UCLA CTSI Research Associates Program: Fostering the Next Generation of Clinical and Biomedical Research

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Abstract

The UCLA CTSI Research Associates Program (CTSI-RAP) provides undergraduate UCLA students with exposure to medical and clinical research in hospital based-settings. Under the collaborative guidance of UCLA faculty, students undertake CTSI research associate duties and build upon their biomedical knowledge through implementing clinical trial protocols, consenting and collecting privatized medical data, heading patient recruitment, and contributing to co-authoring papers, posters, symposium presentations, and abstracts. CTSI-RAP students also shadow UCLA physicians and nurses from the Clinical and Translational Research Center (CTRC). This enables students to become familiar to the medical experience and to garner an in-depth understanding of the various research studies initiated by UCLA investigators. CTSI's strong mentorship allows RAP students to develop professional and communicative skills within the medical community, expand patient advocacy, and foster exposure to interdisciplinary specialties and future occupational endeavors. Additionally, RAP students experience didactic teaching at weekly meetings led by CTSI-RAP's faculty advisors and guest lecturers through various medical ethics discussions, scientific seminars, and presentations of biomedical research methodologies and protocols. This representative blend of first-hand clinical exposure, combined with scientific research allows students an all-encompassing outlook on the challenges of healthcare and innovating biomedical research for the future in medicine.

Acknowledgements

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Advisors

CTSI-RAP Advisor: Dr. Laurie Ann Shaker-Irwin, Ph.D., M.S.
Physician Advisor: Noah Carvajal Federman, M.D.

CTSI-RAP Students 2018-2019

Shagufah Ajmal ▪ Serena Burgos ▪ Eman Burney ▪ Jolene Chan ▪ Janice Chang ▪ Jagjot Dosanjh ▪ Victoria Ford ▪ Omar Habib ▪ Sohini Halder ▪ Hyejin Hong ▪ Ratushtar Kapadia ▪ Rachel Kipp ▪ Gabrielle Le ▪ Sonia Lele ▪ Jar-Yee Liu ▪ Mimi Lu ▪ Joyce Ma ▪ Aditya Mamtora ▪ Mario Martinez ▪ Xena Martinez ▪ Vineet Mathew ▪ Ryan McLaughlin ▪ Elizabeth Murgia ▪ Ankita Nair ▪ Disha Nangia ▪ Terry Nguyen ▪ Matthew Obusan ▪ Jessica Osanyinpeju ▪ Mili Patel ▪ Vaidehi Ramanaryanan ▪ Dean Renna Jr. ▪ Mayilone Sathialingam ▪ Afrida ▪ Anwar Sara ▪ Manpreet Singh ▪ Michelle Tenggara ▪ Elizabeth Tran ▪ Diana Trujillo ▪ Shirley Wong ▪ Jessica Yang

Research Study	Department	Principal Investigator	CTSI-RAP Student Liaisons
Adaptable Trial	Cardiology	Douglas Bell, M.D., PhD	Jack Buckanavage, Shirley Wong
BrainMapD-Threat and Reward Neurocircuitry	Psychiatry	Michelle Craske, Ph.D.	Sienna Ringgenberg
The Caregiver Sleep (CARES) Study	Psychiatry	Michael Irwin, M.D.	Dean Renna Jr, Michelle Tenggara
Cord Umbilical Blood Study (CUB)	Pediatrics	Kara Calkins, M.D.	Stevyndennis Onggo
The Dilated Cardiomyopathy (DCM) Consortium	Cardiology	Martin Caderias MD; Jessica Wang, M.D., Ph.D.	Jar-Yee Liu, Afrida Sara
E-Cigarettes Study	Cardiology	Holly Middlekauff, M.D.	Elizabeth Tran, Kevin Nguyen
ICVD Diagnosis by PhekB	Cardiology	Jessica Wang, M.D., PhD.	Vineet Mathew
The Inherited Cardiovascular Disease Registry (ICDR)	Cardiology	Jessica Wang, M.D., PhD.	Jar-Yee Liu, Afrida Sara
The Myocardial Infarction Biomarkers Project	Cardiology	Linda Cai	Mili Patel, Ankita Nair
Neural, Inflammatory, and Genomic Mechanisms Underlying Risk for Depression in Adolescence	Psychiatry	George M. Slavich, PhD	Mimi Lu

Myocardial Infarction Biomarkers Project

PI: Linda Cai PhD. M.D.

Background: The Myocardial (MI) Biomarker Project is aimed at studying the relationship between myocardial infarction, or heart attacks, and netrin-1. Previous studies have established the role of netrin-1 in the signaling of the cardiovascular system as an important factor in the formation of blood vessels and in reducing ischemia-reperfusion injury by 50% while simultaneously improving cardiac functioning. Blood samples are collected from patients that have recently had a heart attack and are analyzed to examine the correlations between endogenous pathways of netrin-1-DCC signaling and characteristics of myocardial infarction. Genetic information about samples is also obtained in order to study the association between a patient's genetic history and heart attacks.

RAP Responsibilities: CTSI-RAP students are paged when there is reporting of a ST-elevated myocardial infarction. From there, students then screen medical records in order to identify the patient's eligibility for the study. If patients are eligible, research associates are responsible for consenting patients to join the study and communicating with hospital staff for the appropriate collection of biological specimens. Students also interview patients about their medical history and their family's medical history with myocardial infarction.

