UBC Dekaban Proposals 2020

* **Supervisor: Dr. Juli Carrillo**

Email: juli.carrillo@ubc.ca

Website: juli.carrillo@ubc.ca

Either time : Jan-May or Jun-Nov 2020

Research Topic #1: Intercropping with aromatic companion plants to reduce crop pests (invasive fruitfly, *D. suzukii)* in berries. Work will be carried out at the UBC Farm and also in the UBC greenhouse.

Research Topic #2: Examining soil microbe mediated resistance to aboveground pests for tomatoes. It consists of soil inoculations with bacterial plant associated microbes and herbivory assays with specialist (*Manduca sexta*) and generalist (*Tricoplusis ni*) caterpillars.

* S**upervisor: Dr. Simone Castellarin**

Email: simone.castellarin@ubc.ca

Website: <http://wine.landfood.ubc.ca/people/simone-castellarin/>

June – Nov 2020

Research Topic #1: Evaluation of blueberry quality in new breeding selections. The study involves methodologies such as LC/MS, SPME-GC/MS.

Research Topic #2: Effect of drought on grape berry composition. The study involves methodologies such as LC/MS, SPME-GC/MS, gene expression analysis.

Research Topic #3: Effect of deficit irrigation regimes on hop composition. The study involves methodologies such as LC/MS, SPME-GC/MS.

* **Supervisor: Dr. Derek Dee**
Email: derek.dee@ubc.ca
Website: <https://www.landfood.ubc.ca/derek-dee/>

June – Nov 2020

Research Topic #1: Inducing plant proteins to form novel structures that mimic meat proteins for use in food". This project will examine plant protein assembly into nanofibrils, and how to optimize these nanofibrils for use in food.

Research Topic #2: Control and functionalization of protein nanofibrils using genetic and chemical modification". This project uses genetic code expansion to insert non-standard amino acids into proteins that can be specifically targeted for labelling (e.g., with other functional molecules or structure-modifiers). The aim is to create amyloid-based functional materials for bionanotechnology applications.

Research Topic #3: Examining the safety of protein nanofibrils for use in food". Protein nanofibrils are of great interest in nanotechnology and food applications, yet they have amyloid-like properties that might be of concern for direct applications in food. This project examines nanofibril cross-seeding between food and human proteins, and cell toxicity of nanofibrils.

* **Supervisor: Dr. John Frostad**

Email: john.frostad@ubc.ca

Website: <http://www.landfood.ubc.ca/person/john-frostad/>

Either time : Jan-May or Jun-Nov 2020

Research Topic #1: In situ microscopy of starch gelatinazation kinetics as a function of starch source, composition, and pre-processing treatment.

* **Supervisor: Dr. Mahsa Jessri**

Email: mahsa.jessri@ubc.ca

Website: <https://www.landfood.ubc.ca/mahsa-jessri/>

Either time: Jan-May or Jun-Nov 2020

Research Topic #1: Burden of poor lifestyle and dietary behaviours.

Research Topic #2: Simulating the impact of nutritional policy interventions on health outcomes.

Research Topic #3: Development and validation of personalized nutrition assessment tools.

* **Supervisor: Anubhav Pratap Singh**

Email: anubhav.singh@ubc.ca

Website:<http://www.landfood.ubc.ca/person/anubhav-pratap-singh/>

Either time: Jan-May or Jun-Nov 2020

Research Topic #1: Nano-encapsulation of hemp oil for delivery of bioactives through buccal region.

Research Topic #2: Novel process technologies (pulsed UV light and ultrasound) for processing of liquid foods.

Research Topic #3: Extraction of bioactives from plant extracts using aqueous solvents.

* **Supervisor: Dr. Sean Smukler**

Email: sean.smukler@ubc.ca

Website:  http://www.landfood.ubc.ca/sean-smukler/

Either time frame ok: Jan-May or Jun-Nov 2020

Research Topic #1: Using Fourier transform infrared spectroscopy for rapid, cost-effective prediction of soil, plant and soil amendment properties. We have a large data set of mid-infrared spectra for these materials and have achieved reasonable predictions of their physical and chemical properties using partial least squares regression. We are looking for someone who would be interested in exploring other statistical approaches to improve these predictions. I expected that we could co-author a least two papers on the approach.

* **Supervisor Name:   Siyun Wang**

Email:  siyun.wang@ubc.ca

Website: <http://foodsafety.landfood.ubc.ca/>

Either time: Jan-May or Jun-Nov 2020

Research Topic #1: Use microbial genomics techniques to develop biological control methods to reduce the presence and growth of Salmonella in food products.

Research Topic #2: Antibiotic resistance evaluation on food products.

Research Topic #3: Risk assessment of foodborne pathogens in food supply systems.

* **Supervisor: Hannah Wittman**

Email: Hannah.wittman@ubc.ca

Website: <http://www.landfood.ubc.ca/person/hannah-wittman/>

Jun-Nov 2020

Research Topic #1: Implementation of newly developed prototype farm management software for monitoring the socio-ecological outcomes at the UBC Farm. Head up development of new modules for biodiversity and ecosystem service monitoring. Strong fluency in node.js and Javascript required.

Research Topic #2: Undertake social surveys, workshops and focus groups with research groups, field experts, and farmers to identify common needs and requirements for farm management. Identify key knowledge gaps and knowledge transfer gaps. Design concept and plan for long- term multi-site data collection and management. Strong fluency in social science survey techniques, user-based design, product development and market research required.

* **Supervisor Name:   Rickey Yada**

Email:  lfs.dean@ubc.ca

Website: <http://www.landfood.ubc.ca/person/rickey-yada/>

Either time : Jan-May or Jun-Nov 2020

Research Topic #1: Investigation of membrane interactions of aspartic protease plant-specific insert domains.