

Course Code: 1BI037	Course Title: Cell, Stem Cell and Developmental Biology	Credits: 12 HP
Semester: HT2020	Period: Nov 11 th 2021 to Jan 14 th 2022	

Course director: Matthew Kirkham (MK)	Examiner: Matthew Kirkham
Main lab teachers: -Lab 1: Matthew Kirkham -Lab 2: Helder Andre -Lab 3: Matthew Kirkham	Main CCT teachers: Part 1: KIB staff Part 2: Anna Kouznetsova and MK Part 3: Anna M Borgström (Writing support)

Number of Students	Number who have not completed (after 1st re exam)	Number passed by the end of the course (Jan 14 th 2022)
51	6	41 (32VG)

Conclusions From previous course evaluations HT 2020-2021:

The course was a success. Students thought that the lectures and Labs were very good and all the teachers they encountered were excellent. This is reflected in the course survey with a high approval rating for the course. The attendance of the lectures was generally very good and there was a high pass rate of the exam.

The lectures were given in a hybrid format, on campus to a smaller group of students and streamed online over Zoom simultaneously. Though this was technically challenging, and difficult to organise it work well. This gave the student the freedom to guide their own studies depending on their home environment and how safe the student found it to commute. In general, all lectures had a higher attendance than in previous years with 70-90% of the students being present either in campus or online.

In general, the course was very different from previous years and probably will be very different from future years. Though the circumstances were very challenging the students and teachers adapted well and actively participated in the course to make it a rewarding experience for everybody.

Improvements implemented for HT 2021-2022

Plan changes from previous course evaluation.

- Introduce the Team based learning (TBL) element: Cell biology methods and experimental design.
 - New canvas pages that integrated different digital resources.
 - New lab simulations
 - New TBL elements add to the course e.g. Base test and application phases on experimental design
- The content of the labs was updated.
 - First time the new Cell transfection and transformation lab 1 was run without restrictions / social distancing
 - New elements add to Cell migration lab 2 focused on cell proliferation
 - Discussion of Lab3 moved to a separate occasion rather than run in the lab simultaneously with practical elements.

- Reviewed the Link/flow between the slides, textbook, self-study questions and the study guide.
 - Restructured and reviewed Canvas pages. Put all information related to a subject on one canvas page (lectures, study questions, study guide)
 - Restructured self-study questions and how feedback is given to the students on these questions. Added a new question and answer – feedback session before the winter break.
 - New structure to the discussions. Specifically, a totally new developmental biology discussion and optimization of the cell biology discussion.
- Continue to encourage the lectures to be more interactive.
- Suspended a planned review of the textbook used on the course as there were no new editions published.

Feedback for course HT 2021-2022

Most relevant feedback from Student reps

- There was some confusion and inconsistencies around the requirements for the Lab report. Different instructions were given on different canvas pages and the introductory lecture. The student reps ask just to make sure that the same information is present across the course.
- The student reps highlighted that in the beginning of the course many students felt it was unclear what was required to be completed when. This was especially confusing around the first lab and the TBL Base test.
- In several online mandatory discussions the student reps heard that in some of the breakout groups there was no or very little discussion. Several students tried to start a discussion, but this did not work as the majority of the students did not want to speak online and had their cameras turn off. Student reps and the course director together thought a clear online code of conduct introduced at the beginning of the course would help.
- Several students highlighted that some improvements could be made in the organization and time management of Lab1. The second day there was long waiting times for equipment.
- The student reps highlighted that the study visit to Biomedicum Image Center just before Christmas was poorly timed as a lot of the students were traveling for Christmas.
- The student reps wanted to highlight the fact that some lectures and presentation files were excellent not only during the lecture but also when it can to revise the subject. They wanted to highlight the embryology and developmental biology parts as a good example. They felt that other lecturer's presentations though good during

the lecture lacked extra information needed while revising and would be helped with an appendix or glossary with more information.

Most relevant responses for student online survey on strengths of the course

- Very enthusiastic lecturers and really fun labs! Very comfortable atmosphere and the presentations and exhibition was very enjoyable. Lots of group work which allowed for the class to bond more and was a great factor.
- A fun course, many moments that were fun to participate in, for example the scratch cards. The exam was relevant to what we had learned. I really liked that we went through the exams straight after. It made me learn what I hadn't learned before the exam and it was nice to get a feeling for the result straight away
- Well structured so the lectures were presented in a good order. Using figures and generally using the book as a source during lectures facilitated revision by highlighting the key parts. The way the CCT was split up in its corresponding components coupled with workshops was a good approach. Different methods used in science (TBL) and showing and discussing their applications in journal articles was very educational. The labs and the purpose of different steps was well explained and coupled with Labster helped understanding, and parts of procedures reoccurring in different labs allowed practice and internalization of it, which was good too. Going through different questions and discussing them as a class was also very helpful (e.g after the TBL quiz and the exam).
- Overall, there was a lot of focus on learning and using methods to promote it. It was very clear that our learning process was actually of interest and taken into consideration during the different parts of the course, which should seem obvious, but unfortunately isn't always incorporated or implemented well into courses.

