



# ACHIEVE

RESEARCH & GRANTS ACTIVITIES @ ROBERT MORRIS UNIVERSITY • 9th Edition Volume 1 • Fall 2023

## Vice President’s Message

The Research & Grants Administration (R&GA) is happy to share the Fall 2023 issue of the R&G Newsletter. We hope this newsletter will play an important role in showcasing research & grant activities at RMU.

In this issue, we feature three grant applications submitted by RMU faculty from January to July 2023. The summaries presented here are in the Principal Investigators’ own words. Some of these applications have been awarded and others are pending. For this period, nineteen (19) opportunities were discussed/explored and ten (10) proposals were submitted. Most grant proposals were written by our faculty and staff with support from Research & Grants Administration, and Financial Operations. As always, supporting institution data was provided by the Office of Institutional Research.

The Research & Grants Administration encourages all faculty and staff to pursue research and participate in various research & grants related activities. The R&GA is available to help you answer questions related to grant searching, writing, budgeting, and managing. Please contact us with your questions, comments, suggestions, and concerns.

Have a great Fall semester!

Sincerely,

### Sushil Acharya

*Vice President for Grants, Research, and Global Initiatives*  
*Professor of Software Engineering*



## ➤ Nurse Practitioner (NP) Residency

### Grant Agency: Allegheny Health Network (AHN)

This Nurse Practitioner (NP) Grant between the AHN Research Institute and Robert Morris University supports an NP residency for Family Nurse Practitioners (FNP) and Psychiatric Mental Health Nurse Practitioners (PMHNP). The residency program is a one-year integrated learning opportunity for NPs who plan to work in primary care and provide education focused on serving rural and medically underserved populations. Residence will rotate 3-days a week in primary care and 1-day a week in a specialty. The extra day is left open for lectures.

The residency/fellowship program is a voluntary post-graduate training program through which licensed and certified novice NPs are provided additional didactic and clinical experiences alongside other healthcare providers, enhancing transition from education to practice. This form of mentored clinical education occurs within a structured learning environment, typically lasts 12 months long and diversifies the NP clinical preparation via varied clinical rotations, supervised hours, and didactic training.

RMU will serve as a collaborative partnership between AHN and RMU to advance their mutual interests related to practice, education, and research. Collaboration between academic and clinical partners leverages resources to maximize student learning; ensure safety of care delivery; and optimize patient outcomes. RMU will play a significant role in participant recruitment, didactic and clinical training, post-completion employment assistance efforts, and other project activities. RMU will ensure successful evaluation and assessment of project progress and implementation.

### Grant Proposal Activities January to July 2023



**Grant Opportunities  
Explored**



**Grant Proposals  
Submitted**

### Carl Ross

*Principal Investigator*  
University Professor of Nursing  
Coordinator, Nicaragua Programs  
SNEHS



## ➤ **Multiscale, Physics-based Approach for Directed Energy, Blast and Blunt Traumatic Brain Injury Prediction and Prevention. & Enhancing Helmet Capabilities Against Ballistic Threats via Physics-Based Injury Prediction**

Grant Agency: **Department of Defense, Office of Naval Research**

Two grant proposals were submitted as a part of a larger collaborative program called PANTHER. PANTHER is the most comprehensive and integrated team approach for addressing military-relevant traumatic brain injury (TBI) to date. Robert Morris University has been part of the PANTHER program since 2020.

As part of this newly proposed work, RMU will support the research efforts of PANTHER by conducting computational studies to assess the risk of blast-induced TBI from shoulder-mounted weapons and from shipboard blast events. Computational studies will also be conducted to assess head injury risk from ballistic threats. These results will be applied to improve the design of combat helmets and to set new guidelines for acceptable levels of blast exposure, leading to better protection of our military service members.



**Rika Carlsen**

*Principal Investigator*

Associate Professor of  
Mechanical and Biomedical Engineering  
Director, Center for Innovation and Outreach  
Coordinator, Biomedical Engineering  
SEMS

## ➤ **Charting a Path to Achieve Health Equity in Pennsylvania through Nursing Education**

Grant Agency: **Pennsylvania Higher Education Nursing Schools Association (PHENSA)**

The purpose of RMU's Nursing Workforce Diversity project is to increase nursing education opportunities for individuals from disadvantaged backgrounds through a project that recognizes social determinants as barriers to academic success. The project builds on evidence-based strategies that have been shown to be effective in retaining and graduating disadvantaged students in nursing.



**Carl Ross**

*Principal Investigator*  
University Professor of  
Nursing  
Coordinator, Nicaragua  
Programs  
SNEHS

Recognizing that many individuals from disadvantaged backgrounds have inadequate resources to promote academic success, the goal of this proposed project will retain diverse nursing students through positive reinforcement through educational support. The aim of the study will increase retention of nursing students disadvantaged backgrounds.

