

The University of Texas Rio Grande Valley™

UTRGV RESEARCH

ANNUAL REPORT
2022-2023



THE INAUGURAL EDITION



The Inaugural UTRGV Research Annual Report
2022-2023



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Welcome to the inaugural issue of The University of Texas Rio Grande Valley (UTRGV) Annual Research Report for the Fiscal Year of 2023 (FY23). I am excited to reflect upon the incredible journey we have undertaken together during FY23. As Senior Vice President for Research and Dean of the Graduate College, this was my first year at UTRGV. Looking back, what stands out the most is the unwavering commitment of our exceptional students, faculty, staff, and community partners. As I am starting my second year, I am much more enthusiastic and much more energized for the bright future that we are building together. From day one, our goal has been building pathways toward community impact and societal transformations through scholarly activities and research.

As the Division of Research, in the last 12 months, we have developed new capabilities and expanded our capacity to deliver efficient and diversified services to our UTRGV Research community. In the next 12 months, as we continue to fine-tune these services, our primary focus will be on research enhancement and faculty research development across all colleges and schools. This strategic effort aims to develop a holistic portfolio of research and scholarly activities that strategically target visible societal impact.

As I have communicated on various platforms, research expenditures, as a metric, is the primary indicator for various rankings across the nation that indicates an institution's research performance. In FY23, we have made great progress in increasing our research expenditures, through a series of collaborative initiatives conducted in partnership with other divisions, by reducing inefficiencies and weaknesses in our processes across the institution.

As a result, we have reached \$42.4M in restricted (externally funded) research expenditures in the fiscal year of 2023, which is an annual increase of \$15M from last year's \$27.4M. I congratulate you on achieving the highest annual increase in restricted research expenditures in the history of UTRGV.

Similarly, we have reached \$78.8M in total research expenditures (which includes institutional research funds) in FY23, which is an increase of over \$18.1M from last year. Another key indicator of research performance is doctoral degrees. Our doctoral programs are also contributing towards our research performance. With over 40 doctoral degrees awarded in Academic Year 2023, and new doctoral programs being added to our portfolio, UTRGV is making remarkable strides towards becoming a research institution.

In this inaugural issue of UTRGV FY23 Annual Research Report, we are showcasing major contributions from our colleges and schools that have made significant impact on our institutional research and scholarly performance.

After reflecting on the remarkable achievements and the milestones we have reached in FY23, it is important to recognize that our success is a direct result of the dedication and collaboration of our amazing UTRGV faculty members who are working tirelessly with our amazing students with support from our amazing staff members. The collective efforts of these individuals drive our mission forward, which is to create visible societal impact through research and scholarly activities in our region, our state, the nation, and beyond.

I hope you enjoy as you read this report, share with others, and most importantly feel proud of UTRGV's relentless journey towards Research Excellence and the transformative impact we are creating as a university. V's Up!

Senior Vice President for Research
Dean of the Graduate College

RESEARCH LEADERSHIP



Can (John) Saygin, Ph.D., is the Senior Vice President for Research and Dean of the Graduate College. He is also a Professor of Manufacturing and Industrial Engineering at the College of Engineering and Computer Sciences at UTRGV. Previously at The University of Texas at San Antonio (UTSA), he held key administrative roles, including Senior Associate Vice President for Research and Senior Vice Provost. His career spans the University of Toledo in Ohio, Missouri S&T, and UTSA. He received prestigious awards, such as the UTSA College of Engineering 2009 Excellence in Teaching Award, the UTSA President's 2011 Distinguished Achievement Award for Teaching Excellence, and The University of Texas System Regents' Outstanding Teaching Award in 2012. Joining UTRGV in 2022, Dr. Saygin continues to shape academia and advance manufacturing initiatives in the region.



Thomas B. Spencer, Ph.D., M.B.A., is the Associate Vice President for Research Operations and Associate Professor of Health Sciences in the Department of Health and Biomedical Sciences at The University of Texas Rio Grande Valley. He has worked in Academia and Research Administration for 20+ years and is currently a member of the Board of Directors for the National Council of University Research Administrators (NCURA), and he teaches in the Johns Hopkins Research Administration master's degree program. His research focuses on the study and methods of research itself, including research administration, public affairs, and American healthcare.



Angela Cook, PhD, RN, OCN, CCRP, is the Associate Vice President for Clinical and Translational Research at The University of Texas Rio Grande Valley. She has worked in Academia and Clinical Research for 20+ years and is currently a member of the Oncology Nursing Society, The Society of Clinical Research Associates, Public Responsibility in Medicine & Research, and the American College of Healthcare Executives. Angela's work and research is dedicated to the improvement and innovation of Clinical & Translational Research, driving clinical excellence. Her approach is to blend administrative and clinical activities into a supportive and collaborative environment that benefits students and professionals looking to deliver quality outcomes and patient satisfaction.



Abby Guillory, MLIS, CRA, is the Assistant Vice President for Research Enhancement at The University of Texas Rio Grande Valley, bringing almost two decades of experience in research development, proposal writing, sponsored project management, and professional development. Well-regarded in research administration, she's an active regional and national educator, publication author, NCURA Traveling Workshop Faculty, and 2023 SRAI Future of the Field awardee. Currently pursuing her Doctor of Education, Abby focuses on intrinsic and extrinsic factors influencing faculty research productivity. At UTRGV, she collaborates on programs promoting faculty research, scholarship, and creative activities, overseeing proposal development, large-scale submissions, limited opportunities, research faculty development, and providing direct faculty support to expand campuswide research and scholarly activities.

Arya Singh, is the Assistant Vice President for Research Analytics at The University of Texas Rio Grande Valley. He has 15 years of experience in data analytics, data engineering, data management, and data governance, focusing on technology and data service management, and has held positions at The University of Texas San Antonio, Texas State University and Dell Inc. Arya leads the development, management, and maintenance of automated solutions to capture, store and analyze data for institutional research metrics and key performance indicators. He oversees all aspects of technology for the research division, including enterprise and administrative applications, administrative and research data services, networking, servers, and desktop support.



Rosalinda N. Salazar, M.B.A., serves as the Director for Budget and Operations at the Division of Research, contributing 18 years of dedicated service to UTRGV and the legacy institution UT Brownsville. Her extensive experience spans budget management for state, municipal, and school district government entities, including an international bridge. In her current role, Rosalinda oversees general operations and administrative functions, leading strategic initiatives, facilitating communication flow, and guiding senior management focus. She actively supports staffing evaluations, liaises with support areas, and ensures Division-wide budget compliance. Additionally, Rosalinda monitors internal budget reports, prepares forecasts, and conducts expenditure and reconciliation analyses, promoting fiscal responsibility within the Division of Research.



María González, Communications Coordinator for the Division of Research at UTRGV, holds a master's degree in communication. In her current role, she oversees internal and external communication, communication channels, and media relations and writes news articles to promote UTRGV Research. Before UTRGV, María worked for six years in news production at Telemundo NBCUniversal, focusing on breaking news, immigration coverage, and investigative journalism. A six-time Lone Star EMMY award-winning journalist, she earned awards for special coverage, including presidential elections and natural disasters like "The Impact of Hurricane Harvey" and "Terremoto en México," a special news coverage of the 8.1 earthquake that hit Mexico City in 2017. María also received a Regional Overall News Excellence Edward R. Murrow Award.



Aidé Garza, is a proficient Administrative Manager with a history of working with large and complex budgets and teams for governmental, academic, and commercial entities supporting Research and Research Administration at The University of Texas Rio Grande Valley. She is focused on results, with over 40 years of experience and impactful problem-solving while developing strategies to support decision-making at the A-suite level. She is also an expert at collaborating across teams and institutions to meet complex goals across multi-year projects. Aidé's experience ranges from civil engineering, higher education, supporting critical offices at our legacy institution, UT Brownsville, culminating at the President's Office (1990 – 2005), finance, and aerospace, supporting the MPCV Orion Project and the Bioastronautics Contract for NASA (2008 – 2015).

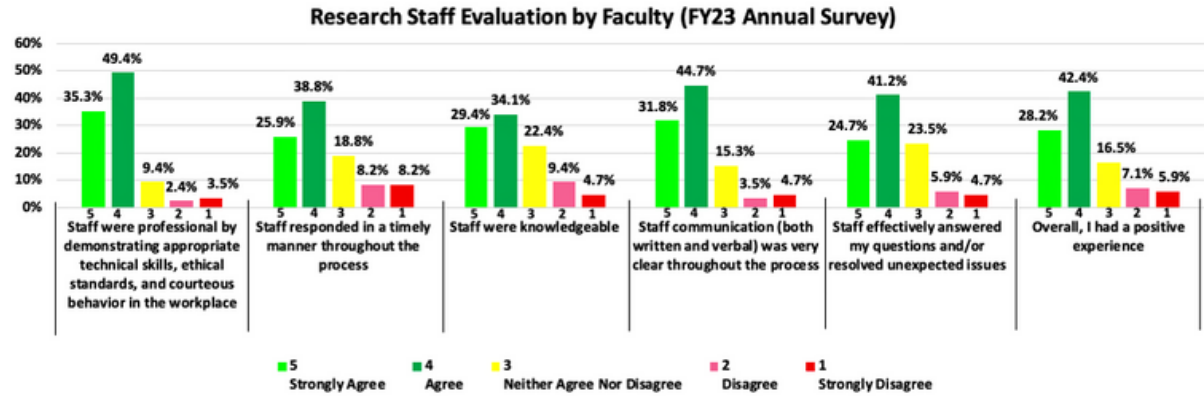


DIVISION OF RESEARCH ANNUAL SURVEY RESULTS

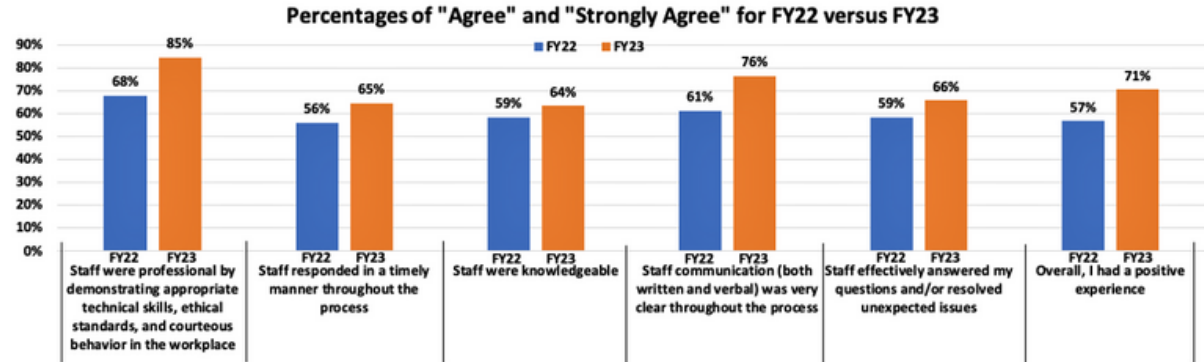
We would like to share with you the results of two surveys conducted in FY23, which includes the period from 9/1/2022 through 8/31/2023. The first graph is the FY23 Annual Survey for the overall evaluation of staff performance in the Division of Research (DoR). The Survey was sent to research-active faculty who had proposal, award, or expenditure related activities during the year. The second graph is the FY23 After-Service Survey. We asked for feedback after providing service to a faculty/staff member, such as submitting a proposal or providing grants accounting services.

We received feedback from 85 research-active faculty from 8 colleges/schools for the FY23 Annual Survey. The FY23 After-Service Surveys received 139 responses.

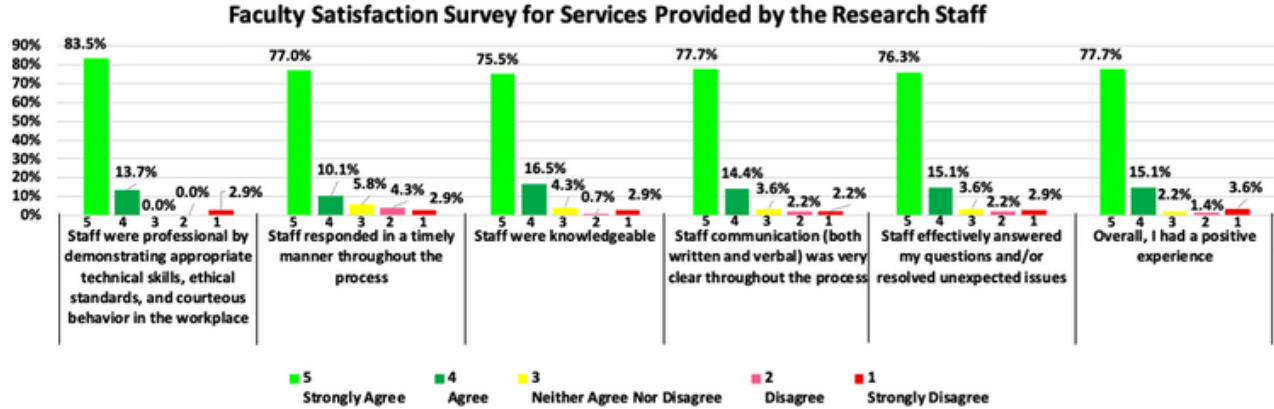
Results of the FY23 Annual Survey are shown below.



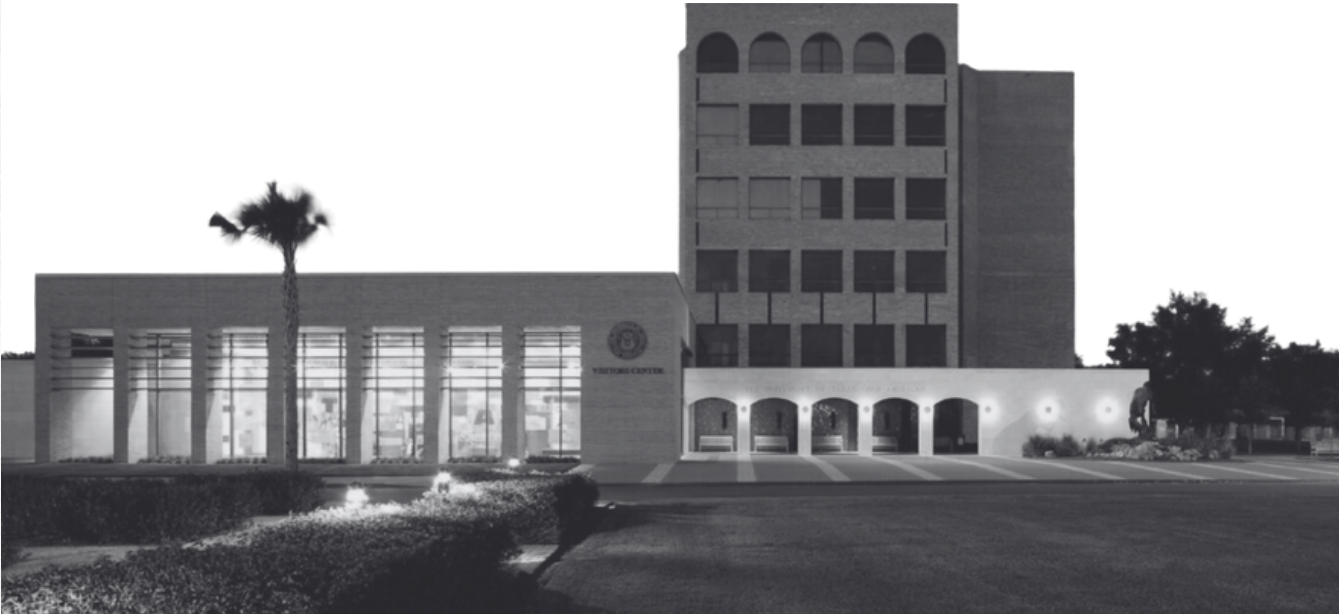
A comparison of FY22 versus FY23 based on "Agree" and "Strongly Agree" percentages shows that the DoR staff performance in all 6 categories improved by at least 5% ("staff knowledgeable") and as high as 17% ("staff professional").



