

Reviewer's report on the doctoral dissertation

Title: Synthesis of peptide and their application for cell penetration and drug delivery

Candidate: M.Sc. Vedran Milosavljević

Thesis supervisor: doc. RNDr. Pavel Kopel, Ph.D.

Supervisor specialist: prof. RNDr. Vojtěch Adam, Ph.D.

Reviewer: Assoc. Prof. Jana Drbohlavová, Ph.D.

The topic of presented doctoral thesis fully corresponds to recent biomedical research demands, i.e. the study and development of new systems for delivery of drugs into cell in more efficient and less toxic way. Taking into account both these aspects, the concept of the thesis is built on three basic objectives: (1) optimization of interaction of system based on cargo such as therapeutic molecule and cell penetrating peptide (CPPs) used as delivery vector, (2) study of delivery process into the cell employing this system and (3) study of interaction of CPP delivery vector with carbon nanocarriers, especially multiwalled carbon nanotubes and fullerenes.

The structural organization of the thesis perfectly follows to all three objectives. I appreciate the literature overview is completed by author's own chapter in book relevant to the topic. Subsequent experimental part comprehensibly describes applied techniques and methods including brief protocols for material synthesis, which are further described in details in enclosed student's publications. The results and discussion are written in the form of short comments to five research papers published or submitted in impacted journals which follows immediately after these comments. Based on achieved results (synthesis of CPPs of high purity and their characterization via electrochemical and spectroscopic

methods), I can conclude that student performed ambitious work with extensive set of experiments and fulfilled all necessary requirements to submit the thesis for defence.

The thesis is of high quality from both scientific and formal point of view. It can be considered as a valuable work which will have high impact for broad research community. The author presented excellent theoretical, experimental and publication skills.

Therefore it is my pleasure to recommend the oral defence of PhD. thesis of Mr. Vedran Milosavljevič to be graduated at Mendel University in Brno.

The question for Ph.D. candidate:

Since the doctoral thesis was primarily focused on application of CPPs in the treatment of two serious diseases, namely acquired immune deficiency syndrome and cancer, I am wondering if the designed drug delivering system has potential for the treatment of other diseases as well. Can you please provide some perspectives regarding the continuous research?

In Brno, 19th of May, 2017

Jana Drbohlavová