Health Sciences Centre FOUNDATION

General Operating

Dr. Janilyn Arsenio, $70,000: "Deciphering single-cell transcriptional signatures to identify molecular determinants of protective immunity"

> **Synopsis:** White blood cells help fight infections and prevent diseases. The more diverse these white blood cells are, the better our immune system can combat chronic inflammation. Understanding how white blood cells become diverse during chronic infections can help us develop better treatments for infectious diseases and chronic inflammation conditions.

Dr. Andrew Goertzen, $70,000: "Detector development for an MRI-compatible PET insert for neuroimaging applications"

> **Synopsis**: Using a PET and MRI together helps researchers better study the brain, because the two technologies combine excellent imagery with excellent functioning info. Unfortunately, access to hybrid PET/MRI devices is limited. But Dr. Andrew Goertzen and his research team are exploring low-cost PET inserts. These inserts can fit inside existing MRIs and allow for simultaneous PET/MRI imaging.
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> **HSC Foundation extends a special thank you to our Honourary Directors who provided support for Dr. Goertzen's grant.**

Dr. Tabrez Siddiqui, $70,000: "Pathogenic mechanisms of aberrant plasticity and cognition in a genetic model of comorbid intellectual disability and autism"
Co-Investigator: Michael F. Jackson

> **Synopsis**: Mutations that cause autism and intellectual disabilities attack proteins in the brain, affecting how brain cells communicate. Dr. Tabrez Siddiqui and his team are identifying how this communication gets disrupted, helping identify new potential treatments.

Dr. Annaliese Tisseverasinghe, $67,850: "The association between adverse life experiences and clinical outcomes in systemic lupus erythematosus"
Co-Investigators: Christine Peschken, Carol Hitchon, Renée El-Gabalawy, Tracie Afifi, Leigh Anne Shafer

> **Synopsis:** Lupus can damage someone's brain and lungs. Some people are more likely to get lupus, have a more severe form of it, and die from it — such as those with low socio-economic status. If someone experiences very stressful and traumatic events before turning 18, their chances of getting lupus and other illnesses seem to increase. Dr. Annaliese Tisseverasinghe and her team are investigating whether stressful events, even in adults, could be linked to worsened lupus in someone who already has the disease.

Dr. Magimairajan Issai Vanan, $120,000, funded in partnership with CancerCare Manitoba Foundation: "Role of Sonic Hedgehog (SHH) pathway in promoting blood-brain barrier (BBB) integrity in diffuse intrinsic pontine glioma (DIPG)":
Co-Investigator: Donald Miller

> **Synopsis**: A protective wall, called the *blood-brain barrier*, covers the brain and prevents bugs and dangerous chemicals from entering the brain. A protein, called *Sonic Hedgehog*, keeps this wall closed.
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> A certain brain tumour relies on the *Sonic Hedgehog protein* to grow. And it is challenging getting medicines into the brain to treat this tumour, because the *blood-brain barrier* around the tumour is always closed. This often leads to death.
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> In this project, Dr. M. Issai Vanan and his team will test whether these tumour cells produce the *Sonic Hedgehog protein,* and whether blocking that protein will help open the wall surrounding the tumor — ultimately helping cancer medicines enter the tumour to kill its cells.

Allied Health

Ms. Cali Orsulak, $15,075: "Review of prescribing practices in Winnipeg hemodialysis patients"
Co-Investigator: Clara Bohm

> **Synopsis**: Patients on dialysis have a high risk of experiencing adverse drug effects if they're also taking multiple medications. Using information from the Kidney Health Record, Ms. Cali Orsulak and her team will review the costs and patterns associated with dialysis patients in Winnipeg using potentially inappropriate prescription medications.

Ms. Kristy Wittmeier, $22,294: "Collaborating to improve care for children and teens with chronic pain"
Co-Investigators: Kerstin Gerhold, Cara Brown, Polina Anang, Kathy Mulder, Catherine McDonald, Gayle Restall

> **Synopsis:** Chronic pain can severely restrict day-to-day life, affecting about 5% of youth. A group of local caregivers and youth affected by chronic pain came together to discuss priorities for chronic pain research in Manitoba. They highlighted the importance of continued youth involvement and access to more educational resources.
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> Ms. Kristy Wittmeier and her team will start addressing these factors by bringing together their clinical research team with youth to review and recommend resources for use in HSC's pediatric chronic pain clinic, and to share with families affected by chronic pain in Manitoba.

Health Sciences Centre FOUNDATION

Dolly & Michael Gembey Nursing Research Award

Dr. Nicole Harder, $55,784: "Psychologically safe debriefing to reduce psychological distress and anxiety after end-of-life simulation-based experiential learning"
Co-Investigators: Susan McClement, Genevieve Thompson, Rae Harwood, Tim Osachuk, Amanda Lucas, Cheryl Ffrench, Wanda Chernomas

Synopsis: Caring for patients at end-of-life can be stressful for nurses and nursing students. Using simulation as an intervention, Dr. Nicole Harder and her research team are developing a solid body of evidence needed to identify and begin managing psychological stress when caring for end-of-life patients.

Mindel & Tom Olenick Research Award in Immunology

Mr. Hadeesha Piyadasa, $5,000: "Regulation of airway inflammation and hyperresponsiveness by an innate defence regulator (IDR) peptide in asthma"

Synopsis: Asthma affects over three million people, costing Canada over $2 billion every year. When airways become inflamed, lungs that have a decreased ability to clean themselves may also have a decreased ability to treat infections and inflammation. Mr. Hadeesha Piyadasa is examining this relationship at a molecular level to better understand how this occurs.

Mr. Anthony Altieri, $5,000: "Regulation of airway inflammation: Cytokines IL-17 and TNF, and cationic host defense peptide LL-37"

Synopsis: Cytokines are molecules that help control our immune systems and fight diseases. Inflammation is very important for healing infections, but sometimes the molecules that trigger inflammation act abnormally, resulting in chronic inflammation.

In chronic inflammatory diseases such as asthma, some cytokines become more concentrated. One such cytokine, IL-17, is known to inflame airways and amplify how other cells respond to the inflammation. This can cause tissue damage.

Mr. Anthony Altieri is exploring how inflammation caused by IL-17 cytokines can be regulated at a molecular level, helping provide new ideas to control inflammation. His project is a continuation of other extensive research done by his research group.