culture at Mount Sinai. METHODS/STUDY POPULATION: The previous two cohorts of LEAD participants were approached to volunteer for the LEAD Alumni Forum working group. Four LEAD alumni came forward to form a self-selected working group. With input from the program leadership, the alumni working group is tasked with organizing regular events that bring the 48 previous LEAD participants together. The events provide the opportunity for individuals with expertise and a passion for leadership to create a supportive environment. This ultimately seeks to increase the transfer and utilization of leadership skills in practice, and promotes a culture of leadership. These alumni events also provide the opportunity for alumni to interact with senior leaders at Mount Sinai, thereby learning from role models within the organization. RESULTS/ANTICIPATED RESULTS: Evaluating learning transfer and culture change is challenging, so a number of proxy measures will provide insight into the success of the Alumni Forum. Firstly, the number of LEAD Capstone projects implemented in practice, and the success of these initiatives, will provide insight into transfer of leadership learning to practice. Secondly, participants will complete a validated survey tool, Leadership Programs Outcome Measure (LPOM), which explores self-reported leadership change at a personal, organizational and community level. Finally, participants will be followed up in the long-term to track promotion, awards, and other formal or informal leadership positions assumed following engagement in the LEAD program and the subsequent LEAD Alumni Forum. DISCUSSION/SIGNIFICANCE OF IMPACT: It is hoped the LEAD Alumni program will enhance the ability of participants to implement leadership knowledge and skills to practice, which may subsequently advance organization and culture change. Fostering a community of practice will further the reach of the LEAD program and as the number of LEAD alumni grows, and the Alumni Forum may provide the supportive environment that allows these individuals to have real impact.

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Development of a Competency-based Informatics Course for Translational Researchers

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OBJECTIVES/SPECIFIC AIMS: Translational researchers often require the use of informatics methods in their work. Lack of an understanding of key informatics principles and methods limits the abilities of translational researchers to successfully implement Findable, Accessible, Interoperable, Reusable (FAIR) principles in grant proposal submissions and performed studies. In this study we describe our work in addressing this limitation in the workforce by developing a competency-based, modular course in informatics to meet the needs of diverse translational researchers. METHODS/STUDY POPULATION: We established a Translational Research Informatics Education Collaborative (TRIEC) consisting of faculty at the University of Utah (UU) with different primary expertise in informatics methods, and working in different tiers of the translational spectrum. The TRIEC, in collaboration with the Foundation of Workforce Development of the Utah Center for Clinical and Translational Science (CCTS), gathered informatics needs of early investigators by consolidating requests for informatics services, assistance provided in grant writing, and consultations. We then reviewed existing courses and literature for informatics courses that focused on clinical and translational researchers [3–9]. Using the structure and content of the identified courses, we developed an initial draft of a syllabus for a Translational Research Informatics (TRI) course which included key informatics topics to be covered and learning activities, and iteratively refined it through discussions. The course was approved by the UU Department of Biomedical Informatics, UU Graduate School and the CCTS. RESULTS/ANTICIPATED RESULTS: The TRI course introduces informatics PhD students, clinicians, and public health practitioners who have a demonstrated interest in research, to fundamental principles and tools of informatics. At the completion of the course, students will be able to describe and identify informatics tools and methods relevant to translational research and demonstrate inter-professional collaboration in the development of a research proposal addressing a relevant translational science question that utilizes the state-of-the-art in informatics. TRI covers a diverse set of informatics content presented as modules: genomics and bioinformatics, electronic health records, exposomics, microbiomics, molecular methods, data integration and fusion, metadata management, semantics, software architectures, mobile computing, sensors, recruitment, community engagement, secure computing environments, data mining, machine learning, deep learning, artificial intelligence and data science, open source informatics tools and platforms, research reproducibility, and uncertainty quantification. The teaching methods for TRI include (1) modular didactic learning consisting of presentations and readings and face-to-face discussions of the content, (2) student presentations of informatics literature relevant to their final project, and (3) a final project consisting of the development, critique and chalk talk and formal presentations of informatics methods and/or aims of an National Institutes of Health style K or R grant proposal. For (3), the student presents their translational research proposal concept at the beginning of the course, and works with members of the TRIEC with corresponding expertise. The final course grade is a combination of the final project, paper presentations and class participation. We offered TRI to a first cohort of students in the Fall semester of 2018. DISCUSSION/SIGNIFICANCE OF IMPACT: Translational research informatics is a sub-domain of biomedical informatics that applies and develops informatics theory and methods for translational research. TRI covers a diverse set of informatics topics that are applicable across the translational spectrum. It covers both didactic material and hands-on experience in using the material in grant proposals and research studies. TRI's course content, teaching methodology and learning activities enable students to initially learn factual informatics knowledge and skills for translational research correspond to the 'Remember, Understand, and Apply' levels of the Bloom's taxonomy [10]. The final project provides opportunity for applying these informatics concepts corresponding to the 'Analyze, Evaluate, and Create' levels of the Bloom's taxonomy [10]. This inter-professional, competency-based, modular course will develop an informatics-enabled workforce trained in using state-of-the-art informatics solutions, increasing the effectiveness of translational science and precision medicine, and promoting FAIR principles in research data management and processes. Future work includes opening the course to all Clinical and Translational Science Award hubs and publishing the course material as a reference book. While student evaluations for the first cohort will be available end of the semester, true evaluation of TRI will be the number of trainees taking the course and successful grant proposal submissions. References: 1. Wilkinson MD, Dumontier M, et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data. 2016 Mar 15. 2. National Center for Advancing Translational Sciences. Translational Science Spectrum. National