Our After-Service Surveys showed that our faculty/staff were extremely happy with the outcomes. For a majority of FY23, each time a faculty member engaged with DoR, they were offered the opportunity to complete a survey at the time of service. These surveys capture the immediate feedback, across all DoR services for all 6 categories based on combined "Agree" and "Strongly Agree" percentages, all responses were above 87% and faculty rated their overall experience with a 93% positive outcome.



Based on the survey results, combined with our internal operational metrics, we are improving our business processes related to account setups, billing, and communication. In addition, we are developing faculty research support programs under the leadership of Abby Guillory, our new Assistant Vice President for Research Enhancement, who joined us in August 2023.



RESEARCH BY THE NUMBERS

\$78,777,880
Total Research Expenditures

\$25,065,324
 Federal Research Expenditures

\$42,412,698
 Restricted Research Expenditures

\$36,304,304
 Unrestricted Research Expenditures

494
 Number of Proposals Submitted

\$460,640,760
 Total Budget of Proposals Submitted

\$98,306,436
 Total Awards Received

\$43,907,523
 Total Research Awards Received

\$54,398,913
 Total Non-Research Awards Received

AWARDS

BY TOP 10 SPONSOR	AMOUNT
U.S. Department of Education	\$26,565,505
U.S. Department of Health & Human Services	\$15,222,015
U.S. Department of Agriculture	\$12,162,222
U.S. Department of Transportation	\$10,042,500
Cancer Prevention & Research Institute of Texas	\$6,000,000
Texas Division of Emergency Management	\$5,637,278
National Science Foundation	\$4,136,845
Texas Higher Education Coordinating Board	\$2,206,080
Boston Children’s Hospital	\$1,240,036
U.S. Department of Defense	\$1,021,699
TOTAL	\$84,234,179

TOTAL RESEARCH EXPENDITURES

BY UNIT	AMOUNT
College of Education & P-16 Integration	\$2,108,820
College of Engineering & Computer Science	\$10,682,644
College of Fine Arts	\$1,576,624
College of Health Professions	\$2,656,894
College of Liberal Arts	\$6,041,958
College of Sciences	\$16,019,083
Honors College	
Robert C. Vackar College of Business & Entrepreneurship	\$5,039,344
School of Medicine	\$28,065,671
School of Nursing	\$654,297
School of Podiatric Medicine	\$243,841
School of Social Work	\$863,103
Other VP Level Divisions	\$4,825,599
TOTAL	\$78,777,880

RESTRICTED RESEARCH EXPENDITURES

BY UNIT	AMOUNT
College of Education & P-16 Integration	\$509,078
College of Engineering & Computer Science	\$7,044,434
College of Fine Arts	\$142,291
College of Health Professions	\$1,410,860
College of Liberal Arts	\$1,257,476
College of Sciences	\$8,759,416
Honors College	
Robert C. Vackar College of Business & Entrepreneurship	\$52,284
School of Medicine	\$22,528,102
School of Nursing	
School of Podiatric Medicine	\$26,985
School of Social Work	\$353,999
Other VP Level Divisions	\$327,774
TOTAL	\$42,412,698

PROPOSALS

BY UNIT	AMOUNT
College of Education & P-16 Integration	\$31,275,582
College of Engineering & Computer Science	\$85,138,952
College of Fine Arts	\$637,427
College of Health Professions	\$29,445,702
College of Liberal Arts	\$19,275,280
College of Sciences	\$92,026,232
Honors College	\$9,750
Robert C. Vackar College of Business & Entrepreneurship	\$6,927,244
School of Medicine	\$142,699,714
School of Nursing	\$5,925,264
School of Podiatric Medicine	\$604,794
School of Social Work	\$2,636,200
Other VP Level Divisions	\$44,038,620
TOTAL	\$460,640,760

AWARDS

BY UNIT	AMOUNT
College of Education & P-16 Integration	\$25,840,289
College of Engineering & Computer Science	\$14,639,963
College of Fine Arts	\$866,997
College of Health Professions	\$603,266
College of Liberal Arts	\$3,683,222
College of Sciences	\$19,551,622
Honors College	\$9,750
Robert C. Vackar College of Business & Entrepreneurship	\$103,807
School of Medicine	\$21,522,136
School of Nursing	\$199,031
School of Podiatric Medicine	
School of Social Work	\$232,539
Other VP Level Divisions	\$11,053,813
TOTAL	\$98,306,436

TOP 10

- 1 Constantine M. Tarawneh**
College of Engineering & Computer Science
University Transportation Center for Railway Safety (UTCRS), Smart Technologies for Safer Railways
U.S. Department of Transportation
\$10,000,000
- 2 Hilda Medrano, John L. Lowdermilk**
College of Education & P-16 Integration
FY23 Early Head Start Child Care Partnership
U.S. Department of Health & Human Services
\$7,929,108
- 3 Subhash C. Chauhan¹, Debasish Bandyopadhyay², Sheema S. Khan¹, Nirakar Sahoo², Manish K. Tripathi¹, Murali M. Yallapu¹**
¹School of Medicine,²College of Sciences
South Texas Center of Excellence in Cancer Research
Cancer Prevention & Research Institute of Texas
\$6,000,000
- 4 Noe Ramos, Jessica Haas, Suzanne Maniss, Nancy Peña Razo**
College of Education & P-16 Integration
UTRGV Project MHS-DGP: A Mental Health Initiative Demonstration Grant Program for Non-traditional School in the Rio Grande Valley
U.S. Department of Education
\$5,800,146

Nancy Peña Razo, Suzanne Maniss, Noe Ramos
College of Education & P-16 Integration
PROJECT MHS ACCESS: Accessing Mental Health Services
U.S. Department of Education
\$5,742,489

Nancy Peña Razo, Jessica Haas, Suzanne Maniss, Noe Ramos
College of Education & P-16 Integration
MHS Access 2: Accessing Mental Health Services
U.S. Department of Education
\$5,286,597

LARGEST AWARDS

- 5 Raquene Sanchez**
VP Finance & Business Affairs
Child Care Access Means Parents in School (CCAMPIS) Grant
U.S. Department of Education
\$3,991,988
- 6 Aisha L. Cruz-Reyes**
College of Sciences
Texas Agricultural Communities Creating Equitable Service Success (Texas Access)
U.S. Department of Agriculture
\$3,487,564
- 7 Gladys E. Maestre**
School of Medicine
Rio Grande Valley Alzheimer's Resource Center for Minority Aging Research: Partnerships for Progress
U.S. Department of Health & Human Services
\$3,195,341
- 8 Colin M. Cain**
College of Sciences
Southwest Regional Food Business Center
U.S. Department of Agriculture
\$2,999,373
- 9 Stephanie M. Alvarez Martinez¹, Alyssa G. Cavazos¹, Teresa P. Feria Arroyo², Laura E. Perez³**
¹College of Liberal Arts,²College of Sciences,³College of Fine Arts
Puentes: A Cultural Wealth Model for Latinx Student Success
U.S. Department of Agriculture
\$2,995,124
- 10 Rafael Almeida¹, Colin M. Cain¹, Anna Erwin¹, Engil I. Pereira¹, Alexis E. Racelis¹, Horacio Vasquez²**
¹College of Sciences,²College of Engineering & Computer Science
Expand Markets for Climate-Smart Beef, Lamb, Goat Meat, Vegetables, and Orchards Crops in the TX Rio Grande Valley Supporting Farmers with Implementation and Monitoring of Climate-Smart Practices
U.S. Department of Agriculture
\$2,229,177



Decoding Consumer Well-Being: Insights from Gratitude, Social Media Wisdom, and Mindfulness

SUNAINA CHUGANI

Dr. Sunaina Chugani, Assistant Professor of Marketing, draws inspiration for her research from her upbringing in the Rio Grande Valley, where she assisted her parents in managing a retail gold jewelry business in downtown McAllen. Reflecting on her childhood experiences, Chugani wondered what motivated some consumers to buy luxury products like gold jewelry, even when that meant jeopardizing basic needs like paying rent. She developed a keen interest in understanding consumer well-being and now studies consumer well-being at the intersections of wisdom and gratitude. One of her findings centers on the connection between gratitude and materialism.

Chugani's research demonstrates that practicing gratitude over time can decrease materialism by increasing a person's sense of abundance. She said, "Those who kept a gratitude journal reported more resource abundance over time, which lowered their materialism."

Chugani's ongoing project delves into social media wisdom, where she seeks to define and measure the behaviors that contribute to positive outcomes from social media use. Based on data from over 1,000 social media users, she identifies six dimensions of wise social media use: using social media for connection, using social media to pursue personal goals, using social media in moderation, protecting self-worth while using social media, unfollowing accounts that do not add value, and being skeptical of news online.

Excited about the potential impact of her research, Chugani states, "We are hopeful that this work can be used to educate the public on how to use social media in a way that supports rather than detracts from well-being."

Chugani emphasizes the joy she finds in collaborative research, noting that working with colleagues enhances the exploration process. She shares, "My work is more fun because I get to choose the people I collaborate with." Her collaboration on the gratitude and materialism project involved friends from her Ph.D. program, fostering a rich learning experience.

Recognizing the significance of her contributions, Chugani received the Thomas C. Kinnear Award in 2019 for the best paper in the Journal of Public Policy & Marketing. The awarded paper, "Mindfulness: Its Transformative Potential for Consumer, Societal, and Environmental Well-Being," explores how mindfulness can positively impact consumer well-being and habits.

Chugani believes in the importance of disseminating research findings to future generations and the wider community. She shares her insights with UTRGV students and aspires to extend her outreach to the external community, emphasizing the potential impact of her research on enhancing both individual and societal well-being. "I share the findings from my research with my UTRGV undergraduate, graduate, and doctoral students, and hope in the future to share more of what I am learning with the external community."

Addressing Healthcare Disparities in Hispanic Communities

XI MAO

Dr. Xi Mao, Assistant Professor of Economics, is dedicated to addressing healthcare disparities, focusing on vulnerable populations affected by chronic and neurodegenerative diseases. Born in China, Mao witnessed challenges faced by individuals unable to access chronic disease treatments due to financial constraints. This shaped her worldview and instilled in her a sense of responsibility. Mao states, “The disparities I observed have pushed me to dedicate my academic and professional pursuits to advocating for equitable healthcare solutions, particularly for those affected by chronic and neurodegenerative diseases.”

In 2020, Mao started her journey at The University of Texas Rio Grande Valley’s (UTRGV) Brownsville campus, located in Cameron County, a region predominantly inhabited by Hispanic Americans facing economic challenges that hinder access to essential healthcare services. In this location, chronic diseases compound the strain on the local healthcare system.

Her research explores genotype-by-socioeconomic status interactions’ impacts on health-related outcomes, including metabolic syndrome, heart disease risk scores, depression levels, and Alzheimer’s Disease and Related Disorders (ADRD). Moreover, she investigates the influence of these interactions on various health-related outcomes.

“I firmly believe that the most impactful research project is always the one I currently focus on,” Mao said. Leading a pilot study supported by the Rio Grande Valley Alzheimer’s Disease Resource Center for Minority Aging Research (RGV AD RCMAR), she aims to enhance the overall quality of life and cognitive health of Hispanic elders affected by ADRD. The study identifies occupational determinants impacting cognitive impairment, contributing to a deeper comprehension of this issue.

The research is organized through short-term and long-term strategies, including external validity tests and long-term clinical trials. These culminate in the development of a predictive model offering health-oriented career guidance based on familial history or concerns related to ADRD.

Strategically pursuing these approaches, Mao aims to reduce the risk of ADRD among Hispanic Americans. This represents a long-term commitment to preventing and treating ADRD and improving health disparities within the Hispanic community. The goal is to develop interventions seamlessly integrating into the daily work lives of Hispanic individuals, preserving cognitive function and alleviating financial burdens imposed by ADRD on Hispanic families and communities.

In her multidisciplinary research, collaboration is a cornerstone for Mao. Engaging faculty members from various departments, she works closely with senior faculty from the Department of Human Genetics and Neuroscience. Mao introduces key collaborators, highlighting the contributions of American human geneticists Dr. John Blangero and Dr. Sarah Williams-Blangero, along with clinical professor Dr. Eron Manusov and neuroscience professor Dr. Gladys Maestre.

Recently receiving the RGV ADRD RCMAR grant, Mao sees this as a key development in her ongoing research efforts focused on ADRD within health economics. Beyond financial support, the grant facilitates her research initiatives, marking the initial stride in launching a research episode with significant promise.

As a junior faculty member, Mao expresses gratitude for grants that serve as catalysts, initiating and sustaining her research pipeline. She shares, “I am eagerly looking ahead with anticipation, confident that the results of this research will firmly establish my reputation as a health economist specializing in the study of social determinants and their correlation with ADRD.”





Exploring the Complex Relationship Between Information Technology and Human Behavior for a Positive Global Transformation

MURAD MOQBEL

Dr. Murad Moqbel, Associate Professor of Information Systems and the founding director of the Master of Science in Business Analytics program, studies the complex relationship between information technology (IT) and human behavior. His research spans the spectrum from the positive aspects of IT use to its adverse side, exploring addiction to social media, smartphones, and video games, as well as security issues.

Moqbel's doctoral dissertation addressed the controversy surrounding organizational members' use of external social media. Synthesizing social capital theory and positive emotions theory, he found positive outcomes, including increased job satisfaction, organizational commitment, and performance, linked to organizational workers' use of external social media.

Currently, Moqbel investigates all aspects of IT. He explains, "I research the dark side of information technology like social media, smartphones, and video games use on health." One impactful project he recently published studied the repercussions of smartphone addiction on users' well-being, identifying underlying mechanisms and relevant factors. His findings emphasize the negative association between smartphone addiction and well-being, highlighting the need for interventions, such as limiting hedonic smartphone use and engaging in energy-generating activities.

Nonetheless, Moqbel's research extends beyond the academic realm, with practical applications addressing global challenges. His investigation into the factors influencing the adoption and sustainable use of health IT, including patient portals and smart healthcare systems, seeks to improve access to healthcare and reduce healthcare costs.

By emphasizing the role of trust in these technologies, Moqbel envisions designing health IT systems that are more trustworthy and more likely to be embraced by patients, thereby leading to improved healthcare outcomes for people around the world. "My research on the interaction between human behavior and information technologies has the potential to make a meaningful impact on society and to address important global challenges in the future," he said.

Furthermore, his exploration of the impact of social media on health-related outcomes opens avenues for developing interventions that promote public health. By understanding the dynamics of technology use, he envisions strategies to navigate the challenges posed by addiction, technostress, and deceptive behaviors. This includes not only preventing these issues but also developing strategies to treat the negative impacts of technology on individuals, organizations, and society at large.

Moqbel envisions his research as a catalyst for change—improving healthcare accessibility, safeguarding mental health, and mitigating the adverse aspects of technology use. Through this vision, Moqbel's research holds transformative potential, shaping a future where technology positively contributes to the well-being of individuals and societies across the globe. As part of this transformative agenda, Dr. Moqbel has also contributed to the field of explainable artificial intelligence, specifically in predicting car accidents' severity, showcasing his commitment to addressing critical global challenges through cutting-edge research.



