

Title of module

Modular Advanced Practical and Seminar
in the Focal Point Programme
"Molecular Medicine" VZ: 185780, 183781
"Expression and isolation of contractile proteins "

Credit points

4

Available in semester(s)

1

Hours per week

5.25

Compact course



Lecturer(s)

K. Jaquet and teaching assistants

Teaching methods

two weeks advanced laboratory course with an
intergrated seminar, one of four lab courses to be
completed in the first term

***Evaluation of learning
progress***

active participation in the laboratory tasks and seminar,
feedback during the experiment

Mode of examination

Assessment of active and successful participation in the
practical (50%) and a written project report (50%)

Learning objectives

The students shall obtain basic skills to deal with
proteins. They will learn to decide which factors are
decisive for isolation procedures for different proteins (
mutants) and to evaluate quality of the isolated
proteins. Additionally they will obtain basic insights in
molecular biology and cell culture.

Soft skills

Critical analysis and presentation of results

Contents of module

Transformation of E.coli, growing bacteria
Expression of troponin subunits in E. coli (wt and/or mutant)
Isolation of troponin subunits by different chromatographical methods
Reconstitution to obtain a troponin complex
Verification of protein quality:
Gel electrophoresis,
Densitometry
Calcium shift assay
Western Blot analysis

Removal of rat hearts and isolation of cardiomyocytes
Quality control: microscopy

Objective: isolated proteins (mutant/wildtype are needed to perform comparative studies on function, interaction and phosphorylation
Cells (expressing wt and mutant proteins) are needed to perform comparative studies on function phosphorylation status and interaction