Action plan based on the student feedback received in the spring semester of the 2024/2025 academic year

Department:	**Department of Molecular Biology**
Faculty:	**Faculty of Medicine**
Compulsory course:	**Molecular Cell Biology 2**
Optional or Elective courses:	**Pathobiochemistry; Methods in Molecular Biology; Networks**

1. Response to the general comments

We noted with some disappointment that, unlike in previous years, many of the questionnaire items received evaluations below the faculty average. This is primarily due to the perceived excessive length of the practical sessions and the fact that, according to our students, the lab sessions do not aid in deepening or better understanding the lecture material. Among the questionnaire items that received scores below the faculty average, particular attention should be drawn to (a) the ability to arouse and stimulate interest in the subject, and (b) the usefulness and interactivity of the practical sessions.

a) We consider it extremely important from both educational and professional perspectives to arouse interest in molecular cell biology. On the one hand, material that is found interesting is easier to learn, and on the other hand, the molecular approach permeates the entire field of medicine today. Many of the diagnostic and therapeutic procedures used in modern medicine are based on the examination and targeted manipulation of processes occurring at the molecular level in the body, so knowledge of these processes is essential for practicing physicians. Molecular-level changes in pathological conditions can be exploited in both diagnostics and therapy (e.g., changes in gene expression patterns, detection of marker RNAs and proteins, identification of drug targets). Our primary goal is to develop and deepen this approach in our students, not only to acquire the basic knowledge required for the exam, but above all to build on the knowledge and skills acquired in the department to become knowledgeable and critical users of the achievements of molecular medicine in the coming decades. To this end, we strive to present the colorful and dynamically regulated world of molecular cell biology in logical, concise, and richly illustrated lectures, and to introduce basic procedures in our practical classes that form the basis of modern medical research, diagnostics, and therapy. We intend to emphasize the medical significance of molecular biology in both lectures and practical sessions, and we plan to place even greater emphasis on this in the future. In this spirit, we expand the classic chapters of the curriculum every year with new findings that are also relevant from a medical perspective (bioinformatic methods, non-apoptotic programmed cell death mechanisms, inflammatory mediators and signaling pathways, molecular stress mechanisms, gene therapy procedures). Within the framework of the optional courses, we also provide a deeper insight into the methodology of molecular biological research and the molecular pathomechanisms of the most common diseases in order to draw the attention of interested students to research and show how the results of basic

research contribute to a better understanding of clinical practice. In addition to traditional teaching methods, we also aim to facilitate the acquisition of the curriculum through more relaxed, playful methods. To this end, we have placed interactive tests containing graphic elements on the Moodle platform, which students can use to develop and organize their knowledge at their own pace.

b) The usefulness of molecular biology practicals depends not only on the intentions of the teachers and the implementation, but also on the attitude of the students. We offer an insight into the tools of molecular biology and help students understand the actual material, equipment, and time requirements of molecular biology processes. Above all, however, we strive to develop and improve our students' molecular approach, questioning and problem-solving skills, which will be extremely important in the careful selection of medical diagnostic and treatment procedures. In order for our practicals to be truly useful, we recommend that you regularly follow the theoretical basics presented in the lectures and read the description of the measurements before the practical. Please participate actively in the exercises and feel free to ask your teacher any questions you may have. This will make your time in the laboratory truly useful, the session interactive and skill-building, and the skills and knowledge you acquire there lasting.

2. Response to specific comments on compulsory subjects

We are grateful for your numerous positive comments acknowledging the well-organized teaching practice of the department and appreciating the preparedness and proficiency of some lecturers and lab teachers alike. Below, we respond only to the critical comments.

a. ’maybe we can cover more topic list related content during the practices.’
We would like to provide our students with more support in preparing for the comprehensive exam. To this end, we are restructuring our practical sessions so that, for the first 45 minutes before performing the experiment, we will cover an important topic from the course material in an interactive manner. During this time, we can clarify fundamental concepts and mechanisms, and students can ask questions about the material presented in the lectures. These consultations will be most effective if students come prepared and are already familiar with the lecture content.

b. ’maybe try to upload the lectures earlier to Moodle, because this semester some of the lectures where uploaded like 1,5 week after it was held. Since many of the lectures where continuations of one another that made it harder to follow the next lecture since you couldn’t watch the one before it. I think like 2-3 days after the lecture is held is an okay or understandable amount of time it takes to upload it, but it would really help in the future if the lectures are uploaded as quickly as possible after the lecture where held.’
Your comment is valid and in line with the department's policy that lecturers should upload recordings to Moodle within 48 hours. If the department administrator who uploads the recordings does not receive them within this time, they contact the lecturer directly. We apologize for the delay described in the comment and will make sure to meet our self-imposed deadline in the future.

c. **’I would suggest aligning the practical lab content more closely with the weekly lecture material. This would help reinforce what we learn in lectures and make the concepts**

more coherent. Additionally, it would be great to incorporate Kahoots or similar quizzes in the practical sessions to engage us and encourage regular review.'

