



# RMTL

Research Methodology  
Training Laboratory

*Nurturing the Next Generation  
of Researchers*

For over twenty years the Hispanic Center of Excellence –Research Methodology Training Laboratory (HCOE-RMTL) has trained and inspired young, low-income and underrepresented minority students to pursue their careers in the biomedical and health sciences.

## Supporting a Student Centered Research Pipeline

The HCOE-RMTL offers a comprehensive research laboratory training for middle and high school, community college and undergraduate students. The program consists of 40 hours of basic science methodology training for students with no formal research experience.

At the **MIDDLE SCHOOL** level, the RMTL's Dr. Park E. Trefts Summer Science Program provides middle school students with a summer research experience. The **LEGACY** Summer Research Program is designed to expose middle school students in underserved communities to topics in cancer research and to learn basic scientific laboratory skills including instruction in biology, physiology, biochemistry and chemistry.

The HCOE –RMTL is all implementing multiple training projects geared to underrepresented **HIGH SCHOOL** students from across San Diego. Working with UCSD Extension, Veteran's Affairs and UCSD School of Medicines, RMTL offers a summer and year-long research training in substance use, addiction and behavioral sciences.

With our **COMMUNITY COLLEGE** students, RMTL services as the primary training laboratory for the Bridges to the Baccalaureate Program at MESA College. UCSD **UNDERGRADUATE** students are also able to gain independent study credit for research projects supported in the RMTL.

**428** Students have  
participated in RMTL  
2002-2014

**94%** have graduated from  
University

**83%** have obtained a degree  
in the biomedical/health  
sciences

**46%** have entered a graduate  
or professional school

## The HCOE-RMTL Training Experience

Dr. Eduardo Fricovsky is a former HCOE participant, trained under Dr. Russell, Director of the HCOE-RMTL and is the primary instructor for all the didactic and theoretical sessions of the laboratory training.

The eight-week Summer Research & Experimental Design Course curriculum includes: Week 1: Orientation and Introduction. HCOE Scholars and UCSD SOM faculty discuss the processes the preparation, recruitment, job description, retention and promotion structure for academic faculty. Selection of a summer research project after a review of various projects. Projects cover a range of topics in basic science subjects, protein chemistry, enzymology and genetics. Basic science projects demonstrate research methodology in a simple framework format. Week 2: Computer literature searches for research proposals. Concurrent training in the following systems: PubMed, ROGER (a UCSD On-line Catalog) MELVYL; MEDLINE; Weeks 3 - 8: Experimental Design. The student plans a research project or program, learns to write papers for publication, and learns to apply for research fellowships. Students learn to write grants with a focus on a) Researching and Presenting the Problem; b) Stating the Objectives and Hypothesis; c) Developing and carrying out the Experimental Design; e) Evaluation of the Research Project; and, f) Using computer databases.



### **Lucas Dantas de Paula**

moved to San Diego, California when he was 19. A recent US Citizen and native of Brazil he and his family faced many significant challenges while growing up. Since moving to the

U.S., he has had to deal with his language barrier and the quiet discrimination of being an immigrant. These challenges have not been obstacles to Lucas, but instead have only influenced him to pursue his education and strive to do his best in school. A current community college and Bridges to the Baccalaureate Program student, Lucas plans to transfer to UCSD. RMTL has provided him with the opportunity to work in a supportive laboratory environment while developing his leadership and delegating skills, versatility, and organizational and data analysis abilities. He plans to pursue his BS and eventually a M.D./Ph.D. to continue working in the research field.

*I believe that HCOE RMTL is already helping me achieve my short and long-term goals. They also keep me in check and motivated, while I strive to obtain my BS.*



**Alyssa Clayton** is currently a second year Human Biology major at San Diego Mesa College. Her participation in the Bridges to the Baccalaureate program at San Diego Mesa College has been instrumental in her ability to find a research lab that she loves. Participating in the HCOE RMTL not only has supported her interest, but has also provided her with an exponential amount of support and resources. Alyssa has had the opportunity to present at the 2017 SACNAS and ABRCMS conferences and has been accepted to research programs at Brown University and Stanford University. She looks forward to continue learning and working in the RMTL upon her successful transfer to UCSD.

*The collaborative effort of the RMTL staff makes the lab a healthy and uplifting learning environment. I cannot thank them enough for their selfless dedication to the betterment of their students.*

A fourth year student at UCSD majoring in General Biology, **Diana Hernandez** was born and raised in San Diego in a bilingual community. Academics has always been very important to her coming from a low-income family. As a UC San Diego student, Diana has been working hard to maintain good grades and continues to do extremely well. Yet, trying to get involved in a lab seemed impossible and almost out of reach, as she didn't have the same laboratory experience as others students did in high school. RMTL opened this door and allowed her to gain valuable experience. She plans to continue building on this foundation, to get more involved in research and eventually apply to medical



*HCOE-RMTL helps me reach my goals by allowing me to go outside of the normal requirements and do what I am interested and passionate about. RMTL has really opened doors for me and I am now considering maybe thinking about future research possibilities.*



As an undergraduate at UCSD, **Bin-An Nguyen** was not very interested in pursuing research. However, this changed after speaking with Dr. Fricovsky at the UCSD Student Run Free Clinic in Pacific Beach.

