Action plan based on student feedback for the fall semester of the 2024/2025 academic year

Department: **Department of Molecular Biology**
Faculty: **Faculty of Medicine**
Compulsory subjects: **Medical Chemistry; Molecular Cell Biology I**
Elective subjects: **Basics of Medical Chemistry; Molecular Medicine Research**

1. Response to the general comments

38.5% of Medical Chemistry students and 49% of Molecular Cell Biology 1 students completed the questionnaire. We would like to express our gratitude for their feedback as it helps us in our work. We would like to improve the response rate even further, at least to the point where it reflects the opinion of the majority of the students in the courses. We do our best to consider and implement forward-looking and constructive suggestions in our educational system. We appreciate the positive evaluations that highlight the organization of our teaching, the quality of our lectures and practical lessons, as well as the clarity of the Moodle page for the course. In addition, the high professional standard of the online supplementary materials and the dedication, preparedness and helpfulness of our laboratory tutors were praised. Regarding the Medical Chemistry course questionnaire, we received scores in line with the faculty average for all items, whereas for Molecular Cell Biology I, two aspects - the ability to arouse interest and the usefulness of the lab sessions - received lower ratings than the faculty average, while the rest of the questions received average or higher ratings.

The aim of the Molecular Cell Biology course is to provide a comprehensive understanding of the molecular processes that take place in the human body. These processes underlie all life phenomena and their regulation allows adaptation to environmental conditions. The recent technological revolution has enabled us to study and interpret these processes globally at the levels of genomics, transcriptomics, proteomics and metabolomics and their interrelationships. All human diseases can be traced back to some perturbation in the regulatory networks operating at these levels. We believe that this molecular perspective is the foundation of modern medicine, and we hope that you, too, will be fascinated by the wonderful order of these molecular processes, which we aim to convey through our passionate lecturers and laboratory teachers. To make the course more interesting and engaging, we try to incorporate modern tools and methods into our teaching, such as illustrative videos and self-assessment tasks for playful learning, as well as Smartboards.

The principal aim of the practical sessions is to demonstrate techniques that enable studying molecular mechanisms (e.g., regulation of prokaryotic transcription and investigation of antibiotic effects) that play an essential role in cell biology and medical diagnostics (genotyping, quantification of gene expression, basic analytical techniques). Unfortunately, the practical time available sometimes only allows for the demonstration of certain phases (e.g., preparation of reaction mixtures). The practice of a medical doctor involves a considerable amount of manual work, and a significant part of the practical training involves the mastery of essential skills, such as precise measurement and pipetting techniques.

We were pleased to receive high marks and positive feedback on our elective courses, which reinforces our belief that there is a need for a better understanding of the fundamentals of chemistry and that many are interested in the methods of basic medical research. We hope to welcome more students from the latter course as research fellows in the department in the near future.

2. Response to specific comments on compulsory subjects

We are grateful for the positive comments acknowledging our high-quality teaching and appreciating the preparedness and proficiency of some lecturers and lab teachers.

Here, we would like to address some typical points of criticism:

a. **“Hasznos lenne egy par probávizsga mint ami talalható a biofizika vagy az anatomia Moodle oldalan hogy jobban lehesen gyakorolni a theoretikus anyagot. (English translation of the remark in Hungarian: It would be useful to have a couple of practice tests like the ones you can find on the Moodle site of Biophysics or Anatomy to better practice the theoretical material)” „Online quizzes to practice each new topic could be something l would like to see on Moodle”**

   Thank you for bringing up this legitimate request, which we will definitely try to implement next semester. We hope that game-based learning, enhanced with graphical elements, will help you prepare for the midterm and exam.

b. **“more practical learning”**

   In principle, we agree with the suggestion to include more experimental work in the practical sessions, but this is limited by the restricted duration of the practical sessions. Unfortunately, due to the reduction in practical time that has occurred in several stages over the past few years, we have been forced to remove certain interesting and/or visually impressive experiments from the curriculum, such as iodometric titration or conductometry. Our current intention is to expand our equipment to allow more students to complete the practicals, i.e., to improve the student/equipment ratio and to better emphasize the medical relevance of the experiments.

c. **“having several substitutes made the course feel a bit fractured, especially when the substitutes did not care about the class due to "not being my class, so I don´t care how good you do"”**

   We are sorry for this negative experience. Unfortunately, in some cases, due to long-term illness or other teaching commitments, the practical instructor may have to find a replacement, sometimes involving different instructors for several labs. However, it is not acceptable for the substitute instructor to provide a lower quality class simply because he/she is not teaching his/her own group. We hope that this has not been the case, but if it has, please do not hesitate to report your dissatisfaction to the Teaching Secretary, who will investigate the matter officially.

d. **“Only thing is sometimes (maybe because he has done it so many times) he [i.e. the lab teacher] will quickly go through the calculations. My only advise is to maybe show us the question, then give us 5 minutes to solve it, and then explain”**

