



MSc Program in Biology, Specialization in Virology

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Final Exams – Instructions to Students

BIO 520 ‘Integrated Knowledge in Biology / Themenübergreifende Fachkompetenz’

Description

The Bio 520 module is designed to be a self-study period of the Master degree course. It comprises a total of 300 study hours (corresponding to about 2 months), and gives students the opportunity to demonstrate a comprehensive understanding of the field chosen for the MSc specialization, virology, and the fundamental concepts in biology. The Master coordinator discusses and designs the contents of the module with the student, in coordination with the supervisor of the Master thesis.

The student uses this module to acquire a broad and solid overview in virology and related fields, including molecular cell biology, immunology and virus related infectious disease. The basis for these studies can be a comprehensive textbooks, such as Flint et al., Principles in Virology, or Acheson Fundamentals of Molecular Virology, or Fields Virology. At the end of the self-study period, there is a three-hour written examination and a 30 minute oral exam.

Learning Outcomes

By the end of this module, the student should be able to:

- Demonstrate his/her understanding and command of relevant virological facts, methods and concepts
- Identify and explain interrelationships between facts, methods and concepts



- Summarize and review scientific literature in an efficient, effective and critical manner

Format of the exams

The written and oral examinations should take place within the same week. The dates are arranged on an individual basis between the MSc coordinator, the thesis supervisor and the student candidate. In general, it is scheduled about 2 months after completion of the Master thesis. The final grade is the arithmetic mean (rounded to half grades) of the grades from the written and the oral parts.

Part 1: Written examination

The written examination lasts three hours. Unless otherwise agreed, the exam takes place at the Institute of Molecular Life Sciences (IMLS) in a room organized by the MSc coordinator. Time and date are agreed on by the MSc supervisor and candidate. The thesis supervisor formulates the exam questions and transmits them ahead of time to the MSc coordinator (urs.greber@imls.uzh.ch). Supervision of the candidate during the exam is handled by the MSc coordinator. The written exam consists of two parts, an essay and an analysis of primary literature.

1.1. Essay

Two to three general topics from the field of Virology will be presented to the candidate. He/she selects one of these topics, and writes an essay (usually 2-4 pages) to demonstrate his/her general knowledge of the field. Examples of essay topics can be:

- The molecular concepts of cancer causing viruses
- Advantages and problems of RNA interference screens
- The major innate responses against virus infections



- Describe the principles of three major 'omics technologies and how these techniques can be applied in virus research.

1.2. Analysis of primary literature

At the beginning of the exam, the candidate is given a scientific paper selected by the thesis supervisor and the Msc coordinator. During the exam, the candidate reads and understands the key points of the paper. He/she writes an abstract and proposes a title for the paper to capture the main message(s). In addition, he/she is asked specific questions about the paper. These questions should be answered completely and succinctly. Examples for questions are:

- How did the authors confirm the specificity of their siRNAs?
- Explain how the 35S-Met pulse-chase experiment works, as shown in figure 1. What does this experiment measure?

General rules:

Documents, laptop, calculator, cell phone or other communication devices are not permitted. Also not permitted are unannounced/unaccompanied stepping out of the exam room, for example visiting the bathroom.

Part 2: Oral examination

The oral exam usually follows after a presentation of the Master thesis in a public research seminar and a public discussion. Thereafter, a closed examination session takes place with the candidate, the thesis supervisor and Msc coordinator. The supervisor or the MSc coordinator can invite additional group leaders to attend the closed session.

2.1 Public research seminar



The candidate presents his/her data from the Master thesis, an introduction and a brief discussion. The public research seminar lasts 30 minutes + 5 minutes of public discussion. It is not official part of the oral examination in BIO 520. However, the quality of the candidate's performance is considered for the grade of the Master thesis (BIO 514).

2.2 Questions related to the Master thesis and the field of specialization

The research seminar is followed by a 30 minute question/answer session, in which the student's supervisor and the MSc coordinator ask questions related to the Master thesis, the field of specialization (Virology) and fundamental biological and virological concepts.