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### Learning to LEAD: Leadership emerging in academic departments

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**OBJECTIVES/SPECIFIC AIMS:** Leadership is an essential and recognized team science competency. Modeled after the successful LEAD (Leadership in Emerging Academic Departments) program at University of Texas Southwestern (UTSW), ConduITS LEAD Program is designed to: (1) provide personal and professional development opportunities for participants; (2) promote organizational change through applied leadership skills; (3) provide a platform for integrating multiple disciplines and fostering interprofessional relationships among investigators and clinicians. **METHODS/STUDY POPULATION:** The 1-year structured LEAD program curriculum includes monthly interactive seminars covering: personal and situational leadership; unconscious bias; communication and influence; navigating personal conflict; negotiation and networking; selecting and managing the right team; teamwork; financing the academic mission, budgets and business plan development; strategic planning and vision; presentation skills. To foster the development of leadership skills participants engage in Hogan Assessments, individual and peer mentoring from an executive coach and self-directed learning activities and assignments. Completion of an individual Capstone leadership project empowers learners to enact practice change through the implementation of leadership concepts in practice. **RESULTS/ANTICIPATED RESULTS:** In collaboration with the Office of Academic Enrichment & Development (OADE), the first competitive RFA was issued in November of 2016. In total, 63 applications were received including: gender: 29 M: 34 F; URM: 10; Degrees: M.D. (40); Ph.D. (11); M.D./Ph.D. (6); M.D./M.P.H. (3); M.D./M.S.C.R. (2); PharmD (1); Departments: 19; Institutes/Centers: 12; MSHS: 3 sites. Through a competitive and rigorous application process, 24 junior faculty with evidence of leadership potential and trajectory were chosen to participate. The current cohort of LEAD participants joined in February 2017, and will complete the program in January 2018. Using qualitative and quantitative survey methodology, participants will be evaluated for self-reported change to attitudes, belief, skills and development of new relationships and collaborations. Submitted Capstone projects were mainly focused on implementing situational and personal leadership concepts to practice, with one additionally focused on the use of behavioral interviewing techniques to optimize team building and teamwork. At the time of abstract submission 30% of the cohort has implemented their Capstone project in practice. Participants will be followed-up in 6 months' time to evaluate the impact of the LEAD program on their practice. Following a second RFA, 24/52 candidates have been selected as our next cohort, and will start in February 2018. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Leadership is known to be a core component of team science, and the ability to implement leadership into practice may advance personal and professional change. This program addresses the need to empower Junior Faculty to engage in leadership in practice. In addition, this program is able to provide added value to extend the reach of the OADE, promote new individual collaborations and facilitate additional leadership training efforts at our Institution. Future collaborative studies will focus on common outcomes as well as institutional differences between these 2 CTSA institutions.

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### Listening for empathy: Audio narratives in DPT curriculum as a model for interprofessional education

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**OBJECTIVES/SPECIFIC AIMS:** (1) Evaluate the auditory narrative process as a learning experience for interviewer, editor, and interviewee. (2) Discuss methodologies for developing or selecting audio narratives and suggest how to effectively integrate them into the DPT curriculum, or thread into individual coursework. (3) Experience and appraise podcast components developed for a DPT psychosocial aspects of disability course. **METHODS/STUDY POPULATION:** Students were provided preassessment and postassessment on empathy. Other methodologies include conducting interviews, developing story boards, and editing audio narratives. **RESULTS/ANTICIPATED RESULTS:** Learner feedback indicated that course material was experienced in a way that deepens one's understanding of the complex and challenging issues facing patient, caregivers, and themselves as they embark on their profession. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The utility of integrating different modalities within coursework is to enrich learner experience to encourage self-reflection and awareness of not only their identity but that of multidisciplinary collaborators.

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### Mount Sinai health hackathon: Harnessing the power of collaboration to advance experiential team science education

