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### What do early career researchers need? Exploring early career researchers' learning needs to develop an Emerging Investigator website

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**OBJECTIVES/SPECIFIC AIMS:** Early career researchers at Mount Sinai have access to a wide range of resources and support. It can, however, be challenging for new investigators to know where to find information and who to ask for help. To address this issue, an Emerging Investigators website was conceived to bring together resources, provide educational support and foster a community of early career investigators at Mount Sinai. In order to ensure this resource effectively meets the needs of this cohort of researchers, and to determine the scope and content of the proposed website, a series of focus group interviews were undertaken with early career researchers at various stages of their careers. The aims of these focus groups were to 1) explore the self-perceived challenges faced by early career researchers that could be addressed through education and / or support, 2) explore the self-perceived learning needs of early career researchers that are not currently being addressed at Mount Sinai, 3) determine the website content that early career researchers would find valuable to support them in their development. **METHODS/STUDY POPULATION:** A convenience sample of early career researchers at Mount Sinai were contacted for participation (N = 20). A total of 13 participants responded and three focus groups were conducted, one with the KL2 scholars (N=4), one with TL1 postdocs (N=4) and one with PORTAL students (N=5) during Spring 2018. Participants were initially asked to consider the challenges that early career researchers face. They were subsequently asked to consider which of these challenges they thought could be addressed through education or support. Participants were then asked to consider what they wished they knew more about in relation to research knowledge, skills or behaviors. Participants were finally asked to discuss the resources or support they thought would help them to manage the challenges or meet the learning needs they identified. The interview questions were semi-structured to allow the conversation to flow, and to allow the participants to discuss issues of importance to them. At the end of the discussion, participants were asked to rank their top priorities for inclusion in an Emerging Investigators website, up to a maximum of 3 per person. Focus group sessions lasted between 1 and 1.5 hours. All key points were captured by the participants on flip-chart paper and sticky notes. **RESULTS/ANTICIPATED RESULTS:** Interview data was transcribed and thematic analysis was used to identifying patterns or themes within the data. A theoretical thematic analysis was conducted, driven by the specific research questions. Each segment of data that was relevant to the research questions or captured something interesting was coded. These codes were examined and further grouped into six key themes that were consistent across all three focus groups. These themes were categorized as: Mapping the research pathway, Research skills, Personal development, Mentorship, Community of Practice and Opportunities at Mount Sinai. Within each of these themes, more specific codes align directly with learning needs for early career investigators at Mount Sinai. When asked to prioritize topics for inclusion in the website, the pre-doc PORTAL students selected research skills that included statistics, navigating the IRB and writing and publication, as well as mapping the research landscape at Mount Sinai. Both the post-doc TL1s and the KL2s also

selected some research skills such as scientific writing and conference presentation, but also prioritized personal development and “soft skills” such as leadership, management, collaborating with others and finding a work-life balance. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The themes articulated by the focus group participants have formed the basis for developing the Emerging Investigators website. Each of the key themes will be reflected in the learning and resources provided on the website. The prioritization of topics differed between groups, reflecting the different stages and levels of experience of these researchers. As a result, the website provides key learning and “top tips” suitable for all levels of early career researchers, but with links to further reading and resources for those at a more advanced level who are interested in learning more. In addition, the reported need for communication, collaboration and social interaction with peers and other researchers across Mount Sinai resulted in the addition of further web-based resources such as a discussion forum, a blog to feature research and provide a sounding board for research efforts, and a calendar of events targeted specifically at early career researchers. The focus groups provided much valued insight to underpin this project and ensure that a valuable resource is created that will meet the needs of early career researchers. The website is currently under development with a view to launch a pilot site in early 2019.

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### WHICH ADMISSION FORMULA CRITERIA PREDICT TIMELY COMPLETION OF THE RESEARCH TRAINING PROGRAM FROM THE MEDICAL SCIENCES CAMPUS, UNIVERSITY OF PUERTO RICO?

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**OBJECTIVES/SPECIFIC AIMS:** This project will present the analysis assessing which of the admission criteria is a useful tool to predict completion of all program requirements **METHODS/STUDY POPULATION:** All admission criteria from graduates (2003-2016) will be analyzed. Outcomes will be measured according to the scholar's performance during the two-year of studies and its success in completing on time all program requirements. Descriptive and inferential statistical analyses will be used to determine potential association in each criteria and in the total score. **RESULTS/ANTICIPATED RESULTS:** We expect that the PPC and total score will be correlated with a higher rate of successful outcomes. **DISCUSSION/SIGNIFICANCE OF IMPACT:** A systematic admission process should lead to timely program completion.

