region V meeting, virtual, 2022.

Conference Co-Organizer, Gulf Coast Consortia Conference on Regenerative Medicine, Houston, TX 2017, 2018, 2019, [2020 postponed due to COVID-19] 2021, 2022.

Discussion Leader, Gordon Research Conference, Salivary Glands and Exocrine Biology, Galveston, TX 2017

Session Chair, Screening and Functional Analysis of 3D Models meeting, FAST Congress- 2014, Boston, MA 2014

Session Co-Chair, International Bone Fluid Flow Workshop, Houston, TX, 2014.

Moderator, Oral Poster Presentation: Basic ASBMR, Baltimore, MD, 2013

Discussant and Presenter, Texas CEO Forum in association with BioHouston, Houston, TX, 2013

Panel Discussion Leader, e-HRI Summit, Houston, TX, 2013

Session Co-Chair (Bone, Cartilage, Connective Tissue Matrix and Development), ASBMR, Minneapolis, MN, 2012

Organizer, 3D Cell Culture Workshop, BRC, Rice University, Houston, TX, 2011

Discussant and Speaker, FASEB Forum on the Critical Role of Basic Scientists in the Translational Research Enterprise, Chevy Chase, MD, 2011.

Session Co-Chair (Osteoblasts: Differentiation and Function), ASBMR, Toronto, Ontario, Canada, 2010.

Poster Session Reviewer (Cartilage and Bone), ASBMR, Toronto, Ontario, Canada, 2010.

Session Co-Chair and Poster Session Chair (Cartilage and Bone), ASBMR, Denver, Colorado, 2009.

Panelist, University of Delaware, Pathway to Prominence Symposium, Newark, DE 2008.

Poster Session Chair, Cartilage and Bone Biology, ASBMR, Montreal, Canada, 2008

Session Co-Chair- Skeletal Complications of Malignancy, sponsored by the Paget Foundation, Philadelphia, 2007

Panelist, Establishing Translational Research Programs, IDeA Symposium, Washington, DC, 2006

Session Co-Chair, American Society for Bone and Mineral Research Meeting, Philadelphia, PA, 2006

Session Chair, ICCBMT, Banff, Canada, 2004

FASEB Summer Conference, Copper Mountain, Colorado 1999; Snowmass, Colorado, 2002; Tucson, Arizona, 2004, Tucson, Arizona, 2006

Session Chair, American Society for Bone & Mineral Research, Minneapolis, MN, 2003

Session Chair, 12th Workshop on Vitamin D, Maastricht, The Netherlands, 2003

Session Chair, Endocrine Meeting, Denver, Colorado, 2001

Session Co-Chair, ASBMR Meeting, Toronto, Canada, 2000

Session Chair, Texas Mineralized Tissue Society, 1990 – 1997

Session Chair, 9th workshop on Vitamin D, Orlando, Florida, 1994

Patents

Farach-Carson, Mary C., Witt, Robert L., Jia, Xinqiao, Pradhan-Bhatt, Swati, Harrington, Daniel A. "Implantable Modular Hydrogel for Salivary Gland Restoration" PCT/US2012/70173. Filed December 17, 2012. Published October 2, 2014, Issued May 9, 2017.

Safran, Catherine B., Farach-Carson, Mary C., Jia, Xinqiao, Srinivasa, Padma P. Jha, Amit "Injectable Delivery System for heparan-binding growth factors", Filed March 16, 2012. Published January 22, 2014, Issued March 21, 2017.

Farach-Carson, Mary C. "Perlecan Fragments as Biomarkers of Bone Stromal Lysis" Patent 8481273. Filed June 16, 2009. Published January 28, 2010, Issued 7/9/2013.

Carson, Daniel, Farach-Carson, Mary C., French, Margaret, Gomes, Ronald. "Delivery system for heparin binding growth factors" Patent 7875591. Filed April 22, 2009. Issued, January 25, 2011.

Farach-Carson, Mary C., Carson, Daniel, Safran, Jeffrey B. "Bioactive peptide for cell adhesion." Patent 7897727. Filed March 5, 2009, Issued March 1, 2011.

Farach-Carson, Mary C., Carson, Daniel D., and Safran, Jeffrey B. "Bioactive peptide for cell adhesion." Number: 7,803,905. Filed July 7, 2003. Published March 4, 2004. Issued September 28, 2010.

