



UBC Dekaban Proposals 2021/22

Applied Biology Program (Animal, Plant, Soil focus)

- **Supervisor: Dr. Juli Carrillo**

Email: juli.carrillo@ubc.ca

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Preferred time for scholar visit: Jun-Nov 2021 / Jan- May 2022

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 (*Tricoplusia ni*) caterpillars.

- **Supervisor: Dr. Simone Castellarin**

Email: simone.castellarin@ubc.ca

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

Preferred time for scholar visit: June – Nov 2021 / Jan – May 2022

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.

- **Supervisor: Dr. Alexandra Protopopova**

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Website: <https://www.landfood.ubc.ca/alexandra-protopopova/>

Preferred time for scholar visit: Jan – May 2022

Research topics : Behaviour and welfare of companion animals
Behaviour and biology of free ranging dogs
One Welfare in animal sheltering
Social justice in companion animal sheltering
Climate change and companion animals
Improving efficacy and ethics of dog training practices



- **Supervisor: Dr. Sean Smukler**

Email: sean.smukler@ubc.ca

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

Preferred time for scholar visit: Jun - Nov 2021 / Jan – May 2022

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: Dr. Hannah Wittman**

Email: Hannah.wittman@ubc.ca

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

Preferred time for scholar visit: Jun-Nov 2021 / Jan-May 2022

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.

Food, Nutrition and Health Program (Food Science and Nutrition)

- **Supervisor: Dr. Tamara Cohen**

Email: tamara.cohen@ubc.ca

Website: <https://www.landfood.ubc.ca/tamara-cohen/>

Preferred time for scholar visit: Jan – May 2022

Research Project #1: Assessment of adherence to diet using different self-monitoring tools, including mobile applications.

Research Project #2: Understanding the nutrition education needs of adolescents living with severe obesity undergoing bariatric surgery.



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

Preferred time for scholar visit: June – Nov 2021 / Jan – May 2022

Conversion of plant proteins into nanofibrils: Using biophysical and biochemical tools, our research explores the mechanisms of protein aggregation. Understanding how to control functional protein aggregation could be used to induce plant proteins to mimic animal proteins (e.g., for use in plant-based 'meat' and 'cheese'). This project examines the mechanisms of how legume proteins self-assemble into amyloid-like fibers, and seeks to correlate their structure with functional performance in food and biotechnology applications. Tools we use include recombinant protein expression, protein extraction and FPLC purification, SDS-PAGE, LC-MS/MS, TEM, AFM, bioinformatics, fluorescence, and bioconjugate chemistry."

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/>

Preferred time for scholar visit: Jun-Nov 2021 / Jan-May 2022

Research Topic #1: In situ microscopy of starch gelatinization 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/>

Preferred time for scholar visit: Jun-Nov 2021 / Jan-May 2022

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: Dr. Anubhav Pratap Singh**

Email: anubhav.singh@ubc.ca

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

Preferred time for scholar visit: June – Nov 2021 / Jan – May 2022

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 Name: Dr. Siyun Wang**

Email: siyun.wang@ubc.ca

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

Preferred time for scholar visit: Jun-Nov 2021 / Jan-May 2022

Project #1 Develop biological control methods to reduce the presence and growth of Salmonella in food products.

Project #2 Understand genetic factors contributing to the risk of Listeria monocytogenes in foods.