common in multiple types of cancer, including HPV-negative head and neck cancers. We sought to identify synthetic lethal genes within this pathway to target treatment of FA-mutant tumors through siRNA- and chemical-compound-based screens. METHODS/STUDY POPULATION: First, we completed siRNA-based and chemical compound-based screening assays to identify gene targets that reduce patient derived Fanconi pathway mutant cell (FA-D2) viability compared to Fanconi pathway proficient cells (FA-D2 + FANCD2). Five aurora kinase (AURK) inhibitors from the compound screen were chosen for further evaluation. Cell lines were treated with AURK inhibitors or siRNA-based AURK knockdown to assess viability, proliferation, DNA repair, and cell cycle progression differences. Patient mutational, mRNA expression, and outcome data were accessed through The Cancer Genome Atlas (TCGA) portal and the Caris CODEai portal. We stratified patients by tumor AURKA and AURKB mRNA levels and assessed differences in patient survival, tumor grade, and DNA repair proficiency. RESULTS/ANTICIPATED RESULTS: In both screens, AURKA came up as a target to selectively reduce the growth of FA-D2 cells compared to FA-D2 + FANCD2 cells. All five AURK inhibitors identified showed selective growth inhibition (~50–75%) in FA-D2 cells at low nanomolar doses. We narrowed our selection to hesperadin, an AURKB-specific inhibitor, which showed the highest selectivity. siRNA knockdown of AURKA and AURKB decreased cell viability by 50% and 20%, respectively. Patients with FA-mutated tumors from the TCGA pan-cancer dataset had high AURKA (twofold) and AURKB (threefold) mRNA expression. AURKA and AURKB tumor mRNA expression was significantly associated with poor patient survival. Homologous recombination deficiency scores were increased ~5-fold (p DISCUSSION/SIGNIFICANCE OF IMPACT: We hypothesize that in FA-deficient backgrounds, loss of AURKA or AURKB leads to heightened genomic instability due to cell cycle dysregulation and accumulated DNA damage. Our findings warrant investigation of the therapeutic potential for AURK inhibitors, specifically hesperadin, in FA-mutant head and neck cancers.

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Exploring data scraping on ClinicalTrials.gov to identify key variables to include in an EHR-based recruitment tool

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OBJECTIVES/GOALS: Failure to achieve recruitment goals results in termination of ~20% of clinical trials and delays >85% of trial timelines. We aim to develop an electronic heath record (EHR)-based recruitment tool to ease identification of participants. We sought to determine whether criteria listed on clinicaltrials.gov could support selection of tool variables. METHODS/STUDY POPULATION: To inform the variables to include in the EHR-based recruitment tool, we data scraped clinicaltrials.gov to identify key inclusion and exclusion criteria common across a variety of diabetes clinical trials. We included actively recruiting or recently active phase 2 and 3 clinical trials of adults aged >18 years of age in the USA. We classified identified variables as clinically relevant or not and compared clinically relevant terms with inclusion and exclusion criteria (~20 variables) that were individually identified by three diabetes clinical trialists and two clinical research coordinators (CRCs). RESULTS/ANTICIPATED RESULTS: We reviewed 203 clinical trials listed on clinicaltrials.gov. We identified 115 terms, 91 of which were clinically relevant. Three of 3 clinical trialists, 1 of 2 CRCs, and all trials listed age as a key variable. Consistent with data scraping, all trialists and CRCs identified glucose-lowering medications and kidney function as important criteria. Gender, ethnicity, and race were less commonly noted on clinicaltrials.gov and listed by 2 of 3 trialists and one CRC. Cardiovascular conditions (e.g., history of myocardial infarction), thyroid function tests, and contraceptive requirements were common criteria on clinicaltrials.gov, but only one trialist and one CRC identified these variables. Active infections (e.g., HIV) and c-peptide were not highlighted by trialists or CRCs but common on clinicaltrials.gov. DISCUSSION/SIGNIFICANCE OF IMPACT: An EHR-based recruitment tool may facilitate identification of trial participants, but identifying key variables to include is essential. We found that data scraping for variables on clinicaltrials.gov mostly aligned with expert opinion, suggesting that automating variable selection via extraction from clinicaltrials.gov may be acceptable.

Education, Career Development and Workforce Development

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The UCLA Clinical and Translational Science Institute (CTSI) Inspired Workforce Development Pathway Programs

