

grants. We adapted an established K Club model from the University of Pittsburgh with high success rates to Hispanics in Puerto Rico (PR). The K to R Club's goal is to increase the successful submission of K- and R-type NIH grants in the HCTRECD Program. METHODS/STUDY POPULATION: K to R Club is an inviting environment that exposes scholars to established funded investigators in PR from all career stages. It creates a forum to discuss different grant mechanisms and explains the selection, submission, and review process. The Club promotes the right mentor selection and mentoring team. It facilitates networking with principal investigators local/external to share their success stories, career development experiences, and grant submission tips. It offers mock review sessions of sections of the grant proposal to provide feedback from invited established investigators during the grant writing process. The Club meets 1–2 times per month in-person or virtual for 1 hour and anonymous evaluations were submitted after each session. RESULTS/ANTICIPATED RESULTS: K to R Club 1st year had 11 sessions with 15 invited speakers. Sessions included: 1 Kickoff, 2 funding opportunities, 2 coaching, 7 successful stories of Diversity Supplement, and F99/K00, K22, K23, K99/R00, R01, and R21 awardees. The highest attendance was for the Kickoff (48). Evaluations response rates ranged from 15 to 62 with the highest participation from women (78% vs. 22% men). Most respondents were PhD (45%) and MD (29%). K to R Club sessions were rated as excellent (84%), 74% agreed that the sessions changed their knowledge very much, and 78% reported it changed their ability to apply for funding very much. Interest in submitting NIH supplements in 12 months was higher (68%) vs. 6 months (48%). Interest in requesting mock reviews for K or R grants in 6 months (91%) vs. 12 months (17%). DISCUSSION/SIGNIFICANCE OF IMPACT: The 1st year of the K to R Club had an active attendance and increased the interest in submission of NIH grants. We are working on strategies to increase evaluations' response rates to improve and address future session needs due to the low response rates recorded. Currently, the semester is full of mock review sessions for grant applications (4 Ks and 1 R01).

### **The Utah CTSI SLCSE-BEES Program: Boosting engagement through experiences in science**

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OBJECTIVES/GOALS: The University of Utah (U of U) CTSI has partnered with the Salt Lake Center for Science Education (SLCSE), a Title I school serving grades 7–12. Goals of this partnership are to 1) bridge the gap between K12 classroom learning and real-world applications and 2) better prepare students from under-represented populations to enter the STEM workforce. METHODS/STUDY POPULATION: To cultivate science self-efficacy in grade 7–12 students, experiences included interviewing a scientist for 7th graders, model organism lab visits for 11th graders, and summer research internships for rising seniors. Additional engagements on the SLCSE campus included U of U guest speakers, U of U faculty

and student participation in afterschool STEM clubs, U of U graduate students' mentorship of high school science fair projects, and U of U faculty support in establishing a zebrafish lab for biology students. All students were surveyed at the start and end of the academic year using DEVISE evaluation tools developed by the Cornell Lab of Ornithology. Students participating in the summer internship program also completed the mentoring competency assessment before and after their ten-week internship experience. RESULTS/ANTICIPATED RESULTS: During the first year of a seven-year longitudinal study, 380 SLCSE students engaged in at least one science experience through the Utah CTSI-SLCSE partnership named BEES (Boosting Engagement through Experiences in Science). Pearson product-moment correlations were used in preliminary studies to examine relationships between experience type and student motivation and interest in STEM. Field trips to U of U STEM labs and of U graduate students' mentorship of high school science fair projects were significantly correlated with student motivation and interest, while the interview-a-scientist experience was significantly correlated with motivation only. The Utah CTSI-SLCSE BEES Program's impact on student STEM success continues to be assessed using surveys and student reflections. DISCUSSION/SIGNIFICANCE OF IMPACT: Access to science for underserved K–12 students is a critical issue in addressing educational equity and improving pathways into STEM fields. Many students attending SLCSE are low-income minority students with limited access to role models in STEM. The BEES partnership provides impactful opportunities for students to gain access to STEM.

