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

Research, Publications and Presentations

My work integrates extracellular matrix biology with salivary tissue engineering, cancer metastasis, and musculoskeletal biology. I am an expert in the use of complex 3D systems for cell and microtissue culture of both normal and cancerous tissues and I frequently deliver seminars on these topics I regularly present seminars locally, nationally and internationally about research ongoing in our laboratory, and also on topics that include mentoring, building successful research programs and clinical research.

Google Scholar H-index = 80 (July, 2025)
Key words: Extracellular matrix, perlecan, tissue engineering, salivary gland, skeletal biology

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, MD (sponsor: W. J. Lennarz, Ph.D.); 1982-83: Postdoctoral Fellow, Department of Biochemistry, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA (sponsor: M. Martinez-Carrion, Ph.D.); 1982: Ph.D., Biochemistry, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA. (Sponsor: M. Martinez-Carrion, Ph.D.); 1978: B.S., Biology (Magna cum laude), University of South Carolina, Columbia, SC

Other Academic Appointments (selected)

2017-pres: Adjunct Professor, Departments of Biosciences/Bioengineering, Rice University, Houston, TX; 2011-17: Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology Department of BioSciences, Rice University, Houston, TX: 2009-2017 Professor (tenured), BioSciences, Rice University, Houston, TX; 2013-pres Senior Member, The Center for Theoretical Biological Physics, a Physics Frontiers Center established by the NSF, Rice University, Houston, TX; 2012-pres: Adjunct Professor, Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX; 2006-09 Founding Director, Center for Translational Cancer Research (CTCR), 2000 – 09: Professor (tenured), Department of Biological Sciences, University of Delaware, Newark, DE; 1998 – 2000: Associate Professor (tenured), Department of Biological Sciences, University of Delaware, Newark, DE 1991-98: Assistant/Associate Professor (tenured), Department of Basic Sciences, Section of Biochemistry, The University of Texas Health Science Center, Dental Branch, Houston, TX; 1990-98: Member, University of Texas Health Science Center at Houston, Graduate School of Biomedical Sciences, Houston, TX; 1987-91:Research Assistant Professor, Department of Biological Chemistry, The University of Texas Health Science Center, Dental Branch, Houston, TX; 1986-87: Research Instructor, Department of Physiology and Molecular Biophysics, Baylor College of Medicine, Houston, TX

Administrative Experience Highlights
2022-pres Associate Dean for Research, School of Dentistry, UTHealth
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.

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. 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 (TMC)
Responsibilities included working with the TMC Research Council and TMC Institutes to foster collaborations including shared use of Core Facilities for cooperative research; working with the Stem Cell Institute and various Centers focused on Regenerative Medicine; 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.

2011-2015 Scientific Director, BioScience Research Collaborative, Rice University and Vice Provost, 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, to broadly oversee the interactions between Rice University and biomedical partners in the TMC, 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.

2009-2011 Associate Vice Provost for Research, Rice University
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 TMC. A primary function of the AVPR was 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/AI duPont Hospital for Children. 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.

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); Endocrine Society; International Association for Dental Research/American Association for Dental, Oral and Craniofacial Research; Phi Beta Kappa; Sigma Xi

Honors and Awards (selected)

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, DC
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, TX

2010	Elected AAAS Fellow, Section on Biological Sciences, Washington, DC
2011	Plenary Poster Presentation, Assoc. Bone and Mineral Research, San Diego, California
2005-06	Community Services and Education Fellow, Christiana Care, Newark, DE
1994-97	Dean's List for Teaching Excellence, The University of Texas Houston Dental Branch and The University of Texas-Houston Graduate School of Biomedical Sciences, Houston, TX
1995	John Freeman Outstanding Teacher Award, The University of Texas Health Science Center Dental Branch, Houston, TX
1990-92	Deans List for Teaching Excellence, The University of Texas Health Science Center Dental Branch, Houston, TX
1991	Young Investigator Award, Presented at Eighth Vitamin D Workshop, Paris, France
1983-86	NIH/NRSA Postdoctoral Fellowship, UTMDACC, Houston, TX
1978-79	A.D. Williams Fellowship for Graduate Study, Medical College of Virginia, Richmond, VA
1975-76	Outstanding Freshman, awarded by Phi Beta Kappa, University of South Carolina, Columbia, SC