Advancing Inclusive STEM Learning: A Journey of Research and Impactful Initiatives

ANGELA CHAPMAN

Dr. Angela Chapman, Associate Professor of Science Education, has dedicated her research to advancing the understanding of how to create inclusive Science, Technology, Engineering, and Mathematics (STEM) learning environments in such a way that her research, teaching, and service are interwoven. Her passion lies in providing every student, from preschool to college, the opportunity to succeed. Reflecting on her journey, Chapman shared, "My interest was sparked while earning my master's in biology and teaching undergraduate biology. I observed disparities regarding students' pass rates in these 'gateway' courses – what the literature refers to as the science achievement gap."

Driven by a sense of responsibility as an educator to support student learning, Chapman pursued a Ph.D. in Curriculum and Instruction with a specialization in Science Education, focusing on supporting high school students who have been historically marginalized. Her research journey has since evolved, continually seeking ways to improve learning for students of all ages.

Two notable projects under her guidance showcase her dedication to inclusive STEM education. The first project focuses on developing and testing STEM curriculum leveraging Spanish as linguistic capital for native Spanish-speaking students or those whose second language is Spanish. Dr. Chapman emphasized the importance of disrupting the deficit perspective toward Spanish-speaking students, noting that this research "helps to disrupt a dominant narrative." The second project explores how informal environments impact Latinx students' attitudes and learning in STEM. Originating from the Journalism, Science, Technology, Engineering, and Math (JSTEM) summer program in 2016, this initiative has expanded to include a STEM Education conference, fostering a research-intensive experience for local high school students.

Dr. Chapman's student-centered model utilizes a nonhierarchical mentoring approach, involving undergraduate STEM majors and UTRGV STEM faculty as mentors. The positive impact of the program is evident in students' enhanced content knowledge, positive attitudes toward STEM, and a strengthened STEM identity.

Moreover, her pivotal role in the STEM Education conference resulted in an advisory board with members across the United States, Canada, and México. Described as a 'game changer,' the conference breaks down silos between disciplines and fosters collaboration between higher education and PK-12. Dr. Chapman's collaborations extend to undergraduate and graduate students actively engaging in research, including publishing. "I consider these collaborations to be the highlight of my research," she said.

Acknowledging her recent UTRGV Faculty Excellence award for Community Engaged Scholarship, Chapman expressed gratitude. The award recognizes her efforts in building the JSTEM summer program and the conference, encouraging her to continue finding ways to promote STEM learning, especially for marginalized individuals. Dr. Angela Chapman's research philosophy revolves around building local scholars, and creating a new table in the STEM education world that facilitates critical conversations between PK-12, college students, PK-12 educators, informal educators, and higher education faculty.

Catalyzing Transformative Change: A Journey in Early Childhood Education

HILDA MEDRANO

Dr. Hilda Medrano, Professor of Human Development and School Services, began her career as a Bilingual Education Early Childhood teacher, intrigued by the process of young children learning two languages simultaneously. She currently serves as the Principal Investigator and Director of the UTRGV Early Head Start Program, funded by the U.S. Department of Health and Human Services, the Children and Family Administration Office, and the Office of Head Start. In this role, she has played a pivotal role in shaping high-quality dual language programs for infants and toddlers in the Rio Grande Valley.

Her research, focusing on simultaneous language development in children aged 0-3, has demonstrated success. Cumulative assessment data since 2016 reveals significant strides in fostering receptive and expressive language skills in both English and Spanish. Medrano emphasizes that her initiatives aim to provide essential services and developmental efforts for students from infancy, a critical period for significant development. "It is important to note that at least 80% of the adult brain can be developed during the first three years of life with early language and brain stimulation, and high-quality early childhood education is crucial," she said.

Throughout her career, Medrano proactively sought funding opportunities to address educational needs in the Rio Grande Valley. Most notably, she secured the very first Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR-UP) grant in the region during the mid-1990s, the largest funded grant in the nation at the time. This initiative aimed to increase awareness of college readiness for low-income middle and high school students, leaving a lasting impact on students and their families.

Driven by the motivation to impact children, Medrano's collaborative approach in her proposal development efforts ranges from small research studies to multimillion-dollar initiatives. "Throughout the years, my proposal development efforts have resulted in a modest amount of funding, such as \$1,000 for a small research study to over \$100,000,000 for the UTRGV Early Head Start-Child Care Partnership (EHS-CCP) Program grant that has been awarded since 2015," she shared.

Currently holding the C.B. Slemp Endowed Chair for Community Engagement, Dr. Medrano's influence extends beyond academia. Her most recent achievement is the ongoing UTRGV Early Head Start-Child Care Partnership (EHS-CCP) Program, funded since 2015. "The primary objective of this grant is to provide accessibility to high-quality early care and early education for children and families within UTRGV's service areas," Medrano said. "This funded program is aligned to UTRGV's vision of transforming lives and engaging communities." The cumulative impact of this grant has surpassed \$100,000,000, reaching over 2,600 children and their families since its inception.

Dr. Hilda Medrano continues to navigate the complex landscape of funding opportunities with the support of UTRGV staff. "I began developing proposals for funding as a new faculty member in the legacy institution and have continued seeking funding since the transition to UTRGV," she said. "Working collaboratively with other faculty members and colleagues from the public schools has always been one strategy to develop proposals." From the 'intent to submit' to budget development and project goals, she collaborates to safeguard all federal funds, ensuring responsible and impactful research outcomes that leave a meaningful imprint on future generations. "Working with young children and families motivates me to seek funding opportunities that can impact children, families, and entire communities."





Literacy in All Its Forms: Innovative Research, Inclusive Practices, and Educational Impact

ELENA VENEGAS

Dr. Elena M. Venegas, Associate Professor of Bilingual and Literacy Studies, explores the critical role of literacy in all facets of life. Going beyond the traditional realms of reading and writing, she emphasizes the often-overlooked dimensions of listening and speaking. “We use each of these domains in our professional and personal lives—to express ourselves, to sustain our culture, and to gather information from the world,” she said.

In a recent collaboration with doctoral candidate Angelica Guanzon, Venegas analyzed read-aloud practices in local elementary schools, resulting in a practical planning tool for interactive read-aloud. Their findings, presented at the 2022 Literacy Research Association conference, have quickly gained traction, with an article in *The Reading Teacher*, a practitioner-focused journal with over 25,000 subscribers, making waves among educators eager to embrace their innovative approach. “After the article’s publication, an elementary teacher from the Chicago area emailed me about the planning tool, and although the article is relatively new, it’s already having an impact in elementary classrooms, which is exciting,” she says.

Furthermore, venturing outside the traditional scope of literacy, Venegas, along with colleagues, researched the experiences of Black and Asian women faculty of color employed by three Hispanic-Serving Institutions (HSIs). Describing this collaborative effort, she states, “Our research has been presented at the American Educational Research Association (AERA) Annual Meeting and published in the journal, *Race Ethnicity and Education*.” She adds, “This research has contributed to the growing body of research on HSIs but from a different lens. As a woman faculty of color, myself, I am proud of this work, and hope that it encourages HSIs to be inclusive and supportive communities for all faculty.”

Additionally, Venegas serves as the Co-Principal Investigator on a federal grant from the Institute of Education Sciences (IES) in which she leads a study on the use of a differentiation kit alongside the Peer-Assisted Learning Strategies (PALS) in Reading program with Grade 4 students. “The purpose of the grant is to study the use of a differentiation kit added to the evidenced-based PALS program with Grade 4 students,” she explains. The research breaks away from traditional educational norms, welcoming diverse student contributions to the knowledge base. The study aims to assess the effectiveness of the PALS program with a differentiation kit in accelerating literacy learning. This is particularly crucial for Grade 4 students who faced challenges during the COVID-19 pandemic while in kindergarten and Grade 1 – critical stages for early literacy development. This research enriches educational perspectives and evaluates the program’s efficacy post challenges of remote instruction during the COVID-19 pandemic, Venegas explained.

In recognition of her contributions, Venegas received the 2022-2023 Outstanding Faculty Research Award from the College of Education and P-16 Integration at UTRGV. “Although this is an internal award, it feels wonderful to have my work recognized by my colleagues who are doing some pretty amazing work themselves,” she said.

In a constantly evolving landscape, Dr. Elena M. Venegas remains dedicated to affirming the diverse linguistic and literate practices of communities of color, particularly in the Rio Grande Valley. “It’s important for these practices to be recognized and valued within educational research, and I aim to contribute as such.”

Revolutionizing Manufacturing Through Impactful Research and Economic Vision

JIANZHI LI

Dr. Jianzhi (James) Li, Professor of Manufacturing and Industrial Engineering, has been at the forefront of advanced manufacturing for over two decades. During his earlier career, he focused primarily on the innovative field of laser cladding, sustainable manufacturing, and remanufacturing. Emphasizing his work's environmental impact and cost-saving potential, Li explained, "Through these processes, worn parts can be reused to save money and reduce environmental impact from manufacturing."

In 2008, Li's journey into additive manufacturing began at the Open Innovation conference in San Francisco, California, a pivotal moment where he recognized the potential of metal additive manufacturing and its capacity to transform the manufacturing industry. Li acknowledges the challenges and opportunities in this field, "One key challenge was about the residual stress and poor property caused by significant heat generated in the Laser melting process," he said. Despite these challenges, Li and his research team are revolutionizing the concept of in-situ alloying, a groundbreaking approach in additive manufacturing.

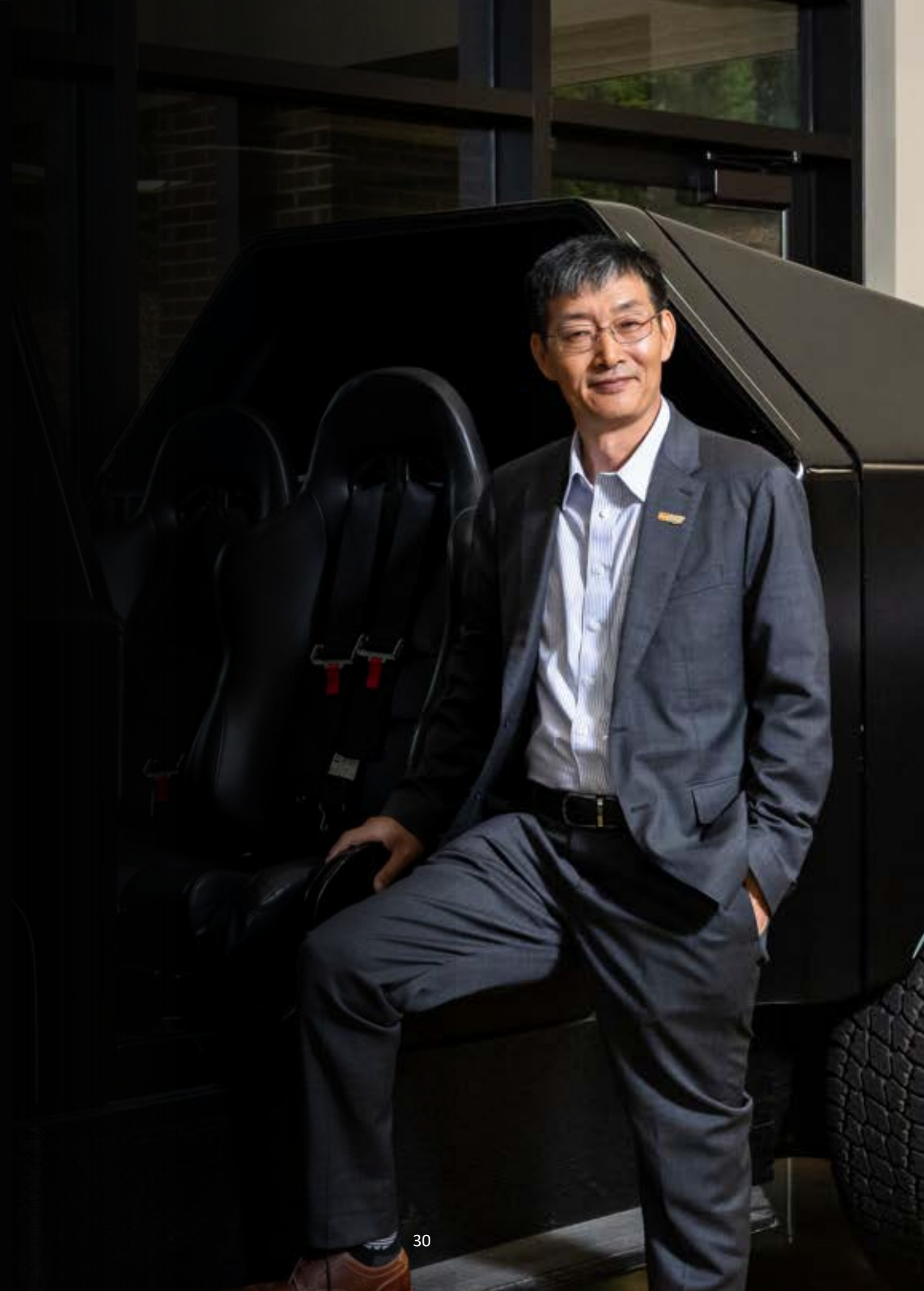
Notably, Li's research has drawn attention from the Army Research Lab (ARL), with which Li collaborates extensively. "In 2014, I was invited to an open campus summit at ARL. ARL scientists visited our lab right after," he said. "This triggered our research in different areas with an aim to develop advanced material and manufacturing processes that can protect U.S. warfighters and maintain U.S. leadership in many key areas that matter to national security."

Moreover, with the support of the \$4 million I-DREAM4D grant funded by the U.S. Department of Defense (DoD) in 2019, Li and his team are spearheading research in advanced materials manufacturing. One of the research projects involves the development of novel alloys for extreme environments in defense applications. The team leverages the Multi-Elements Laser Additive Alloying Process (MELAA) to design materials with improved properties, including lightweight alloys, high entropy alloys (HEAs), and high entropy borides (HEBs).

The I-DREAM4D grant (2019-2023) supports comprehensive exploration in advanced material manufacturing. Within this, the High-Temperature Materials initiative aims to design alloys for extreme defense environments.

Under Dr. Li's leadership, MELAA, developed at the UTRGV Center for Advanced Manufacturing Innovation and Cyber Systems (CAMICS) center, transforms additive manufacturing (AM) for structures thriving in harsh conditions. In addition, with another \$4 million grant from the Department of Energy (DOE), Dr. Li is leading another national Consortium of Advanced Additive Manufacturing Research and Education for Energy-Related Systems (2022-2026), supporting the national priority of advanced manufacturing technologies for clean energy harvesting and storage. Through this grant, about 20 students are engaged in research annually and offered internship programs at National Laboratories, including Oak Ridge National Lab and Los Alamos National Lab.

Li recognizes the unique position of UTRGV in serving a large, underrepresented population in an economically distressed region and emphasizes the university's commitment to the community by creating high-paying jobs and preparing talents at all levels to meet industry needs. "UTRGV serves a large, represented population in an economically distressed region; we are obligated to make an economic impact, creating high-paying jobs, and prepare talents at all levels to meet the industry needs." His commitment extends beyond the confines of academic recognition, and is a strong advocate of academic research to make societal impacts. "I believe academic research cannot just happen and stay inside the university labs; it must make real societal impacts. This could include providing an opportunity for students to learn better in the classroom and providing hands-on experiences for students engaged in research, but more importantly, transferring research and technologies to businesses to spur broader economic opportunities for the communities we serve."



