

MBB505/BIOF520 Problem Based Learning in Bioinformatics

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Welcome to the 2020 SFU/UBC PBL in Bioinformatics course!

Class time and location

Each problem-based learning (PBL) case will start on Wednesdays, 3-5 pm and continue on Mondays, 3-5 pm unless otherwise stated. The 1st and 2nd day of class will be at SFU in the Applied Science Building (ASB). Most classes will be held at the Genome Sciences Centre in Vancouver.

What is PBL in bioinformatics?

This course is based on a PBL pedagogical approach whereby students learn a bioinformatics subject by working together to solve a complex “real world” bioinformatics problem as opposed to learning from presentations by a faculty member. PBL is a student-centered approach and teachers are only guides. Students in PBL learn critical thinking and problem-solving skills and acquire knowledge of the essential concepts of the course. Using PBL, students also acquire learning skills which include the ability to find and use appropriate learning resources

How PBL in bioinformatics works

Wednesday class

- Students are presented with a problem (“case”), read by one or two students (this role rotates between students).
- A student becomes the “scribe” to record main discussion points (role rotates between students)
- The group organizes their ideas and previous knowledge related to the problem - attempt to define the broad nature of the problem
- Students identify, and rank roughly in order of importance, the learning issues generated.
- Some issues assigned to individuals as learning objectives to research (and report back for next class), while some are assigned to the whole group for all to review.

- Focus on what you don't know - and question the accuracy of the statements!

Monday class

- Students reconvene at next class – explore previous learning issues and integrate new knowledge for solving the problem.
- After class, an assignment may need to be completed – usually due a week or later after the end of a particular case – which involves some sort of summary of the solution to the problem, depending on the nature of the problem.

Facilitator's role

- Guide, probe, and support students' initiatives (not lecture, overly-direct, or provide easy answers)
- Provide some guidance to ensure group discussion stays on track (also a student responsibility)
- Evaluation and feedback at the end of a case
- NOTE: Each facilitator will differ in the way they approach this and their degree of influence

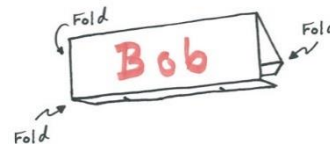
Because the class size is large, students will be divided into two groups. One group will be facilitated by the faculty member who created the case and the other group will be facilitated by Ali.

The first class and case will be facilitated at SFU in room ASB 10940 (Booked under Professor Fiona Brinkman). It is important to get to these classes on time. Remember, that being able to determine the week's location and plan ahead and get to the class on time, will be the first problem that you will encounter for each class and you will also be assessed your ability to accomplish this. It is recommended that for the SFU classes, if you are a UBC student, you embark on your journey two hours ahead of the class, to allow plenty of travel time and to find the room in an unfamiliar campus.

There will be a workshop on research validity taught by professor Rob Kay, and a workshop on research ethics, taught by professor Anita Ho, both of which represents part of the professional development program.

This year we have a larger class size, about 21 students. PBL usually works best in smaller groups. Larger groups are sub-optimal where it is often harder for everyone to be able to express their views and make their individual contributions. Thus, we will split the class into two groups of 10.

Please bring a folded paper with your name printed on it to every class. This will help the facilitators assign participation grades.



Course mark breakdown: 40% participation, 60% assignments.

Participation

Participation is essential for the success of this course. 40% of your grade is determined on how well you participate in class. Thus, absences and tardiness will be dealt seriously. All absences must be documented. For example, if you're sick you must provide a doctor's note. If your absent because you are presenting a poster at a conference you must provide your poster number or anything else that provides proof. You will not lose participation points for documented absence. If your absence is not documented you will lose participation points for that day (10% per day late penalty). You can only recompense your undocumented absences with a legitimate document.

Participation grading rubric for a class period

Below is the grading rubric suggested to each facilitator. Facilitators may grade differently.

Excellent (A+)	The student mentioned excellent points to the discussion and expressed their level of confidence in their scientific statements. The student was a good listener and let the other members finish his/her thoughts without interrupting. If a member was silent, the student encouraged the member to share their thoughts.
Good (A to A-)	The student mentioned good points to the discussion. The student may have not expressed their level of confidence in their scientific statements.
Unsatisfactory (B+ to B-)	The student participated in the discussion. The points mentioned by the student was not an important part of the discussion. The student may have not expressed their level of confidence in their scientific statements. A student may have interrupted another student.
No attempt (F)	The student did not participate

Assignments

The assignments - four in total - will be provided to you by the end of the case and are due 10 days after they are assigned, unless stated otherwise. Assignments, unless noted by the instructor, should not be more than two single-spaced pages. Submit your completed assignment to Ali in a private message in Slack.

Communication via Slack

Most of our communication outside of class will be through Slack. The app is available for mobile devices (android/iPhone) and for desktops. Allow notifications so ensure you don't miss any important announcements. The course Slack URL is: biof520-mbb505-2020.slack.com

Course schedule

Date	Case facilitator	Group assigned to the facilitator	Case Description	Room location	Assignment due date
8-Jan	Fiona Brinkman	Both	Predicting secreted proteins	SFU, Big data Hub, room ASB 10908	No Assignment
13-Jan	Fiona Brinkman	Proline		SFU, Big data Hub, room ASB 10908 / ASB 10940	
15-Jan	Snow day		Research validity (professional workshop)	GSC room 100 / GSC lunchroom 5th floor	No Assignment
20-Jan	Rob Kay	Both			
22-Jan	William Hsiao	Proline	Microbiome	GSC room 100 / GSC lunchroom 5th floor	Feb 6th
27-Jan	William Hsiao	Tryptophan			
29-Jan	Ryan Brinkman	Tryptophan	Standardization	GSC room 100 / GSC lunchroom 5th floor	No Assignment
3-Feb	Ryan Brinkman	Proline			
5-Feb	Jeffrey joy	Proline	Evolutionary genetics and viruses	GSC room 100 / GSC lunchroom 5th floor	Feb 24th
10-Feb	Jeffrey joy	Tryptophan			
12-Feb	Jessica Dennis	Tryptophan	Population health	GSC room 100 / GSC lunchroom 5th floor	No assignment
24-Feb	Jessica Dennis	Proline			
26-Feb	Zipeng Liu & Anamaria Crisan	Proline	Visulaization analysis and design	GSC room 100 / GSC lunchroom 5th floor	Mar 12th
2-Mar	Zipeng Liu & Anamaria Crisan	Tryptophan			
4-Mar	Anita Ho	Tryptophan	Research ethics	GSC room 100 / GSC lunchroom 5th floor	No assignment
9-Mar	Anita Ho	Proline			
11-Mar	Andrew Roth	Proline	Tracking clonal dynamics in cancer	GSC room 100 / GSC lunchroom 5th floor	Mar 26th
16-Mar	Andrew Roth	Tryptophan			
18-Mar	Tao Huan	Tryptophan	Metabolomics	GSC room 100 / GSC lunchroom 5th floor	No assignment
23-Mar	Tao Huan	Proline			
25-Mar	Denise Daley	Proline	Environment and Gene Interaction	GSC room 100 / GSC lunchroom 5th floor	No assignment
30-Mar	Denise Daley	Tryptophan			