Reviewer Experience (selected)
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

2023 Outstanding Reviewer, Acta Biomaterialia; 2021 Reviewer, NIH/NCI Developmental Therapeutics Study Panel (two meetings); 2020 Reviewer, NIH/NCI, Developmental Therapeutics Study Panel; 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; 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"; 2016Reviewer, Rett Syndrome 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); 2010-11 Special Panel reviewer IRSF Translational Research Program Grants (IRSF = International Rett Syndrome Foundation); 2007 Reviewer, PO1 applications, NCI/NIH (Special Panel); 2004 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

Boards, Consultantships & Editorial Responsibilities (selected)
2023-pres Editorial Board, Proteoglycans; 2022-pres Editorial Board, J. Dental Research; 2024-pres Scientific Advisory Board, Ambrose Cell Therapy; 2021-pres Scientific Advisory Board, Organamet Bio, Inc.; 2020-2024 Chair, External Advisory Board for Biotechnology Program, Houston Community College, Houston, TX; 2020-pres Editorial Board, Biomolecules; 2018 External Advisor and Program Review, Biomedical Engineering Doctoral Program Boise State University, Boise, ID; 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, Cleveland, OH; 2016-pres Editorial Board, Matrix Biology (reappointed); 2014-pres Advisor, TMCx business accelerator, Texas Medical Center 2012-18 Scientific Review Board, RettSyndrome.org; 2012-17 Academic Advisory Panel, Baylor College of

Medicine Orthotic/Prosthetic Program, Houston, TX; 2010-12 Editorial Board, Matrix Biology; 2010-12 Member of Advisory Board, Alliance for NanoHealth, Houston TX; 2000-14. 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); 2001–07 Editorial Board, External Advisory Board, Osiris Therapeutics, Inc., Baltimore, MD, Bone projects; 1999- 2002 Editorial Board, Am. J. Physiol., Endocrin. and Metab.

Committee Service & Experience (selected)

American Association for Dental, Oral, and Craniofacial Research

Member, Government Affairs Committee (2025-2028); Institutional Representative, AADOCR Mentoring an Mind the Future); Mentor, Cohort III, Mind the Future, (2022-pres); Member, Council representing UTSD (2017-2023)

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, 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

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, Task Force on BioSciences and Human Health, 2010

The University of Delaware

Planning Coordinator, Center for Translational Cancer Research, Pavilion Building Project Christiana Care Health Systems 2007-2009; Member, Biological Sciences Steering Committee, 1999 – 2009; 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; Promotion and Tenure Committee, 2001, College of Arts and Science; Member, Graduate Affairs & Admissions Committee, 1998 - 2001, (1999-2001, Committee Chair)

The University of Texas Health Science Center at Houston

Member, Search Committee, Associate Dean for Research, School of Nursing, 2024-pres; Member, Search Committee, Director Pediatric Research Center and Vice Chair of Pediatrics, 2022-pres; Member, Research Service Center Executive Committee, UTHealth, 2023-pres; Member, COVID-19 Clinical Research Review Committee, UTHealth, 2020-2022; 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 Review Committee, 1994-1997; Committee on the Status of Women, 1992-96 (Member, *ex-officio*, 1996; Chair of Committee, 1994-95; Member, Status of Women Subcommittee, 1992-93

The University of Texas Health Science Center, School of Dentistry

Faculty/Research Formal Mentor: 10 faculty; CODA Ad Hoc Self-Study Committee/Standard 6/Research, 2018-19; Chair Clinical Research Subcommittee, 2017-pres; Research Committee, 2016-pres (ad hoc since 2022); Member, Diagnostic and Biomedical Sciences Department, Leadership Committee; SOD IT Procurement Team, 2017-2022; 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; Membership Committee, 2020-2023, Chair 2021-22; Biochemistry and Cell Biology/Molecular and Translational 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

Sponsorship of D.D.S., M.S. Students (3)