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**OBJECTIVES/SPECIFIC AIMS:** Innovation in healthcare is increasingly dependent on technology and teamwork, requiring effective collaboration between disciplines. Through an intensive team-based competition event, Mount Sinai Health Hackathon 2017, aimed to harness the power of multidisciplinary and transdisciplinary collaboration to foster innovation in the field of cancer. Participants were immersed in an intensive weekend working in teams to develop technology solutions to important problems affecting patients and care providers in the field of cancer. The learning objectives were to enable participants to: Identify cancer-related healthcare problems which lend themselves to technology-based solutions. Delineate key behaviors critical to multidisciplinary team success Identify optimal strategies for communicating in multidisciplinary teams. Engage and inspire participants to apply knowledge of technology to meaningfully impact clinical care and well-being. **METHODS/STUDY POPULATION:** The Mount Sinai Health Hackathon is an annual 48-hour team-based competition, using a format adapted from guidelines provided by MIT Hacking Medicine. The 2017 event gathered a total of 87 participants (120 registered), representing 17 organizations from as far away as California, with a diverse range of backgrounds in bioinformatics, software and hardware, product design, business, digital health and clinical practice. The overall participation model included: Phase 0: Health Hackathon 101 summer workshops; Phase 1: pre-Hackathon priming activities using online forums Trello and Slack; Phase 2: a 48-hour onsite hackathon to catalyze innovation through problem sharing, solution pitches, team formation and development of prototype solutions; Phase 3: competitive presentations to judges and prize awards; Phase 4: a suite of post-hackathon support to stimulate continued development of innovations. The event sponsored by ConduITS, was also co-sponsored by Persistent Systems, IBM Watson, Tisch Cancer Institute, Sinai Applab, Sinai Biodesign and other ISMMS Institutes. Mentors circulated throughout the event to support the teams in the technical, clinical, and business development aspects of their solutions. In total, the 14 teams formed during the Hackathon, created innovations ranging from diagnostic devices, networking apps, artificial intelligence tools, and others. The top 3 teams were each awarded \$2500 to support their projects' future development. **RESULTS/ANTICIPATED RESULTS:** Qualitative and quantitative post-event survey data revealed the Hackathon experience fostered collaborative attitudes and a positive experience for participants, providing insight into the potential benefits of team science. In the post-event survey (n = 24) 92% of participants reported that the experience increased their ability to solve problems and 96% made new professional or personal connections. In addition, 96% of respondents would attend future Hackathon events and 75% reported they were likely to continue working on their project after the Hackathon. Qualitative feedback from 1 participant reported it was: "a wonderful event that really highlighted how much interdisciplinary team science can achieve." Along with intermediate support interactions, including the winning teams participating in a Shark Tank style event with pitches to external entrepreneurs and investors, all teams will be followed up in 6 months time to determine if participants continue to work on projects, file new patents, create new companies, or leverage the new connections made through the Health Hackathon experience. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Our experience indicates that a Health Hackathon is a compelling and productive forum to bring together students, trainees, faculty, and other stakeholders to explore tech-based solutions to problems in cancer and other areas of biomedicine. It is a valuable tool to foster collaboration and transdisciplinary team science and education. Follow-up analysis will determine to what extent the Mount Sinai Health Hackathon is contributing to an ecosystem that encourages professionals and trainees in healthcare and in technology development to work together to address unmet needs in healthcare with innovative technology solutions.

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### Perceptions of translational science among faculty researchers: A survey to inform the efforts of a multidisciplinary education and research program

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**OBJECTIVES/SPECIFIC AIMS:** Opinions regarding translational science vary incredibly. We aimed to gather a baseline of perceptions, barriers, and needs for translational science among faculty investigators. We will use these data to define areas in which the Duke Multidisciplinary Education and Research in Translational Science program (MERITS) can work to address, educate and improve. **METHODS/STUDY POPULATION:** Data was collected via a scalar,

multiple-choice, open-ended survey including questions regarding, definition, impact, barriers, resources, and training preferences specific to translational science. Digital survey links were emailed to Duke University faculty. **RESULTS/ANTICIPATED RESULTS:** In total, 350 responses were collected. While perceptions of translational science varied, common defining elements were noted, including multidisciplinary collaboration (69%) and transitions between research stages (63%). Translational science was said to have an overall positive impact, despite 37% of participants stating issues of insufficient institution-wide support and 62% citing minimal training in translational science skills. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Effective support for translational science requires a multi-faceted approach, as perceptions differ among investigators and between career stages. Duke MERITS will seek to standardize education and support ranging from teambuilding to entrepreneurship, and to promote support from institutional leadership to reduce barriers and facilitate acceleration of translational science.

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### Perspectives on increasing competency in using digital practices and approaches to enhance clinical translational research: A qualitative study

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**OBJECTIVES/SPECIFIC AIMS:** The use of digital practices and approaches can potentially increase the quality and efficiency of all phases of the traditional clinical translational research (CTR) process. The purpose of this qualitative study was to describe key stakeholders' perspectives on the need to: (A) formalize training in digital practices and approaches among CTR trainees; and (B) develop an aligned educational framework that defines core competencies, educational methods, and evaluation metrics. **METHODS/STUDY POPULATION:** Participants (n = 66) were recruited via email from June to November 2017 using purposive and snowball sampling methods across 4 groups: (1) English speaking national and international experts from academic and private sector institutions with working experience in using digital practices and approaches in research (n = 36), (2) CTR educators (n = 8), (3) CTR trainees (n = 13), and (4) Members of the Southern California Clinical and Translational Science Institute at the University of Southern California (n = 9). Online focus groups were conducted using a semi-structured, open-ended interview guide through Google Hangouts and a conference call interface. Sessions were recorded and transcribed verbatim, and 2 research team members performed independent content analyses to identify before and emergent themes using an inductive analytic approach. Kappa was calculated for inter-rater agreement and repeated until agreement was at least 0.70. **RESULTS/ANTICIPATED RESULTS:** Participants' average age (41.2 yrs, SD 9.26), gender (59% females), non-Hispanic (97%), race (72% White), and doctoral degree (67%). In total, 85% reported experience in teaching digital practices and approaches in research, although 70% were currently not teaching in this field. Participants reported that complementary teaching in digital practices and approaches across the 15 Clinical and Translational Science Award (CTSA) CTR competency areas was relevant, especially in literature review, research implementation, statistical approaches, biomedical informatics, regulatory support, responsible conduct of research, scientific communication, translational teamwork, cross-disciplinary training, leadership, and community engagement; and less so in literature critique, study design, sources of error, and cultural diversity. Additional competencies were identified, for example, online study recruitment, crowdfunding, team and project management, scholarly impact metrics (Altmetrics), ethical and regulatory guidance for conducting research using digital approaches. Five main educational practices were identified including online training sessions, flexible on-demand modules, in-person consultations and training, and project-oriented hands-on workshops. Among the identified challenges were the need for clear metrics in order to evaluate such a training program. **DISCUSSION/SIGNIFICANCE OF IMPACT:** There was consistent support for a structured program to help CTR trainees to develop competency in digital research practices and approaches. Our results indicate that an education program focused on digital practices and approaches should include a step-wise approach to meet different research and training goals, allowing attendees to increase their awareness and specialized hands-on practical experience.