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DIAMOND: A Digital Platform for Workforce Development

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OBJECTIVES/SPECIFIC AIMS: The DIAMOND project encourages study team workforce development through the creation of a digital learning space that brings together resources from across the CTSA consortium. This allows for widespread access to and dissemination of training and assessment materials. DIAMOND also includes access to an ePortfolio that encourages CRPs to define career goals and document professional skills and training. METHODS/STUDY POPULATION: Four CTSA institutions (the University of Michigan, the Ohio State University, University of Rochester, and Tufts CTSI) collaborated to develop and implement the DIAMOND portal. The platform is structured around eight competency domains, making it easy for users to search for research training and assessment materials. Contributors can upload links to (and meta-data about) training and assessment materials from their institutions, allowing resources to be widely disseminated through the DIAMOND platform. Detailed information about materials included in DIAMOND is collected through an easy to use submission form. DIAMOND also includes an ePortfolio designed for CRPs. This encourages workforce development by providing a tool for self-assessment of clinical research skills, allowing users to showcase evidence of experience, training and education, and fosters professional connections. RESULTS/ANTICIPATED RESULTS: To date, more than 100 items have been posted to DIAMOND from nine contributors. In the first 30 days there were 229 active users with more than 500 page views from across the U.S. as well as China and India. Training materials were viewed most often from four competency domains: 1) Scientific Concepts & Research Design, 2) Clinical Study Operations, 3) Ethical & Participant Safety, and 4) Leadership & Professionalism. Additionally, over 100 CRPs have created a DIAMOND ePortfolio account, using the platform to document skills, connect with each other, and search for internships and job opportunities. DISCUSSION/SIGNIFICANCE OF IMPACT: Lessons learned during development of the DIAMOND digital platform include defining relevant information to collect for the best user experience; selection of a standardized, user-friendly digital platform; and integration of the digital network and ePortfolio. Combined, the DIAMOND portal and ePortfolio provide a professional development platform for clinical research professionals to contribute, access, and benefit from training and assessment opportunities relevant to workforce development and their individual career development needs.

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Duke Integrated Physician-Scientist Development

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OBJECTIVES/SPECIFIC AIMS: 1.Identify barriers to pursuing research for physician trainees 2.Develop a sustainable pipeline of physician-scientists at Duke 3.Coordinate physician-scientist development programs across the School of Medicine under one central Office 4.Provide infrastructure and resources for all physician-scientists 5.Increase the number of MDs and MD/PhDs who pursue, succeed, and are retained in research METHODS/STUDY POPULATION: To establish a baseline understanding of the needs and concerns of physician-scientist trainees at Duke, we conducted focus groups using a standardized interview guide and thematic analysis. Findings from these focus groups were used to develop a framework for support, leading to the creation of the Office of Physician-Scientist Development (OPSD) housed centrally within the Duke School of Medicine. The OPSD integrates programs and resources for multiple populations including medical students, residents, fellows, junior faculty, and faculty mentors. Pipeline programs will also be developed to enhance research engagement in targeted student populations prior to medical school. RESULTS/ANTICIPATED RESULTS: A total of 45 students and faculty participated in the focus groups and structured interviews (1st year medical student, n=11; 4th year medical students, n=11; residents/fellows, n=13; junior faculty, n=11). While participants raised a number of specific issues, one key message emerged: non-PhD MDs in basic research felt they lacked opportunities for directed training. Moreover, they felt the need to teach themselves many critical skills through trial and error. This has led to perceptions that they cannot compete effectively with PhDs and MD-PhD scientists for research funding and positions. Consensus recommendations included: better guidance in choosing mentors, labs, and projects; central resource for information relevant to physician scientists; training specifically tailored to physician scientists conducting laboratory-based research; improved infrastructure and well-defined training pathways; and assistance with grant preparation. To-date, over 90 students, residents, and fellows have been identified who identify as laboratory-based physician scientists. Additional efforts are underway to identify and

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