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### Workforce Engagement and Resilience (WE-R): A Framework for Innovating Clinical Research Careers

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**OBJECTIVES/SPECIFIC AIMS:** 1. Assess changes in clinical research workforce landscape at Duke 2. Optimize and evaluate efficacy of a tier advancement process for clinical research career progression at Duke 3. Implement CRP engagement as a change management mechanism for workforce innovation **METHODS/STUDY POPULATION:** We evaluated 857 clinical research positions at Duke to understand

changes in the workforce (demographics, numbers in each position and tier) since implementing the tier advancement process in 2016. To understand the efficacy of the tier assessment process, data from a subset of this population (n=84) who underwent the advancement process was examined for success rate. Individual employees and their managers were surveyed to understand their perception of the advancement process and identify areas for improvement. We also describe implementation of multiple mechanisms of community engagement to manage expectations around the tier advancement process and to provide opportunities for employees to self-manage their career planning, including portfolio planning and leadership opportunities. **RESULTS/ANTICIPATED RESULTS:** Whereas the clinical research workforce has grown by 5.5% since tiering began (2016, n=810; 2018 n=857). Nearly 13% of that growth has been in managerial or senior positions (2016, n=111; 2018 n=127). Distributions across job classifications changed only slightly, representing realignment of positions with study-level responsibilities over department-level responsibilities. Notably, clinical research nurses (CRNC & CRNC Sr.) was the only category including tiered and non-tiered positions to drop overall numbers between 2016 (n = 136) and 2018 (n=115), representing a shift in the workforce from research nurses to research coordinators. General demographics (gender, age) remained largely the same. A total of 359 positions have been hired during this time frame, nearly half of which were entry-level positions (175/359): 47 of these positions represent expansion of the workforce. Of 359 new hires since 2016, 271 currently still work in one of the research roles. Of the 84 employees who underwent the tier advancement process, 84% (43/51) succeeded in tier 2 advancement, 70% (14/20) succeeded in tier 3 advancement (CRC, CRNC, and regulatory coordinators), and 77% (10/13) of research program leaders (RPLs) succeeded in achieving tier two, which is the highest tier for this group. Fifty-five employees (65%) and 32 managers responded to a voluntary feedback survey. Overall confidence in the process improved in both groups from 2016 to 2018, most notably with managers. Both groups indicated a 10 hour reduction (employees = 35hr, 2016 and 25hr 2018; managers 25hr, 2016 and 15hr 2018) in time required to complete the tier advancement process. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The use of objectively-assessed competencies is an important step in the development of a workforce. By 1) maintaining alignment with industry standards for competencies, 2) upholding high standards, and 3) offering a consistent approach to career growth, Duke is working to develop and maintain a workforce that supports high quality research. Since the implementation of standardized job classifications and competency-based tier advancement, the positions have undergone rigorous competency-based needs evaluation. This leads to better matched jobs to study needs as well as increased standardization across the clinical research workforce. We believe that the subtle workforce shifts represent alignment of our positions with the business needs of our clinical research enterprise. Additionally, approximately 15% of our clinical research workforce has taken advantage of the opportunity to advance their own careers. We have made significant improvements in the following tier advancement processes: standardization of assessments, scoring guides, and modes; changes from LMS to a REDCap delivery of the knowledge assessments; streamlined the utilization of electronic documentation; and additional guidance for employees and managers regarding portfolio inclusions. These improvements have increased satisfaction and acceptance with the advancement process and were made possible through strategic communication across the workforce. Regular town hall meetings and focus group feedback sessions have included the clinical research community in discussions of WE-R initiatives and provided a much-needed feedback loop for

process improvement and change management. Moreover, inclusion of WE-R discussion in our Research Professional Network events has provided opportunities to discuss career advancement strategies as well as volunteer opportunities to grow and demonstrate leadership competencies.

## Health Equity & Community Engagement

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### “Sofia Learns about Research”: an interactive storybook to educate children and their families on clinical research with a welcoming and inclusive approach.

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**OBJECTIVES/SPECIFIC AIMS:** Our overall goals are: 1. To engage, inform and educate children and families on clinical research and increase their understanding of the goals and process of participation in research studies/clinical trials; 2. To Increase participation of children, especially those who are disproportionately underrepresented, in clinical research in the Western New York region and beyond. **METHODS/STUDY POPULATION:** The University at Buffalo Clinical Translational Science Institute conducted meetings in schools, community coalitions while holding focus groups with children with chronic conditions and their families and community health workers to identify the general perceptions of research. These conversations then informed the development of a children’s activity book about research. Completed in 2017, our “Sofia Learns about Research” activity book presents research in a non-threatening way by presenting a child with asthma who walks through the process of learning about research, being recruited and participating in research. The book explains basic concepts about research coupled with fun games and the possibility to color. Over 1,000 copies of the activity book have been disseminated to second to fourth graders via afterschool programs, community events, and medical practice waiting rooms. Recipients of the book are directed to short surveys to provide feedback on the book and their perception of research. The parents are also given the option to sign-up for the Buffalo Research Registry in order to be contacted about research opportunities. **RESULTS/ANTICIPATED RESULTS:** Response has been very positive, with parents and community participants saying “It’s not just a storybook. The activities keep kids entertained while learning new concepts.” In children informally polled via a brief questionnaire pre and post story reading at an afterschool program, there was an increase in those interested in participating in a research study. In a recent event sponsored by the CTSI Community Engagement Core and other UB organizations, a group of fifty children from diverse background colored with enthusiasm several activity pages and obtained stickers for their “Research Passport”. In a recent teacher focus group we learned that the book content may fit the Science Curriculum and plan on reading sessions in inner-city schools after approval from the district. A pilot reading activity in a Montessori program revealed that second grade children were able to understand and complete the activities in the book. We are obtaining further feedback form teachers and parents in order to design simple protocol to be submitted for IRB approval to obtain more formal feedback and outcomes in future readings. In parents and focus groups several respondents have indicated its relevance to older populations and