**Undergraduate Research Opportunity**

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| Area of Research or Title of Proposed Research Project:  Targeted dietary treatments for the prevention of boar taint | | |
| Name and department of the supervisor:  Jim Squires and Christine Bone Department of Animal Biosciences | Type of the research opportunity available (check all that apply)  x Research in Animal Biology (ANSC4700/4710)  X Research Volunteer | |
| Semester(s) and Year, e.g. F2023/W2024  Winter 2024, Summer 2024, Fall 2024 | | Application deadline: Projects are ongoing – no deadline to apply |
| List 2-5 specific things you feel a student will learn during this position.  Boar taint is a meat quality issue that develops in pork from entire male pigs. It is currently prevented by castrating males but this reduces production efficiency, increases the negative environmental impact of swine production, and is a growing welfare concern. Many treatments have been developed for boar taint but have not been effective in all animals as the biological systems that regulate boar taint development vary considerably between individual animals. We are addressing this using a novel precision agriculture approach where we will compare treatment response to the genotype of each individual animal to identify markers associated with favourable treatment outcomes. This will allow us to later provide animals with the most effective treatment for boar taint based on their individual genotypes. To accomplish this we will perform animal feeding trials using binding agents (activated charcoal and biochar), natural products (active compounds extracted from various plants), and dietary fiber (e.g., chicory root and sugar beet pulp). We also will use cell models to study the molecular mechanisms behind these treatments and also identify novel targets for making gene edited boar taint free pigs using CRISPR-Cas9 technology. We will also perform genetic evaluations and run hormone assays (ELISA/RIA) to identify markers associated with successful treatment outcomes and predict boar taint from an early age.   1. Critically assess scientific literature to write a literature review. 2. Identify knowledge gaps in existing literature and develop novel hypotheses and objectives. 3. Use existing research to design experiments. 4. Conduct hands-on research on farm and/or in the lab using appropriate collection and/or analytical techniques (applicable to ANSC4710 only). 5. Use results or expected results to address research questions. | | |
| Which 2-5 knowledge, skills, or attitudes are most relevant to this position?   1. Knowledge: Scientific 2. Skill: Critical and Analytical Thinking 3. Skill: Teamwork and Collaboration 4. Skill: Time Management 5. Attitude: Initiative | | |
| Application Requirements  1. Indicate the research course code on the cover letter accompanying the application package  2. Meet minimum course requirements, as outlined in the Undergraduate Calendar | | |
| Courses and/or Experiences that are Required or Recommended for the proposed position (s)  A good understanding of animal physiology is required (ANSC3080). | | |
| Contact information:  Dr. Jim Squires, Email jsquires@uoguelph.ca, Phone x53928 | | |

**Documents Required of Applicants**

Cover Letter Resume or CV Unofficial Transcript

Statement of Interest in Research, addressing the following questions: Why do you want to do research (and in particular a 4th year project)? Why do you want to do research in this lab specifically? What are your future goals/aspirations, for example, are you potentially interested in graduate research work or even research as a career?

\*Submit your application package to the faculty members offering research projects that interest you. You may apply for up to five (5) projects.