

DEPARTMENT OF PEDIATRICS: STUDENT SUMMER RESEARCH OPPORTUNITIES

Please note that this list will change over time. Researchers are struggling with COVID, the same as everyone. We do not know what the summer will bring. So check back often. Another way to find projects is to review the active research conducted by the department:

<http://chicago.medicine.uic.edu/departments/academic-departments/pediatrics/research/projects/>

If you find a study that interests you, feel free to reach out to the PI.

Faculty Mentor: Tianji Chen, PhD

General Information: Pulmonary hypertension (PH) is a devastating disease that results in a progressive increase in pressure in the pulmonary artery that takes blood to the lungs, an increase in resistance to flow into the lungs, failure of the right side of the heart, right ventricular failure, and ultimately death of the patient. Our research focuses on 1. investigating the role of microRNAs (small bits of RNA that can control the expression of genes and proteins that direct the function of many cells in the body) in the pathogenesis of PH; and 2. developing potential therapeutic strategies for treatment of pulmonary hypertension using extracellular vesicles (tiny vesicles released by cells) as drug delivery vehicles.

Key Roles:

- To perform research using cell culture models.
- To assist lab members in research experiments when needed.

Key Qualifications/ Experience Required:

- Undergraduates and high school Seniors
- Experience with basic lab techniques (gene expression analysis and cell culture etc.) is preferable

How to Apply: Students can apply by emailing their CV and Statement of Interest to Tianji Chen at tianjic@uic.edu

Faculty Mentor: Molly Martin, MD

General Information: Coordinated Oral health Promotion (CO-OP) Chicago is an NIH-funded research study that aims to address oral health disparities in young children. <https://co-opchicago.ihrp.uic.edu/> CO-OP Chicago completed primary data collection and intervention delivery in the summer of 2020. We also completed a secondary data collection looking at the impact of COVID-19 on oral health outcomes. The goal now is to analyze and publish the results. We are looking students to help with (1) qualitative data analysis for the COVID data, (2) GIS mapping, (3) manuscript preparation.

Key Roles:

- Assist with data analysis.
- Support preparation of data tables.
- Drafting and editing manuscripts.

Key Qualifications/ Experience Required:

- Must have strong writing skills
- Experience with qualitative data analysis or GIS mapping would be helpful
- Spanish-language fluency would be helpful

How to Apply: Students can apply by emailing their CV and Statement of Interest to the project manager Anna Sandoval at asando1@uic.edu

Faculty Mentor: Jonathan D. Klein, MD, MPH

General Information: Dr. Klein conducts health services research studies on adolescent preventive services and on child and adolescent tobacco control and other global child health services policy issues.

Key Roles:

- Students would help prepare one or more synthesis and policy manuscripts for journal submissions addressing global child and adolescent health issues.
- Dr. Klein is also co-chair for the International Association for Adolescent Health November 2021 Global Congress in Lima, Peru. There will be an opportunity to help plan and manage the program development for this congress, including work on policy input for the 2023 United Nations Call to Action for Adolescent Wellbeing.

Key Qualifications/ Experience Required:

- Excellent written and oral communication skills required. Experience in evidence and policy synthesis preferred.
- Spanish language fluency preferred for IAAH Congress project.

How to Apply: Students can apply by emailing their CV and Statement of Interest to: Jonathan D. Klein, MD, MPH. jonklein@uic.edu

Faculty Mentor: Rebecca Feinstein PhD

General Information: The PATH 2 Purpose study is a two-arm comparative effectiveness research trial that will evaluate the ability of the interventions, Teens Achieving Mastery over Stress (TEAMS) and Competent Adulthood Transition with Cognitive-behavioral and Interpersonal Training (CATCH-IT), to intervene early to prevent depressive illness in adolescents ages 13-18 from diverse communities. The study will enroll 564 teens at-risk for depression into the two different online prevention programs, TEAMS and CATCH-IT, and compare their effectiveness, accessibility, time commitment, cultural acceptability, and implementation costs. Our challenge is to:

- Widely implement effective, evidenced-based mental health interventions in primary care clinics and schools;
- Successfully adapt the interventions for use in diverse communities; and
- Create a sustainable system for the interventions to be used in a population-health model.