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

University of Texas Health Science Center (G.S.B.S.) **(9)**

Robert E. Devoll, DDS., PhD., 1997; J. Gary Meszaros, PhD., 1997; Jeffrey Safran, PhD, 1999; Riting (Allan) Liu, PhD, 1999; Jeffrey Kiefer, PhD, 2001; Tristen Tellman, PhD, 2022; Saleh Ramezani (PhD, 2023); with co-advisor Dan Harrington; Caitlynn Barrows (PhD 2025); with co-advisor Simon Young; Ephraim Vazquez- Rosado (MD/PhD program); with co-advisor Simon Young

University of Delaware **(15)**

Joel Bergh, PhD, 2003; Yihuan (Catherine) Xu, MS, 2003; Rania Al-Shami, PhD, 2004; Caroline Muir, MS, 2004; Ying Shao, PhD, 2005; Jeff Wallis, MS, 2005; Ben Rohe, MS, 2006; Anissa Brown, PhD, 2008; Lynn Schwarting-Opdenaker, PhD, 2009; Rose Deeter, PhD (with co-advisor Carolyn Schanen), 2009; Angela Petiak MS, 2008; Curt Warren MS, 2009; Swati Pradhan PhD, 2010; William Thompson PhD, 2010; Lisa Gurski PhD; 2012

Rice University **(15)**

Ariel Diaz MA, 2012; Derek Shenefelt MA, 2012; Curt Warren PhD, 2014; Brian Grindel PhD, 2015; Eliza Fong PhD, 2015, with Antonios Mikos; co-advisor; Jerahme Martinez PhD, 2016; Patricia Chapela PhD, 2017, with Daniel D. Carson; co-advisor; Mariane Martinez PhD, 2019 with Dan Harrington; co-advisor; Kelsea Hubka PhD,2019, NRSA Fellowship with Antonios Mikos; co-advisor; Lindsey Sablatura PhD, 2020; Alexandru Dan Grigore PhD, 2020, with Dr. Herbert Levine; co-advisor); Fabio Brasil PhD, 2020 with Dan Carson; co-advisor; Caitlin McCowan, PhD, 2022 with Dr. Pratip Bhattacharya; Maximilen DeLeon, (Ph.D. candidate) with Dr. Danielle Wu; co-advisor; Yuqing Han, (Ph.D. candidate) 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 **(20)**

Jeffrey Safran, PhD; Ronald Gomes, Ph.D. (NRSA Fellow); Riting (Allan) Liu, PhD (with Daniel Carson); Kamil Akanbi, PhD; Jean Weber, DMD; Wei Li, PhD; Cristiana Savoré, PhD; Van Tanh Ta, PhD (with Daniel Carson); Weidong (William) Yang, PhD (with Daniel Carson); Chu Zhang, PhD (with Dr. Daniel Carson) (DOD postdoctoral fellowship awardee); Nikki Delk, PhD (NRSA fellow; K award, Faculty Fellow), Daniel Harrington, PhD (Faculty Fellow); Danielle Wu, Ph.D. (NRSA Fellow); Valeria Ferrer, Ph.D. (CNPq Scholar); Brian Grindel, PhD; Lissette Cruz, PhD (CPRIT Computation Cancer Training Program Fellow); Kelsea Hubka, PhD; Shivanand Pudakalakatti, PhD (CPRIT Fellow with Dr. Pratip Bhattacharya, UTMDACC); Jiasong Li, PhD (CPRIT Fellow with Dr. Steven Wong, Houston Methodist); Lindsey Sablatura, PhD

Teaching Responsibilities (selected)

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 Director and Lecturer, Current Methods in Molecular and Translational Biology CMMTB Module 4: Cell, Tissue and Animal Model Systems, G.S.B.S. 2025-present; Lecturer, Current Methods in Molecular and Translational Biology, G.S.B.S., 2024; Module Presenter, 1991: Introduction to Dental Informatics, UTHealth School of Dentistry. 2019-pres; Lecturer, Endocrine Block (5-10 lectures), 1510: Biomedical Science Core, UTHealth School of Dentistry. 2017-present; Lecturer, Fundamentals of Biology (6 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).