Carson, Daniel D., Farach-Carson, Mary C., French,, Margaret, Gomes, Ronald, Timpl, Rupert. "Delivery system for heparin-binding growth factors." Number: 7,671,018. Filed August 4, 2003. Published April 1, 2004. Issued March 2, 2010.

Taber, Douglas, Xu, Catherine, Farach-Carson, Mary C., "Treatment of Osteoporosis and Autoimmune Disease with Astrogorgadiol", Number 7,345,035 Issued March 18, 2008.

Publications (Abstracts not listed)

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Research Projects Ongoing or Completed in Last 3 Years (direct costs/year)

NIH R01DE032364-01

Farach-Carson, M.C. (PI) 09/19/22-06/30/27

\$ 583,063 DC

1.0 CM

Functional Biointegration of Bioengineered Salivary Tissues in Irradiated Animal Models

Goals: 1) Use a quantitative scoring system to evaluate biointegration of vasculature and nerve into implanted 3D-STs in irradiated animal models and determine impact on salivary cell phenotype. a) Assess the extent and stability of host integration over time including vasculature and nerve. b) Measure growth without overgrowth and formation of salivary structures in the 3D-ST expressing acinar, ductal and myoepithelial markers. 2) Evaluate the ability of the transplanted 3D-ST to restore salivary function. a) Demonstrate functional protein delivery (human α -amylase, G-Luc marker) from the 3D-ST into irradiated host saliva. b) Demonstrate

restoration of fluid flow by evaluating aquaporin 5 expression in implanted 3D-ST and fluid production using direct saliva collection techniques.

NIH R01AR074473-01 (Thompson, W., PI) Farach-Carson (sub) 09/20/18-06/30/23
 \$63,855 DC 0.6 CM
 Osteocyte Mechanotransduction and the Gabapentin-Sensitive Matrix-Channel Tethering Complex
 Goals: Perlecan-containing tethers transmit force to VSCCs, enabling mechanical signals to be transduced into anabolic biochemical responses in osteocytes. Aim 1: Determine if disruption of the M-CTC membrane receptor $\alpha 2d1$ impairs bone formation. Aim 2: Determine if genetic ablation of the PLN matrix tethers within the M-CTC of osteocytes impairs basal or load-induced bone formation. Aim 3: Determine how gabapentin interferes with the M-CTC to impair bone formation.
 Role: Co-Investigator

NIH / NINDS T32 NS126115 (P. Horner, PI) 07/01/22–06/30/27
 \$164,236 (DC) 0.6 CM
 Training in Neural Control of Organ Degeneration and Regeneration (NeuralCODR).
 Major Goals: The overall goal of this project is to develop a training program will foster a new generation of scientific leaders who pioneer research on the connected pathways between brain and organ systems to solve fundamental challenges in neuroscience. This project aims to: 1) catalyze the collision of talent and ideas that spawn research projects bridging neuroscience with organ systems through facilitated interactions, 2) build co-mentor teams that include neuroscience, organ systems, and clinical perspectives, ensuring trainees are guided toward a unique research niche, and 3) train fellows in research rigor, analysis, and career skills that support their development as scientific leaders.
 Role: Co-Director

NIH/NIDA R01 056544-01 (A. Myers, PI) 07/01/23-05/31/28
 \$243,844 (DC) 0.2 CM

The central hypothesis is that arecoline is subject to metabolic inhibition when combined with ethanol or L-menthol leading to increased toxicity and greater CNS effects. The central hypothesis will be tested by 3 specific aims: 1) Establish the predominate contribution of human esterases and tissue sites that hydrolyze arecoline; 2) Dissect the influence of ethanol on arecoline disposition; and 3) Elucidate the pharmaco- neurological significance of menthol in commercialized AN products. The aims will be accomplished by an interdisciplinary team with varied expertise in trace drug analysis, carboxylesterase drug metabolism, biomimetic 3D organoid systems, special knock-out mouse models, and drug addiction. Male and female mice will be used throughout the aims to assess sex as a biological variable.
 Role: Co-Investigator

Oral and Maxillofacial Surgery Foundation Farach-Carson, M.C. (PI) 01/01/20-6/30/22
 \$75,000 DC 2%
 Development of Surgically Implantable Minor Salivary Gland-Based Constructs for Treatment of

Xerostomia

Goals: Develop a 3D-salivary tissue replacement using stem/progenitor cell population isolated from minor salivary glands; Aim 1 will perform baseline functional and phenotypic analysis of harvested minor salivary glands and their component cells. Aim 2 will evaluate the ability of 3D hydrogel long-term cell culture methods to assess retention of target phenotypes established in Aim 1.

