

We conducted six focus groups (two graduate program manager focus groups and four graduate student focus groups), to assess the programming, career development, and training needs of graduate students. Using a grounded theory approach, we first engaged in open coding of a sample of transcripts. After developing a codebook, we continued with an iterative coding process interspersed with coder meetings to discuss emerging and changing codes. Using the framework of landscape analysis allowed our coding and modeling to go beyond graduate student needs and study the varying relationships and contexts that impact graduate students throughout their training, such as relationship to supervisor or institutional policies. **RESULTS/ANTICIPATED RESULTS:** Preliminary results indicate that students wrestle with their status as both students and workers. Specifically, conflict arises between graduate and supervisor expectations around time spent in class, lab, and other career development activities based on these divergent roles. Students and program managers also note the disparities that arise from the university's lack of standard, formalized policy on labor issues, such as paid leave. Data also suggest that students on training grants note the difference in access to career development resources compared to colleagues. In many cases, students themselves coordinate ad hoc programming to better suit their career and professional development needs, although this work is not a required aspect of their training. **DISCUSSION/SIGNIFICANCE OF IMPACT:** We characterize current graduate training landscapes, which continue to shift as graduate student bodies diversify, unionize, and express interest in increasingly varied biomedical careers. Data from multiple perspectives facilitate creating, implementing, and evaluating supportive training programs that meet identified student needs.

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### **Removing roadblocks to training: Reimagining resources to support career development grant writing**

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**OBJECTIVES/GOALS:** In this project, we set out to supplement our existing grant writing workshops with targeted, learner-centered, multimodal training. This method will assist us in moving toward a more equitable training landscape, reaching a wider variety of learners, by freely disseminating these resources. **METHODS/STUDY POPULATION:** To increase access and impact of training materials for our career development grant writing workshops, we restructured our pre-workshop training videos. We culled expert advice from lengthy recorded lectures into brief (less than 5 minute) how-to videos that target instruction to writing specific sections of an NIH K grant. We then coupled these how-to videos with easy-to-navigate, open access online courses that further illustrate best practices for writing key sections of NIH K grants. These resources were given to registered workshop attendees and made available through a public Canvas course, the Diamond portal, MICHHR website, and U-M Innovation Partnerships to disseminate the materials through multiple channels. **RESULTS/ANTICIPATED RESULTS:** Four online courses and complementary videos were developed over six months, each focusing on a specific section of the NIH K grant proposal. These resources provide targeted instruction for writing the Specific Aims, Candidate Background, Career Development Plan, Career Goals and Objectives, and Mentor Letter. Learners accessed all four of the online courses. Released in January 2024, we continue to gather data on whether learners believe their knowledge about writing successful K grants has increased after using the resources,

if they believe the courses have prepared them to write the section of the grant covered, and whether learners would recommend the courses. We will analyze these results to better understand how learners are using and responding to these new resources. **DISCUSSION/SIGNIFICANCE OF IMPACT:** These how-to videos and online courses provide targeted, learner-centered training and fill an important gap by meeting learners where they are and extending the impact of our training beyond our institution. Widely disseminating online interactive training resources is a model we are applying beyond grant writing to other projects.

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### **Role-based approach in REDCap training**

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**OBJECTIVES/GOALS:** REDCap is a popular electronic data capture tool. However, training users in how to best utilize REDCap can be a challenge for many institutions. The Clinical and Translational Science Institute (CTSI) strives to setup a self-service training program that takes the day to day roles of users into account. **METHODS/STUDY POPULATION:** Our new training curriculum is a collaboration with our Workforce Development team and our REDCap Support Team. The REDCap team functions as the subject matter experts and generate a training outline based on a certain feature or topic. The Workforce Development team transform that outline into an LMS style course that's available online. In order to organize the courses for maximum relevance to user, we engaged with various REDCap training and regulatory experts around the globe. Based on their input, we organized the various training courses into a role-based schema. The training courses are freely available online and contain an optional test and completion certification in order to comply with regulatory standards like 21 CFR part 11 or GDPR. **RESULTS/ANTICIPATED RESULTS:** We released the first 17 training courses in July 2024 with another 20 courses planned in the near future. Responses to the courses have been overwhelmingly positive from users and the greater REDCap community. Our collection of training courses won the best website award at the yearly REDCap conference in 2024. To date we have had 137 people go through a training course with the optional test and completion certificate. While the majority have been from the USA, a significant portion hails from other countries. We believed these people only represent a small subset of users due to the optional nature of the test and accreditation section. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Our new role-based training curriculum is crucial in giving REDCap users the training tools they need for their particular role. The certification option fills a niche for professionals to demonstrate their REDCap proficiency to further their careers. Overall, this user training should increase the utilization of REDCap in all research endeavors.

