FALL 2024 | WWW.BCCHBIOBANK.CA

BCCHB NEWSLETTER

OFFICIAL UPDATES FROM THE BC CHILDREN'S HOSPITAL BIOBANK

What's inside this issue:

WE CURRENTLY COLLECT:

BLOOD
BONE MARROW
TISSUE
SALIVA
STEM CELLS
URINE
PLACENTA
CEREBROSPINAL FLUID
CORD BLOOD

NEW LIQUID NITROGEN FREEZER!

We are excited to announce that we now have a new additional liquid nitrogen freezer thanks to our work with Dr. Gregor Reid and the oncology research team on the BRAvE initiative! BRAvE (Better Responses through Avatars and Evidence) is an innovative research program at BC Children's Hospital (BCCH) to evaluate if precision medicine can improve the treatment of children diagnosed with cancer. Purchased as part of the CFI fund, this new freezer will enable us to increase our storage capacity and therefore fuel more pediatric oncology research!

BC CHILDREN'S HOSPITAL BioBank

SAMPLE RELEASE: HOW BIOBANKED SAMPLES ARE SUPPORTING RESEARCH

Dr. Kelly Brown was granted 41 urine supernatant samples from patients at BC Children's Hospital for her study Evaluating the Utility of Adult-Defined Prognostic Biomarkers in Childhood Onset Primary Chronic Vasculitis.

Study summary: In children, vasculitis, caused by the inflammation of blood vessels, can often result in kidney disease. In adult-onset vasculitis, specific biomarkers can be used to predict the risk of developing severe diseases, renal-involvements, and relapses. These biomarkers have also been used to guide treatments. Although biomarkers have been used in adult patients, it is unclear if these markers are useful in pediatric vasculitis. Using pediatric urine samples, this study will evaluate the usefulness of biomarkers in predicting severe renal disease.

BCCHB has released 44 control blood samples from healthy patients to Dr. Tom Blydt-Hansen for his study Age-related differences in metabolome composition in a pediatric cohort.

Study summary: In recent studies by the Blydt-Hansen team, they discovered metabolites that varied by age in children with end-stage kidney failure. Dr. Blydt-Hansen's study hypothesizes that these metabolites in children change during development and puberty. This study aims to analyze the differences in the metabolome across different ages and stages of sexual maturation by studying the blood metabolome of healthy pediatric patients. In addition, the blood metabolome of children with kidney failure will be compared to the blood metabolome of healthy children, using control plasma samples.

HELP US WELCOME OUR NEW STAFF!

Nicole is a new co-op student at the BCCH BioBank. She just finished her third year at UBC, majoring in Integrated Sciences (Genetics, Microbiology, and Immunology). Nicole has previously worked with patients and their families with the START Program at BCCH and as a Genetic Counselling Assistant at St. Paul's Hospital. She is very excited to be working at the BioBank and learn more about the different research studies it supports. Outside of school and work, you can often find Nicole at a bookstore or cheering on the Canucks!

Claudia graduated from the University of Toronto with a HBSc, where she majored in Molecular Genetics & Microbiology, and minored in Spanish and Russian. She joined the BCCH BioBank in July 2024, and is excited to learn more about pediatric and women's clinical research and collaborate with various healthcare professionals. In her free time, Claudia enjoys rowing, running, coaching skating, and lifting heavy things. Ask her about placentas and worms.

BC Children's Hospital | MINING FOR MIRACLES | BC Children's Hospital Research Institute | BC Children's Hospital Foundation | BC WOMEN'S HOSPITAL+ HEALTH CENTRE | WOMEN'S HEALTH RESEARCH INSTITUTE AT BC WOMEN'S | BC CHILDREN'S HOSPITAL BioBank

PREEMIE CORD BLOOD DISCOVERY ABOUT NEWBORN IMMUNITY

Neonatologist Dr. Pascal Lavoie's recently published research could eventually lead to therapeutic interventions for sepsis, lung disease, and other complications in premature newborns. His study used cord blood samples from preterm deliveries at BCWH that were less than 33 weeks gestation. These samples, part of the BCWH Preemie Biobank (est. 2018), have helped support many studies over the years, including ones that aim to understand why premature babies are more vulnerable to infections, about ways to improve early nutrition in premature babies, and to develop new tests to help predict complications linked to premature birth.