For didactic reasons, our department naturally strives to coordinate the program of lectures and practical classes. An excellent example of this is the beta-galactosidase lab, which directly follows the lecture on the regulation of prokaryotic transcription and provides excellent experimental support for it. Although all of our molecular biology practical sessions are based on the material covered in the lectures and are intended to demonstrate its application, for technical reasons we are sometimes unable to coordinate the theoretical and practical content precisely. There are lengthy experiments that span several practical sessions, such as PCR-RFLP-based genotyping, which is scheduled for the second semester, although the relevant lecture is held at the end of the first semester; however, by that time there is not enough time to complete the three-part practical session. The midterm exam also requires a practical session, which delays the schedule. Despite all these difficulties, we believe that our practical program, by introducing the tools of molecular biology, supports theoretical education well and proportionately, while also providing our students with a foundation in the field of molecular diagnostic and therapeutic procedures used in medicine.

d. **'I feel like the professors are quite harsh during the exams. They also don't teach us in the same depth as they ask us in the exam. The lectures might be a bit detailed, but then during the exam, the questions are so much more difficult.' ' the subject is interesting and critical for medical practice, but sometimes I felt I'm spending more time memorizing names of certain molecules rather than learning concepts and procedures, I'm not talking about molecules that are of extreme importance or key molecules which are understandably necessary knowledge but rather molecules which only mere seconds are dedicated to during the lectures or are just mentioned without any explanation but knowing the names of are required for getting a good grade'**

The primary goal of the oral exam is to evaluate the student's integrated understanding of the course material. In other words, the exam determines if the student possesses the foundational knowledge and skills necessary to confidently answer questions about molecular biology, diagnostic and therapeutic procedures, mechanisms of action, and drug targets that will be encountered during their clinical studies. Therefore, the focus is not on recalling as many detailed facts or three-letter abbreviations as possible. While it is true that fundamental mechanisms require naming key players, the emphasis should always remain on the mechanisms themselves. For instance, to understand apoptosis, one must know the pathways and key proteins (such as p53, Bax, and TNF).

e. **'Please reduce the time of the practices, although incubations for different experiments might need a 3 hours class. Its very inefficient. ' There is a lot of downtime during the practicals'**

We have combined the weekly two 45-minute practical sessions into one four times 45-minute session every two weeks, specifically to allow time for lengthy molecular biology experiments. No matter how much we try to streamline the experiments, the duration of enzymatic reactions cannot be shortened any further. The waiting periods necessitated by indispensable incubations are made useful by the lab teacher reviewing the most important theoretical topics with the students and answering questions related to the lecture material.

f. **'This subject suffers from the fact that it occurs at the same time as genetics, microbiology and immunology.I found both semesters of mcb quite interesting, however I wasnt able to concentrate or focus on mcb II specifically as much as I think a subject like this requires'**
The structure of the theoretical, preclinical, and clinical modules of medical and dental training is determined by the faculties and the senate, leaving our department with very little influence. We are aware that mastering the material of the parallel courses requires considerable effort and regular, intensive study. However, these subjects are not independent of each other; molecular biology encompasses many chapters of genetics, immunology, and microbiology and presents them from a different perspective. Thus, the different subject within the theoretical module complement each other.

g. **'teaching in lectures is not straight forward and makes thing complicated (…) its time for the leaders of the university to start taking the quality of lectures seriously and complement lectures with meaningful consultation based practices.'**
The current structure of our education, which has developed over several decades, is based on the coordination of theoretical and practical training. This traditional frontal teaching model has faced significant criticism and challenges in recent years due to the development of information technology and the associated changes in student expectations. Changing the educational structure of the university is not our department's decision or responsibility, but we are committed to the continuous improvement of our teaching methods. Although we do not hold separate seminars, we review the most important aspects of the theoretical material during a specific part of the practical sessions and incubation periods. In our lectures, rather than simply conveying information, we focus on structuring the content, highlighting key points, and emphasizing logical connections and interesting details that capture students' attention and curiosity.

h. **'I would love if professors explained some topics in an order which would make the topic more clear and easier to understand.'**
Our lecturers and practical instructors generally have many years of research and teaching experience, and they do their best to present the material in the most logical way possible. However, if, despite the efforts of the teaching staff, you ever lose track or have questions, don't hesitate to ask them, even during the lecture, because understanding is the basis of learning and is much more important than simply memorizing facts.

3. Response to specific comments on elective subjects

Pathobiochemistry, Molecular Biology Research and Networks subjects are popular with students as reflected by the numbers of participants and slightly-above-the-average evaluation scores. We are pleased to note that the weekly bonus system introduced in the Pathobiochemistry course has been well received by our students, increasing both attendance and engagement. Thank you for your numerous comments praising the relevance of the teaching material for medical practice and research. The only point of constructive criticism is addressed below.

a. **'I believe the course could be even more beneficial if it included weekly seminars or discussion sessions. While the current self-paced format offers flexibility, some of the more complex concepts in network science would be easier to understand with the**

opportunity for live explanation and interaction. Many elective courses already incorporate seminars, and adding even one per week could greatly enhance the learning experience.'

Your comments are entirely justified and understandable, but unfortunately the lecturer for the Networks course is too busy to be able to comply with this request at present.

September 29th, 2025