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### **Enhancing community-engaged research through the adaptation and integration of the Chicago Citizen Scientist Program**

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OBJECTIVES/GOALS: Citizen Science (CS) recognizes the vital role that community members play in research, centering their unique lived experiences and perspectives across the research cycle. We aim to enhance community-engaged research (CEnR) by adapting a CS Program at the University of Illinois Chicago (UIC) Center for Clinical and Translational Science (CCTS). METHODS/STUDY POPULATION: The CS Program, launched in response to COVID-19, was designed/piloted for Chicago community members interested in research careers, developing evidence-based practice skills, and/or partnering with academic, community, and/or public health organizations. To inform program adaptation, we are conducting a landscape assessment, including 1) inventory/annotation of existing curricular materials, 2) review of peer-reviewed literature, 3) website extraction of existing CS programs' key components, and 4) interviewing key informants. An Advisory Board of prior CS instructors/alumni will guide curriculum adaptation, coordination, and fidelity. We will also identify strategic internal/external UIC organizational partnerships to collaborate on establishing, developing, and conducting the program. RESULTS/

**ANTICIPATED RESULTS:** Literature describes common CS program typology as a continuum, from research done “with the people” to research conducted “by the people” (King et al, 2016). Our program will equip CS to engage across these conceptual continuums. We plan to launch the UIC CCTS CS Program by Fall 2025 and have 10 online modules with a disability justice lens. Topics will range from Critical Thinking and the Research Process to Structural Violence and Evaluation Frameworks. Grounded in liberatory pedagogy, sessions will be taught by UIC faculty, staff, and community partners, each containing a lecture, interactive activities, and assessments. Participants will earn a certificate applicable to related jobs (e.g., academic/community research), supplement community health worker training, precursor to health degrees, and more. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Through the CS Program, we aim to center community expertise and lived experience within research, foster bi-directional collaborations and relationships, and build community capacity. We are evaluating this project adaptation and implementation to create a blueprint for institutions to enhance their community-engaged research.

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### **Innovating Medical Education: A translational approach to integrating cannabinoid-based therapies for chronic pain management**

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**OBJECTIVES/GOALS:** This project aims to inform and develop a clinician-centered educational tool evidence-based and stakeholder-informed that fosters healthcare professionals’ (HCPs) adaptive expertise (AE) in cannabinoid-based therapies (CBT) for chronic pain management (CPM), addressing existing knowledge gaps, improving patient care and clinical decision-making. **METHODS/STUDY POPULATION:** To achieve this, the project will use a mixed-methods approach divided into three phases to evaluate existing educational resources, identify gaps, and inform the design of a curriculum to transform clinician education in CBT for CPM. It includes stakeholder mapping to engage and consult key experts for real-world insights and an environmental scan to assess and compare current educational resources qualitatively. A

rigorous curriculum will be informed to be designed through an adaptive expertise and reflective practice framework, emphasizing case and problem-based learning, clinical simulations, and other pedagogical techniques. The educational tool will be pilot-tested with clinicians, measuring its impact on knowledge and decision-making flexibility through pre- and post-assessments, ensuring it fosters AE on CBT. **RESULTS/ANTICIPATED RESULTS:** The project is expected to identify key gaps in existing educational resources, particularly AE in HCPs specializing in CPM. Through pilot testing, we anticipate improved knowledge of CBT among clinicians and enhanced ability to apply this knowledge flexibly in clinical practice. We also expect to establish core curriculum components that better support routine and adaptive expertise in chronic pain management. The pilot evaluations will guide further curriculum refinement and inform broader educational implementation. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This project addresses critical gaps in CbT education by informing the development of a curriculum that enhances clinicians’ ability to manage chronic pain with cannabinoid-based therapies. The resulting educational tool could significantly impact clinical practice, empowering patients, and HCPs to make informed decisions and improve patient outcomes.

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### **UCLA’s Clinical and Translational Science Institute (CTSI) and the California Institute for Regenerative Medicine (CIRM) Trainee Collaborative Efforts**

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**OBJECTIVES/GOALS:** By synergizing our efforts, we believe this to be a fruitful collaboration for UCLA Clinical and Translational Science Institute (CTSI) and California Institute for Regenerative Medicine (CIRM). With multiple levels to stem cell training, focusing on specific educational goals is integral to our pilot event. This was held on July 26th and offered an exciting and valuable day for trainees. **METHODS/STUDY POPULATION:** Leadership was comprised of leaders at the UCLA Health Alpha Clinic, Broad Stem Cell Research Center (BSCRC), Human Gene and Cell Therapy Facility (HGCTF), UCLA Campus, Clinical and Translational Research Center (CTRC), and the Santa Barbara COMPASS program. Trainees from UCLA, CSUN, and UCSB were represented. The agenda included a didactic overview of the entire translational and clinical research process from discovery in the laboratory to bedside nursing in the patient care areas. Onsite tours were conducted at the HGCTF and the CTRC with a meet and greet with the nurses. The curriculum covered the clinical research process, regulatory requirements, ethics, current clinical trials, manufacturing, quality control, and compliance. A career opportunities discussion and network sessions closed out the day. **RESULTS/ANTICIPATED RESULTS:** Of the 13 trainees who attended the session, 10 replied to the evaluation survey. All the responding students (100%) rated the event as “excellent” and found it to be “highly valuable” to their current training program. The trainees indicated that they were “very likely”