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Bridging Cell Biology and Engineering Sciences: Interdisciplinary Team-based Training in Computational Pathology††

Myles Joshua T. Tan[1]*, Akshita Gupta[2]*, Jamie L. Fermin[1]*, Samuel P. Border[3], Sanjay Jain[4], John E. Tomaszewski[5], Yulia A. Levites Strekalova[6+], and Pinaki Sarder[7+]
[1]Department of Electrical & Computer Engineering, University of Florida, [2]Department of Health Outcomes & Biomedical Informatics, University of Florida, [3]J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, [4]Division of Nephrology, Washington University School of Medicine in St. Louis, [5]Department of Pathology and Anatomical Sciences, University at Buffalo, [6]Department of Health Services Research, Management & Policy, University of Florida, [7]Division of Nephrology, Hypertension & Renal Transplantation, University of Florida
*Equal contribution, +Co-corresponding

OBJECTIVES/GOALS: Computational pathology is an emerging discipline that resides at the intersection of engineering, computer science, and pathology. There is a growing need to develop innovative pedagogical approaches to train future computational pathologists who have diverse educational backgrounds. METHODS/STUDY POPULATION: Our work proposes an iterative approach toward teaching master's and Ph.D. students from various backgrounds, such as electrical engineering, biomedical engineering, and cell biology the basics of cell-type identification. This approach is grounded in the active learning framework to allow for observation, reflection, and independent application. The learners are trained by a team of an electrical engineer and pathologist and provided with eight images containing a glomerulus. They must then classify nuclei in each of the glomeruli as either a podocyte (blue), endothelial cell (green), or mesangial cell (red). RESULTS/ANTICIPATED RESULTS: A simple web application was built to calculate agreement, measured using Cohen's kappa, between annotators for both individual glomeruli and across all eight images. Automating the process of providing feedback from an expert renal pathologist to the learner allows for learners to quickly determine where they can improve. After initial training, agreement scores for cells scored by both the learner and the expert were high (0.75), however, when including cells not scored by both the agreement was relatively low (0.45). This indicates that learners needed more instruction on identifying unique cells within each image. This low-stakes approach encourages exploratory and generative learning. DISCUSSION/SIGNIFICANCE: Computation medical sciences require interdisciplinary training methods. We report on a robust approach for team-based mentoring and skill development. Future implementations will include undergraduate learners and provide opportunities for graduate students to engage in near-peer mentoring.

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Developing a Clinical and Translational Research Pathway Across Three Health Sciences Disciplines

Aric Lane[1], Mark Whipple[1], Sara Kim[1], Andrea Lazarus[2], Russell Lackey[1]
[1]University of Washington [2]Washington State University

OBJECTIVES/GOALS: The design and phased roll-out of a CTSA competency-based longitudinal Clinical and Translational Research (CTR) curriculum pathway that can be integrated into the training of health sciences professional degree programs at three regional institutions. The outcome will be an increased number of health science professionals participating in CTR. METHODS/STUDY POPULATION: Based on an environmental scan, student surveys to assess interest, and feedback from regional stakeholders, a CTR pathway program was developed. The pathway curriculum will be grounded in 6 key focus areas derived from the Core Competencies in Clinical and Translational Research and prioritized based on regional need. The CTR pathway is currently being developed for the University of Washington School of Medicine, with additional implementations at the Washington State University School of Pharmacy and the Montana State University School of Nursing. Students will complete training modules and a mentored research project that is integrated into their specific course of study. RESULTS/ANTICIPATED RESULTS: In addition to the initial assessments and curriculum, an Advisory Committee will be established. Mentors, site leads, and research project partnerships across the region will be identified. Modifications will be made according to the local needs at both Montana State University and Washington State University. After the pilot launch and roll-out, the pathway curriculum will be adapted for other disciplines based on input from content experts and pathway evaluation data. Student retention in CTR fields will be tracked, with a goal to increase the number of CTR investigators and professionals across WWAMI in the next decade. CTR pathway processes and training resources will be shared with the CTSA consortium and other health sciences professional training sites. DISCUSSION/SIGNIFICANCE: Development of the CTR workforce is a priority to increase national capabilities in clinical and translational science. Building on a recognized need for targeted and longitudinal engagement, a CTR pathway is being established for health sciences students in the WWAMI region.

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Educating the Clinical and Translational Research Workforce Online: A Case Study of Tufts CTSI I LEARN

Kris M. Markman
Tufts University n/a

OBJECTIVES/GOALS: In November 2020, Tufts CTSI launched a new, upgraded learning management platform for disseminating self-paced online professional education for the CTR workforce. This poster will present a case study of the first two full years of Tufts CTSI I LEARN usage to illustrate how a local and national CTR workforce engages in free online training. METHODS/STUDY POPULATION: This study will employ a retrospective analysis of 2021 and 2022 learner usage data from the Tufts CTSI I LEARN platform. The population are individuals who have engaged in one or more courses over the specified time period, where engagement is defined as having viewed at least one content item in a course. Descriptive statistics will be used to show total engagement and unique learners each year by course, popular courses by year, as well as geographical distribution of learners across both years. Two sample t-tests will be used to compare the mean percentage of course completion and mean time spent in courses for 2021 and 2022. The Wilcoxon Rank Sum test will be used to compare median courses taken per learner each year. Finally, descriptive statistics will be used to show returning learners vs new learners from 2021 to 2022. RESULTS/ANTICIPATED RESULTS: Data from 2021 show 723 learners (436 unique) engaged in 49 courses across the year. Course engagement ranged from a max of 135 to minimum of 1 learner (Mean = 14.8, Median = 6). Mean percent of course content viewed was 69.4 (Median = 63.7%) and mean time spent on course content was 41.3 minutes (Median = 33.6). Preliminary data from Q1-Q3 of 2022 find 557 learners (328 unique) have engaged in 69 courses. Based on this trend, it is anticipated that 2022 will match or exceed 2021 engagement levels. Recently launched

††The name Yulia A. Levites has been removed as an author and the affiliations have been corrected. An erratum detailing these changes has also been published (doi:10.1017/cts.2023.553).

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