Participating in the HCOE RMTL has given him the opportunity to apply concepts learned in his biochemistry courses, hone his analytical skills, and contribute to a growing body of knowledge that may lead to a greater understanding of specific cancer therapies. Being involved in the HCOE has also provided Bin-An with the mentorship needed to help with pharmacy school applications, his own professional development, and to see the importance of research in the health sciences. RMTL has also allowed him to give back to his community, becoming a mentor to new undergraduates who join the lab. Bin-An hopes to someday use the skills and experiences gained from the RMTL to continue serving communities and improve the health of people around the world as a practicing pharmacist.

*The HCOE RMTL has helped me realize that research is one way I can use my science education and knowledge to improve the health of people around the world as a pharmacist and also give back to the community that helped me become the person I am today.*

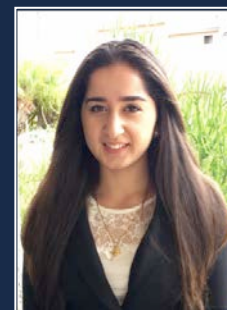


**Naquiba Williams** is an undergraduate transfer student at UCSD majoring in Biochemistry and Cell Biology. Upon coming to UCSD Naquiba questioned whether she would be able to find the

support needed in order to achieve her goals and work in a research lab. Coming from a low-income, high-crime area this didn't seem possible. After successfully transferring to UCSD, she learned about RMTL and was excited to be able to pursue her goals at UCSD. Working in the RMTL has broadened her interests and develop the confidence to pursue a dual M.D./Ph.D. RMTL program and research staff, has helped Naquiba navigate these paths, while also providing her with the learning opportunities to master biochemical techniques and apply them in the classroom. She is able to conceptualize many things taught and critically raise questions to ask while in the lab in order to brainstorm for future projects or to find another way of problem solving the question at hand.

*This program has been very beneficial to me in so many ways, and I feel that it is a necessity for people, especially like me, coming from my background, to continue to strive towards goals set forth and have the confidence to do so.*

**Sandy Romaea** is a first generation college student who started pursuing her passion in the pharmacological chemistry field at Cuyamaca Community College before transferring to UCSD. Responding to her passion to the profession of pharmacy, RMTL helped her recognize the vital role that pharmacists play in therapeutic drug discovery. Sandy is currently a senior undergraduate student and will graduate June of 2018 with a B.S in human biology. HCOE-RMTL program not only provided her with great laboratory training techniques to accomplish and achieve her goals, but it also provided Sandy with a collaborative environment and the social and emotional support from the RMTL faculty and staff to succeed and thrive.



*The HCOE RMTL has made me feel validated. To being given this advantageous opportunity, to develop research as an undergraduate, while being surrounded by like-minded, has only fortified my convictions of becoming a science major. And for that, I will be eternally grateful.*



**Alexandra Hernandez** is a junior at UCSD and joined the RMTL after hearing Dr. Fricovsky present to the students on campus. The RMTL has provided Alexandra with her first experience working in laboratory setting. She is grateful for the friendly, encouraging atmosphere of the RMTL and working in the lab has been a positive, humbling experience. Alexandra is looking forward to contributing to Dr. Fricovsky's research. She is currently exploring options for her future career and setting her goals.

*I am now able to use the knowledge I learned in class and apply in a real world setting, such as the RMTL. I have a new perspective on learning and am excited to continue working in the RMTL and gain a better connection to my peers and staff.*

The **Dr. Percy Russell HCOE Training Laboratory** is named after the founding director of the HCOE at UCSD in 1993. The HCOE-RMTL is the only dedicated space on the Health Sciences Campus at UC San Diego for the training URM students. The laboratory is comprised of 600 sq ft lab space and a 110 sq ft computer analytical center. The lab also offers an 8-week boot camp for incoming biomedical graduate and MD/PhD students on laboratory methodologies and advance training in biochemistry and molecular biology skills. Students use the HCOE Laboratory year-round to develop their academic and professional skills and achieve their goals.



The HCOE/RMTL continues to engage new community and academic partners to expand its reach and work toward increasing the diversity of the scientific and health care workforces. Together with our community partners in Southeast San Diego and City Heights, to our collaborations with the VA Moores Cancer Center, UCSD School of Medicine, and the PATHS Program in the Department of Biological Sciences, the RMTL continues to provide a safe nurturing and challenging environment for our students to grow and improve their academic and professional skills and achieve their goals.