SUCCESS STORY

www.bioalberta.com

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Path Therapeutics is a Calgary-based drug discovery company that uses a first-in-class, patented platform technology called MitoREAD to identify novel targets. Path's initial focus is on pediatric epilepsies. Their inspiration comes from the fact that over 90% of antiseizure drugs in therapeutic use today target only a handful of channels and receptors localized to the synapse, underscoring that drugs with alternative mechanisms of action are needed for pharmacoresistant patients – basically, the antiseizure drugs available do not work for everyone.

Van Anh Phan working with the zebrafish colony

The WIL Voucher allowed Path to hire undergraduate student talent that they might not have otherwise had the budget to hire. Path Therapeutics Director of Operations Alicia Vanderbrink was quick to say that their two students helped to push their research program forward by relieving workflow pressures and by contributing to Path's knowledge base.

Alicia was quick to note that Van Anh Phan, a third year Nursing student at the University of Calgary, was an incredibly studious and an enthusiastic member of the Path team over the summer. She makes special mention of Van Anh's work on the SLC13A5 gene that proved valuable for pushing forward their epilepsy platform. For Van Anh, gaining experience with fellow students and research professionals was key for two reasons: "Having the independence to carry out experiments with limited supervision allowed me to gain

the confidence I needed to pursue further research in academia and strengthen my problem-solving skills. It also allows me the opportunity to gain insight into my personal preferences as to whether a career in research will suit me."

Gaining a wider perspective is also important, and seeing the whole picture was vital to Van Anh's technical development. She says that the most exciting part of her time at Path was "getting a desirable result during data analysis after spending weeks optimizing the method and obtaining enough cell numbers." It is certainly rewarding for Van Anh to know that her work is an important contribution towards a future publication and helped expand the understanding of the SLC13A5 gene.

Path Therapeutics' technology has the potential to alter the future of drug discovery across CNS disorders including epilepsy, autism, and aging. They are actively seeking partnerships and connections to those who share our vision. Please visit their website at www.pathbio.com to connect with them.

Read more about Van Anh's work in her own words:

"My project involved studying the SLC13A5 gene that encodes a sodium/citrate transporter, NaCT, present on the plasma membrane of the liver, testes and brain that plays a key role in energy production. SLC13A5 mutations are known to cause rare infantile epilepsy in the first few days of life, lifelong seizures, neurodevelopmental delays, and tooth abnormalities. Using CRISPR/Cas9 mutagenesis, zebrafish mutants of SLC13A5 paralogs were generated as the model organism. I conducted a month-long experiment to determine whether genetic mutations in epilepsy-related genes influence premature death and used the data to generate a survival curve. The results indicate that only a small percentage of SLC13A5 mutants survive to adulthood. I also quantified the number of proliferating cells in the brain through antibody staining for cell cycle marker Phosphohistone H3. The results are shown to have a significant reduction in proliferating cell numbers, suggesting molecular deformations in the mutant's brain may contribute to morbidity. The goal of my research is to expand our understanding of NaCT's role in the brain by recording proliferating cells and in the future, collecting cell apoptosis data."

-Van Anh Phan, Summer 2022