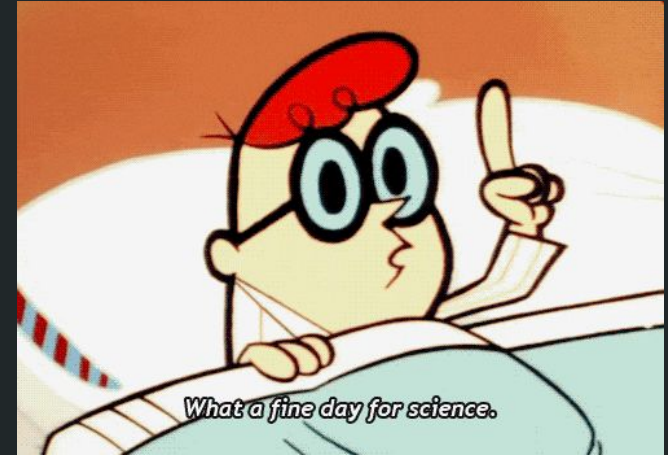


499 Project Information Night



Academic Co-Chairs: Emily Fenech & Safa Majeed
academiclsscqueensu@gmail.com

What is a 499 project?

- Undergraduate research project supervised by a professor
 - Worth 12 units
- Often entails collaborating with graduate students
- Does not have to involve wet lab work

Why do a 499 project?

- Strengthen your teamwork skills
- Gain exposure to the world of research
- Decide if a career in research is for you
 - Great experience for grad school
 - Accelerated Masters Program

Who is eligible to do a 499?

- Students enrolled in a specialization stream
 - BUT a 499 is NOT guaranteed for all SSP students
 - Finding a supervisor is your responsibility
 - If you are still struggling late in the semester, contact the Life Sci office → Room 650 Botterell Hall
(You can email lifesci@queensu.ca to set up an appointment)

Students enrolled as majors are NOT eligible for a 499

Clarifications about BCHM and Sub Plans

Check out the degree plans here to see additional “option” requirements:

http://www.queensu.ca/artsci/sites/default/files/degree_plans_certificates_course_lists.pdf

(1) Biomedical Sciences

- CORE: BCHM 315/316 or BCHM310
 - OPTION: ANAT 499, EPID, MICR, NSCI, PATH, PHGY, or PHAR

(2) Biomedical Discovery

- CORE: BCHM 310 + PHAR450
 - ANAT 499, EPID, MICR, NSCI, PATH, PHGY, or PHAR

Sub plans continued...

(3) **Cancer:**

- CORE: BCHM 310 + PHAR450, and CANC 440
 - CANC499

(4) **Cardiorespiratory Science**

- CORE: BCHM 310 + PHAR450, PHGY355, CRSS453 and CRSS454 (or LISC454 or CRSS456)
 - ANAT 499, PATH, PHGY, or PHAR

(5) **Drug Development and Human Toxicology (DDHT):**

- CORE: BCHM 310 + DDHT459, DDHT460, PHAR416, PHAR450
 - ANAT 499, EPID, MICR, NSCI, PATH, PHGY, and PHAR

(6) **Neuroscience:**

- CORE: BCHM 310 + PHAR450 + NSCI323, NCI324
 - NSCI 499

How to secure a 499 project...

- Before approaching profs, do your homework!
 - Take a look at their areas of research to see if you are interested
- For most, an email will suffice
 - They may ask for your marks and/or experience on paper before agreeing to meet with you
 - Some may not reply to an email and are best to approach in person

What NOT to do!

- Do NOT send out a mass email to a list of professors
- Profs will NOT respond to this
 - They are looking for someone with a genuine interest in their work who can contribute to their team
- Do NOT dress casually for the interview



← Be professional!

Tips & Tricks

- Profs that lecture are **not** the only ones that supervise 499s
- Do not approach profs now - for many it is too early
- Try to attend a Fall/Winter Professor Mentorship session

Frequently Asked Questions

Frequently asked questions...