The need to attract students from under-represented groups in nursing is growing in importance. The development of a culturally diverse nursing workforce has a direct relationship on the ability of nurses to provide culturally responsive patient care. Studies indicate that nurses from minority backgrounds represent only 19 percent of the registered nurse workforce. The health care environment in Pennsylvania is imbalanced. Nursing workforce diversity within Pennsylvania has not kept pace with the population. Growing minority and elderly populations have created unmet health-care demands.

While the need clearly exists, several barriers interfere with the creation of a diverse nursing workforce. These include: (1) lack of academic support structures to assist struggling students, particularly those with insufficient academic preparation for the rigors of nursing education; (2) lack of social support structures, including peer and professional mentoring for diverse nursing students; and (3) inadequate financial resources for low-income students.

## ➤ **Three-dimensional finite element analysis on different bone densities in the implant-supported fixed dental prostheses**

Grant Agency: **University of Pennsylvania**

The technique sensitivity involved in achieving clinical survival and/or success with immediate implant placement has been attributed to various mechanical properties of the implant. Implant design has proven to be a key factor in allowing for osseointegration. Previous studies have also correlated implant survival with quality of bone surrounding the implant. Ridge preservation using various grafting materials has additionally been an integral part of immediate implant placement. There is adequate research that proves the success of bone grafting for ridge preservation. Finite element analysis is a computer guided tool that is used to analyze the effect of mechanical properties of a material.

Study design consisted of replacing a maxillary left central incisor with a healed extraction site as control. For the study group, an extraction socket of 13mm was simulated to accommodate an implant of 3.5mm x 13mm with bio-oss collagen bone graft material. The study design aims to simulate immediate loading of the both designs and studying the force distribution at various time intervals of T0 – immediately after implant placement; T1 – 2 weeks after implant placement; T2 – 1 month after implant placement; T3 – 6 months after implant placement and T4 – 1 year after implant placement.

The aim of our study is to assess the changes in stress distribution around the body of an immediately placed implant in anterior maxilla due to presence of graft material and its properties changes by a bone remodeling over time.



**Won Joo**  
*Principal Investigator*  
Department Head, Engineering  
Associate Professor of Biomedical  
Engineering  
SEMS

## ➤ **Real-Time 3D (RT3D) Workforce Grant**

Grant Agency: **Unity**

The proposed Simulation Master Ambassador Real-Time 3D (SMART3D) is a unique experiential Train-the-Trainer Program, fostering an interdisciplinary cohort of RMU undergraduates in community with other underserved learners to inject their collective skills in 3D visualization into growing rust-belt innovation sectors. SMART3D equips undergraduate students with skills to become instructors in RT3D. We will empower student applicants from diverse RMU majors to use Unity Learn to produce high-fidelity models applicable to their fields, then teach them to deliver the RT3D curriculum to underserved learners across the rust belt. Doing so, the program will provide both trainers and trainees access to work in customer experience, entertainment, healthcare, and smart manufacturing. SMART3D applies RMU's unique expertise in esports and experiential learning to major regional challenges. Our community once built bridges for the world, but is now known for industrial decline. Yet we also about a global robotics and simulation hub. By immersing student ambassadors in RT3D, they can catalyze this transformation regionally, positioning Southwestern Pennsylvania as a leader in real-time visualization services.

Dr. Armand Buzzelli is Director of Campus Recreation and Adjunct Instructor of Sport Management. He oversees the university's nationally recognized esports program. Dr. Tim Jones is Director of the Academic Media Center and Assistant Professor of Media Arts. He researches inclusion in animation and immersive media.



**Tim Jones**  
*Principal Investigator*  
Assistant Professor of  
Media Arts  
Director, Academic  
Media Center  
SIHSS

**Armand Buzzelli**  
*Co-Investigator*  
Director, Campus Recreation  
Student Affairs



## ➤ **RMU Radio: “Great Lanes” Podcast Series**

Grant Agency: **National Endowment for the Humanities (NEH) Division of Public Programs**

This grant application is for the development of a podcast series about the human connection to the sport of bowling, highlighting the stories, memories and personal experiences that make bowling more than just a game. These themes are central to RMU’s educational mission in the humanities - understanding the nature of achievement, ethics, gameplay, and membership in community.

