UCLA CTSI Research Associates Program: Pioneering Future Innovators in Clinical and Biomedical Research

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Background

The UCLA CTSI Research Associates Program (CTSI-RAP) works toward simultaneously exposing undergraduate students to the interdisciplinary fields of medicine and clinical research in a hospital-based setting. By promoting a collaborative network among undergraduate students and principal investigators, the program serves primarily to build upon students' knowledge and experience in the clinical environment and patient-oriented research. Students assume their roles as Research Associates by becoming instrumental in the implementation of the research protocol, recording and analyzing securitized data, leading patient recruitment efforts, and contributing to publications, poster presentations and abstracts. In addition, students are able to shadow UCLA faculty physicians and become acquainted with the multitude of research studies conducted at UCLA by rounding with investigators at the Clinical and Translational Research Center (CTRC). Weekly meetings directed by CTSI-RAP's advisors serve as didactic teaching sessions through the incorporation of literature reviews, ethics discussions, and presentations on research methodology. The mentorship provided within the program allows students the opportunity to cultivate skills in professionalism, patient advocacy, and the competency needed to serve as leaders within their respective projects. Over time, students gain independence in the ability to spearhead research studies, collaborate with medical staff, and exercise skills necessary to pursue a future career in healthcare.

Ongoing Research Studies

Study Name	Department	Principal Investigator	CTSI-RAP Student Liaisons
Adaptable Study of Aspirin	UCLA CTSI Informatics Program	Douglas Bell, M.D., Ph.D.	Jack Buckanavage, Shirley Wong
BrainMAPD	Psychology	Michelle Craske, Ph.D.	Sienna Ringgenburg
BrainSPORT	Neurology	Christopher Giza, M.D.	Adrian Jones
The Dilated Cardiomyopathy Consortium (DCM)	Cardiology	Martin Cadeiras, M.D.	Jar-Yee Liu, Afrida Sara
E-Cigarettes Study	Cardiology	Holly Middlekauff, M.D.	Kevin Nguyen, Elizabeth Tran
The Inherited Cardiovascular Disease Registry (ICDR)	Cardiology	Jessica Wang, M.D., Ph.D.	Jar-Yee Liu, Afrida Sara
Neural, Inflammatory, and Genomic Mechanisms Underlying Risk for Depression in Adolescence	Psychoneuro-immunology	George M. Slavich, Ph.D.	Mimi Lu
POMA Phase 1 Interaction Study	Family Medicine	Keith Heinzerling, M.D.	Sienna Ringgenberg, Jack Buckanavage
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
Undiagnosed Diseases Network	UCLA Human Genetics	Katrina Dipple, M.D., Ph.D. Stanley Nelson, M.D. Christina Palmer, Ph.D. Eric Vilain, M.D., Ph.D.	Ryan McLaughlin, Elizabeth Tran

Myocardial Infarction Biomarker Study

PI: Linda Cai, Ph.D.

Background:
The Myocardial Infarction (MI) Biomarker study aims to examine the relationship between the neuronal developmental protein netrin-1 and heart attacks. Previous studies have established the role of netrin-1 in the signaling of the cardiovascular system, and as an important factor in the formation of blood vessels. Furthermore, netrin-1 has been shown to reduce ischemia-reperfusion injury by 50% while simultaneously improving cardiac functioning. While underlying molecular mechanisms have been uncovered, the present study aims to examine the correlations between endogenous pathways of netrin-1-DCC signaling and characteristics of myocardial infarction.

Research Associate Responsibilities:
Research Associates are paged into the Ronald Reagan Medical Center with the arrival of a patient diagnosed with a ST-elevated Myocardial Infarction. From there, students are expected to screen medical records to identify the patient's eligibility for participation in the study. Alongside facilitating the informed consent process, research associates are responsible for communicating with inpatient medical staff for the proper coordination and collection of biological specimens.