Empowering Innovations: Pioneering Impact in Mechanical Engineering

KAREN LOZANO

Dr. Karen Lozano, the Julia Beecherl Endowed Professor in mechanical engineering and the first UTRGV professor ever to be inducted into the National Academy of Engineering (NAE), has a journey that exemplifies determination, innovation, and a commitment to fostering opportunities for underrepresented students. Her trajectory, marked by overcoming obstacles like gender biases and pioneering nanofiber technology, showcases her resilience and passion for research and education.

“Upon graduation, I could not find a job; this was 30 years ago. Women were not wanted in the field,” she added. “Before graduation, I thought of pursuing a graduate degree. I did not know how to do it but prepared myself by taking the TOEFL and GRE; then two professors from Rice University visited my university, and I was ready to apply.”

Lozano’s path into mechanical engineering posed significant challenges. “If I knew or visualized where I am now? No, never. I just knew I needed to do my best to help my family,” she reflects. Overcoming gender biases in the field, she pursued her Ph.D. in Materials Engineering at Rice University. She was the first Mexican woman to graduate from Rice with a Ph.D. in science or engineering. She worked on projects ranging from the rheological properties of nanoladen fluids, the development of models to predict malignancy in tumors through analysis of the mechanical properties, to process-structure-property relationships of nanoreinforced polymer composites.

“From what I learned in my master’s degree through the rheological analysis of nanoladen fluids, I knew there was much more to do with nanotubes and carbon nanofibers. I took upon the challenge of using one of my ‘vacation’ weeks to work 100 hours to prepare some nanofiber-reinforced polymer composites,” she said. “I then showed my advisor some samples and quick results and was asked to use this topic for my dissertation.”

Reflecting on her journey, Lozano expresses gratitude for collaborations, having participated in proposals and co-authored journals with over 30 faculty members from UTRGV and its legacy institution, The University of Texas-Pan-American (UTPA).

She especially appreciates collaborating with her students. “Above all, my most active collaboration is with my students; their drive, their ‘ganas,’ have driven me to work extra hours,” she said. Her commitment to student success is evident in the NanoTeam, a research group she leads, fostering educational, social, and economic mobility for at-risk students.

The impact of Dr. Lozano’s work extends beyond the laboratory. “Socially, our research has changed a community one student at a time. We were the first research team on campus, a team that now has 80+ members. Through strategically designed projects and work environment, we have driven an exciting educational, social, and economic mobility experience for hundreds of at-risk students, all now leading successful careers in industry, academia, or government labs,” she said. She commented that she and her team determinedly led a far-reaching transformation at a once non-PhD teaching institution. “Our efforts have led to 100% retention and graduation rates for over five hundred students working on the NanoTeam. We have successfully opened a pathway to graduate school; over forty-five students from our team members have pursued Ph.D. degrees in Engineering,” she said.

Dr. Lozano’s efforts have transformed UTRGV into a hub of research excellence. Additionally, her research contributions have impacted several markets: filtration, energy storage, wound treatment, and tissue regeneration, to mention some.

In recognition of her contributions, Dr. Lozano has received numerous awards, including the 2023 Great Immigrants, Great Americans by Carnegie Corporation of New York; the first UTRGV faculty member inducted to the National Academy of Engineering (NAE), the National Academy of Inventors; and the U.S. Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM). Through her numerous accolades, she views these as opportunities to inspire others, especially underrepresented students, demonstrating that success is achievable. “The awards are not to be hung on the wall,” she emphasizes, “But is an opportunity to show our youth that it is possible - If I was able to do it, anybody can.”



Innovating Tracks: Pioneering Railway Safety Through Research Excellence

CONSTANTINE TARAWNEH

In the dynamic field of railway safety, Dr. Constantine Tarawneh, Senior Associate Dean of UTRGV's College of Engineering and Computer Science and Director of the University Transportation Center for Railway Safety (UTCRS), embarked on a transformative academic journey, establishing himself as a nationally recognized researcher in the field. "When I first graduated, this field was not on my radar," he recalled. Despite an initial focus on thermal modeling and vibrations, his trajectory took an unexpected turn during a summer teaching job at his alma mater, the University of Nebraska-Lincoln. Faced with limited funding as a lecturer, he took an opportunity presented by a colleague facing a thermal conundrum with bearings. "A professor came to me and said, 'We're having problems with some bearings heating up, and we do not know what causes that heating,'" Dr. Tarawneh recounts. Intrigued, he initiated experimental studies to resolve the thermal intricacies of bearings, leading to an innovative paper in the field of railway safety.

His research funding journey began with a \$15,000 grant. The research organically evolved, researching the complexities of vibration-induced temperature trends within bearings. As funding increased, Tarawneh's research attracted industry partners, resulting in grants totaling over \$35 million as a principal investigator and co-principal investigator. Most notably, in 2013, the University Transportation Center for Railway Safety was established with a \$4.5 million grant from the United States Department of Transportation University Transportation Center program, marking a pivotal moment for studies in rail safety at UTRGV.

Tarawneh highlights the strategic decision-making behind applying for this grant, which led UTRGV to become the first Hispanic-Serving Institution (HSI) to lead a center. "We defied the odds, being selected as one of 35 centers out of 215 applications. This success marked a turning point, making us the first HSI to lead a center. Our vision and dedication set a precedent, challenging perceptions and inspiring other Minority-Serving Institutions to pursue similar opportunities."

Today, UTCRS organizes the largest transportation-related Science, Technology, Engineering, and Mathematics (STEM) camps in the nation and has hosted more than 8,000 K-12 students and 850 teachers in summer camps since 2013.

The risk-taking decision by Tarawneh led to UTRGV's success, influencing subsequent Minority-Serving Institution (MSI) applications. Tarawneh emphasizes the impact of this, asserting that being an HSI or R3 institution doesn't hinder the capability to conduct quality research. For almost two decades, Tarawneh has dedicated his career to a twofold mission: providing opportunities for students and challenging perceptions about the significance of research at UTRGV. "The main objective has been to provide opportunities for students." However, his vision extends beyond educational opportunities; it is about instilling confidence and illustrating the impact of research conducted at UTRGV. Tarawneh challenges the notion that the institution's contributions are overshadowed by those of larger, more traditionally recognized universities. "The research we do now is very impactful. We are more experts than other institutions when it comes to railroad bearings," he said.

Tarawneh strongly contributes toward making research visible at the institutional level, combining research with teaching and elevating UTRGV's status to become a tier-1 research institution. Additionally, his mission aims to break barriers for Hispanic students, encouraging them to pursue advanced degrees. "At UTRGV, we are seeking to change students' mentalities through creating pathways for students, whether through research, education, or just showing them that what you're doing here matters." Through his dedication, he hopes to contribute to a broader shift in the academic landscape, fostering a greater number of Hispanic U.S. citizens with doctoral degrees and paving the way for future success stories that go beyond individual accomplishments to societal change in the Rio Grande Valley, the nation, and beyond.





Exploring Central American Musical Narratives Through Ethnomusicology Research

ANDRÉS R. AMADO

Dr. Andrés R. Amado, Associate Professor of Musicology and Ethnomusicology, explored Latin American art, popular, and traditional music during his undergraduate studies. Originally from Guatemala, he reflected on the absence of non-European musical narratives in global music school curricula, shaping his academic path.

"I wondered how music outside Western Europe, especially in my home country, fits into music history narratives studied in universities," he said. His commitment to exploring Latin American music, with a focus on Central America, became central to his academic pursuits. Amado expanded his research to the U.S.-Mexico border, addressing the integration of diverse musical traditions into UTRGV's curriculum.

Dr. Amado's contributions extend to the UTRGV B3 Institute and the Center for Teaching Excellence. His research aligns with the institute's goal of creating a bilingual, bicultural, and biliteral institution. Featured in the *Journal of Music History Pedagogy* and a forthcoming chapter on culturally responsive curriculum in higher education, his work highlights engaging diverse audiences.

Amado emphasizes the impact of his work, reaching international audiences through open-access online journals. "I believe my research is impactful because it reaches international audiences that may not always have access to English-language publications."

Beyond research, Amado collaborates with the Texas Conjunto Music Hall of Fame and Museum, revitalizing a music history course. This redesign connects UTRGV music majors with the musical history of the Rio Grande Valley, integrating service-learning into the curriculum. Addressing curriculum issues and exploring musical developments, Amado amplifies marginalized voices, contributing to the research's "decolonizing potential."

Accolades, including the Vida Chenoweth Student Paper Prize, serve as a testament to the profound impact of his research. This prestigious award, named in honor of the globally recognized ethnomusicologist, represents a deeply personal connection that significantly influenced his scholarly journey.

Reflecting on the award, Amado shares, "This award is very meaningful to me for a few reasons." He profoundly admires Dr. Vida Chenoweth, who authored a foundational book on Guatemalan marimbas for his research. "When I received a small internal grant at Arizona State University in 2007, I dedicated a line item in my budget to the purchase of *Marimbas of Guatemala* by Chenoweth (1964), which had become a rare book by then." The prize has continued to shape his academic path. "After receiving the Chenoweth Prize at the 2011 national conference of the Society for Ethnomusicology, I was invited by *Ethnomusicology Review* to submit the award-winning paper for consideration. It was later published in Volume 16 (2011)."

Despite authoring additional articles, this paper remains his most cited work. "I even encountered it in a textbook on Latin American music that I have used in my teaching. The continued impact of this student prize leaves me in awe, even after so many years." This scholarly paper resonates in both classrooms and textbooks, underscoring his dedication to exploring Central American musical narratives within the fields of Musicology and Ethnomusicology.



Art, Winemaking, and Economic Threads: Researching the Cultural Landscape in Latin America

KATHERINE MOORE MCALLEN

Dr. Katherine Moore McAllen, Associate Professor of Art History and Director of the Center for Latin American Arts at The University of Texas Rio Grande Valley, researches the connection of economic history, art production, and cultural exchange in Latin America. McAllen's journey into her field of research began with a graduate seminar at Harvard, focusing on the history of manuscripts in Perú and Spain. Her research agenda was clear: "My objective was to find out how Spanish and indigenous donors funded art production at the missions and in major cities such as Parras, Coahuila, México and Lima, Perú. After working in the national archives looking for documents confirming my hypothesis that there was a connection, my outcomes showed there was a strong relationship with patrons and economic success of winemaking and commissions for artworks decorating well-known churches," she said.

An important milestone in McAllen's journey is the Thoma Foundation post-doctoral research grant she received in 2020. This \$60,000 grant facilitated her developmental leave to publish her research, concentrating on how winemaking industries in colonial México and Perú supported art production within missions.

During her research, McAllen discovered symbiotic links between winemaking industries and the creation of church artworks, emphasizing the interplay of historical elements. Examining this intersection of economic history, art history, and cultural exchange on the Spanish colonial missions, McAllen explains, "I have found that Spanish and indigenous landowners, who owned and operated vineyards in Perú and México, became powerful and influential patrons who actively played a role in the artworks chosen to decorate chapels in Jesuit churches."

This grant recognized the significance of her work by granting her a post-doctoral fellowship, enabling her to travel to Latin America and expand her contributions to the field. Through this, McAllen seeks to enhance UTRGV's reputation and research capabilities. As she embarks on her travels to México, Argentina, Perú, Italy, and Spain, she envisions a broader understanding of how winemaking funded the purchase and movement of artwork in colonial Latin America.

McAllen states, "My research teaches us about our history, and it's important to learn about our past to make a difference in our world today and in the future." Her work unravels the complexities of economics, art history, and consumption, offering insights into art and architectural production, city planning, and their impact on global challenges in Latin America and the Southwest United States.

As McAllen's research unfolds, it not only enriches the understanding of history but also underscores the importance of economic forces in shaping the cultural landscape. Dr. McAllen has recently been named the Maryalice Shary Shivers Chair in the Fine Arts in the College of Fine Arts at UTRGV to continue advancing research initiatives as Director of the Center for Latin American Arts.

Poetic Narratives and Borderland Voices: A Literary Odyssey

EMMY PÉREZ

Emmy Pérez, Professor and Chair of the Department of Creative Writing, is a renowned poet and creative writer whose work transcends language boundaries to explore the rich tapestry of her cultural roots and the complex dynamics of the Texas borderlands. “I am a poet, and my journey into the realm of writing poetry began early in my life, finding emotional and intellectual gratification in the possibilities of language in the poetic medium.”

Born in Santa Ana, California, Pérez’s connection to the Texas borderlands began in 2000 when she moved to El Paso to delve into her mother’s family history, inspired by her mother’s storytelling. “I moved to the TX borderlands in the year 2000 to research my mother’s family history in El Paso/ysleta because she was an amazing storyteller and my first teacher in the importance of our cultural roots,” she said.

Pérez’s literary prowess reached new heights with her book *With the River on Our Face* (2016), an exploration of the Rio Grande. “Traveling the length of the Rio Grande from Colorado to Boca Chica shaped a narrative thread, with a focus on El Paso and El Valle, and from my time in these borderlands,” she said. The impact of her work extends beyond borders, with her poems featured on prestigious platforms like the Poetry Foundation and the Academy of American Poets website.

As a recipient of various fellowships, including the United States Artists Fellowship and the Poets Laureate Fellowship from the Academy of American Poets, Pérez emphasizes how these accolades have contributed to her community-based work. “I have always been a community-based poet, and at times, fellowships have supported my poetry and performances or further granted me more time to witness the border militarization affecting our communities and support other writers through community-based workshops and documenting their poetry performances.”

Pérez’s commitment to social justice is demonstrated in her writing, reaching into issues that resonate across communities. “I write from the geopolitical space of the Texas borderlands and my life as a Chicana, aiming to shed light on the negative impact of increased border militarization and the cultural and environmental beauty beyond it,” Pérez explains. “While I don’t only write about border topics, it is one way that I have served and continue to serve as a witness since national policy and rhetoric affect folks beyond this region too and how Mexican American/Latinx/e peoples are viewed within our country and beyond it.” Notably, her work has transcended borders, resonating in countries like México, Ecuador, Denmark, France, and Colombia.

Beyond her role as a poet, Pérez carries her passion into the classroom. “My mission as a professor is to empower students to explore topics close to their hearts and homes. It’s an honor to help guide them on their literary journeys,” Pérez states. Several Master of Fine Arts students she has mentored have gone on to publish their books of poetry, a testament to her impact in nurturing emerging voices.

Emmy Pérez’s literary journey showcases the power of words in shaping narratives, fostering community, and challenging perceptions. As she continues to write from the heart of the Texas borderlands, her voice resonates as a poet and a beacon for those seeking to explore the depth and breadth of their own stories.





Advancements in Biomedical Sciences: Bridging Medicine, Engineering, and the Future of Healthcare

SUE ANNE CHEW

Dr. Sue Anne Chew, Associate Professor of Health and Biomedical Sciences, began her journey in biomedical sciences at The University of Texas Austin, earning a degree in chemical engineering. Her path was shaped by a strong interest in both medicine and engineering. She explained, “I discovered that I could merge both of these fields I was interested in, which sparked my interest in Biomedical/Bioengineering.”

Chew leads an innovative research initiative to develop a biodegradable composite system for glioblastoma treatment. The focus is on the localized delivery of chemotherapy and an anti-angiogenic agent. “These outcomes contribute to developing biomaterials for cancer therapy drug delivery applications,” Chew emphasized. The innovation extends to the fabrication of temozolomide- and minocycline-loaded poly (lactic-co-glycolic acid) (PLGA) using electrospraying and the development of PLGA scaffolds with different architectures, showcasing an easy and economical technique and injectable alginate scaffolds.