Presentations

Invited Seminars/Talks/Oral Presentations (selected from 170; since 2015)

1. "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
2. "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
3. "Perlecan/HSPG2: Border Patrol for Health and Disease in Bone" Orthopaedic Grand Rounds, University Hospitals, Case Western Reserve University Medical Center, Cleveland, OH, 2016
4. "Perlecan and Tissue Border Patrol in Health and Disease" Department of Anatomy and Cell Biology, Indiana University School of Medicine, Indianapolis, IN, 2016
5. "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
6. "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
7. "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
8. "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
9. "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
10. "Preclinical Models for Testing the 3D Salivary Tissue (3D-ST) for Treatment of Xerostomia" IADR/AADR/CADR Virtual Symposia New Insights into Salivary Gland Biology and Regeneration, 2021
11. "From Salivary Avatars to Preclinical Animal Models: Strategies to Restore Salivary Function, Evaluate Sialagogues and Evaluate SARS Cov-2 Infections", Center for Craniofacial Research Retreat, Houston, TX, 2022
12. Keynote "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
13. "Tissue Engineered Avatars for Regenerative Medicine and Preclinical Research" OsteoScience Symposium at IAOO, Chicago, IL, 2022
14. "From Salivary Avatars to Preclinical Animal Models: Cell-based Strategies to Restore Salivary Function" Webinar, NOCO Head and Neck Cancer Support Group, 2023
15. "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

16. “Sowing Seeds in Arid Lands: Challenges in Cell-Based Therapies for Radiation-Induced Xerostomia” Gordon Research Conference on Salivary and Exocrine Biology, Ventura, CA, 2025
17. “GRC Power Hour: Creating Professional Resilience in Academic and Corporate Careers” Gordon Research Conference on Salivary and Exocrine Biology, Ventura, CA, 2025
18. “Tissue Engineered Salivary Avatars for Regenerative Medicine for Cancer Patients” Stem Cells, Cell Therapies, and Bioengineering in Lung Biology and Diseases Conference”, Burlington, VT, 2025

Service as organizer, session chair, panelist or discussant at professional meeting (selected, since 2015)
Panelist, Women in Surgery and Science: Strategies to Promote Excellence, 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.

Patents (selected)
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.

Publications (Abstracts not listed)
Refereed original articles in journals (selected from 216)
1. Carson, D.D., **Farach, M.C.**, Earles, D.S., Decker, G.L., and Lennarz, W.J. A monoclonal antibody inhibits calcium accumulation and skeleton formation in cultured embryonic cells of the sea urchin. Cell. 41:639-48. 1985. PMID: 3986913.
2. **Farach, M.C.**, Valdizan, M., Park, H.R., Decker, G.L., and Lennarz, W.J. Developmental expression of a cell surface protein involved in calcium uptake and skeleton formation in sea urchin embryos. Dev. Biol. 122:320-31. 1987. PMID:3297856.
3. Caffrey, J.M., and **Farach-Carson, M.C.** Vitamin D3 metabolites modulate dihydropyridine-sensitive calcium currents in clonal rat osteosarcoma cells. J. Biol. Chem. 264(3-4):20265-74. 1989. PMID: 2479647.
4. Safran, J.B., Butler, W.T. and **Farach-Carson, M.C.** Modulation of osteopontin post-translational state by 1,25-(OH)2-vitamin D3. J. Biol. Chem. 273:29935-41. 1998. PMID: 9792712.
5. **Farach-Carson, M.C.**, Brown, A.J., Lynam, M., Safran, J.B., and Carson, D.D. “A novel peptide sequence in perlecan domain IV supports cell adhesion and spreading” Matrix Biology 27:150-60, 2007. PMID: 17997086.
6. Brown, A.J., Alicknavitch, M., D’Souza, S.S., Daikoku, T., Kirn-Safran, C., Marchetti, D., Carson, D.D., and **Farach-Carson, M.C.** “Heparanase expression and activity influences chondrogenic and osteogenic processes during endochondral bone formation.” Bone 43(4):689-99, 2008. PMID: 18589009.