Clinical and Translational Research Center Rounds

Background:
The Clinical and Translational Research Center (CTRC) is dedicated to bringing tangible improvements in healthcare, disease prevention, and treatment through the application of research. It is the primary outpatient unit for clinical studies conducted at UCLA, specializing in areas of research including but are not limited to Maternal Medicine, Pediatrics, Endocrinology, Cardiology, Gene Therapy, and Neuro-oncology.

Research Associate Responsibilities:
Research Associates are given the opportunity to interact with patients while observing clinical research directed in the CTRC. Research Associates receive individualized attention from nurses experienced in research methodology, and under their mentorship are able to observe common procedures such as intravenous (IV) injections, blood draws and ultrasound testing. Furthermore, rounding in the CTRC alongside physicians, nurses, basic science researchers, and clinical research coordinators offers student the exposure needed to solidify their future career goals as healthcare professionals.

Figure: Example of patient room used for conducting clinical research in the CTRC

Advisors

Clinical Director:
Laurie Ann Shaker-Irwin, Ph.D., M.S.
Medical Advisor:
Noah Carvajal Federman, M.D.

Acknowledgements

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Teen Resilience Project

PI: Kate Ryan Kuhlman, Ph.D.

Background:
Childhood adversity is linked to treatment resistant depression across the lifespan, and exaggerated inflammatory responses to stress. Acute inflammatory responses can lead to reduced motivation for rewards and enhanced sensitivity to threat, both of which are phenotypes of depression. The Teen Resilience Project aims to examine behavioral and inflammatory responses to acute stress during the key developmental phase (age 12-15) in at risk youth. By identifying the three modifiable risk factors of depression (threat sensitivity, reward motivation, inflammation), the study hopes to support the development of a program of research dedicated to mitigating these effects before the onset of persistent and recurrent illness.

Research Associate Responsibilities:
Research Associates administer psychological stress to each study participant via the Trier Social Stress Test (TSST). Afterwards, students are responsible for gauging the level of stress induced on each adolescent through a quantitative survey. Moreover, students are given the opportunity to further pursue their interests in research by participating in systematic review projects, proposing testable hypotheses, developing abstracts and presenting posters at research conferences.

Pediatric Immunodeficiency Study

PI: Donald B. Kohn, M.D.

Background:
Adenosine deaminase–deficient severe combined immunodeficiency (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. The Pediatric Immunodeficiency study aims to implement and develop gene therapy through the use of hematopoietic stem cells for ADA-deficient SCID patients between 30 days and 17 years of age. By using the CD34+ hematopoietic stem cells from the bone marrow of the patient for treatment, this study has been able to add the missing gene (ADA gene) necessary to the patient's immune system into the stem cells, and transplanting these genetically modified cells back into the patient. Efficacy studies are then performed to determine the strengthening of the patient's immune system following treatment.

Research Associate Responsibilities:
Research Associates are involved in data analysis and management, in which they write case report forms and examine patients' long-run, 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.

CTSI-RAP Students 2017-2018

Ajmal, Shagufah ♦ Buckanavage, Jack ♦ Burgos, Serena ♦ Burney, Eman ♦ Dosanjh, Jagjot ♦ Ford, Victoria ♦ Guan, Michelle ♦ Habib, Omar ♦ Jones, Adrian ♦ Kapadia, Ratushtar ♦ Kipp, Rachel ♦ Lam, Harrison ♦ Lele, Sonia ♦ Liu, Franklin ♦ Liu, Jar-Yee ♦ Lu, Mimi ♦ Mathew, Vineet ♦ Mclaughin, Ryan ♦ Nair, Ankita ♦ Nangia, Disha ♦ Nguyen, Kevin ♦ Obusan, Matthew ♦ Onggo, Stevyndennis ♦ Patel, Mili ♦ Patel, Shreya ♦ Renna, Dean ♦ Ringgenberg, Sienna ♦ Sara, Afrida ♦ Singh, Manpreet ♦ Tenggara, Michelle ♦ Tran, Elizabeth ♦ Wong, Shirley