



Seeds4Hope

A program of the
Windsor & Essex County Cancer Centre Foundation

2015 Seeds4Hope Grant Recipient

Dr. Lisa Porter

“Markers in the early detection of hepatocellular carcinoma”



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Liver cancer is an aggressive disease that is becoming increasingly prevalent. The most common form of cancer that begins in the liver is hepatocellular carcinoma (HCC), and each year approximately half a million people world-wide are diagnosed with this disease. Stressors including diet, inherited disorders,

SUMMARY OF RESEARCH PROJECT

alcoholism and viruses can cause fat deposits to form in and around the cells of the liver, putting an individual at risk of developing HCC. These fat droplets trigger an inflammatory reaction that leads to death of cells in the liver and subsequent growth of healthy cells to compensate for this loss. The precise mechanism tipping this balance to favour the start of liver cancer to start is not known. The Porter Lab at the University of Windsor serendipitously discovered a protein that can drive at least one step of this process. They found that mice genetically manipulated to express high levels of the protein Spy1 develop fatty livers that progress to HCC. Other research groups have shown that this same protein is found at high levels in human HCC and correlates with poor patient

prognosis. Hence, we have a model by which we can test some of the early events that drive initiation and/or progression of this disease.

This work will use several cutting edge cell biology techniques that we have ongoing in our lab to characterize the mechanistic event that Spy1 is responsible for in the early progression of HCC. We will do this in collaboration with clinical colleagues toward the long-term goal of developing early diagnostic tools and potentially novel treatments. Also involved are researchers in kinesiology who will focus on future testing of the preventative strategies for this disease. This work may have profound impact on how we diagnose and treat a common and aggressive form of cancer.

How this Research Helps Advance Quality Cancer Care in Our Community

Hepatocellular carcinoma (HCC) is the 5th most common form of cancer worldwide with very low 5-year survival rates (approximately 20%). If caught early these numbers dramatically change – rising to approximately 70%. While lifestyle factors are frequently associated with this disorder, the Porter Lab has discovered a protein, coined Spy1, which plays a role in the progression of HCC. This introduces a genetic component that may serve as a valuable diagnostic indicator and/or a target for therapeutic intervention and has the potential to advance care for all patients with HCC. In order for what we learn in the lab to benefit patients in our community, we are conducting this work in collaboration with a group of clinical researchers from the Windsor Regional Cancer Centre. Clinicians will be involved in all aspects of project development to ensure that research questions will best support the future goal of developing

early diagnostic tools and new therapeutic targets that can benefit patients directly. Our close ties with clinical researchers through our membership on the Windsor Cancer Research Group will facilitate the transition of our findings into clinical trials, right here in our community. Furthermore, the progression of this project will also involve growing our newly established collaborative relationships with researchers in Kinesiology at the University of Windsor. Given that lifestyle factors are implicated in the initiation and/or progression of HCC, future work will address whether genetic effects on HCC can be altered by modifiable factors such as diet, body mass index, and exercise. These findings have the potential to make an impact on cancer care globally. Conducting this work locally will ensure that patients in Windsor/Essex have early access to the first clinical trials that emerge from this work.