7. Pradhan, S.S., Zhang, C., Jia, X., Carson, D.D., **Farach-Carson, M.C.**, Witt, R.L. “Perlecan domain IV peptide stimulates salivary gland cell assembly in vitro.” Tissue Engineering, 15(11): 3309-3320, 2009. PMID: 19382872.
8. Pradhan, S., Liu, C., Zhang, C., Jia, X., **Farach-Carson, M.C.**, Witt, R. “Lumen formation in 3D cultures of salivary acinar cells.” Otolaryngology & Head and Neck Surgery 142(2):191-5, 2010. PMID: 20115973.
9. Thompson, W.R., Modla, S., Grindel, B.J., Czymmek, K., Kirn-Safran, C.B., Wang, L. Duncan, R.L., **Farach-Carson, M.C.** “Perlecan/Hspg2 deficiency alters the pericellular space of the lacuno-canalicular system surrounding osteocytic processes in cortical bone.” J. Bone Min. Research 26(3):618-29, 2011. (selected by Faculty of 1000 as top 2% article in field) PMID: 20814969
10. Thompson, W.R., Majid, A.S., Czymmek, K.J., Ruff, A.L., Garcia, J., Duncan, R.L., **Farach-Carson, M.C.** “Association of the α2δ1 Subunit with Cav3.2 enhances membrane expression and regulates mechanically induced ATP release in MLO-Y4 osteocytes.” J. Bone Min. Research 26(9):2125-39, 2011. PMID: 21638318.
11. Pradhan-Bhatt, S., Harrington, D.A., Duncan, R.L., Jia, X., Witt, R.L. **Farach-Carson, M.C.** Implantable three-dimensional salivary spheroid assemblies demonstrate fluid and protein secretory responses to neurotransmitters. Tissue Engineering, 9(13-14):1610-20, 2013. PMID: 23442148.
12. Pradhan-Bhatt S., Harrington D.A., Duncan R.L., **Farach-Carson, M.C.**, Jia X., Witt, R.L. “A novel in vivo model for evaluating functional restoration of a tissue-engineered salivary gland” Laryngoscope, 124:456-61, 2014. PMID 23832678.
13. Grindel, B.J., Martinez, J.R., Pennington, C.L., Muldoon, M., Stave, J., Chung, L.W. and **Farach-Carson, M.**C. “Matrilysin/Matrix Metalloproteinase-7 (MMP7) cleavage of perlecan/HSPG2 produces bioactive fragments that alter prostate cancer cell behavior.” Matrix Biology 36:64-76, 2014. PMID: 24833109.
14. Forrest, R.R.……**Farach-Carson, M.C.** et al [FANTOM Consortium and the RIKEN PMI and CLST (DGT)] “A promoter level mammalian expression atlas.” Nature 507:462-70, 2014 PMID: 24670764. [and series of satellite papers]
15. Andersson, R. …**Farach-Carson, M.C.** et al [FANTOM Consortium and RIKEN] “An atlas of active enhancers across human cell types and tissues.” Nature 507:455-61, 2014. PMID: 24670763.
16. Fong, E.L.S., Wan, X., Yang, J., Morgado, M., Mikos, A.G., Harrington, D.A., Navone, N.M., **Farach-Carson, M.C.** “A 3D in vitro model of patient-derived prostate cancer xenograft for controlled interrogation of in vivo tumor-stromal interactions” Biomaterials, 77:164-72, 2016 PMID: 26599623
17. Grindel, B.J., Arnold, Rl, Li, Q., Zayzafoon, M., Muldoon, M., Stave, J., Chung, L.W.C., Petros, J., **Farach-Carson, M.C.** “Perlecan/HSPG2 and matrilysin/MMP7 as indices of tissue invasion: Tissue localization and circulating perlecan fragments in a cohort of 288 radical prostatectomy patients” Oncotarget, 7(9):10433-47, 2016 PMID: 26862737
18. Ozdemir, T., Fowler, E.W., Harrington, D.A., Witt, R.L., **Farach-Carson, M.C.**, Pradhan-Bhatt, S., Jia, X. “Tuning hydrogel properties to promote the assembly of salivary gland spheroids in 3D.” ACS Biomaterials Science and Engineering. 2(12):2217-2230, 2016 PMID: 27990487
19. Srinivasan, P.P., Patel, V., Liu, S., Harrington, D.A., Hoffman, M.P., Jia, X., Witt, R.L., **Farach-Carson, M.C.***, Pradhan-Bhatt, S.* (*co-corresponding authors) “Primary salivary human stem/progenitor cells undergo microenvironment-driven differentiation in hyaluronate hydrogel culture.” Stem Cells Translational Medicine. 6(1):110-120, 2017 PMID: 28170182
20. Wang, Z., Pradhan-Bhatt, S., **Farach-Carson, M.C.** and Passineau, M.J. “Artificial induction of native aquaporin-1 expression in human salivary cells” J. Dental Res. 96(4):444-449, 2017 PMID: 28072927
21. Ozdemir, T., Zakheim, D.R., Srinivasan, P.P, Harrington, D.A., Witt, R.L., **Farach-Carson, M.C.**, Jia, X., Pradhan-Bhatt, S. “Bottom-up assembly of salivary gland microtissues for assessing myoepithelial cell function” Biomaterials. 142:124-135, 2017 PMID:28734180
22. Grindel B.J., Martinez J.R., Tellman T.V., Harrington D.A., Zafar H., Nakhleh L., Chung L.W., **Farach-Carson M.C**. Matrilysin/MMP-7 cleavage of perlecan/HSPG2 complexed with semaphorin 3A supports FAK-mediated stromal invasion by prostate cancer cells. Sci. Reports 8(1):7262, 2018 PMID: 29740048
23. Wu. D., Chapela P., Farach-Carson M.C. “Reassembly of functional human stem/progenitor cells in 3D culture.” Methods Mol Biol. 1817:19-32, 2018 PMID: 29959699