Beyond the boundaries of traditional biomedical science, Chew has researched the evaluation of Course-Based Undergraduate Research Experience (CURE) benefits for student academic success and retention. Her work on the Biomedical Freshman Research Initiative (BFRI) revealed important advantages. “Students who participated in BFRI had higher odds of being retained in the Bachelor of Science (BS) in Biomedical Sciences program and UTRGV compared to those who did not participate in the program,” she emphasized. The BFRI program also demonstrated positive effects on soft-skills development and confidence in science and research.

Collaboration is a cornerstone of Dr. Chew’s research endeavors. Notably, her partnership with Dr. Arkene Levy from Nova Southeastern University resulted from an encounter at an American Association Cancer Research Annual Meeting in 2018.

This collaboration has yielded publications and conference presentations showcasing the intersection of biomaterial development and innovative drug combinations for platinum-resistant ovarian cancer treatment.

At UTRGV, collaborations with Dr. Karen Martirosyan, Professor from the Department of Physics and Astronomy, Dr. Kristina Vatcheva, Associate Professor from the School of Mathematical and Statistical Sciences, and Dr. Murat Karabulut, Professor from the Department of Health and Human Performance have enriched Dr. Chew’s research landscape. These partnerships have led to cross-training of students, grants, publications, and presentations, highlighting the interdisciplinary nature of her work.

In recognition of her impactful research contributions, Chew has received numerous accolades, including the Minority and Minority-Serving Institution Faculty Scholar in Cancer Research Award from the American Association of Cancer Research (AACR) in 2016, 2018, and 2022. The College of Health Professions also acknowledged her excellence with Grant Writing and Success in Publication awards.

Dr. Chew foresees a future in which her research significantly advances bone tissue engineering and cancer therapies, ultimately enhancing and extending human life. She states, “I believe that my research, which merges biomaterial development and investigates combination drug/bioactive factor therapies, can play a crucial role in the progress of biomaterial-based applications for bone tissue engineering and cancer therapies, contributing to the enhancement and extension of human life.”



Transformative Health Initiatives: Catalysts for Empowering Communities Through Research and Education

ZASHA ROMERO

Dr. Zasha Romero, Associate Professor of Health and Human Performance, has dedicated his career to advocating for healthier lifestyles, particularly in regions with issues of poverty and obesity. Recognizing the profound impact of physical activity and proper nutrition, Romero's focus extends beyond individual well-being to community-wide health improvement. "Since a young age, I have seen the positive effects a healthy lifestyle can have on individuals," Romero said. "We live in an area of the country that leads to poverty and obesity; many Rio Grande Valley residents are affected by some type of chronic illness which many times could be remedied through physical activity and a healthy diet."

Romero is an integral part of a research team overseeing the South Texas Early Prevention Study (STEPS), a substantial \$6.4 million, 6-year initiative funded by the Texas Health and Human Services Commission. This comprehensive study involves approximately 1400 preschoolers from South Texas, spanning two local Independent School Districts (ISDs). The initiative implements a health curriculum, tracking students' progress from pre-kindergarten through 1st grade.

Residing in a community frequently identified as the most obese region in the United States, Dr. Romero asserts that STEPS' initiatives, particularly those directed at young children, play an essential role in fostering awareness of the significance of adopting a healthy and active lifestyle.

The end goal of the STEPS project is dissemination. We have concluded positive outcomes through statistics and published some findings. The intention is to disseminate similar health curriculums to other ISDs," Romero stated, highlighting the potential for their research to catalyze positive change beyond the local community. "Obesity reduction, increased physical activity, and lower consumption of sugary drinks are our primary objectives," Romero emphasized. "We work with the younger population to plant a seed early so children can grow up knowing they don't have to be a statistic of chronic illness."

In addition to the STEPS project's goals, Romero collaborates with Pharr-San Juan-Alamo PSJA and La Joya ISDs, collecting data from 28 schools. He also partners with DHR Health Hospital, emphasizing his commitment to fostering positive health outcomes and educational support within the community.

The impact of Romero's work extends beyond academia, earning him a Community Impact Award and a New Researcher Award at The University of Texas Rio Grande Valley. "The recognition of our efforts to help the community is always welcomed," he said. "They inspire me and our team to continue with the important work we do and push us to try to reach more individuals with such an important message." Dr. Zasha Romero's commitment to empowering communities through health initiatives resonates as a catalyst for a healthier future for the Rio Grande Valley.

Advancing Precision Medicine: Healthcare Innovation Research

UPAL ROY

Dr. Upal Roy, an Associate Professor of Health & Biomedical Sciences, stands at the forefront of advancements in healthcare innovation. His academic journey reflects a steadfast commitment to enhancing the accessibility, efficacy, and individualization of healthcare, with a specific emphasis on precision medicine.

The transformative impact of Dr. Upal Roy's work reaches beyond HIV treatment, offering implications for a diverse array of medical conditions. Through the application of his technology to existing medications, his research envisions a future characterized by enhanced healthcare outcomes featuring reduced side effects and improved efficacy. "Most drugs lack specificity for the targeted disease and often result in significant side effects," Roy said. His research aims to tackle this challenge by developing more precise medications that substantially minimize adverse effects. The overarching objective is to transition this technology from the laboratory to the patient's bedside, leading to a new era of healthcare.

Collaboration plays a central role in Roy's research methodology. He emphasizes, "Considering the multidisciplinary approach of our research, we collaborate with different expertise to enrich and validate our research outcomes." Roy's multidisciplinary approach includes partnerships with experts from the UTRGV Department of Mathematics and Statistical Science and the University of North Carolina at Chapel Hill. Through these collaborations, Roy's precision medicine research gains valuable insights validated by computational modeling and artificial intelligence.

Reflecting on his professional journey at UTRGV, Roy expresses gratitude for the support received from the Department of Health and Biomedical Science, department chair Dr. Nair, College of Health Professions Dean Dr. Lehker, Dr. Shawn Saladin, Professor of Rehab Services and Counseling, and other colleagues and mentors.

This support has been instrumental in securing National Institutes of Health (NIH) grants, including the prestigious NIH R01 grant in 2020, elevating the scope and impact of Roy's research. "Our research found that HIV infection is more complex than any other viral infection, as it is a lifelong infection that is associated with many other diseases, social stigma, and health disparity, being just a few of them. Therefore, we have a long way to go to find a cure, which motivates me to keep going toward it," he said.

Beyond the laboratory, Roy embraces the opportunity to mentor first-generation college students, imparting cutting-edge research experiences that contribute to the development of future healthcare professionals. This mentorship commitment underscores Roy's vision of leaving a lasting imprint on the next generation of healthcare leaders. "I feel very fortunate to mentor many first-generation college students and expose them to cutting-edge research," he said. "I am training healthcare professionals from diverse backgrounds, which will have an everlasting impact on our nation's future generation."

As Dr. Upal Roy continues to shape the future of precision medicine, his dedication to revolutionizing healthcare serves as an inspiration within the academic community and beyond. In the complex medical research landscape, Roy stands at the forefront, leading the transformative change towards a more targeted, effective, and patient-centric approach for our future healthcare system.



Exploring Bilingualism in the Community and the Classroom

KATHERINE CHRISTOFFERSEN

In the multifaceted landscape of language and culture, Dr. Katherine Christoffersen, Associate Professor of Applied Linguistics in the Department of Writing and Language Studies and Associate Director of UTRGV's B3 (bilingual, bicultural, and biliterate institution) Institute, emerges as a guiding force. With a background in elementary education and Spanish secondary education, Christoffersen's teaching journey included roles teaching high school Spanish, elementary bilingual education, and English in Puebla, México, and São Paulo, Brazil. These experiences sparked her curiosity about language learning and languages more generally, leading to a dedicated focus on sociolinguistics, the study of language in relation to social factors.

Christoffersen's research project, the Corpus Bilingüe del Valle (CoBiVa), available on the website www.utrgv.edu/cobiva, is a collection of interviews with the Rio Grande Valley community members. It provides valuable insights into the language of the Rio Grande Valley. "Sociolinguistic interviews... uncover patterns of code-switching, borrowings, and topics such as identities and language ideologies," Christoffersen said. This dataset was inspired by a similar sociolinguistic collection on Spanish in Southern Arizona created by her mentor, Dr. Ana Carvalho, and co-founded with Dr. Ryan Bessett, a former UTRGV faculty member who is now an Associate Teaching Professor of Spanish at the University of California San Diego. This past year, Dr. Julio Ciller, Lecturer II in the Department of Spanish at UTRGV, has begun collaborating on the project.

In addition to the audio and transcript files and demographic and linguistic information on each interviewee, the website includes teaching modules and resources for researchers who would like to develop similar sociolinguistic corpora. Christoffersen also integrates the CoBiVa into several community-engaged scholarship classes, where students gain valuable research skills. Dr. Christoffersen challenges common misconceptions about bilingualism, stating, "Code-switching is a highly sophisticated skill... a unique feature of the language in the Rio Grande Valley." She dismisses false perceptions through her teaching and research, fostering a renewed appreciation for the rich tapestry of language varieties.

The CoBiVa has secured two federal grants, solidifying its prominent position in linguistic research. These grants, from the National Endowment of the Humanities (NEH) and the Humanities Collections and Referral Resources (HCRR) program, consist of a foundational grant in 2020 (\$59,975) and the Phase 2 implementation grant in 2023 (\$349,931). In the latest project funded by the grant, the research team is focused on balancing and expanding the dataset. They are collaborating with UTRGV Scholarly Communications Librarian Justin White to preserve the collection and working with UTRGV IT to enhance the website. These grants provide financial support for the research and enhance the visibility of this research area among both peers and the public.

As the Associate Director of the B3 Institute, Christoffersen leads a project assessing B3 teaching at UTRGV. The survey of current students revealed a significant satisfaction level, with 92.35% expressing contentment with their courses' bilingual/Spanish aspect. Dr. Christoffersen and her team envision a future where B3 teaching enhances the educational experience at UTRGV, enabling all students to earn the new B3 Scholar Seal. This certificate program recognizes students who take coursework in Spanish, bilingually, or coursework that integrates culturally sustaining pedagogy.

As Dr. Katherine Christoffersen continues her journey at the intersection of linguistics and education, the impact of her work transcends the borders of academia. In documenting language variations and assessing teaching methodologies, she shapes a narrative that celebrates linguistic diversity, challenges misconceptions, and paves the way for a greater appreciation for local bilingual language varieties.





Unraveling the Mind: A Journey in Behavioral Neuroscience and Translation Research

MARIO GIL

Dr. Mario Gil, Associate Professor of Psychological Science at the University of Texas Rio Grande Valley (UTRGV), stands at the forefront of neuroscience research with a passion for studying the brain and its impact on behavior. “Neuroscience provides an important framework for studying behavior and mental processes. Behavior is dependent on brain function and structure,” Gil says, highlighting the fundamental connection between the brain and behavior. In addition, “understanding brain-behavior relationships is critical for developing treatments for neuropsychiatric and neurological disorders that impact lives,” he explains.

One of Gil’s groundbreaking discoveries during his postdoctoral fellowship at Georgia State University involved the activation of a nucleus in the ventral midbrain of a rodent model in response to social stimuli. This discovery, which continues to inspire his research, focuses on the role of dopamine-producing neurons in the ventral midbrain. His current NIH-funded research program delves into the hypothesis that arginine-vasopressin, a brain-produced peptide, regulates social behavior and responses to psychosocial stressors. Gil emphasizes the potential therapeutic implications for conditions linked to psychosocial stress. “This project is important because it may help determine whether arginine-vasopressin has therapeutic potential for treating conditions linked to psychosocial stress such as cardiovascular disease and neuropsychiatric disorders,” he said.

In addition to his research, he actively engages in translational research, aiming to bridge the gap between scientific knowledge and practical applications that benefit individuals. Recently awarded a fellowship pilot grant from the UT Health Houston Center for Clinical and Translational Sciences, Gil explores the relationship between stress and mental health in Hispanics and Latinos in the Rio Grande Valley. “This is translational research in action,” he said. “By conducting research at all stages of the translational research spectrum, our team has the potential of accelerating the discovery of interventions that may be effective in the treatment of psychosocial stress-associated negative health outcomes.”

Collaboration plays a pivotal role in Dr. Gil’s research endeavors. He acknowledges the support of Dr. Gabriel de Erausquin at The University of Texas Health Science Center in San Antonio, emphasizing the importance of mentorship in the success of his research program. He also expressed his gratitude for the successful collaboration with Dr. Upal Roy and Dr. Kelsey Baker at the UTRGV Parkinson’s Disease Research Program, which focuses on investigating factors impacting the nigrostriatal pathway in the brain, crucial for understanding Parkinson’s Disease. He also acknowledges Dr. Laura Seligman, Professor in the Department of Psychological Science, who, as he said, serves as his mentor in his home department.

Additionally, Gil’s contributions extend to the UTRGV School of Medicine, where he holds a joint appointment. Working closely with Dr. Ihsan Salloum and Dr. Gladys Maestre, he explores aging and neurodegenerative disorders, aiming to uncover mechanisms underlying the impact of risk factors on Alzheimer’s Disease and related dementia. Furthermore, his achievements have garnered recognition, including a Career Development Award from the National Heart Lung and Blood Institute in 2021. This grant supports his research and reflects the National Institutes of Health (NIH) acknowledgment of the importance of his work. In 2022, he participated in a special course at Cold Spring Harbor Laboratory, where he received an award from the National Cancer Institute to cover course fees. Additionally, Gil’s commitment to advancing scientific knowledge earned him a spot at the International Brain Ageing Conference in Nairobi, Kenya, where he received the best poster award. These accolades underscore the significant impact of his work on the scientific community and highlight his dedication to pushing the boundaries of knowledge in his field.

As Dr. Mario Gil continues to navigate the intricate realms of behavioral and systems neuroscience, he remains optimistic about the potential impact of his research on improving the quality of life and mental health globally. “Our work has the potential of improving the quality of life and mental health of millions of people across the world.”

Forging Resilience: A Journey through Disaster Research and Global Impact

DEAN KYNE

Dr. Dean Kyne, Associate Professor of Sociology and Disaster Studies Program Coordinator, traces the roots of his research to the impactful events of the 2004 Indian Ocean earthquake and tsunami. Reflecting on the tragedy that claimed approximately eight thousand lives in Thailand, he shared, "Witnessing the devastating impact of this event ignited a profound interest in me, motivating me to explore more effective strategies for mitigating the consequences of natural disasters and, ultimately, saving lives."

Kyne's research journey has been dedicated to disaster and emergency management, covering aspects such as disaster risk assessment, social vulnerability analysis, and the role of social capital in disaster resilience. He said, "This pivotal event served as a catalyst for my dedication to these critical areas of study, driving my commitment to making a meaningful impact in disaster preparedness and response."

A significant project in Kyne's career focuses on measuring social capital. Recognizing the crucial role of critical concepts in disaster studies, he states, "It became evident that quantitatively measuring these concepts was essential for gaining a deeper understanding of the current state of disaster preparedness." The Social Capital Index (SoCI), a unique composite index developed by Kyne and his research team, marked a groundbreaking effort in disaster research, providing a new perspective on disaster management at the county level across the United States.

Kyne highlights the significance of the Social Capital Index: "By incorporating social capital alongside vulnerability metrics, we gain a more comprehensive and accurate understanding of the social vulnerability of a given geographical region." This holistic approach enhances the formulation of effective disaster preparedness and response strategies, contributing to the resilience and well-being of communities facing the constant threat of disasters.

