**Targeting Leukemia Inhibitory Factor for Detection of Pancreatic Cancer**

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Pancreatic cancer is the development of a malignant tumor in the pancreas, it’s the seventh leading cause of cancer-related deaths in the world and generally not diagnosed until it has metastasized. ​Pancreatic tumors have protective barriers called the stroma that surrounds tumors making them resistant to anti-cancer drugs. ​Stellate cells are a type of cell that are found in the stroma and pancreas, they are generally dormant and activated when malignancies are present. When activated, they secrete a variety of proteins that perform different functions, one of which is Leukemia Inhibitory Factor (LIF). LIF is a signalling protein that plays a role in cancer progression, it acts on the neighboring cancer cells and drives development and progression of cancer. Targeting LIF will be useful in developing diagnosis methods.

**Computational chemistry**​ for performing docking assays using libraries of molecules to discover small molecules that will bind to and have a high affinity for LIF. These molecules will be synthesized and radiolabelled or fluorescently tagged.

**Radiolabelling**​ will first happen with fluorine-19 and tested to ensure binding to LIF. Radiolabelling with fluorine-18 will follow a will be tested on mice with pancreatic cancer to determine if diagnosis is possible.

**Fluorescently**​ labelled molecules will go through various assays to ensure binding, florescence and specificity. These molecules will be tested using blood samples to ensure accuracy of detection of LIF in pancreatic cancer patients.

​Pancreatic cancer is hard to diagnose and currently there is no method for early detection, it is not diagnosed until it reaches advanced stages. Methods for early diagnosis of pancreatic cancer are needed to be able to make it curable. Previous research done suggests that LIF has the potential to be a good biomarker for early diagnosis, this research will allow for development of techniques for early diagnosis of pancreatic cancer.