24. Martinez, J.R, Grindel, B.J., Dodge, G.R., **Farach-Carson, M.C.** "Perlecan/HSPG2: signaling role of domain IV in chondrocyte clustering with implications for Schwartz-Jampel Syndrome" J. Cell Biochem. doi: 10.1002/jcb.27521. 2018 PMID: 30203597
25. Wu, D. Witt, R.L., Harrington, D.A., **Farach-Carson, M.C.** "Dynamic assembly of human salivary stem/progenitor microstructures requires coordinated α1β1 integrin-mediated motility." Frontiers Cell and Developmental Biology. 7:224, 2019 PMID: 31750298
26. Hubka, K.M., Carson, D.D., Harrington, D.A., **Farach-Carson, M.C.** "Perlecan Domain I gradients establish stable biomimetic heparin binding growth factor gradients for cell migration in hydrogels" Acta Biomaterialia doi: 10.1016/j.actbio.2019.07.040. 2019 PMID: 31351252
27. Brasil da Costa, F.H., Lewis, M.S., Truong, A., Carson, D.D., **Farach-Carson, M.C.** SULF1 suppresses Wnt3A-driven growth of bone metastatic prostate cancer in perlecan-modified cancer-stroma-macrophage 3D tricultures. PLoS One 15;15(5):e0230354. 2020. PMID: 32413029
28. Wu, D., Lombaert, I.M.A., DeLeon, M., Pradhan-Bhatt, S., Witt, R.L., Trombetta, Mark G., Passineau, M.J., **Farach-Carson, M.C.** "Immunosuppressed miniswine as a model for testing cell therapy success: Experience with implants of human salivary stem/progenitor cell constructs." Front Mol Biosci. 8:711602 2021 doi.org/10.3389/fmolb.711602. 2021 PMID: 34660692
29. Martinez, M.; Witt, R.L., **Farach-Carson, M.C.**, Harrington, D.A. Functionalized biomimetic hydrogels enhance salivary stem/progenitor cell organization. 2021. bioRxiv 2021.08.05.455302; doi: https://doi.org/10.1093/jbmrpl/ziad008
30. Wu, D., Chapela, P., Barrows, C.M.L., Harrington, D.A., Carson, D.D., Witt, R. L., Mohyuddin, N.G., Pradhan-Bhatt, S., **Farach-Carson, M.C.** "MUC1 and polarity markers INADL and SCRIB identify salivary ductal cells." J. Dent. Res. (8):983-991, 2022. PMID: 35259994. [Cover of the Year, 2022]
31. Tellman, T.V., Dede, M., Aggarwal, V.A., Naba, A., **Farach-Carson, M.C.** "Systematic analysis of actively transcribed core Matrisome genes across tissues and cell phenotypes" Matrix Biology 111:95-107, 2022 PMID: 35714875.
32. Yin, Y., Vazquez-Rosado, E.J., Wu, D., Farach, A., Viswananthan, V., **Farach-Carson, M.C.**, Harrington, D.A. "Microfluidic coaxial 3D bioprinting of cell-laden microfibers and microtubes for salivary gland tissue engineering" 2023 Biomaterials Advances. 154:213588, 2023, PMID: 37634337
33. Barrows, C., Young, S., **Farach-Carson, M.C.** "Exploring spike-dependent and ACE2-independent viral entry into salivary epithelial cells in the absence of ACE2" BioRxiv 2025, 22:2025.05.19.654917 PMID: 40475672 " submitted to Biology (MDPI) (revision under consideration)