DE-CTR-ACCEL (Witt, R.L., PI) Farach-Carson (contract) 07/01/20-06/30/22
\$80,000 total award (NCE) contractee

SARS-CoV-2 Latency in Oral and Salivary Tissues

Goals: To use DNA sequencing to assess presence of ACE2 polymorphisms in previously collected salivary gland cells from an existing 193 patient cohort; to create salivary tissue “avatars” from stem/progenitor populations representing distinct ACE2 variants and test infectivity with an engineered lentivirus expressing the SARS-CoV2 spike protein; to assess for presence of latent SARS-CoV2 viral mRNA in oral tissues from 50 asymptomatic surgical patients who test negative for virus in nasopharyngeal swab.

Dental Trade Alliance Foundation (Farach-Carson) 4/1/21-3/31/23
\$25,000 DC 0.24 CM

SARS-CoV-2 Latency in Oral and Salivary Tissues

Role: PI

Supplement to studies in ACCEL project to include other oral tissues including tongue and tonsil.

NSF/CASIS 2025505 (Uzer) 09/01/20-10/31/23
\$400,000 DC 0.24 CM

ISS/Collaborative Research: 3D Bone Marrow Analogs to Determine the Contribution of Mechanical Signals to Aging MSC Function in Microgravity

Major Goals: Provide hydrogel culture models with encapsulated mesenchymal stem cells that mimic the bone marrow microenvironment. These culture models are made to integrate with SpaceTango’s Cube Lab Units designed for microgravity research aboard the International Space Station. High-fidelity imaging will be performed on pre-flight, ground controls, space flight samples.

Role: Co-PI

NIH/NIDCR R56 DE026530 (Farach-Carson) 09/01/20-08/31/22
\$250,000 DC 1.20 CM

Cell-Based Therapy in Minipig Model of Radiation-Induced Xerostomia

Major Goals: 1) Establish the irradiated immunosuppressed minipig as a suitable host animal for the evaluation of long-term stability, biocompatibility, and fate of matrix-modified hyaluronate-based hydrogel/bioscaffold material containing human hS/PCs, and 2) Evaluate the ability of the transplanted salivary tissue to restore salivary function.

Role: PI

No overlap

NSF Center for Theoretical and Biological Physics

Member of Senior Faculty

no effort
post-doc salary provided

The Center for Theoretical Biological Physics (CTBP) is one of the ten Physics Frontiers Centers established by the Physics Division (PHYS) of the National Science Foundation. CTBP encompasses a broad array of research and training activities at the forefront of the biology-physics interface.

NIH R01 AR054385 Wang (PI) Farach-Carson (co-PI)

04/01/15-03/31/21

\$413,050 DC

0.5 CM

Mechanosensing in the Bone Lacunar-Canalicular System in Bone

Goals: The goal of this study is to elucidate the roles of perlecan-rich pericellular matrix in bone's responses to mechanical loading and disuse and osteocyte mechanotransduction, as well as the interactions between perlecan and cell membrane/bone matrix proteins to form the mechanosensing tethers *in vivo*.

Role: Co-PI

NIH P01 CA098912

Farach-Carson (PI) (Chung, P01 PI)

03/01/15-02/28/21

\$958,375 DC

1.5 CM

Project 2 PI: Heparan Sulfate Proteoglycans in Prostate Cancer Bone Metastasis

Goals: This is project 2 of a PO1 (PI: Leland Chung) Aims: 1. Determine the functions of domain IV perlecan (PLN) peptides generated by proteases found in the TME, focusing on peptides created by matrix metalloproteinase-7 (MMP-7)/matrilysin; investigate interactions of PLN bioactive fragments with pathways that amplify escape and invasion by PC cells and recruit vascular and immune cells to the TME; 2. Study HS-rich PLN domain I as a depot for HBGFs released by the secreted GAGases –heparanase (HPSE) and sulfatases (SULFs) – that act on HS structures to release diffusible HBGFs via two distinct mechanisms..

Role: PI, Project 2

Pending

On request.