Portland State University (PSU), to create a new model of research training for underrepresented and disadvantaged students. This model provides an opportunity to learn about clinical and translational research academic careers; participate in a research enhancement and professional development curriculum;have a long-term authentic research experience; and receive enhanced mentorship. BUILD EXITO includes PSU, and local and 3 US Pacific territory 2-year colleges. We have developed a sustainable plan that includes these core elements after NIH support for the program ends. We have tracked long-term student outcomes for entry into graduate programs and the research workforce. RESULTS/ANTICIPATED RESULTS: We will describe the experimental model and the network of university and community colleges in BUILD EXITO, including PSU, U of Alaska, and colleges in US territories of Guam, Northern Mariana Islands, and American Samoa. All these universities and colleges have high proportions of underrepresented and disadvantaged students. We will present data on characteristics of the >600 students who have participated in BUILD EXITO to demonstrate the diversity of the cohort. We will also describe 4-year degree completion, engagement in the research workforce, and entry into graduate or professional programs. We will show how this has positively affected faculty inclusion of students in research, institutional policies at the 2-year and 4-year programs, and how this model has become sustainable. DISCUSSION/SIGNIFICANCE: The BUILD EXITO program developed as a collaboration of the CTSA hub at OHSU and a highly diverse undergraduate programs. We have developed a successful model for training a diverse research workforce and will disseminate this sustainable model.

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The Crosstalk between Mitochondrial Dysfunction and Neurodevelopmental Outcomes in Preterm Infants with Pain/Stress in the NICU*

Tingting Zhao[1], Drs. Xiaolin Chang[2], Subrata Biswas[3], Jeremy Balsbaugh[4], Jennifer Liddle[4], Ming-hui Chen[2], Adam Matson[5] and Xiaomei Cong[6]
[1]Yale University School of Nursing; [2]Department of Statistics, University of Connecticut; [3]Department of Molecular and Cell Biology, University of Connecticut; [4]Proteomics and Metabolomics Facility, University of Connecticut; [5]Division of Neonatology, Connecticut Children's Medical Center; Department of Pediatrics, University of Connecticut School of Medicine and [6]Yale School of Nursing

OBJECTIVES/GOALS: Early life pain/stress impacts infants' neurodevelopmental outcomes. Mitochondrial dysfunction may interface between infants' stress and neurodevelopment. The study aims to investigate the associations between pain/stress, proteins associated with mitochondrial dysfunction, and neurobehavioral responses in preterm infants. METHODS/STUDY POPULATION: A prospective cohort study was conducted with 33 preterm infants enrolled between September 2017 and July 2022 at two affiliated NICUs in Hartford and Farmington, CT. Daily pain/stress experienced during NICU was documented. At 36-38 weeks post-menstrual age (PMA), neurobehavioral outcomes were evaluated using the NICU Network Neurobehavioral Scale (NNNS) and buccal swabs for Mass spectrometry-based proteomics analysis. Lasso statistical methods were conducted to study the association between protein abundance and infants' NNNS summary scores. Multiple linear regression and Gene Ontology (GO) enrichment analyses were performed to examine how clinical characteristics and neurodevelopmental outcomes may be associated with protein levels and underlying molecular pathways. RESULTS/ANTICIPATED RESULTS: During NICU hospitalization, preterm premature rupture of membrane (PPROM) was negatively associated with neurobehavioral outcomes. The protein functions, including leptin receptor binding activity, glutathione disulfide oxidoreductase activity, and response to oxidative stress, lipid metabolism, phosphate, and proton transmembrane transporter activity, were negatively associated with neurobehavioral outcomes. In contrast, cytoskeletal regulation, epithelial barrier, and protection function were found to be positively associated with neurodevelopmental outcomes. In addition, mitochondrial dysfunction-related proteins (SPRR2A, PAIP1, S100A3, MT-CO2, PiC, GLRX, PHB2, and BNIPL-2, ABLIM1, UNC45A, Keratins, MUC1, and CYB5B) were found to be associated with neurobehavioral outcomes. DISCUSSION/SIGNIFICANCE: Mitochondrial dysfunction-related proteins were observed to be associated with early life pain/stress and neurodevelopmental outcomes in infants. Buccal proteins could be used to predict potential neurobehavioral outcomes. In addition, individualized skin integrity protection should be provided to preterm infants during their NICU stay.

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Using LGBTQ+ Community Expertise to Co-Develop Inclusive Sexual Orientation and Gender Identity (SOGI) Screening for Research Studies

Jennifer Poger[1], Jennifer Kraschnewski[1], Raffy Luquis[1], Paula Moodie[1], Gelise Thomas[2], Jess Abrams Schrodel[1], Jennifer M. Poger[1], Paula Moodie[1], Gelise Thomas[1], Raffy Luquis[1] and Jennifer L. Kraschnewski[1]
[1]Penn State University and [2]Case Western Reserve University

OBJECTIVES/GOALS: To promote diverse research engagement and address health disparities by creating an inclusive tool to collect sexual orientation and gender identity (SOGI) data from potential participants #_msoanchor_1 METHODS/STUDY POPULATION: The Penn State Community Health Equity & Engagement in Research (CHEER) team, part of our Clinical and Translational Science Institute (CTSI), developed inclusive screening guidance to collect SOGI data from potential research participants to fill an identified gap in the literature. Guidance was developed through an iterative feedback process, leveraging expertise from local, regional, and national organizations, healthcare systems, and leaders throughout Clinical & Translational Science Award hubs. By eliciting expert feedback, CHEER co-developed a comprehensive SOGI data collection form, filling an important gap of inclusivity in the consenting process. Training of this new tool was delivered to CHEER's far-reaching listserv researchers (internal and external) and community partners. RESULTS/ANTICIPATED RESULTS: Feedback collected from our LGBTQ+ expert partners resulted in a total of five inclusive SOGI screening questions; two 'Gender Identity' questions, one 'Sexual Orientation' question, and two 'Sex' questions, with "prefer not to answer" and "another option not listed" provided. The goal of this effort is to equip research teams with a tool that integrates SOGI characteristics that may be particularly important to determine study eligibility

https://doi.org/10.1017/cts.2024.96