**BIOCHEMISTRY 4H03**

**DRUG DISCOVERY and Biotechnology**

**TERM 2 (2024)**

The course will focus on the fundamentals, paradigms and processes of modern day pharmaceutical/biotechnology discovery research. The discussion / lectures are centered on problem-based learning – whereby group/team work will be a priority. discussion a keen focus is placed on the translational nature of drug discovery with the overriding goal to revisit the fundamentals of biochemistry in context of real and practical problems in biomedical research and modern drug discovery. Content will be in 2 parts, lecture format and group inquiry:

**(i) Lectures in modern drug discovery.**

An introduction of the principles and paradigms of modern drug discovery. Within each scheduled lecture there will also be break out sessions where teams/groups (formed in class) discuss relevant ideas and present team ideas for the group learning initiatives. Breakout sessions center around technologies/companies currently in biotechnology realm and assessment of their likely success in treating disease. In these breakouts– students will focus on creating assessments of technologies & short critiques of the company ideas and goals. Dr. Magarvey will present aspects of entrepreneurship in discovery & venture capital involvement in company formation. Microsoft teams will be used when appropriate to facilitate group discussion and communication of Group/Breakout sessions. These group breakouts will focus on the following –

* summarizing the technology used within a successful start-up/biotech company – critique of the underpinning technology
* compiling information focused on a specific disease and providing an overview of the current and past treatment approaches taken from a given disease
* Defining molecular targets/technology alignments to reveal next step considerations in management of a disease.

**(ii) Group inquiry of a therapeutic area and proposal for an R&D strategy.**

Principles highlighted in the lecture component will be reinforced by group study of an assigned therapeutic area. Teams will be in groups (6-9 people per team) The outcome of this work will be a group proposal for the discovery of a new chemical entity/or concept for an assigned therapeutic area. Here the students will hone skills in group inquiry, attend tutorial sessions with the instructors to develop their ideas and present their proposals as both a written report and in seminar format. Dr. Magarvey and the TAs for the course will work directly within Microsoft teams.

**Evaluation Due Date Weight**

Test 1 (individual mark) Feb 15th (take home) 25 %

Technology/Disease Assessment (Group Assignment) Feb 15th 10 %

Progress meetings (individual mark) Tutorial sessions I and II 10 %

Presentations (group mark) See attachment 30 %

Test 2 (individual mark) handed out on Apr 4 due on April 11th 15 %

(test based on student presentations)

Commentary (individual mark) - Apr 9 10 %

**Notes:** Group evaluations will be taken into account when evaluating group work

components. The course facilitators reserve the right to adjust marks accordingly. Also marks will be posted on Avenue to Learn with student numbers. By attending this class, you are agreeing to this method of grade disclosure. Any student who infringes the University's Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as detailed in the Senate Policy Statements will be treated as prescribed. Uses of large language models to reveal existing ideas an used as a tool to compile information is fine but not for such Ai to write a paper or devise a concept that one takes as their own.

**Instructor:** Dr Nathan Magarvey (magarv@mcmaster.ca), MDCL-2320

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**Class schedule:**

Thursday (11.30 -2:20 pm)

PGCLL B131