Collaboration has been pivotal in Kyne's interdisciplinary research approach. During the pandemic, a diverse team from various disciplines united for a study on Social Connectedness, Physical Distancing, and Anxiety (SCPDA). Kyne reflects, "Our collaborative effort demonstrated the power of interdisciplinary research and the capacity for innovative insights even in physical isolation and uncertainty."

Moreover, stemming from his successful collaborations, the recognition of Kyne's Social Capital research paper, which became the most cited paper in its field with over 90 citations, brought about global acknowledgment. "This experience has left me with a profound sense of purpose and conviction," he said. The recognition facilitated connections with scholars worldwide, offering mentoring opportunities and potential collaborations on similar research endeavors.

Kyne's research extends beyond academic recognition, aiming for real-world impact. His proactive approach to disaster management addresses global challenges, emphasizing, "Rather than reacting to disasters as they occur, proactive strategies can help communities better prepare for and mitigate the impact of such events, ultimately saving lives and reducing damage."

Furthermore, Kyne's research sheds light on the disproportionate risks faced by vulnerable communities, advocating for equitable environmental policies. "It underscores the need for environmental justice and a commitment to addressing disparities in disaster preparedness and response." In emphasizing the crucial role of preparedness in strengthening community resilience, Kyne states, "This resilience not only safeguards lives and property but also fosters a sense of unity and cooperation within communities." Kyne's research holds the potential to impact society, advocating for proactive disaster management, championing equitable environmental policies, and underscoring the importance of community resilience.





Unveiling Cosmic Mysteries Through Gravitational Wave Astronomy Research

MARIO DÍAZ

Dr. Mario Díaz, Professor in the Department of Physics and Astronomy and Director of the Center for Gravitational Wave Astronomy at The University of Texas Rio Grande Valley, has devoted his career to exploring the gravitational waves that traverse the complex structure of spacetime. “I decided to study physics when I was already thirty years old, an age when most people, with a college degree or not, have already set a path in life for themselves,” reflects Díaz. Despite not finishing high school initially, his curiosity led him to delve into the “inner-workings” of the universe.

Inspired by the writings of Albert Einstein, George Gamow, and Isaac Asimov, Díaz delved into the general theory of relativity, crafting his doctoral dissertation around the mathematical properties and cosmological implications of Einstein’s equations. “The reading of ‘The Evolution of Physics’ by Albert Einstein and Leopold Infeld, ‘30 Years that Shocked Physics’ by George Gamow, and another popular science book titled ‘Astronomy’ by Isaac Asimov sparked my desire to learn physics,” he said. Additionally, he expressed, “I was interested in learning the General Theory of Relativity developed by Albert Einstein. I was intrigued by this theory that radically changed the Newtonian paradigm of gravity as a force.” His fascination stemmed from how Einstein’s General Theory of Relativity revolutionized the understanding of gravity compared to the traditional Newtonian perspective.

After delving into the transformative insights of Albert Einstein’s General Theory of Relativity, Díaz continued this scientific journey by dedicating his doctoral dissertation to the mathematical properties and cosmological implications of specific exact solutions derived from Einstein’s equations. Díaz’s work was drawn to the prediction of gravitational waves—ripples in the fabric of spacetime itself. Reflecting on his research, he shared, “The last half of the past century was rich in new and amazing astrophysical discoveries.” Díaz explains the life cycles of stars, from the eventual fate of stars like the Sun to the formation of compact, dead stars like neutron stars and black holes.

As Díaz explored gravitational waves and the dance of stars, his scientific journey connected with collaborative efforts. Joining forces with colleagues at UTRGV’s legacy institution, the University of Texas at Brownsville, Díaz and his collaborators were part of the LIGO Scientific Collaboration (LSC) – a scientific collaboration of international physics institutes and research groups dedicated to the search for gravitational waves. In 2015, the collaboration made a groundbreaking discovery of gravitational waves. With NASA’s funding, they established the UTRGV Center for Gravitational Wave Astronomy in 2003. This milestone validated years of theoretical groundwork and opened a new chapter in astrophysics.

In recent years, Díaz has shifted gears, focusing on observing the electromagnetic emission tied to gravitational wave events. The construction of an astronomical observatory in the Atacama highlands of South America, funded by the National Science Foundation, is a significant leap forward. “This is one of the best regions in the world to do astronomy due to the height and dryness of the area. This project is a joint project with the Astronomical Observatory of Cordoba,” he said. About \$2 million from National Science Foundation (NSF) funding has already been invested in the project, and the Argentine equivalent agency has invested in building infrastructure at the site. Through this research, Díaz aims to develop a group to observe the electromagnetic emission associated with gravitational wave events.

Díaz has received numerous accolades for his contributions to the field of gravitational wave detection, awards such as the Distinguished Fulbright Chair in Gravitational Wave Detection, the Breakthrough Prize in Fundamental Physics, the Einstein Prize, the Princesa de Asturias Prize, all these with the other members of the LIGO Scientific Collaboration and the Leopoldo Garcia-Colin Medal Award in 2020. As Dr. Mario Díaz continues his exploration of the mysteries of the universe, his work inspires future generations of students in space exploration and astronomy, reflecting a steadfast commitment to scientific inquiry.



Cultivating Sustainability: A Journey in Soil Biogeochemistry Research

ENGIL PEREIRA

Dr. Engil Pereira, an Associate Professor specializing in soil biogeochemistry, is a researcher exploring the connections between climate change, soil function, and food production. Her academic journey, initially grounded in agronomic perspectives, took a transformative shift as she recognized the susceptibility of soils to climate shifts, emphasizing a commitment to mitigating these effects and promoting sustainable agriculture.

“Understanding that soils are vulnerable to climate change added a new, exciting dimension to my work,” Pereira said. She emphasized this perspective, “We need to comprehend the intricate relationships between soil health, environmental conditions, and food security.” Pereira further explained the significance of their work, stating, “I believe our work on how soil microbes seek shelter within soil aggregates under drought conditions, highlighted by Nature Climate Change, contributes to a deeper understanding of soil ecology and its role in climate resilience.”

Pereira also highlighted the research behind her “Organic Management of Soil Fertility for Sweet Potato Systems in Mozambique” project, aiming to combat nutrient depletion and address Vitamin A-deficiency, a pressing public health concern affecting young children in Mozambique, a country located in southeastern Africa. “The overarching goal of this project was to combat nutrient depletion in soil, particularly in resource-poor communities growing sweet potatoes,” she explained. Innovative intercropping strategies and locally available organic fertilizers were employed, introducing a soil fertility management method specifically aimed at boosting the production of orange-fleshed sweet potatoes by smallholding farms. “I believe our work had the most significant impact, given the far-reaching implications for public health and sustainable agriculture,” she emphasized. The project, in collaboration with numerous partners, aimed to reach 138,000 households in Mozambique when it concluded in 2020.

Beyond Mozambique, she collaborates locally in the Rio Grande Valley through the Texas Climate-Smart Initiative, involving partnerships with local producers, Texas A&M, and the U.S. Department of Agriculture’s (USDA) Natural Resource Conservation Service (NRCS). This program focuses on implementing innovative, climate-resilient agricultural practices.

The objective of this initiative is to advocate for the utilization of soil as a strategy to mitigate climate change. A fundamental aspect of this project is quantifying the benefits derived from climate-smart practices, particularly in reducing greenhouse gas emissions and enhancing soil carbon sequestration. Situated in the subtropical, semi-arid climate of the Rio Grande Valley, the initiative led by Dr. Pereira and her team represents a significant advancement in environmental research. This initiative will establish large-scale quantification of greenhouse gas emissions and soil carbon sequestration in the region, establishing the Rio Grande Valley as a natural laboratory for areas that may face similar climatic conditions in the future. Through this comprehensive approach, Pereira and her team are committed to providing empirical evidence supporting sustainable agricultural practices. These practices are environmentally beneficial and economically viable for local producers in the Rio Grande Valley.

Pereira’s research contributions have been recognized through the E. Kika de la Garza fellowship, where she delved into the USDA’s operations, aiming to guide students toward roles that contribute to efficient resource management for local producers, especially historically underserved communities.

“This fellowship gave me a better grasp of how the USDA operates by visiting service centers around the country to see how they address their local issues as well as how these activities coalesce at the national level,” she said. “I can now build soil science paths for students to join the USDA as they assist local producers in staying productive through efficient resource management while breaking ground for historically underserved communities.”

As Dr. Engil Pereira’s research progresses, she remains steadfast in delivering impactful, science-based solutions for food security, public health, and environmental sustainability. Her commitment extends to addressing urgent global challenges and working towards a sustainable future.



At the Forefront of Mathematical Sciences: Bridging Theory and Real-World Solutions

CRISTINA VILLALOBOS

In the field of mathematical sciences, where precision and problem-solving meet, Dr. Cristina Villalobos stands as a prominent figure, shaping the optimization landscape. As the Myles and Sylvia Aaronson endowed professor in the UTRGV School of Mathematical and Statistical Sciences, associate dean for the College of Sciences, and founding director of the Center of Excellence in Science, Technology, Engineering, and Mathematics (STEM) Education, Villalobos' work extends beyond mathematical theories into real-world applications, leaving a lasting impact on academia.

Villalobos, an optimization researcher, defines her field as the study of 'discrete or continuous optimization problems and studies scenarios where the objective is to optimize a function over a set of constraints, with applications ranging from antenna design to medical advancements. "I first learned about optimization during my undergraduate career at The University of Texas at Austin," recalls Villalobos. "Participating in a summer research program at Rice University opened my eyes to the potential of applying mathematics to solve real-world problems."

One of her significant projects involved optimizing the assignment of classes to faculty members, a complex problem with over 2000 variables and constraints. Villalobos collaborated with various individuals, including graduate students, a Software Engineering class, senior design capstone students, and an undergraduate research student. "We wanted to automate the process, and a collaboration with a Computer Science class resulted in creating a web application," she explains. "This project, spanning several years and involving multiple contributors, resulted in two published papers and numerous conference presentations." One of her graduate students recently modelled the workload distribution for graduate students.

Her collaborations extend beyond mathematical disciplines. Villalobos has worked with colleagues in electrical engineering to model antenna design and joined forces with researchers from other universities to model drug therapy for retinitis pigmentosa, the leading cause of hereditary blindness.

In recognition of her outstanding contributions, Villalobos has received prestigious awards, including being named a Fellow of the American Mathematical Society in 2023 and the 2020 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. "I am honored to have received these awards. These accolades have provided opportunities and a platform to share my passion for optimization, STEM education, and the importance of student mentoring."

Currently, her focus with additional collaborators lies in studying the effects of Mathematics Identity on students taking Calculus 1, using the assessment strategy of Specifications Grading. This research aims to enhance pass and retention rates, particularly in STEM studies. "As a Hispanic Serving Institution with a high population of commuter students, our work in Specifications Grading and Math Identity is pioneering," she states. "It's about understanding the factors that influence student success and applying that knowledge to make a meaningful impact."

With a legacy of accolades, meaningful collaborations, and a steadfast dedication to pushing the boundaries of optimization and STEM education, Dr. Cristina Villalobos stands at the forefront of mathematical sciences, seamlessly bridging the gap between theory and real-world problem-solving.

Revolutionizing Cancer Research: Advancing Early Diagnoses and Innovative Therapies

SUBHASH CHAUHAN

Dr. Subhash Chauhan, a tenured Professor and Division Chief of Cancer Immunology and Microbiology Group, Medicine and Oncology Integrated Service Unit at the UTRGV School of Medicine and the Founding Director of the South Texas Center of Excellence in Cancer Research (ST-CECR), is at the forefront of transformative cancer research, advancing early cancer diagnosis and effective therapies. "Cancer is one of the devastating health conditions which not only impacts the life of patients but also negatively influences the life of other family members," he said.

Chauhan's primary research interest is identifying and characterizing diagnostic and therapeutic targets for cancer. Utilizing genomics and proteomics approaches, his lab is actively engaged in identifying biomarkers that aberrantly express or localize in cancer cells, aiming to develop innovative tools for early disease diagnosis. "Recently, we have identified a novel trans-membrane mucin MUC13, highly over-expressed in ovarian, pancreatic, and colon cancers. This may be a potential biomarker for early cancer diagnosis and a good target for antibody-guided targeted therapy," Chauhan explained, illustrating the promising strides his lab has made in discovering potential solutions for early cancer detection and treatment.

Chauhan's lab is also pioneering the development of novel targeted therapeutic modalities for cancer treatment and diagnosis. By leveraging cancer-associated antigens, antibodies can deliver radionuclides and nanoparticle-encapsulated drugs specifically to tumors, overcoming the hurdles of nonspecific distribution and suboptimal drug delivery.

Chauhan emphasizes the importance of collaboration in research: "My research group includes an outstanding team of basic scientists, physician-scientists, clinicians, and biostatisticians." These collaborations have resulted in over 200 peer-reviewed manuscripts, book chapters, and several patents related to drug delivery systems, nanoparticle formulations, and antibodies.

The collaborative efforts have led to impactful publications and garnered extramural funding, including 5 National Institutes of Health (NIH) RO1 grants, 3 Department of Defense (DOD) grants, 2 Private Foundation grants, and 2 Industry grants. Dr. Chauhan has delivered over 90 invited lectures at national and international forums, contributing to disseminating valuable research findings.

Additionally, Chauhan's leadership has been instrumental in establishing a new department (Immunology and Microbiology) and the South Texas Center of Excellence in Cancer Research (ST-CECR) at UTRGV. Recognized with prestigious awards, including the Science and Technology Acquisition and Retention (STARs) award totaling \$5 million from the University of Texas System and substantial funding from CPRIT (\$2.5M and \$6.0M), his impact extends beyond the laboratory. Moreover, Chauhan has developed a state-of-the-art Integrated Cancer Research Core (ICRC) facility, which serves biomedical researchers across the UTRGV campus.

Chauhan's work extends to societal impact through active engagement with organizations like the Kosten Pancreatic Cancer Research Foundation and the SSA Foundation, aiming to provide care to pancreatic cancer survivors and develop a cure for Amyotrophic Lateral Sclerosis (ALS), respectively. His overarching goal is to advance early cancer diagnosis and modern cancer treatment, offering hope for the future. "Ultimately, our research is expected to advance early cancer diagnosis and modern cancer treatment fields in the near future," Chauhan affirmed. Dr. Chauhan is passionate about cultivating the next generation of cancer researchers and the workforce that will play a pivotal role in the ongoing fight against cancer. During his free time, he enjoys reading, spending quality moments with his family, and delving into a deeper understanding of global human population dynamics. As a dedicated cancer researcher, he considers himself blessed and strives to make a meaningful difference in the fight against cancer.





At the Forefront of Neuropsychiatric Health: Advancing Research and Collaborative Vision

IHSAN M. SALLOUM

In a groundbreaking effort to address the intricate intersection of psychiatric and substance use disorders, Dr. Ihsan M. Salloum, Director of the Institute of Neuroscience at UTRGV, has been at the forefront of research aimed at developing effective treatments for individuals suffering from these challenging conditions. "My research interest is focused on the development of effective treatment for people who suffer from complex comorbid conditions involving co-occurring psychiatric and substance use disorders," Salloum said. "These conditions are highly prevalent in clinical populations and are associated with significant morbidity and mortality. However, effective, evidence-based treatments are sorely lacking, and there is a major unmet treatment need for people affected by these conditions."