Invited/Review Articles (selected from 34)

1. **Farach-Carson, M.C.**, and Carson, D.D. "Extraction and isolation of glycoproteins and proteoglycans." Biotechniques. 7:482-93. 1989. PMID: 2699238.
2. **Farach-Carson, M.C.** and Carson, D.D. "Perlecan: A multifunctional extracellular proteoglycan scaffold in embryo implantation and placentation." Glycobiology 17:897-905. 2007. PMID: 17442708.
3. **Farach-Carson M.C.,** Grindel B . HSPG2 (heparan sulfate proteoglycan 2). Atlas Genet Cytogenet Oncol Haematol. October 2008 .
URL : http://AtlasGeneticsOncology.org/Genes/HSPG2ID40890ch1p36.html
4. Pradhan, S., **Farach-Carson, M.C.** "Mining the extracellular matrix for tissue engineering applications" Future Medicine: Regenerative Medicine, 5(6): 961-70, 2010. PMID: 21082894.
5. **Farach-Carson, M.C.**, Warren, C., Harrington, D.A., Carson, D.D. "Border Patrol: Insights into the unique role of perlecan/heparan sulfate proteoglycan 2 at cell and tissue borders" Matrix Biology, 34:64-79, 2014. PMID: 24001398.
6. Dicker, K.T., Gurski, L.A., Pradhan-Bhatt, S., Witt, R.L., **Farach-Carson, M.C.** Jia, X. "Hyaluronan: a simple polysaccharide with diverse biological functions" Acta Biomater. 10(4):1558-70, 2014. PMID 24361428.
7. Grigore, A.D., Ben-Jacob, E., **Farach-Carson, M.C.** "Prostate cancer and neuroendocrine differentiation: More neuronal, less endocrine?" Frontiers in Oncology, 2015, 5:37 PMID: 25785244
8. Ozdemir, T., Fowler, E.W., Hao, Y., Ravikrishnan, A., Harrington, D.A., Witt, R.L., **Farach-Carson, M.C.**, Pradhan-Bhatt, S., Jia, X. "Biomaterials-based strategies for salivary gland tissue regeneration" Biomater. Sci., 2016, 4:592-604 PMID: 26878077

9. Grigore, A.D., Jolly, M.K., Jia, D., **Farach-Carson, M.C.***, Levine, H.L.* “Tumor budding: The name is EMT. Partial EMT.” * (co-corresponding authors) J Clin Med 5:5, 2016 PMID: 27136592.
10. Fong, E.L., Harrington, D.A., **Farach-Carson, M.C.,** Yu, H. “Heralding a new paradigm in 3D tumor modeling” Biomaterials, 108:197-213, 2016 PMID: 27639438
11. Martinez, J.R., Dhawan, A., **Farach-Carson M.C**. “Modular proteoglycan perlecan/HSPG2: Mutations, phenotypes, and functions” Genes, Nov 16;9(11). pii: E556, 2018. PMID: 30453502
12. Barrows, C., Wu, D., **Farach-Carson, M.C.**, and Young, S.W. “Building a functional salivary gland: More than secretory epithelial acini” Tissue Eng Part A. 2020 Sep 21. doi: 10.1089/ten.TEA, 2020.0184. PMID: 32829674
13. Trubelja, A., Kasper, F.K., **Farach-Carson, M.C.**, Harrington, D.A. “Bringing Hydrogel-Based Craniofacial Therapies to the Clinic” Acta Biomaterialia, 138:1-20, 2022 PMID: 34743044
14. **Farach-Carson, M.C.,** Wu, D., França, C.M. “Proteoglycans in Mechanobiology of Tissues and Organs: Normal Functions and Mechanopathology” Proteoglycan Research, 2(2):e21, 2024 PMID: 39584146.