See <http://path2purpose.uic.edu>

Research activities: Remote and in-person screening, Recruitment, and enrollment of adolescent patients age 13-18 in UIC pediatric and adolescent medicine clinics and Mile Square Health Centers.

Key Qualifications/Experience Required: We are seeking undergraduate and graduate students interest who have interpersonal skills, can work independently, and have previous work/volunteer experience with adolescents ages 13-18. Since the recruitment training process is complex, particularly due to COVID, students who are willing to volunteer longer than the 6-week Summer Scholars program are preferred.

How to Apply: Students can apply by emailing their CV and Statement of Interest to pedsresearchcoord@uic.edu

Faculty Mentor: Lewis Hsu, MD

Study title: Sickle cell transfusion guidelines – Virtual project - hybrid of educational research and quality improvement.

Chou ST, Alsawas M, Fasano RM, Field JJ, Hendrickson JE, Howard J, Kameka M, Kwiatkowski JL, Pirenne F, Shi PA, Stowell SR, Thein SL, Westhoff CM, Wong TE, Akl EA. American Society of Hematology 2020 guidelines for sickle cell disease: transfusion support. Blood Adv. 2020 Jan 28;4(2):327-355. doi: 10.1182/bloodadvances.2019001143. PMID: 31985807; PMCID: PMC6988392.

1. Look at ASH 2020 guidelines about transfusion in sickle cell disease and develop a quiz for physicians (residents and maybe attendings) on the key points of the guidelines.
2. Work with me to polish the wording of the quiz so that there is nothing confusing or misleading.
3. Develop a questionnaire about the characteristics of the physicians so that you can test one or more hypotheses:
 - a. Specific knowledge about sickle cell care is associated with a residents' accurate score on the quiz about these guidelines prior to any educational intervention? Previous familiarity with care of sickle cell disease? formal training in hematology or blood banking? Whether their medical school training included exposure to care of sickle cell disease?
 - b. General medical knowledge is associated with more accurate score (Year of residency training? General amount of self-study reading the medical literature)
 - c. Positive attitude toward sickle cell patients is associated with more accurate score (do you have relatives or friends with sickle cell disease? do you like to take care of people with sickle cell disease?)

Other methodology notes

- You need to select the questions carefully – more questions means that you might need a larger population to study and more questions will cause reluctance among physicians to answer them all.
- Probably use Redcap or SurveyMonkey to make the quiz and questionnaire collect information electronically and anonymously. Avoid paper forms or physical contact (= no COVID risk). Avoid collecting personally identifiable data so that there is no privacy problem and no need for a written informed consent.
- You might still need the Institutional Review Board to look at the project and approve that the project is educational quality improvement and not human clinical research.

Another version of the project: create the quiz with steps 1-2 above. Administer the quiz at baseline and then tell the residents that they can do the quiz with full use of the “ASH Pocket Guides” app and see whether they get a perfect score on the second attempt at the quiz.

A third version of the project: compare different educational interventions – Develop the quiz with steps 1-2 above. Administer the quiz at baseline. Provide a sub-group with a traditional classroom didactic seminar on the topic of transfusion and another subgroup with the ASH Pocket Guides app: which sub-group had better quiz scores? What was the satisfaction of the residents with the educational approaches?

How to Apply: Students can apply by emailing their CV and Statement of Interest to the Lewis Hsu, lewhsu@uic.edu.

Faculty Mentor: Reshma Shah, MD, MPH

General Information: Dr. Shah is conducting research on how the primary care setting can better help children with developmental delays and disabilities access therapeutic services and reduce inequities to evidence-based care.

Key Roles:

- To assist with recruitment
- To input data
- To complete a chart review
- To provide families with assistance in obtaining school-based services

Key Qualifications/ Experience Required:

- Excellent communication skills
- Ability to speak in Spanish is preferred, but not required
- Ability to access Epic is preferred

How to Apply: Students can apply by emailing their CV and Statement of Interest to Reshma Shah at reshmamd@uic.edu