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OBJECTIVES/GOALS: The UCLA Clinical and Translational Science Institute (CTSI) training programs have been optimized by clinical research experts since 2013. They inculcate an interest in clinical and translational research careers. The acquisition of new skillsets and early exposure to potential career opportunities often influence lifetime decision-making. METHODS/STUDY POPULATION: The first program, in 2013, was the CTSI Research Associates Program (CTSI-RAP), which exposes undergraduate students to clinical research opportunities. RAP students are now mentoring high school students in the Mentoring and Advocacy in Teaching Clinical and Health-Related Research (MATCH) program. The Fiat Lux seminar is a research course designed to allow freshman students to explore diverse interests. The Leveraging Amazing Undergraduates in Clinical Research at UCLA Health (LAUNCH) program continues the workforce development pipeline by recruiting and training recent graduates to enter clinical research study coordinator careers. Each of these programs has their own stellar track records in terms of high interest and satisfaction and are assessed by annual evaluations from stakeholders. RESULTS/ANTICIPATED RESULTS: CTSI-RAP is in its 11th year and a recent 10-year impact survey demonstrated the value of the program to students and their career decision-making especially those who are underserved and/or disadvantaged. The MATCH program arose from the interest of RAP students to mentor STEM high school students from local disadvantaged schools and is now in its 4th year across the state. The Fiat Lux freshman seminar began with a clinical research essentials emphasis, followed by an

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FDA/regulatory focus, and is now evolving to highlighting specific innovative areas of research with this year's course spotlighting Cellular & Gene Therapy/Regenerative Medicine. LAUNCH is now in its third year, having been inspired by graduating RAP students wishing to continue in clinical research and feedback from their own focus groups. DISCUSSION/SIGNIFICANCE OF IMPACT: The UCLA CTSI has supported these highly successful workforce development pipeline programs, which have had a demonstrated impact on students and the overall institutional clinical research infrastructure. Their stellar reputations generate high interest at UCLA and serve as model programs for implementation at other academic medical centers.

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A decade of excellence and impact: The UCLA Clinical And Translational Science Institute – Research Associates Program (CTSI-RAP)

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OBJECTIVES/GOALS: The impact of the program on alumni students was measured in a 2023 survey, which assessed key factors and student perspectives on motivation to apply/remain in the program, their engagement activities, how they used the skills acquired in RAP upon graduating, and if they were currently serving in a health profession and/or clinical research. METHODS/STUDY POPULATION: Survey questions were based upon specific components of CTSI-RAP that make it unique. Covered topics related to motivation for participation, meaningful experiences, program effectiveness, future use of RAP knowledge/training, and current career roles in the health professions and/or clinical research. The survey was built and analyzed in REDCap and deployed May–July 2023. The study received exempt certification from the IRB. The survey was sent to 123 alumni from the 2013 to 2021 cohorts. Bounced e-mails were followed up on and two reminder e-mails were sent to initial non-responders. Identifiable demographic information was separated from program evaluation questions for analysis. A subanalysis was performed to determine program impact on students who identified as underserved or disadvantaged. RESULTS/ANTICIPATED RESULTS: Respondents included 82/123 (66.7%) alumni. The survey took approximately 15 minutes. Most of the students 64/82 (78.0%) had 1 year or less research experience. The top three motivating factors for joining the RAP program were gaining clinical research experience, exposure to healthcare settings, and interest in pursuing a healthcare related career. Most alumni rated the overall effectiveness of the RAP program as very or somewhat valuable and the majority felt that the program ranked high or very high among their undergraduate experiences. The program was very influential or influential in defining their long-term plans and goals. Just under half felt that their career aspirations were changed or influenced by the program, which was especially true for those who identified as underserved/disadvantaged. DISCUSSION/SIGNIFICANCE OF IMPACT: CTSI-RAP alumni highly value their experience in the program. They have benefitted professionally and are motivated to keep their connection to the program alive. With a decade of clinical research excellence and programming, CTSI-RAP's impact is well established as a proven model benefiting both students and the clinical research infrastructure.

Health Equity and Community Engagement

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Empowering communities through theater testing: Engaging Promotoras de Salud in substance use disorder research on the US-Mexico border

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OBJECTIVES/GOALS: Highlight the importance of community engagement: Showcase how the involvement of Promotoras de Salud is critical for fostering trust and encouraging participation in clinical trials. Cultural relevance and adaptation: Underline the importance of cultural and contextual relevance in developing and refining clinical research tools. METHODS/STUDY POPULATION: The theater test, an interactive evaluation approach akin to a dress rehearsal in theater, was conducted with approximately 60 Promotoras de Salud at a community center near the US-Mexico border. The Promotoras were divided into four groups, each focusing on one domain of the toolkit and facilitated discussions provided critical feedback on the materials and methods. A community engagement liaison with the University of New Mexico Health Sciences Center played a key role in introducing the EXPLORE team to these community leaders, leveraging long-standing relationships that predate this project. RESULTS/ANTICIPATED RESULTS: Post-testing evaluations showed that 97% of the Promotoras were likely to encourage clinical trials in their communities, and 86% saw significant benefits for their community members. The Promotoras provided key insights and recommendations to enhance the toolkit's cultural and contextual relevance. The community engagement liaison created a bilingual infographic to share these insights, which was presented at a Promotoras meeting, fostering meaningful discussion about clinical trials. DISCUSSION/SIGNIFICANCE OF IMPACT: This project underscores the importance of community voices in research, transforming feedback into actionable insights for public health. Engaging Promotoras through theater testing validated the EXPLORE Toolkit and strengthened ties

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