WINTER 2023 | WWW.BCCHBIOBANK.CA

BCCHB NEWSLETTER

OFFICIAL UPDATES FROM THE BC CHILDREN'S HOSPITAL BIOBANK

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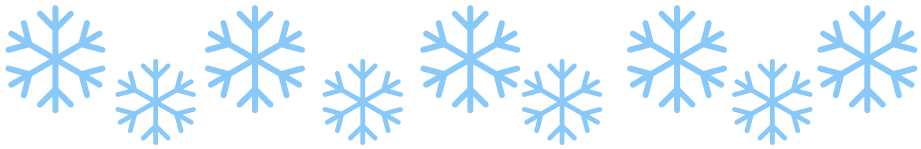
WE CURRENTLY COLLECT:

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



MULTI-LANGUAGE SUBTITLES ON BCCHB YOUTUBE VIDEO

The BCCH BioBank's Superhero Video, which we use to help explain biobanking to children and potential participants, is now available with Punjabi, Chinese, and Arabic subtitles. To watch our video, click here

BC CHILDREN'S HOSPITAL BioBank

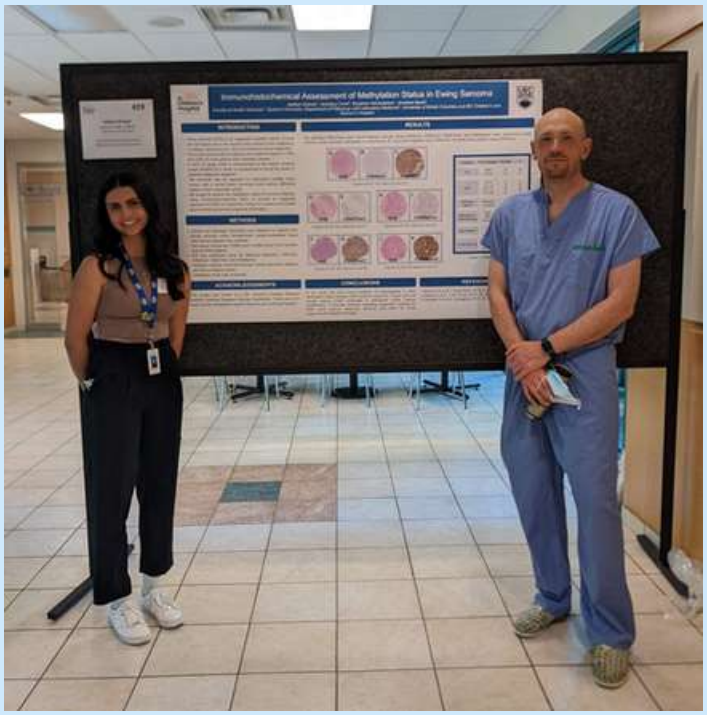
SAMPLE RELEASE

BBCCHB has released 32 plasma samples and 81 urine samples from solid organ transplant patients to Dr. Tom Blydt-Hansen for a study called Enhanced immune monitoring in pediatric kidney transplant recipients (EnMo I).
Study summary: After a kidney transplant, one of the risks is that the patient may reject the kidney. If doctors can detect this early after the transplant, the patient could get medication that prevent the loss of the transplanted kidney, however the only way to determine rejection currently is through a biopsy of the kidney. Scientists have been looking at different markers in the urine in transplanted patients to find a non-invasive alternative to the surgical biopsy procedure. Markers in the urine (such as CXCL10) have been shown to predict acute kidney rejection.. The study team, led by Dr. Blydt-Hansen, proposes a study to establish whether increased urine monitoring in children with kidney transplantation is better than a surgical biopsy to identify risk of rejection.

Dr. Aly Karsan was granted 20 bone marrow samples from Acute Myeloid Leukemia (AML) patients, and 3 bone marrow controls for her study Genomic and epigenomic sequencing to understand resistance and relapse in AML.
Study summary: Dr. Karsan's study hypothesizes that sequencing of RNA (RNA is the code for the protein-making machinery) in a single cell will help identify patients at risk to disease relapse or resistance. This information could lead to a more effective treatment of AML. Using bone marrow cells from AML patients at the time of diagnosis and relapse, this study will look for changes in the RNA that contribute to progression of the leukemia.