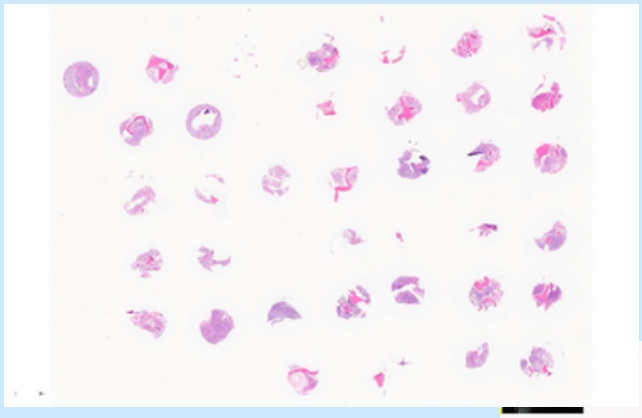
Premature baby cells are unique, because they are still in their early developmental stage. These premature cells act as the first building blocks and are, therefore, malleable and could lead to unexpected discoveries, not just for babies but well into adulthood.

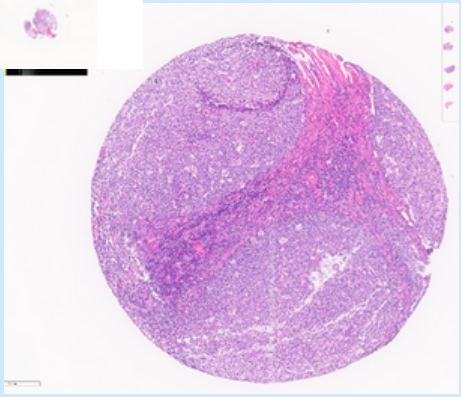
Providing researchers access to cord blood and placenta samples that are discarded after the baby is born is a useful way to investigate biological samples and cells that are otherwise hard to obtain. Preterm samples are more difficult to access due to the nature of these urgent deliveries, so these groups are often underrepresented in biobanks. This could limit the potential for discoveries. The BC Women's Hospital Preemie Biobank was established to addressed the need for more discovery research that could benefit these patients.

"[It's] research that we hope will bring solutions to some of the medical complications that premature babies encounter shortly after they're born," said Lavoie.

PITCH PERFECT

In February of this year, our Research Assistant, Qudrat Aujla, presented to local researchers and trainees at PITCH (Progress in the Theme of CHildhood diseases). By providing an overview of the BioBank's samples and services, we hope that we can generate more interest in biobanked samples and fuel even more research studies right here on the Children's and Women's campus.





We used H&E staining to stain cell nuclei with blue and cytoplasm with pink

MAXIMIZING SAMPLE UTILIZATION WITH TMAs

From May to July 2024, Sue Kang and Seoyoung Chae, undergraduate Co-op students from SFU and UBC worked alongside Drs. Suzanne Vercauteren and Jonathan Bush to construct tissue microarrays (TMA). TMAs take a small sample, called a punch, of tissue from leftover tissue blocks used to make slides for a pathologist to review and diagnose diseases under the microscope. These punches are then placed in a new block next to many other punches of other cases, very similar to muffins in a muffin tray, so that instead of one block of tissue showing one big piece of tissue from a single patient, the TMA will allow pathologists and researchers the ability to see small pieces of many different patients on a single slide. One example of how researchers may use these TMAs is to test a new biomarker across many different patient samples to determine if a certain group of patients or disease types may benefit from this biomarker being used clinically. The TMA that Sue and Seoyoung constructed used bone marrow samples from pediatric patients diagnosed with acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), or lymphoma. Above are microscopic images of the two TMA blocks built by the Co-op students.

CCRP CERTIFICATION

Our Research Manager, Ashton Ellis, recently passed her Certified Clinical Research Professional (CCRP) exam through the Society of Clinical Research Associates (SOCRA). The CCRP program is an internationally recognized certification, tailored to research professionals dedicated to upholding the highest standards in the research field. Achieving certification demonstrates that she has met or exceeded the quality standards required in the industry and has validated her competence. With this new qualification, the BCCH BioBank will continue to uphold the highest standards and continue to work with even more clinical trials at BC Children's and Women's Hospitals in the times to come.

BC Children's Hospital | Mining for Miracles | BC Children's Hospital Research Institute | BC Children's Hospital Foundation | BC Women's Hospital + Health Centre | Women's Health Research Institute at BC Women's

BC Children's Hospital BioBank