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Facilitating Global Collaborations for Pregnancy and Pediatric Biomarker Research Through a Biobank Database: The COPPER Project

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Objective:

Globally, research studies often collect biologic specimens from study participants and have leftover specimens stored in “biobanks”[1, 2]. We are currently unaware of a centralized database of residual pregnancy or pediatric specimens in biobanks that could be available for use in use by other researchers to support translational maternal and child health research. Given the effort and cost to develop cohorts for biomarker research, having access to residual samples could be beneficial. The objective of the Collaborative Online Perinatal & PEdiatric Repository (COPPER) project was to develop this type of usable database of biobanks with maternal and child specimens.

Study design:

A REDCap survey was developed and shared with known United States (US) investigators with pregnancy and pediatric biobanks, principal investigators of selected published biomarker studies, and Maternal-Fetal Medicine Units Network Data Coordinating Center for chosen studies [3]. Respondents were asked about number of participants, number of specimens, type of specimens collected, trimesters when specimens were collected, participant ages, governance, consent forms, future unspecified use, race/ethnicity of participants, and pregnancy conditions of focus. Survey responses were housed in Indiana University’s REDCap servers.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Results:

24 US biobanks were represented in responses, ranging from 30 up to 40,000 participants, with some holding more than 600,000 pregnancy biospecimens. All (100%) of the biobanks had samples from patients identifying as White or Black/African American, 94% of biobanks held samples from Asian patients, followed closely by Native Hawaiian/Pacific Islander (70%) and other non-specified categories (70%), and finally American Indian or Alaska Native (65%).

Of these biobanks, 62.5% had blood specimens, 42% had umbilical cord blood, 33% had urine, 17% had breast milk, and 25% had DNA or genomic data. 11 (46%) biobanks held child specimens with 9 (37.5%) also holding newborn specimens. More than half (n= 14) allowed future unspecified use of the samples. Most biobanks had 3rd trimester specimens (57%), followed respectively by postpartum, second, and first trimester specimens. Conditions of focus for the biobanks included preeclampsia (42%), diabetes or endocrine conditions (42%), cardiovascular conditions (25%), respiratory conditions (17%), and healthy patients (25%). Most of the biobanks contained clinical outcome and covariate data for multiple conditions in pregnancy and childhood.

Conclusion:

The COPPER project's aim is to facilitate collaboration between research groups and established biobanks to better investigate rare conditions (e.g. early onset pre-eclampsia). Our study's limitations included the limited number of US biobanks that look at maternal and pediatric health conditions. We are currently developing a web-based search platform to identify specimens, accessible to researchers interested in collaboration. Furthermore, we are soliciting additional US and international pregnancy and child biobanks to enter their data to expand the reach. COPPER could then serve as a platform for international collaboration to address disparities in pregnancy and child biomarker studies. To add your biobank to COPPER, please scan the QR code (Figure) which will take you to the portal to input your data. Additional information on COPPER can be found at <https://mprint.org/partnership/COPPER/index.html>.

Disclosures:

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Figure:
QR Code for COPPER REDCap form to input data