Neural, Inflammatory, and Genomic Mechanisms Study

PI: George Slavich PhD.

Major Depressive Disorder (MDD) is one of the most prevalent and debilitating diseases affecting Americans today. Starting in adolescence, women are twice as likely to suffer from the condition as men are, making them disproportionately at risk for co-occurring diseases like heart disease, and certain cancers, and as a result, early mortality. One of the best markers of risk for MDD in female adolescents is having a mother with depression. This is the first integrative, multi-level fMRI study of both high (maternal history of depression) and low (no maternal history of depression) risk female adolescents and their responses to social stressors at the psychological, neural, physiological, molecular, and genomic levels.

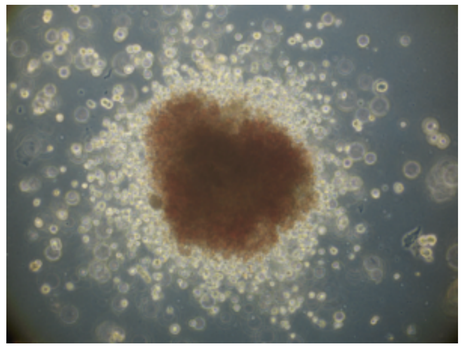
RAP Responsibilities: RAP students participate in subject recruitment, observation of the consenting process, and guidance of subjects through experimental procedures. Students also assist with blood sample handling and processing, including the preparation for ELISA, RT-PCR, and microarray analyses. RAP students are also able to observe fMRI scanning procedures and any other experimental procedures.

Patient-Reported Outcomes Assessment in the Treatment of Thyroid Nodules and Cancer	Endocrinology	Kyle A. Zanocco M.D.	Shagufah Ajmal
Pediatric Immunodeficiency Study	Pediatrics	Donald Kohn, M.D.	Omar Habib
Polycystic Ovary Syndrome	Obstetrics and Gynecology	Daniel Dumesic, M.D.	Elizabeth Tran, Ryan McLaughlin
POMA Phase 1 Interaction Study	Internal Medicine	Keith Heinzerling, M.D.	Jack Buckanavage, Sienna Ringgenberg
PREDICTS- QRISK3 and Lupus and Depression	Rheumatology	Maureen Mcmahon, M.D	Manpreet Singh, Sonia Lele
The Role of Vitamin C in Pediatric Critical Care	Pediatrics	Michelle Korn, M.D.	Victoria Ford, Michelle Guan, Stevyndennis Onggo
SLE Atherosclerosis	Rheumatology	Maureen McMahon, M.D.	Harrison Lam
Sleep Health Aging Research for Depression	Psychiatry	Michael Irwin, M.D.	Dean Renna Jr, Michelle Tenggara
The Teen Resilience Project (TRP)	Psychology	Katie Kuhlman, PhD	Afrida Sara
Undiagnosed Disease Network	UCLA Human Genetics	Katrin Dipple, M.D., Ph.D; Stanley Nelson, M.D.; Christina Palmer, Ph.D.; Eric Viliain, M.D.,	Ryan McLaughlin, Elizabeth Tran

Pediatric Immunodeficiency Study

PI: Donald Kohn M.D.

Background: This study aims to develop and implement gene therapy through hematopoietic stem cells for adenosine deaminase–deficient severe combined immunodeficiency (ADA-deficient SCID) patients between 30 days and 17 years of age. ADA-deficient SCID is a genetic disorder that affects the white blood cells of an individual's immune system, resulting in an increased difficulty to fight off infection. Researchers extract CD34+ hematopoietic stem cells from the bone marrow of the patient for treatment, add the missing ADA gene necessary for the patient's immune system into the stem cells, and transplant these genetically modified cells back into the patient. Follow-up studies are then conducted in order to determine the strengthening of the patient's immune system after treatment.
RAP Responsibilities: Research Associates are involved in data analysis and management, in which they write case report forms and examine patients' long-term follow-up results for review. In addition, research associates assist in completing FDA audit forms. Students also gain clinical exposure through watching clinical consent processes and procedures, including stem cell infusions, and attending weekly clinical staff meetings.



(Hematopoietic Stem Cell)

SLE Atherosclerosis

PI: Maureen McMahon M.D.

Background: Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease that affects the skin, joints, kidneys, brain, as well as many auxiliary organ systems of the body primarily affecting women between the ages of 15 and 44. The cause or causes for SLE are unknown at this time and has no known cure and there is no known cure. Patients diagnosed with SLE have been found to be at higher risk for cardiovascular diseases such as atherosclerosis (ATH). ATH is characterized by plaque buildup in the arteries, causing thickening of arterial walls and blockage of arterial blood flow. Unfortunately, the underlying mechanism for the accelerated atherosclerotic risk for SLE patients is not well understood. The current study aims to identify lipid and protein biomarkers to predict the risk of ATH in SLE patients by tracking the changes in arterial wall thickness and plaque buildup.

RAP Responsibilities:CTSI-RAP students have the opportunity to conduct literature searches, administer patient questionnaires, and escort patients to arm and neck ultrasound appointments within the UCLA Medical Plaza. The students also play a key role in conducting phone calls to study participants to ensure their return for follow-up testing. CTSI-RAP students also become familiar with UCLA's electronic medical record system by accessing patient charts for data collection and analysis.