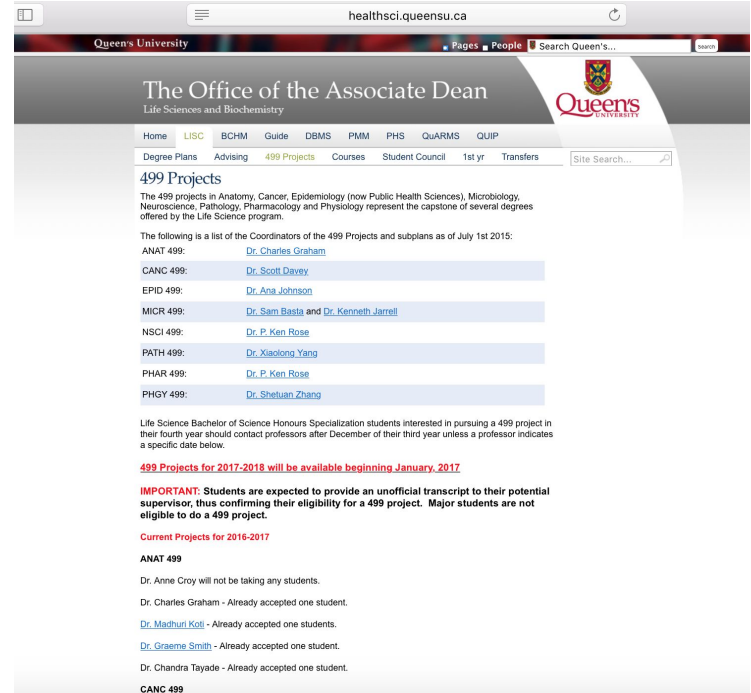
1. What is the time commitment like?
2. Is there a list of professors accepting 499 students?
3. Could you explain the process of getting a 499, starting from 3rd year (i.e. timeline of events)?
4. What exactly do you do in a 499?

1. Time commitment?

- Varies
- 10-20 hrs/week for most
- Seminar classes

2. If Only I Knew the Profs Accepting Students...

- http://healthsci.queensu.ca/liscbchm/life_sciences/499
 - **Note:** 499 Projects for 2018-2019 will be available beginning January 2018
 - Shows Professors who currently have students completing 499s this year
- Google search “Queen’s DBMS” → Faculty
 - <https://dbms.queensu.ca/faculty>



The screenshot shows a web browser displaying the page http://healthsci.queensu.ca/liscbchm/life_sciences/499. The page is titled "The Office of the Associate Dean" and "Life Sciences and Biochemistry". It features a navigation menu with links for Home, LISC, BCHM, Guide, DBMS, PMM, PHS, QuARMS, QUIP, Degree Plans, Advising, 499 Projects, Courses, Student Council, 1st yr, and Transfers. The main content area is titled "499 Projects" and contains the following text:

The 499 projects in Anatomy, Cancer, Epidemiology (now Public Health Sciences), Microbiology, Neuroscience, Pathology, Pharmacology, and Physiology represent the capstone of several degrees offered by the Life Science program.

The following is a list of the Coordinators of the 499 Projects and subplans as of July 1st 2015:

ANAT 499:	Dr. Charles Graham
CANC 499:	Dr. Scott Davey
EPID 499:	Dr. Ana Johnson
MICR 499:	Dr. Sam Basta and Dr. Kenneth Jarrell
NSCI 499:	Dr. P. Ken Rose
PATH 499:	Dr. Xiaolong Yang
PHAR 499:	Dr. P. Ken Rose
PHGY 499:	Dr. Shetuan Zhang

Life Science Bachelor of Science Honours Specialization students interested in pursuing a 499 project in their fourth year should contact professors after December of their third year unless a professor indicates a specific date below.

499 Projects for 2017-2018 will be available beginning January, 2017.

IMPORTANT: Students are expected to provide an unofficial transcript to their potential supervisor, thus confirming their eligibility for a 499 project. Major students are not eligible to do a 499 project.