Book Chapters (selected from 29)

1. **Farach-Carson, M.C.**, Wagner, R.C., Kiick, K.L. “Extracellular matrix: structure, function and applications to tissue engineering.” The Biomedical Engineering Handbook: Tissue Engineering and Artificial Organs, Third Edition, (Bronzino, J.D., ed) CRC Press, pp. pp. 32-1-22, 2005.
2. Bhatt, S.P., Cannon, K., Zakheim, D., Harrington, D., Duncan, R.L., Jia, X., **Farach-Carson, M.C.** Witt, R.L. “Salivary gland tissue engineering and repair.” In Stem Cell Biology and Tissue Engineering in Dental Sciences. (Vishwakarma, A., Sharpe, P., Shi, S., Wang, X.-P., Ramalingam, M., eds) Elsevier, Waltham, Mass, pp 613-23, 2014.
3. Zarembinski, T.I., Engel, B.J., Doty, N.J., Constantinou, P.E., Onorato, M.V., Erickson, I.E., Fong, E.L.S., Martinez, M., Milton, R.L., Danysh, B.P., Delk, N.A., Harrington, D.A., **Farach-Carson, M.C.**, Carson, D.D. “HyStem®, a customizable hyaluronan-based hydrogel material for 3D cell culture.” In Technology Platforms for 3D Cell Culture: A User's Guide. (Stefan Przyborksi, ed.) John Wiley and Sons, Ltd., pp 173-96, 2017.
4. Martinez, M., Wu, D., **Farach-Carson, M.C.**, Harrington, D.A. “Matrix Biology of the Salivary Gland: A Guide for Tissue Engineering.” In Salivary Gland Development and Regeneration. (Seunghee Cha, ed) Springer, SPi Global, pp 145-71, 2017.
5. Wu, D. Chapela, P., **Farach-Carson, M.C.** “Reassembly of Functional Human Salivary Stem/Progenitor Cells in 3D Culture.” In Epithelial Cell Culture; Methods in Molecular Biology (Barratta, M., ed) Springer, pp 19-32, 2018.
6. **Farach-Carson M.C.** and Kasper F.K. “Chapter 1: Principles of Regenerative Medicine of the Maxillomandibular Region” In Regenerative Strategies for Maxillary and Mandibular Reconstruction: A Practical Guide.” Melville JC, Shum JW, Young S and Wong ME, eds., Springer. pp 3-11, 2019.
7. Srinivasan, P., Harrington, D.A., Jia, X., Witt, R.L., **Farach-Carson, M.C.**, Pradhan-Bhatt, S. “Chapter 53: Salivary Gland Tissue Engineering to Relieve Xerostomia” In Surgery of the Salivary Glands, 1st Edition. Witt, RL, ed., Elsevier, 2020.
8. Barrows, C.M.L., Wu, D., Young, S. **Farach-Carson, M.C.** “Human minor salivary glands: A readily-available source of salivary stem/progenitor cells for regenerative applications” Epithelial Cell Culture, Springer Nature Baratta, M., ed. 2023 and published online as Methods Mol Biol. 2024;2749:25-38. PMID: 38133771.

Research Funding (Active with PI or co-PI role)
Continuously funded since 1983 (NRSA fellowship) to present. Total funding from NIH to date: **$10,036,542**

“*Functional Biointegration of Bioengineered Salivary Tissues in Irradiated Animal Models*” with major goal to develop a fully functional, implantable human salivary gland autograft (3D-ST) for patients suffering from xerostomia, or dry mouth, subsequent to radiation therapy for head and neck cancer [R01 DE032364]; 09/2022 - 06/2027; Total Award Amount: $3,674,480
“*Mapping and Predicting Therapy Resistance in SCLC Liquid Biopsies at a Personalized Level*” with major goal to utilize patient-derived circulating tumor cells to establish 3D CTC-Peripheral Blood Mononuclear Cell (PBMC) co-cultures as a translational platform for assessing therapy resistance” [DOD HT9425240701-subproject]; 07/2024 - 06/2027; Total Award Amount: $762,992