Throughout this series, listeners will gain new understanding of the unique ways in which bowling has brought people together, creating lasting friendships, unforgettable historical moments, a sense of community, and served as social catalyst for all walks of life. The podcast will engage public awareness with humanities ideas - across disciplines from literature to user experience design. Each episode will feature personal, engaging narratives, first and secondhand accounts of landmark achievements in bowling. It will be hosted by veteran comedian and radio host, Kenny Zimlinghaus and feature guests from local celebrities to national entertainers and politicians and professional athletes. Doing so, will generate a unique community collaboration between storytellers, media producers and scholars.



**Tim Jones**  
*Principal Investigator*  
Assistant Professor of  
Media Arts  
Director, Academic Media  
Center  
SIHSS



**Heather Pinson**  
*Subject Matter Expert*  
Professor of Humanities &  
Media Arts  
Department Head, Arts &  
Humanities  
SIHSS



**Andrew Ames**  
*Subject Matter Expert*  
Professor of Media Arts  
Coordinator, Media Arts  
Gallery  
SIHSS

## ➤ **Cyber Talent Development with Curriculum Innovations**

Grant Agency: **U.S. Department of Defense**

This proposal requests new grant funding from the U.S. Department of Defense (DoD) Cyber Scholarship (CySP) program to support selected RMU student scholars and faculty research on cybersecurity education for 2023-2024.

The proposal will maintain the established CySP program at RMU with continuous research and innovations in cybersecurity curriculum and mentoring for cyber talent development. As a National Center of Academic Excellence in Cybersecurity (NCAE-C), RMU will adopt and implement a comprehensive mentoring model for DoD CySP scholars to succeed academically and professionally. The proposed project will recruit and develop cyber talent for the DoD cyber workforce and enhance the national pipeline for qualified cybersecurity professionals. Student scholars supported by the CySP program will intern and serve in full-time cybersecurity professional positions with DoD agencies.



**Ping Wang**  
*Principal Investigator*  
University Professor of Computer  
and Information Systems  
NCAE-CDE Program Coordinator  
SIHSS

## ➤ **Comprehensive Analysis of the Perceptions and Usage of Medical Marijuana in Prelicensure Nursing Students**

Grant Agency: **National Council of State Boards of Nursing (NCSBN) Center for Regulatory Excellence**

Marijuana use recreationally and medically is still considered illegal by federal law which classifies marijuana as a Schedule I Drug under the Substance Control Act (Hansen, Alas & Davis, 2022). However, states individually have been legalizing it since 2012 for recreational and medical use. The majority of states in the United States have legalized some form of medicinal marijuana use as of 2022 (Kurtzman, Greene, Bigley & Drenkard, 2022). 43% of full-time college students reported using marijuana within the past year (Park, et al., 2020). In addition, a study of 4,033 nursing students by Boulton and O'Connell (2017) reported past-year marijuana use by nursing students at 18%. Despite evidence of marijuana use in prelicensure nursing students, research is lacking on the use of medical marijuana, the perceptions of its use by nursing students, and how nursing schools are addressing student use of medical marijuana that complies with state legislation. Use in the prelicensure nursing student population could lead to challenges for schools of nursing, state boards of nursing, and clinical agencies that host nursing students in regards to monitoring medicinal versus recreational use, reporting use to clinical agencies hosting nursing students for educational experiences as necessary, policy creation and implementation, and adherence to state boards of nursing regulations and guidelines.

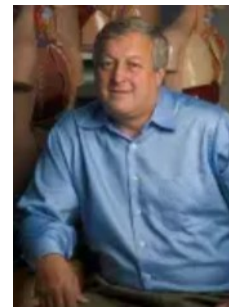
The purpose of this study is to investigate the usage, or interest in using, medicinal marijuana by pre-licensure nursing students to enable Schools of Nursing (SON) in order to identify policy and management needs. A secondary purpose is to review pre-licensure nursing students, clinical agencies, and school of nursing faculty and administrators' knowledge and perceptions of medical marijuana use by prelicensure nursing students.



**Jessica Kamerer**  
*Principal Investigator*  
Associate Professor of Nursing  
Assistant Director, Center for  
Innovative Teaching  
Director, Corporate Programs  
and Lifetime Learning  
SNEHS



**Nadine Englert**  
*Co-Investigator*  
Interim Dean SNEHS  
Associate Dean SNEHS  
Professor of Nursing  
Chief Nurse Administrator  
SNEHS



**Steve Forman**  
*Co-Investigator*  
Professor of Health Care  
Administration  
Professor of Economics  
SNEHS

### **Contact:**

Sushil Acharya, *Vice President*

[acharya@rmu.edu](mailto:acharya@rmu.edu)

412-397-4023

Patricia Centofanti, *Grants and IRB Specialist*

[centofanti@rmu.edu](mailto:centofanti@rmu.edu)

412-397-6227