Current Projects for 2016-2017

ANAT 499

Dr. Anne Croy will not be taking any students.

Dr. Charles Graham - Already accepted one student.

[Dr. Madhuri Kojl](#) - Already accepted one students.

[Dr. Graeme Smith](#) - Already accepted one student.

Dr. Chandra Tayado - Already accepted one student.

CANC 499

3. Timeline

Now - December

- Decide what stream interests you
- Start researching professors
- Prof Mentorship!



Early January

- Start emailing professors



January onwards

- Interviews with professors



August

- Re-contact your professor
- Start on 499



499 Time!

4. What do you do in a 499?

- Depends on your stream
- Pipetting and PCR
- Statistical Analysis
- Research paper and poster presentation

Ask the current 499 students that are here!

How to find a supervisor...

General Process

- Find a prof whose work you find interesting
 - Look at bios on DBMS website:
 - Read some papers
- Email Prof
- Get to know prof

What to include in your email

- A Resume/CV
- An unofficial transcript
 - Confirms your eligibility for a 499 project
- A brief description of your prior research experience (if any)
- Reasons why you are interested in their research

Interviews

- Dress appropriately
- Familiarize yourself with their lab/research
- Prepare some questions
- Don't get overly stressed
- Be yourself!!

Further Question

- If you are interested in talking further to a student currently in a 499 project contact Safa and Emily at academiclsscqueensu@gmail.com and we will try to connect you with someone who can answer your questions.

Current 499 Students!



Liam Sutherland
Cancer

The binding of PD-1 to PD-L1 activates specifically autophagy in tumour cells via reverse signalling, leading to chemotherapeutic drug resistance.

The Programmed Death 1 (PD-1)/Programmed Death Ligand 1 (PD-L1) axis exists as an immune checkpoint regulator that inhibits autoimmune responses from cytotoxic T lymphocytes (CTLs), whereby healthy cells express PD-L1 to inhibit the adaptive immune system from targeting them. Evading immune destruction is at the foundation of tumour formation, and constitutes a key barrier to being able to treat cancer. It is established that cancer cells can overexpress PD-L1 in order to launch an immune escape in order to survive. In 2016, it was discovered that the PD-1/PD-L1 axis also has a reverse signalling whereby the cancer cell is able to become resistant to chemotherapy. **My project aims to elucidate what particular mechanism is responsible for the observed chemoresistance.**



Griffin Pauli

Drug Development and Human Toxicology

The Impact of Polymorphisms in the N-acetyltransferase 1 & 2 genes in the Production of Genotoxic Metabolites derived from Heterocyclic Aromatic Amines

“My 499 is centred around polymorphisms in the N-acetyltransferase 1 and 2 genes and their role in the production of carcinogenic metabolites derived from heterocyclic aromatic amines in cooked meat. Essentially, its looking at differing catalytic activities and how increased acetylation of compounds in meat may increase DNA adducts and increase colorectal cancer initiation. I quantify the amount of activity in the patients enzymes by using a homogenized sample of colon tissue that has been incubated with specific substrates. It then forms a specific product that can be detected via HPLC which produces a chromatogram which is then analyzed. The area under the curves is calculated giving the amount formation of acetylated product.”



Michael Fisher
Neuroscience

Search for an Endogenous Inducers of Cortical Spreading Depolarization in Ischemic Stroke in an in vitro rat model.

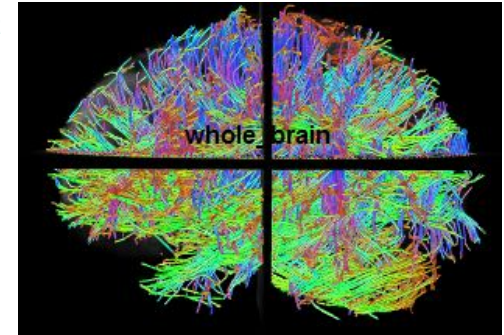
“My 499 attempts to address the unknown mechanisms that induce cortical spreading depolarization (CSD) when the brain is deprived of oxygen and glucose as in stroke. The lab entails dissection and vibratome slicing of the brains in euthanized rats. The brain slices are maintained viable with oxygenated artificial cerebrospinal (aCSF) solution, and undergo routine spreading depolarization when oxygen glucose deprived (OGD) solution is superfused over the slices to model stroke conditions. The depolarization is made visible by differential light transmittance imaging that colourizes osmotic changes in the neurons. By manipulating the brain slices and inducing their depolarization into a solution that is then superfused over viable brain slices, my study attempts to demonstrate CSD with a solution that contains an endogenous inducer of CSD.”