Building on this commitment, Salloum's research group achieved a noteworthy milestone by being the first to conduct a rigorous clinical trial evaluating the efficacy of pharmacotherapy in patients with comorbid bipolar disorder and alcohol use disorder. The study demonstrated that divalproex sodium, a commonly used anticonvulsant medication, significantly reduces alcohol use among patients with bipolar disorder. These findings filled a critical gap in treatment knowledge and paved the way for further investigations in this complex clinical population. "Our study proved that it was possible to conduct clinical trials in this complex clinical population, which paved the way for other investigations in this population," he said. "The results of that study were also included in the American Psychiatric Association's Clinical Guidelines for the treatment of comorbid bipolar and alcohol use disorders."

Collaboration has been a cornerstone of Dr. Salloum's research endeavors. In close partnership with colleagues at the University of Pittsburgh Medical Center, he has played a vital role in developing innovative interventions for comorbid mood disorders and co-occurring alcohol and substance use disorders. Additional partnerships with the University of Miami and The University of Texas Dell School of Medicine led to the exploration of stem-cell infusion for treating comorbid depression and alcohol use disorder.

Moreover, collaborations with colleagues at The University of Texas Southwestern Medical Center involved trials for patients with bipolar disorder and comorbid alcohol use disorder using promising nutraceutical products.

Internationally, Salloum's collaborations extend across the globe, encompassing the United States, Canada, England, Scotland, France, Italy, Iceland, South Africa, India, and various Latin American countries. These collaborations culminated in the development of Person-centered Medicine (PCM) and the International College of Person-centered Medicine, aiming to optimize care by placing the person at the center of healthcare and public health. "Diagnostic and care models are being developed, aiming at transforming care with emphasis on total health, with attention to prevention, health restoration, and recovery," Salloum explained.

Salloum's contributions have not gone unnoticed, with a list of prestigious awards recognizing his service and dedication to under-represented populations. These include the Annual Chester M. Pierce, M.D., Sc.D. Resident and Medical Student Research Symposium of the National Medical Association and the Lifetime Achievement Award from the American Society of Hispanic Psychiatry.

Looking ahead, Dr. Ihsan Salloum outlined the main goals of his research, emphasizing the need for effective interventions with global applications to enhance personalized care and access to treatment for individuals from diverse cultural and geopolitical backgrounds. He is looking forward to doing this at the UTRGV Institute of Neuroscience, where a core of multidisciplinary scientists is working to address the most pressing neuropsychiatric health issues affecting the Rio Grande Valley, incorporating basic mechanisms, translational and clinical research, and the application of artificial intelligence and machine learning to optimize and personalize clinical care.



Advancing Human Genetics and Infectious Disease Research

SARAH WILLIAMS-BLANGERO

In the field world of human genetics and infectious disease research, Dr. Sarah Williams-Blangero's story unfolds as a testament to passion, perseverance, and groundbreaking discoveries. She currently holds the position of Chair of the Department of Human Genetics and Director of the South Texas Diabetes and Obesity Institute. Her trajectory into the world of genetics was unique and far from conventional. Within the broad scope of scientific exploration, she is acknowledged for her significant contributions, offering inspiration and contributing to the continuous endeavors in human genetics research.

In her early academic years, she unexpectedly shifted from a chemistry major to discovering her fascination for anthropology through introductory courses in cultural and physical anthropology at the university. "I went to university to major in chemistry but fell in love with anthropology when I took the two introductory courses in cultural and physical anthropology," she said. The study of human variation and population genetics became her focus, leading her toward a master's and Ph.D. in Biological Anthropology. Williams-Blangero conducted her dissertation research in the remote eastern hill region of Jiri, Nepal, unraveling the complex impact of marriage patterns on the genetic population structure of villages. Her dissertation on clan-structured migration in the Jirel population marked a pioneering effort, a population genetic study of microevolution that set the stage for her remarkable career.

Her postdoctoral training at a private non-profit biomedical research institute saw a shift in focus to the practical application of population genetics in the genetic management of nonhuman primates, particularly baboons and chimpanzees. However, while she worked at the Southwest Foundation for Biomedical Research, she discovered a new path in her career. "While working on genetic management issues, I saw a request for applications (RFA) focused on developing international collaborations in infectious disease research, which was issued by the National Institutes of Health (NIH)," she said. "This RFA caused yet another shift in direction in my career journey."

The opportunity brought her back to Nepal, where she conducted health-related research, focusing on understanding the genetic factors influencing susceptibility to infectious diseases. This resulted in her receiving her first NIH R01 grant, supporting a family study on susceptibility to intestinal worm infections among the Jirels of Nepal.

The research, one of the earliest large-scale human genetic studies of infectious disease susceptibility, yielded valuable results with the localization of multiple genes influencing the risk for helminthic infection.

Over the next 26 years, Williams-Blangero leveraged the pedigree and genetic information collected during the initial Nepal project to extend her research on the Jirel population to different conditions. With projects focused on childhood growth and development, psychiatric disease, osteoporosis, dental health, and ocular health and disease, her work benefited over 2800 individuals within a single extended pedigree.

Like her work in Nepal, a collaborator's focus on applying genetic approaches to Chagas disease led to a two-decade-long family study in Brazil. Funded by the NIH, this project explored the genetic determinants of variation in Chagas disease progression. The changing economic landscape in Brazilian communities over this period highlighted the interconnectedness of infectious diseases and lifestyle factors, revealing a link between *T. cruzi* infection and an elevated risk of type 2 diabetes. As Williams-Blangero researched complex pedigree reconstruction for her major projects, her expertise attracted collaborations worldwide. From Alaska to Samoa, Oman, Mozambique, and Egypt, she played a pivotal role in helping other scientists collect family data for genetic studies on various diseases. Her research also extended to Mexican-American families in South Texas, focusing on assessing the genetic determinants of risk for diabetes, obesity, and related disorders in this health disparity population.

This year marked a significant milestone in Williams-Blangero's career with her largest NIH grant. In her role as the Principal Investigator for the \$10.6 million UTRGV Diversity Center for Genome Research grant, she generated funding that supports innovative research projects, a community engagement core, and a workforce development core, underscoring her dedication to advancing genetic research. Looking ahead, she expresses optimism for the center's future, stating, "As I look ahead, I am enthusiastic about what the future holds," she said. "The UTRGV Diversity Center for Genome Research is part of a consortium that seeks to foster cutting edge genetic research on health disparities, community engagement related to genetics and genomics, and diversification of the genomics workforce."

A Pioneer in Perinatal Research Redefining Healthcare Standards

SHARON RADZYMINSKI

Dr. Sharon Radzynski, a recognized figure in nursing and research, has devoted her career to researching the complexities of perinatal care. Perinatal care is a cornerstone of her research, impacting the health and safety of newborn infants and charting the course for future generations.

Radzynski embarked on her journey into perinatal research in 1977 as the Research Coordinator for the Perinatal Research Unit at Case Western Reserve University in Cleveland, Ohio. During this time, she oversaw research grants examining diabetes's impact on pregnancy and infants, the effects of labor medication on newborns, long-term consequences of gestational diabetes and prematurity in children, placental changes in low-income women, and the correlation between fetal electrocardiogram (ECG) patterns and birth outcomes. Over the years, Radzynski has played a pivotal role in numerous groundbreaking research projects, contributing significantly to the understanding of the impact of diabetes on pregnancy, the effects of medications during labor, and the long-term consequences of prematurity in children.

One of her key projects, focusing on the "effect of epidural anesthesia on suck/swallow coordination in term newborn infants," challenged conventional wisdom. Contrary to initial perceptions, the research revealed that it was not the epidural but the separation of infants from their mothers after delivery that posed the most significant challenge to successful breastfeeding. This finding prompted a shift in hospital policies, redefining the standard of care for breastfeeding mothers in the labor and delivery unit. Kangaroo care, another area of Radzynski's expertise, involved placing infants skin-to-skin with their mothers immediately after birth.

The study, primarily focused on premature infants, demonstrated the most significant benefits for term infants, especially those breastfeeding. This research, in contrast to results in underdeveloped countries, where kangaroo care compensated for limited medical care, highlighted the importance of tailored approaches in different healthcare settings. Radzynski's collaborative efforts with physicians and nurses played a vital role in shaping her research. "My greatest collaboration was with the physicians and nurses of the labor and delivery and high-risk perinatal units who came to me with the clinical research questions they wanted answered," she said.

From her Sigma Theta Tau International Nursing Honor Society membership in 1980 to her role as the Principal Investigator for various grants — including those from the March of Dimes, the American College of Obstetricians and Gynecologists, the Association of Women's Health, Obstetric and Neonatal Nurses, and the U.S. Department of Health and Human Services — Radzynski's leadership in the field of nursing extends well beyond her research endeavors. Before her former term as the Dean of the UTRGV School of Nursing concluded in June 2018, she chaired the Georgia Southern University School of Nursing. She held essential roles in professional associations, such as the Georgia Association of Nursing Deans and Directors and the American Association of Colleges of Nursing.

Dr. Sharon Radzynski's dedication to perinatal research has advanced the understanding of critical issues and left an indelible mark on the standards of care for mothers and infants. Her legacy inspires future generations of researchers and healthcare professionals dedicated to improving perinatal outcomes.





Equity in Healthcare: Addressing Hispanic Access and End-of-Life Care

ANDRYA R. RIVERA-BURCIAGA

Dr. Andrya R. Rivera-Burciaga, Assistant Professor of Nursing, emerges as a steadfast advocate for equitable healthcare access. Her journey is marked by a dedication to addressing disparities among Hispanics of Mexican origin, fueled by personal experiences and a commitment to improving end-of-life care. “Improving access to healthcare and minimizing healthcare disparities among Hispanics of Mexican Origin have always been issues that I am passionate about,” Rivera-Burciaga said, reflecting on a career shaped by a desire for positive change.

Her journey into this field began nearly 18 years ago during clinical rotations as a nursing student, where she confronted the stark realities of health inequities faced by the Hispanic community. The turning point in her career was with the illnesses of her grandparents. “My grandfather died of liver cirrhosis, and my grandmother of Alzheimer’s. I remember thinking about how the experience was unpleasant, and as a nurse, I was unprepared and should have known more,” she recounts. This personal journey pushed her mission to become an advocate to improve nursing care for those grappling with serious illnesses.

During her Doctor of Nursing Practice program, Dr. Rivera-Burciaga conducted a quality improvement project titled “The Use of Promotoras to Initiate Advanced Care Planning Among Mexican Americans in an Acute Care Setting.” This initiative aimed to improve the initiation and completion of advance directives among Mexican Americans. The project also created interventions to increase access to palliative and hospice care. Her doctoral education offered her opportunities to decrease disparities for Mexican Americans in the Rio Grande Valley and advance nursing education in these areas through annual conferences.

Collaboration is at the core of her projects, as Rivera-Burciaga emphasizes the importance of teamwork across diverse healthcare disciplines. “In palliative care and hospice, there is no such thing as a lone ranger. Teamwork is so important for the benefit of patients during their most difficult time in illness to decrease suffering and improve quality of life,” she said. Her collaborations extend beyond nursing to include medicine, social work, pharmacy, physician assistants, clergy, and community health workers.

With Hispanics, particularly Mexican Americans, being the fastest-growing ethnic group in the United States, Rivera-Burciaga highlights the urgent need to address healthcare disparities. Mistrust in the healthcare system, perceptions of inequitable care, limited access, and cultural barriers contribute to disparities, especially in palliative and end-of-life care. “Mexican Americans living with serious illnesses are underrepresented in the literature, and with the population increase, it is vital to understand and create solutions to prevent healthcare disparities further while living with serious illness and at the end of life within this group,” she emphasizes.

Dr. Rivera-Burciaga’s current research focuses on exploring the palliative care attitudes, perceptions, experiences, and needs of Mexican Americans and their caregivers in the Rio Grande Valley facing severe illnesses. By identifying these perspectives, she aims to eliminate stereotypes, add to the literature, create culturally appropriate interventions, and enhance the quality of care provided to this community.

Transforming Lives Through Nursing, Research and Education

ELOÍSA G. TAMÉZ

In the ever-evolving healthcare landscape, Dr. Eloísa G. Taméz is acknowledged for her unwavering commitment to innovation and compassion in healthcare. With a diverse background of academic and professional qualifications—holding a Doctor of Philosophy in Physical and Health Education, a Master of Science in Criminal Justice, and the distinguished title of Fellow of the American Academy of Nursing—her journey into research traces back to her high school years. Even when the full importance of her early endeavors might not have been apparent, this formative experience set the stage for her later contributions to the nursing field. Her journey into research traces back to her high school years, and even at a time when the full importance of her endeavors might not have been apparent, this early experience set the stage for her later contributions to the nursing field.

Taméz has led impactful research projects with a broad influence on health. As the Principal Investigator in the "Risk Assessment of Colonia Children for Type 2 Diabetes," she showcased her commitment to community well-being. This project aimed to assess the risk of Type 2 Diabetes in children. Beyond data collection, the project focused on imparting health promotion strategies to children and parents, covering nutrition, physical activity, and diabetes awareness. The six-week-long health promotion classes culminated in a final evaluation, during which children actively participated, creating visuals to showcase their findings.

Taméz acknowledges the significant impact of collaborative efforts in research, as demonstrated by her involvement in the Colonia Children project with the Dietetics Department and the Department of Nursing at UTRGV. During this initiative, a student from dietetics played a crucial role in facilitating snack planning, while two student nurses took the lead in spearheading health promotion classes. Additionally, a fair was designed to engage parents and children and facilitated the collection of specific metrics, underscoring the holistic approach to community health.

Living amid underserved populations, Dr. Taméz is aware of the challenges in the Rio Grande Valley—severe poverty, a high uninsured population, and a shortage of medical services. Her commitment to making a meaningful impact led to developing the post-master's Psychiatric Mental Health Nurse Practitioner Certificate. Launched in 2015 at the inauguration of UTRGV, this program has produced 35 Psychiatric-Mental Health Nurse Practitioners, Board Certified (PMHNP-BCs), currently practicing in the Rio Grande Valley. Notably, the online nature of the program has expanded its reach to 17 other states, graduating over 200 students. With this, Dr. Taméz's initiative has played a pivotal role in addressing the shortage of mental health providers serving the valley and Texas.

Throughout her professional journey, Taméz has received prestigious awards, such as her fellowship in The American Academy of Nursing, the "A" Proficiency Designator from the United States Army Medical Department, and her fellowship with the International Center of Research for Women. Reflecting on these accolades, she notes, "The awards mentioned above were hard to earn, as Mexican Americans receiving such recognition could be counted on one hand." When students inquire about the initials added to her name, she sees it as an opportunity to motivate them, stating, "It helps me to reach my goal of inspiring students to look beyond minimum achievements."

Dr. Eloísa G. Taméz's unwavering dedication to research, education, and community health exemplifies a transformative leader. Her story is not just one of academic accomplishments but a testament to the impact that passion and commitment can have on the well-being of communities, both locally and beyond.





Bridging Biomaterial Research and Regenerative Medicine

CLAUDIA BIGUETTI

Dr. Claudia Bigueti, an Assistant Professor at UTRGV's School of Podiatric Medicine, has dedicated over a decade to researching biomaterials for reconstructing craniofacial defects. Her research journey began during dental studies, focusing on enhancing patients' responses to tissue healing. "I started this research 14 years ago as a dental student," she said. "Understanding how we can improve patients' responses to tissue healing is fascinating, and my passion for this field of research led me to pursue a master's and Ph.D. in basic sciences, specializing in osteoimmunology."