Most relevant responses for student online survey on improvements

- Double check the exam.
- More detailed explanation of some parts and what we are supposed to do (TBL for example)
- Maybe make the time organization of the labs better, so the experiments can be done properly and so there are not too many people waiting for something in the lab.
- Canvas page could be structured in a different way (all lectures together and in chronological order). And hybrid lectures (where the screen is shared via zoom) are much more useful than simply listening-in.
- I think more discussions would have been useful. The one on cell biology only covered a few of the topics, having them more often would be very beneficial I think.

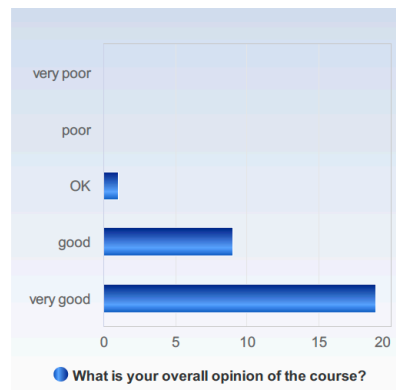
Also I think it would be cool if the second part of CCT could be on a 2 week rotation. So that part is repeated every two weeks of the course. That way we get to read more articles and learn about more diseases. Since there was way more self study time then was actually needed for the content I think some of it could be replaced with this.

Summary of students' student online survey

In general, 94% of the students thought the course was very good or good (see diagram below). The survey also demonstrated that the students felt that they had developed valuable expertise /skills during the course (mean score of 4.6 out of 5) and scientific way of thinking and reasoning (mean score of 4.6 out of 5). Furthermore, most of the students felt to a large extent or very large extent that the course structure was good (mean score 4.2 out of 5), the workload was reasonable (mean score 4.4 out of 5) and examination was relevant (mean score 4.4 out of 5). The answer frequency was 58%.

What is your overall opinion of the course?

What is your overall opinion of the course?	Number of responses
very poor	0 (0.0%)
poor	0 (0.0%)
OK	1 (3.4%)
good	9 (31.0%)
very good	19 (65.5%)
Total	29 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What is your overall opinion of the course?	4.6	0.6	12.2 %	3.0	4.0	5.0	5.0	5.0

We also had specific questions on the use of Lab simulations on the course. The students thought that the Labster simulations were relevant for the intended learning outcomes of this course and should be used as preparation either for the labs or lectures, rather than after these course moments. Finally, the students preferred to be allowed to do them at their own time.

Course director summary of Course

The course was a success. Students thought that the lectures and Labs were good and all the teachers they encountered were excellent. This is reflected in the course survey with a high approval rating for the course. The attendance of the lectures was generally good and there was a very high pass rate of the exam.

There were some new elements added to the course this year mostly related to the practical training and the theory behind different experimental approaches. In general, these worked well, especially the TBL base test: on methods in cell biology, the TBL application phase: experimental design, and the use of Labster simulation to complement the theory. However, there was a problem for some of the students to understand the structure of the TBL module in terms of what was required to be completed when. I think as the students must

keep track already of three course elements (CCT, course Labs and subject theory) adding a fourth was too much. A review of the TBL elements will be conducted to see how a more integrated module combining the course labs and all relevant theory might be created. New elements were also added to the labs. In general, they worked well but more optimisation is required. In lab 1 second day there was a problem with viewing the samples on the microscopes. Lab2 some of the new labelling protocols for cells used resulted in big variations of results across student groups.

Sadly, covid pandemic again had an impact on the course. In general, not as big as the previous year, but recommendations on teaching activities changed rapidly during the course, resulting in some elements being moved online or given in a hybrid manner. The rapid changes resulted in difficulties in some of the course moments as it was tough to adapt completely in the short time frame.

Aims for improvements on new course

- Review the textbook used on the course and the canvas pages. Specifically related to DNA, prokaryotic biology and stem cell biology. A new Molecular Biology of the Cell textbook edition is coming out. This seems to have more information in each chapter. Is this new information relevant? Also the reorganisation of Canvas pages had a mix response, students seem to either like a lot or found it very confusing.

- Review Team based learning (TBL) element: Cell biology methods and experimental design. Try and integrate the elements of the TBL module with the lab theory and practical moments into one module rather than introduce them as two separate things.

- Review the assessment rubric for the written assignments.

- Review the organisation of the labs and routines in monitoring and servicing lab equipment