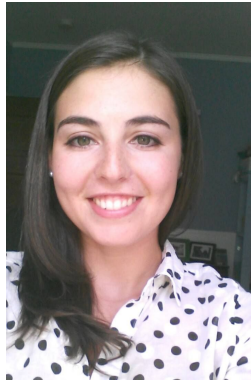


Greg Brooks
Neuroscience

White Matter Pathways and their Influence on Learning

“my project explores the impact of white matter pathways in the brain on visuomotor adaptation learning and the changes that can occur within them after learning, through DTI neuroimaging data.”





Abigail Marshall
Biomedical Discovery

Differential expression of cutaneous gamma delta T cells in the back, paw, and ear

“I have been working on developing a protocol for staining gamma delta T cells in mouse paw, back, and ear skin using immunofluorescent imaging. One of the Master’s students in the Ghasemlou lab is looking into whether these cells play a role in inflammatory pain, and needed histology done. Since these cells are difficult to stain in the skin, I have had to troubleshoot some different protocols to find one that works. Now that I have staining up and running, I am analyzing the morphology and cell counts of gamma delta T cells in the three different skin types. Preliminary data has shown some differences both in shape of the cells and number of the cells between the back, ear, and paw.”



Daniela Cino
Biomedical Discovery

The role of IL-27 in modulating the survival of DU145 cells

- IL-27 cytokine has been shown to have potent anti-tumor activities
- Determining if death ligands and toll-like receptors (TLRs) are up-regulated after IL-27 treatment
- Determining levels of apoptosis
- IL-27 in combination with cytokines that are currently used as cancer treatments to investigate if there is a synergistic apoptotic effect



Christie Patterson
Cardiorespiratory Science

Novel Ultrasound-Guided Microcarriers for Atherosclerosis Targeted Therapy (NUGATT)

“I am working on creating an ultrasound testing phantom platform to detect and test contrast entry into a vulnerable plaque mimic.”



Emily Fenech
Biomedical Sciences - Epidemiology

Early Childbearing in Mongolia:

Exploring the phenomenon of early childbearing and associations with breastfeeding practices in Mongolia. Working with UNICEF to investigate the topic at hand.

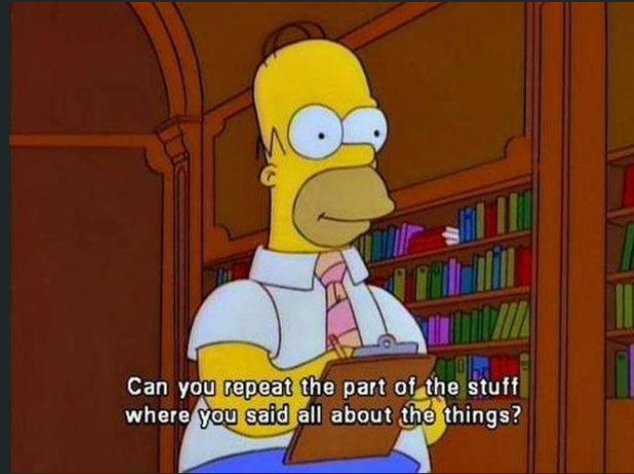


Dayna Gudaitis
**Biomedical Sciences
Epidemiology**

Investigating factors affecting completion of testing for active chronic hepatitis C infection in ever-incarcerated individuals in Ontario.

(went on exchange 3rd year winter semester)

Questions?



academicsscqueensu@gmail.com