Bigueti's research focuses on improving tissue regeneration post-trauma or reconstructive surgery. This research stems from her doctoral studies, during which she demonstrated the role of immunomodulatory molecules and titanium surfaces in successful osseointegration. Her findings guided her subsequent postdoctoral work at The University of Texas at Dallas in collaboration with Dr. Danieli Rodrigues, an Associate Professor of Bioengineering. As she moved to UTRGV as an assistant professor of medicine, she expanded her collaborations involving clinicians such as Dr. Naohiro Shibuya and Dr. Javier LaFontaine in her research with bone biomaterials. "This collaborative effort enhanced the quality of our research and expanded its potential impact," Bigueti emphasized.

The interdisciplinary nature of Bigueti's research fosters collaboration between clinical, translational, and engineering disciplines, promoting a holistic approach to healthcare challenges. "By bridging the gap between these fields, my research not only advances scientific knowledge but also stimulates a broader perspective in addressing complex health issues," she said.

Her work holds particular promise for conditions like diabetes, where impaired healing is a significant concern. "My research can pave the way for innovative treatments in orthopedics and dentistry," she said. "Particularly, in the context of diseases like diabetes, where impaired healing is a significant concern, finding effective methods to promote tissue regeneration can dramatically improve patients' lives."

Bigueti's vision of making a meaningful difference in healthcare extends beyond the laboratory. She aims to inspire the next generation of research scientists and clinicians by fostering a diverse and multidisciplinary environment for aspiring researchers in the student community. "My aim to encourage our UTRGV students to engage with these challenges ensures a continuous cycle of discovery and progress, ultimately leading to further breakthroughs in the medical field," she expressed.

Bigueti's commitment to understanding tissue healing, collaborating across disciplines, and her contributions to the field of biomedical engineering and medical sciences have garnered her accolades. In 2021, Bigueti received her first grant as a Principal Investigator from the Academy of Osseointegration and the 2021 Rising Stars Award in Engineering in Health. Establishing her research lab at UTRGV's School of Podiatric Medicine in 2022 marked a significant milestone, accompanied by the Rising Stars Award from the UT System and a Start-Up grant from UTRGV. "These achievements have motivated me to make a meaningful difference in the field of tissue regeneration as I keep pursuing major NIH grant mechanisms with the support from UTRGV."



Advancing Biomechanics: Transformative Research in Foot and Ankle Health

HAFIZUR RAHMAN

In the realm of mechanical engineering and healthcare, Dr. Hafizur Rahman, Assistant Professor at the School of Podiatric Medicine, is recognized for his groundbreaking contributions to biomechanics. Dr. Rahman found his niche in applying mechanical principles to unravel the intricacies of the human movement. "I realized that biomechanics, the application of mechanical principles to the movement of a living body, was where I could blend my engineering knowledge with a deeper understanding of human motion," he says.

He focuses on improving the lives of those dealing with foot and ankle deformities, aiming to enhance mobility, functional independence, and overall quality of life. One of his major research projects centers around peripheral artery disease, a condition with significant implications for walking abnormalities. Through human subject experiments, Rahman and his team investigate how the disease affects gait kinematics and kinetics. Their findings reveal that peripheral artery disease is inherently multilevel, impacting various muscle groups across the lower extremities. "Myopathy and neuropathy, along with its complicated hemodynamics, are key mechanisms responsible for the diffuse manner by which peripheral artery disease affects the legs of claudicating patients," Rahman explains.

Emphasizing the need for collaboration, Rahman acknowledges the importance of bringing experts from various fields together in his clinical-oriented biomechanics research. While he specializes in biomechanics, he values the contributions of other specialists in providing context and understanding the impact on the human body. "My current research team includes biomechanists, physicians, interventional cardiologists, podiatrists, physical therapists, and biostatisticians," he notes, highlighting the interdisciplinary nature of his work.

Rahman's journey is marked by significant milestones, including receiving the Small Projects in Rehabilitation Research (SPiRE) Program grant from the Department of Veterans Affairs during his postdoctoral fellowship. This federal research grant, secured as a Principal Investigator, not only strengthened his confidence but also underscored the significance of his work in improving the lives of veterans. Reflecting on his achievements, Dr. Rahman states, "This grant acknowledges the importance of my research work and how veterans can benefit by enhancing their activities of daily living with the possibility of reducing the disability rate."

Beyond grants, Dr. Rahman has actively participated in collaborations and initiatives, including the University of Nebraska Research Collaboration Initiative, a NASA Nebraska Space mini-grant, and the Rising STARS (Science and Technology Acquisition and Retention) grant from The University of Texas System, following his joining The University of Texas Rio Grande Valley.

Rahman's research lab is a central hub for clinical and translational research, directly addressing foot and ankle deformities to revolutionize healthcare delivery. With a commitment to enhancing mobility, walking performance, and physical activity, Dr. Hafiz Rahman's contributions represent a significant stride in evidence-based biomedical research, promising improved healthcare for individuals in South Texas and beyond.



Exploration of Aging, Technology, and Caregiving Dynamics in Diverse Communities

LIN JIANG

Dr. Lin Jiang, Associate Professor at the University of Texas Rio Grande Valley (UTRGV), is a prolific researcher with a unique trajectory rooted in personal experiences and societal needs. She has an impressive track record in publications and successful grant applications and brings a valuable perspective to her research endeavors.

Jiang's research journey is distinctive, shaped by personal experiences and an acute awareness of societal needs. Arriving in the United States in 2011 with minimal belongings and no social networks, Jiang experienced social isolation and loneliness, finding solace in social media. This pivotal moment prompted her to contemplate the potential of technology for older adults, particularly the tech-savvy baby boomer generation. In 2013, her research shifted to focus on the intersections of social isolation, social support, mental health, and technology utilization among older adults.

Joining UTRGV in 2017, Jiang faced a personal challenge in 2018 when her mother was diagnosed with stage III colon cancer. This caregiving experience deepened her awareness of the formidable difficulties caregivers encounter, particularly within the Mexican-American population, which grapples with elevated rates of Alzheimer's. Subsequently, her research pivoted towards addressing the specific needs of Mexican-American caregivers for patients with Alzheimer's disease and related dementia (ADRD).

This profound experience led to Jiang's research on decreasing social isolation among Mexican-American informal caregivers during the COVID-19 pandemic. The project, funded by the National Institutes of Health (NIH) RGV Alzheimer's Disease Resource Center for Minority Aging Research (AD RCMAR), explores the relationship between technology utilization, social isolation, and loneliness among Mexican-American caregivers.

Recognizing cultural similarities between Chinese and Mexican communities, her recent research delves into immigration and cognitive health among first-generation Chinese and Mexican immigrants. Recently, she applied for an NIH R21 grant to support her project. This shift underscores Jiang's commitment to cross-cultural understanding and the nuanced intersectionality of healthcare challenges in diverse communities.

Beyond her contributions in the U.S., Jiang actively participated in a research team that conducted groundbreaking research on ADRD Care and Management in Faith-based Nursing Homes in China.

The project aimed to understand the challenges and strategies associated with caregiving in a faith-based context, with a particular emphasis on addressing the spiritual needs of older adults dealing with ADRD.

In addition to her significant contributions to ADRD research, Jiang's impact extends beyond, demonstrating a steadfast commitment to training future health workers and mental health professionals. As a program evaluator for Health Resources and Services Administration (HRSA)-funded projects, she plays a pivotal role in assessing the effectiveness of training programs designed to equip the next generation with the knowledge and skills necessary to address healthcare along the U.S.-Mexico Border.

Furthermore, Jiang has played a key role in national professional organizations dedicated to promoting research. Notably, she has served on the membership committee of the Gerontological Society of America (GSA), chaired the Communication Committee of the Association for Gerontology Education in Social Work, and co-chaired the Society for Social Work and Research (SSWR) Asian and Asian-Pacific Islander Focused Research cluster. These roles highlight her active engagement in advancing the field and fostering collaborative research initiatives.

Throughout her journey, Jiang gratefully acknowledges the profound influence of mentors at UTRGV, including Dr. Luis Torres-Hostos, Dr. Leticia Villarreal-Sosa, Dr. Michael Mahaney, Dr. Eron Manusov, and Dr. John Gonzalez. Reflecting on their impact, she expresses, "I owe a debt of gratitude to my mentors at UTRGV. Their guidance has offered me the wisdom and expertise necessary for achieving success."

Additionally, Jiang has cultivated collaborations with renowned scholars in gerontology across the nation, particularly at R1-level universities such as NYU, MSU, USC, and ASU, among others. Emphasizing the importance of these collaborations, she states, "Collaborating with these influential scholars has exposed me to cutting-edge knowledge and instilled in me a deep commitment to rigorous scientific inquiry." These collaborations underscore Dr. Lin Jiang's dedication to staying at the forefront of gerontological research and her commitment to advancing the field through rigorous and innovative approaches.



Bridging Borders and Boundaries: A Journey of Impactful Research in Social Work

LETICIA VILLARREAL SOSA

Dr. Leticia Villarreal Sosa, Professor of the School of Social Work and Inaugural Associate Dean of Research and Faculty Development, has dedicated her career to research rooted in personal experience and a commitment to community-based collaboration. Her journey into academia and research was deeply influenced by her background as a daughter of Mexican immigrants. She recalls, “Anzaldúa’s work was powerful for me; it gave me a framework to understand my own identity and the borderland’s existence. This became the theoretical framework I would carry forward in much of my work.” Her experiences as a school social worker further shaped her dissertation research, combining professional insights, her lived experience, and social science and Chicana feminist theories.

An important project led by Villarreal Sosa is focused on the role of school social workers in addressing equity issues with immigrant youth. “We surveyed school social workers nationally to understand their work in immigrant-serving schools.” This three-year Spencer-funded initiative has extended her Nepantlera practice model and created a national dataset, shedding light on an overlooked aspect of school social work. Another impactful project, funded by the New York Life Foundation, focuses on developing a culturally informed response to grief and loss for school-based professionals. “We are getting ready to run a second pilot and develop a school-based coaching program to implement the content and learning in the school setting,” she shared.

Her commitment extends beyond borders, pioneering the integration of Artificial Intelligence/Machine Learning (AI/ML) into the work of promotores (community health workers) in the Rio Grande Valley. With a pilot program targeting 20 promotores, she aims to enhance their capability to identify and address mental health issues in underserved communities.

Furthermore, as collaboration remains a cornerstone of Villarreal Sosa’s work, from local initiatives with Arab American Family Services to international collaborations in Azerbaijan and Mexico, her research continually transcends boundaries. “Nationally, my work is generally collaborative, involving scholars from other universities.” This collaborative spirit has notably led to the developing of a culturally informed response to grief and loss in partnership with the School Social Work Association of America (SSWAA).

Additionally, her work in school social work has pushed the field’s boundaries, addressing the need for more culturally responsive practices. Recognizing the contributions she has made to the field of school social work, in 2023, Dr. Villarreal Sosa received the Gary Lee Schaffer Award from the School Social Work Association of America. SSWAA described Dr. Villarreal Sosa as “an integral force in revolutionizing the profession of school social work.” In 2022, she received the Davlin Diversity Award for her contributions to her prior institution and an award for the best theoretical article in the International Journal of Social Work Education, showcasing her impactful work in Guatemala.

Dr. Leticia Villarreal Sosa’s dedication to work that has a social impact is a testament to community-based collaborative efforts. “I want to do relevant work that meets the community’s needs,” she said. Her focus on system changes and development, particularly in schools and for immigrant youth, reflects her commitment to creating a meaningful and lasting impact.



As we introduce the inaugural UTRGV Research Annual Report, we express our gratitude to each faculty member featured in this report for allowing us to accompany them on their remarkable research journey. Faculty members, your willingness to share your expertise, insights, and passion has been instrumental in creating this report. Meeting with you across all UTRGV campuses, from offices to classrooms and laboratories, provided us with a profound understanding of the critical value of your research. Through photographs and narratives that delve into the stories behind your work, we are honored to showcase the dedication and innovation within our UTRGV research community.

Special thanks to our contributors, especially Aidé Garza, Administrative Manager in the Division of Research, the Associate Deans for Research, and the University Marketing and Communications staff. Your support has been invaluable. This report serves as a testament to the extraordinary work occurring within our university. The research conducted at UTRGV not only shapes the future of our institution but also leaves a profound impact on the Rio Grande Valley region, the nation, and beyond.

To our readers, we hope this report meets your expectations. Research Communications aims to convey UTRGV research's mission through each of our stories and photographs. Together, let's continue to shape the future of research at The University of Texas Rio Grande Valley.

With gratitude,
Research Communications

María González

María González
Communications Coordinator

Jesús Alfárez

Jesús Alfárez
Communications Specialist

THANK YOU

Associate Deans for Research

Michael A. Abebe
College of Business & Entrepreneurship

Javier Cavazos
College of Education and P-16 Integration

Constantine Tarawneh
College of Engineering and Computer Science

Mark Ramírez
College of Fine Arts

Murat Karabulut
College of Health Professions

Russell K. Skowronek
College of Liberal Arts

Volker Quetsche
College of Sciences

Angela Cook
School of Medicine

Lilia Fuentes
School of Nursing

Naohiro Shibuya
School of Podiatric Medicine

Leticia Villareal
School of Social Work

Contributors

Aidé Garza
Research Administrative Manager

Elisa Flores
UMC Marketing Director

Karla Castillo
UMC Graphic Designer Manager

David Pike
UMC Senior Photographer

Paul Chouy
UMC Senior Photographer



On December 6, 2012, The University of Texas System Board of Regents voted to create The University of Texas Rio Grande Valley (UTRGV), as a new institution, including a new medical school by combining the resources of The University of Texas–Pan American and The University of Texas at Brownsville. With the mission "To transform the Rio Grande Valley, the Americas, and the world through an innovative and accessible educational environment that promotes student success, research, creative works, health and well-being, community engagement, sustainable development, and commercialization of university discoveries," UTRGV was formally created in 2013 under the leadership of its founding president, Dr. Guy Bailey; the university officially opened in the fall of 2015, and the School of Medicine welcomed its first class in the summer of 2016. The academic programs are fully accredited by the Southern Association of Colleges and Schools (SACS), and the School of Medicine received accreditation from the Liaison Committee on Medical Education (LCME) in 2023. In 2020, UTRGV was classified as a Carnegie R2 research university in the "R2: Doctoral Universities – High research activity" category.

UTRGV comprises one campus with nine distinct sites spanning 120 miles in the Rio Grande Valley (RGV), including Rio Grande City, Edinburg, McAllen, Weslaco, Harlingen, Brownsville, Boca Chica, Port Isabel, and South Padre Island. The RGV is the home to Texas's top five lowest socio-economic counties. As a Carnegie Community Engaged institution, a key part of its mission is to serve the needs of its communities, as it does by facilitating access to higher education for the many historically underserved and socioeconomically disadvantaged students in the RGV.

91% of our student population is Hispanic, 95% are from the region, 66% are first-generation, and 65% are Pell Grant recipients. UTRGV's commitment is not just enrolling the students of its region; we are also committed to better serving them by understanding their unique needs and assets and intentionally designing our supports and strategies to ensure their success. UTRGV's student success metrics (as of 2022) include student persistence of 79% for first-time, full-time (first year) degree-seeking students; over 93% of course completion at lower, upper, and graduate levels; and 6-year graduation of first-time, full-time undergraduates is at 56.6%. According to a recent Washington Monthly report released in August 2023, out of 442 national universities, UTRGV is ranked #60 based on a combined metric, including social mobility, research, and service metrics. In terms of specific metrics, UTRGV is ranked #2 on the performance of Pell Grant students, #11 on the lowest net price of attendance, and #21 on social mobility alone out of 442 institutions. Another study by Third Way, released in August 2023, focuses on the Economic Mobility Index (EMI) based on 1,409 institutions. UTRGV ranks #6 at the national level and #2 in Texas.





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