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### Phase II award: Evaluation of outcomes in preparing independent researchers by continued mentoring and career development support (2006–2016)

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**OBJECTIVES/SPECIFIC AIMS:** The Hispanic Clinical and Translational Education and Career Development program entails formal research training (Phase I) through an established post-doctoral Master of Science in Clinical and Translational Research. The most qualified graduates from Phase I compete to receive 1–2 years support for continued mentoring and career development (Phase II program) aiming to apply for a regular research grant or career award (K or R series). **OBJECTIVE:** This project aims to present an evaluation of the Phase II program and Scholars outcomes. **METHODS/STUDY POPULATION:** **METHODS:** Participants (n = 12) responded to a semistructured interview including 43 questions about program's processes and outcomes. Descriptive and content analysis was done. **RESULTS/ANTICIPATED RESULTS:** **RESULTS:** Results show that 83% are women, 42% are MD, and 67% are affiliated to the University of Puerto Rico-Medical Sciences Campus and 67% were able to fulfill their career development expectations during the Phase II Award. At present (92%) are conducting clinical research in their current position. Outcomes include new selection of research line, K Awards, and enhanced skills in clinical and translational research **DISCUSSION/SIGNIFICANCE OF IMPACT:** **DISCUSSION:** Challenges identified were: time management, better coaching and a more structured mentoring experience. The main benefit of the program were protected time, research budget, and the opportunity to acquire more research experience.

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### Promoting collaboration among researchers: A team science training curriculum

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**OBJECTIVES/SPECIFIC AIMS:** As multidisciplinary, interdisciplinary, and transdisciplinary research has become imperative to solving the complex problems of contemporary healthcare, teaching researchers how to create and maintain high-functioning and innovative teams has also become paramount. In Fall 2016, the Center for Improvement Science (CIS) core, in collaboration with the Translational Workforce Development (TWD) core, at the Cincinnati Center for Clinical & Translational Science & Training (CCTST) began offering training in Team Science in an effort to better prepare researchers for collaborative work. Since then, the CIS has expanded Team Science education into a multifaceted and adaptable curriculum that includes workshops, team consultations, Grand Rounds, grant writing assistance, grant review, train-the-trainer, and a graduate-level course. **METHODS/STUDY POPULATION:** Over almost 2 years, we have offered 9 unique workshops attended by individuals from the University of Cincinnati, UHealth, and Cincinnati Children's Hospital Medical Center. Recruitment was primarily accomplished via email invitations. Topics ranged from introductory team science issues such as Creating Teams, Team Effectiveness, and Team Leadership to more advanced team science areas such as Team Dysfunctions and Conflict Management. In addition, we have consulted with researchers on Team Science components of grant applications and served as grant reviewers for Team Science elements in a competitive, internal research funding program. We have developed tools and teaching strategies for faculty members tasked with teaching students about collaboration (train-the-trainer). And finally, we offered a graduate level course on Collaboration and Team Science. **RESULTS/ANTICIPATED RESULTS:** Over 250 participants attended our workshops and Grand Rounds, many at the faculty level, but we also had research staff and graduate students register. Content was very well-received, with workshop evaluations typically scoring in the high 4.5 and above range (on a 5-point scale, with 5 being the highest rating). The CIS team received (and accepted) at least 2 follow-up invitations from workshop participants to provide training to an additional team or group. We are tracking data on long-term effects of team science training and consultation, both in research productivity and team satisfaction/longevity. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The goals of Team Science training at the Cincinnati CCTST are 2-fold: to provide practical knowledge, skills, and tools to enhance transdisciplinary collaboration and to promote systemic changes at UC, CCHMC, and UHealth that support team science. After almost 2 years of training, team science is gaining traction among key leaders at our local institutions and a broader audience of researchers who see how collaborative practice can enhance their professions.

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### Research navigation services and onboarding: Succeeding in the research environment

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**OBJECTIVES/SPECIFIC AIMS:** Describe (1) the components of the research navigation service and consultation/onboarding program, (2) use and adoption of the services, and (3) the overall satisfaction from the research community.