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### **Rural health: Building capacity to conduct translational research across the Mayo Clinic Health System (MCHS)**

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**OBJECTIVES/GOALS:** This proposal outlines the successful deployment of a research training initiative to support the formation of a Learning Healthcare System. Mayo Clinic Health System (MCHS) rural providers were offered the opportunity to the fundamentals

of clinical research via Clinical and Translational Science Awards core curriculum, mentorship, and an online seminar series. **METHODS/STUDY POPULATION:** MCHS funded 4 key introductory research courses: 1) Manuscript Writing, 2) Grant Writing, 3) Basic Biostatistics, and 4) Essentials of Clinical and Translational Science Program. In addition to course offerings, a Research Interest Group was formed to guide novice rural researchers on topic selection and study design. This cultivated interest to create a 16-month clinical research webinar series offering CME credits. Subsequently, an internal MCHS RFA was launched seeking early-stage investigator pilot proposals focused on rural health. **RESULTS/ANTICIPATED RESULTS:** In 2023, over 140 MCHS providers enrolled in 324 CCaTS research courses. This training led to the submission of 53 proposals to the inaugural MCHS 2023 RFA, of which 15 were awarded. Additionally, 14 MCHS extramural grants were submitted in 2023. Training efforts expanded in 2024 to include an online research seminar series covering various study topics and providing CME credit, with an approximate attendance up to 196 attendees per session. The second annual MCHS RFA resulted in 4 internal awards, with an additional 22 extramural grant submissions. These collective efforts have increased the number of MCHS first and last author publications and the number of MCHS providers with academic rank. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Leadership's commitment of resources to educate, mentor, and engage clinicians was crucial to our success and demonstrated a strong return on investment. To maximize impact in community-based practice, continued commitment is needed in the form of protected research time, funding, and research administration support of projects of interest

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### **Collaborations between translational science programs and academic health sciences libraries**

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**OBJECTIVES/GOALS:** Collaborations between translational science programs and academic health sciences libraries can enhance research impact by improving efficiency, leveraging diverse professional expertise, and expanding opportunities for collaboration between librarians and translational science programs. **METHODS/STUDY POPULATION:** A team science approach was utilized, integrating findings from a literature review, practical

experiences of health sciences librarians, and collaborative writing. An analysis of case studies from institutions with successful partnerships explored the roles of libraries in partnering with translational science programs. The data collected were mapped to the Clinical and Translational Science Award Program's five functional areas outlined in the Notice of Funding Opportunity PAR-24-272. Librarians from 21 institutions engaged in discussions and collaborative writing to share insights and identify key factors driving successful partnerships. **RESULTS/ANTICIPATED RESULTS:** Academic health sciences libraries play a crucial role in enhancing translational science programs through expert knowledge management, facilitation of research dissemination, and support for interdisciplinary collaboration. Results from this project include a table outlining 16 specific opportunities mapped across five functional areas and six topical categories for translational science programs and libraries to collaborate effectively. Successful partnerships demonstrate improved research workflows, increased interactions between researchers and libraries, and accelerated translation of discoveries into clinical settings. These collaborations illustrate opportunities for other institutions to adopt as they consider best practices in supporting translational science. **DISCUSSION/SIGNIFICANCE OF IMPACT:** By combining resources and expertise between libraries and translational science programs, these partnerships enhance the ability to transform scientific discoveries into real-world clinical applications, drive innovation, and amplify the contributions of both libraries and translational science programs.

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### **Career Mentorship in Clinical Research Pathways in Medicine: UCLA Mentorship and Advocacy in Teaching Clinical Health-Related Research (MATCH) Program**

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**OBJECTIVES/GOALS:** To assess the impact of the MATCH Program on mentees and mentors over the years, we have surveyed both groups on the effectiveness of the mentorship process, how the MATCH program influenced mentees' future career plans, and their ongoing interest in clinical research. **METHODS/STUDY POPULATION:** To evaluate impact on mentees and mentors in the most recent cycle, we fielded two program evaluation surveys, for mentors and mentees. The surveys were distributed and collected using Qualtrics in May 2024. The mentee survey collected data on relationship with mentors, quality of mentorship, future career/education plans, and self-assessment of the program impact. The mentor survey collected data on relationship with mentees, mentees' engagement, and a self-assessment of the program impact. Qualitative analysis was conducted to determine key themes expressed by participants. The responses were compared to assess the effectiveness of the mentoring relationship from both parties. **RESULTS/ANTICIPATED RESULTS:** Respondents included 15/20 (75%) mentees and 15/20 (75%) mentors. All mentees (100%) and mentors (100%) stated they would like to continue their relationship outside of the program. The majority of mentees 13/15 (87%) and mentors