LOOKING AT MARKERS OF DNA CHANGES IN EWING SARCOMA

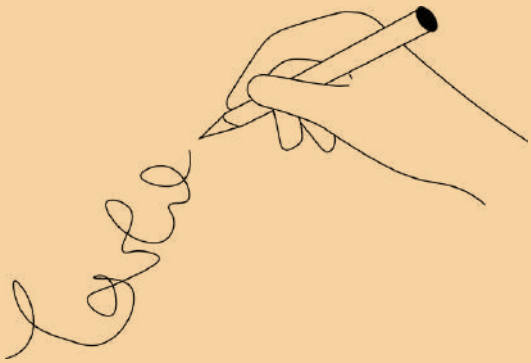
BioBank summer student Jasleen Grewal conducted a project looking for new ways to help patients with a type of bone cancer called Ewing Sarcoma. Jasleen is a third-year undergraduate student studying health sciences at Queen's University and took part in the BC Children's Summer Student Research program this summer. As part of the program, she had to present her findings to her peers and take part in multiple presentation sessions geared toward young researchers. Working with BioBank Co-Director Dr. Jon Bush in Anatomical Pathology, she identified Ewing sarcoma patients who received care at BC Children's Hospital and took a small piece of each of their cancers to create one master block of tissue. By doing so, Jasleen was able to test a number of antibodies specific to different proteins in the tumor cells across a wide number of patients, but in only one test. These antibodies were looking for different methods our cells use to regulate whether a piece of the cell's DNA can be read and used to make other proteins. Jasleen determined the number of cells in each patient's sample that were positive for these master-regulator proteins, and then compared that whether the patients responded well to chemotherapy or not, and whether there were any complications or progression of the cancer.. This work may have significant implications for patients with Ewing sarcoma as it has the potential to inform doctors with prognostic information at the time of biopsy and before chemotherapy begins, while also allowing for possible new therapies to be considered for these patients.



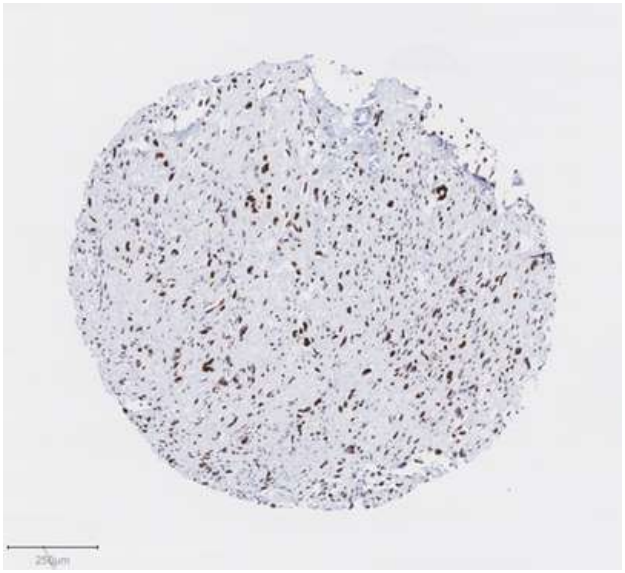
COVID-19 HIGH SCHOOL SURVEY: UPDATE!

As mentioned in the previous newsletter, we have been conducting a survey among students in Grade 8-12 across British Columbia regarding their perceptions of COVID-19, vaccination, and research participation. Adolescents were asked about vaccination willingness and concerns about the COVID-19 vaccine. Additionally, this survey assessed adolescent opinions on the importance of research and willingness to participate, along with the types of samples they are willing to donate. Demographics such as age, name of school, gender, biological sex, ethnicity, English as their first language and first three digits of postal code were collected.

We recently closed this survey in June and are now in the process of analyzing our data. 1,083 survey responses were completed from participants aged 12-19 years old from 14 British Columbia school districts. We found that perceived importance of research has increased since the start of the pandemic and COVID-19 has shown the significance of participating in research. Majority of adolescents are willing to donate leftover samples to research with the possibility of helping others. Additionally, majority of adolescents are in favor of those under 18 getting vaccinated, considering vaccines to be safe and allowing them to resume social activities. We hope to use the data collected from this survey to better inform public policy and vaccination efforts among this age group.



Artwork by Augusta Lutinski



Above is 1 of 58 stained tumour cores from an osteosarcoma tissue microarray (TMA) that was constructed over the summer. A TMA is a grid of different tumour sample cores from different patients which have been punched into a paraffin (wax) block. We take slices of this block and are able to stain it on a microscope slide with several antibodies on many different patient's tumours. TMAs can be used as tools to find important biomarkers that may help provide diagnosis or prognosis for different diseases.

OSTEOSARCOMA PROJECT

NEW MARKER IN PEDIATRIC OSTEOSARCOMA THAT PREDICTS POOR RESPONSE TO TREATMENT

This year, Sebastian Kondratowski, our co-op student, undertook a project that investigated the most common tumor that arises in the bone, osteosarcoma. Osteosarcoma is an aggressive cancer which has not shown significant changes in overall survival in recent years unlike other pediatric cancers. Working alongside our co-director, Dr. Jon Bush, Sebastian built a master block of many different patient samples who were diagnosed with osteosarcoma, in order to explore markers that are used to identify how open a cells DNA is in order to determine how "active" the cells are for replicating themselves. Sebastian found that some of the markers he explored were associated with patients who had a poor response to therapy. If this result is shown to be present in a larger group of patients, Sebastian's work may be used by clinicians at the time of osteosarcoma diagnosis to determine which patients might need more intense chemotherapy earlier on in therapy.