   This is a suggestion that should have been made to the lab instructor in a timely manner, and the instructor would certainly have taken it into consideration. Unfortunately, due to limited consultation time, it is difficult to ensure that 5 minutes are provided to solve each problem before the instructor (or a student with the correct result) demonstrates the solution to the group. Perhaps the most effective approach would be for students to solve the remaining problems from the given chapter at home after the demonstration of sample problems, and to seek the instructor's help for the problem they couldn't solve on their own or for which they got an incorrect result.

e. **“The practices are waste of time in my opinion it should have more lectures material”**

   We disagree with this statement and proposition. Laboratory courses have a mission: to prepare future doctors for the precise and demanding application of diagnostic and therapeutic procedures, and to introduce a quantitative approach to medicine. Through chemical, biochemical and molecular

biological measurements, our students learn the basics of experimental work, how to formulate scientifically rigorous questions, how to design and conduct experiments, and how to critically interpret the results obtained. Demanding and precise manual work is the cornerstone of medical practice, and scientific measurement develops skills that are essential to the toolkit of a good diagnostician.

f. **"I wish the lectures covered more of the content which the students are expected to know for the exams"**
Unfortunately, the limited duration of lectures does not allow us to cover the entire material in class. This is not an isolated phenomenon, as university education is largely based on independent learning. The material that is not covered in class is available in the official textbook, but the lab teacher is also available to answer any questions about the content.

g. **"The practicals weren't very well-focused although the DNA, PCR and electrophoresis were interesting to conduct ourselves."**
In addition to the general role outlined above, each of our practical sessions has a clearly defined aim: to investigate, explore and interpret a specific area or aspect of molecular biology using practical methods. It is truly amazing to make an otherwise invisible process detectable, measurable and visible using the tools of molecular biology, thus confirming the nature of intracellular processes and regulatory mechanisms. We sincerely wish that every student has the opportunity to experience this magnificence as often as possible during our practical sessions.

h. **"Witholding lecture recordings as a means of punishing for physical absence during lecture hours when students are within their rights to organise their study time themselves is rather unproductive. Some students focus better at home where they can go through lectures at their own pace instead of the auditorium."**
We are confident that attending lectures in person is a more effective and enriching way to acquire molecular biology knowledge than listening to recordings afterwards. However, we also need to meet the needs of those who prefer to learn from recordings. Recordings of our lectures are usually available on the Moodle platform within 24 hours, but we kindly ask our students to be patient for a few days. If you experience significant delays, please report this directly to the lecturer or the Teaching Secretary of the subject.

i. **"The lectures themselves were pretty ok, but only once one would realise in which order one was to view the material, so to speak, and to which exam topic it correlates to. I found the organisation and highlighting, I.e the titles of the slides and lectures to be confusing and disorienting."**
For the exam, the material must be studied in its entirety and in context, not broken down into separate topics, as this would undermine the most important goal, i.e., understanding and seeing the connections. The purpose of the oral exam is to show whether the student has captured the depth and interconnectedness of the material. Once all the lecture recordings have been listened to and studied, they will form a meaningful whole, and then you will know what part of the big picture each question is referring to.

j. **"But I have heard that sometimes the examiners asked content that was not on the lecture slides. Please synchronise what is asked and what is taught."**
The topic list provides orientation for the material that may be asked in the exam. This corresponds to what was covered in the lecture, with the exception of smaller sections. If you come across any terms in the topics list that were not covered in the lecture, it is advisable to look them up in the

textbook or reliable electronic sources, but first and foremost to seek the help of your laboratory teacher.

k. **“More classes for this subject to better explain the theory in class rather than relying on lectures. One class a week at least is favorable for me.”**
Unfortunately, although it would undoubtedly be beneficial, the department is unable to extend the practical sessions. While a weekly practical would be ideal, it is not possible to perform enzymatic reactions that require long incubation times within the 2x45 minute time frame. Therefore, we are forced to combine labs by two and hold them every other week for 4x45 minutes. During the incubation time there is usually some time left to discuss the lecture material. The most effective way to use this time is for students to ask the lab teacher specific questions about parts of the material that are unclear or difficult to understand, rather than asking them to outline an entire chapter.

3. Response to specific comments on elective subjects

a. **“The lectures to be recorded, and a better insight to what is required” “maybe upload recordings the time didn’t work for me but I find it interesting and I’m sure others do too.”**
It is recommended that you prepare for the exam using the presentation slides uploaded to the Moodle site and notes taken during the lectures. The examination material will cover the full content of the lectures in the course.

b. **“I would suggest making the consultations more effective and to add more explanations to them”**
For a better understanding of the calculation problems in general chemistry, we have included two problem-solving lectures in the Basics of Medical Chemistry course. During these sessions, the lecturers will go through about 15 problems from the problem set step by step, explaining the way to the solution in detail and discussing how to avoid typical mistakes. We ask that you raise any points of confusion immediately, as these sessions are most valuable when they are interactive, and the lecturers are always happy to answer any questions you may have.

Date: April 5, 2025