CTU
CZECH TECHNICAL
UNIVERSITY
IN PRAGUE

I. PERSONAL AND STUDY DETAILS

Student's name:	**Talakvadze Anna**	Personal ID number:	**473063**
Faculty:	**Faculty of Biomedical Engineering**		
Study program:	**Biomedical and Clinical Technology**		
Branch of study:	**Biomedical Technician**		

II. EVALUATION OF THE BACHELOR THESIS

Bachelor's thesis title in English:

3D bioprinted collagen I with incorporated stem cells

	Evaluation criteria	N. of points
1.	Fulfillment of the aim of the thesis and suitability of the structure of the thesis with respect to the topic (compliance with the assignment). (0 – 30)* Any part or sentence of the bachelor thesis assignment has to be dealt with. The full amount of points can be given to the excellent thesis only. The points are reduced in relation to the part of the assignment which is not properly dealt with or is not included at all.	28
2.	Theoretical level and application of accessible sources. (0 – 30)* The reader evaluates the relevance of the theoretical part of the thesis with respect to the assignment and structuring of the ideas. If word-for-word citing prevails, the reader shall decrease the rating by 15 points. (of course if copyright is abided). Moreover, another reason for decreasing the overall assessment is insufficient amount of theoretical knowledge, references and sources.	27
3.	Scope of experimental work (SW, HW) and applied knowledge, quality of methodology and conclusions of the thesis. (0 – 30)* Maximum number of points can be granted to a thesis which is fit for publishing. This aspect is judged with respect to enhancement of theoretical knowledge and practical implications. Creation of a model, SW or technical realization is valued. For minor methodological flaws, the assessment is reduced by up to 5 points. Inconsistency of elaboration with the theoretical background and unclear or not fully professional approach leads to a reduction by at least 15 points. Another decrease can be due to insufficient discussion. A total of 30 points can be given to a very complex and flawless work, including other activities such as participation in scientific-research project or grant, active participation in the writing publications, patents and utility models.	23
4.	Formal requisites and layout of the thesis (writing mastery, structuring, graphs, tables, citations in the text, list of references etc.). (0 – 10)* Reader evaluates formal requisites according to the rules of writing, attributes of final works, i.e. text formatting, structure of the text, references, quality of charts and tables and citations. Number of points can be reduced for noncompliance with the rules by the maximum of 2 points for each disrespected attribute. Grammatical mistakes, spelling mistakes and improper stylistics and terminology decrease the evaluation by 2-4 points. Only standard terminology should be used, especially in the English language (it is necessary to judge the ability to use the technical language - 2 points), graph are according to the rules (see tolerance and the influence of statistical processing - 2 points), captions are included for graphs and tables and everything is readable (2 points), citation rules are complied with according to ISO690 and ISO690-2 (2 points).	10
5.	**Total points**	88

* Verbal evaluation should be part of the Comments

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III. PROPOSED QUESTIONS FOR THE DEFENSE (OPTIONAL)

1. Different parts of the specimen can exhibit different properties such as homogeneity, (an)isotropy, density of cells, etc. Did you observe such differences? Did you take other pictures besides those shown in Fig. 5.20.?

2. The collagen filaments in tunica externa of blood vessels are specifically oriented accounting for the required strength and elasticity of the blood vessel wall. Can you propose a method allowing to assess the orientation of collagen filaments in your samples?

3.

IV. THE OVERALL ASSESSMENT OF THE LEVEL OF THE BACHELOR THESIS

Grade**:	A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (failed)
Number of points:	100 - 90	89 - 80	79 - 70	69 - 60	59 - 50	< 50
	❑	X	❑	❑	❑	❑

** in case of F (failed) please explain in detail

I give the above grade to the bachelor thesis and I recommend/~~do not recommend~~ it for the defence.

V. COMMENTS

The bachelor thesis is aimed at comparing the performance of two approaches in shaping vascular tissue using cellularized collagen gels, namely 3d printing and molding. Both methods are in experimental use.
The student has fulfilled thorough literary research. The theoretical part is citing 27 relevant sources.
The methods used are more or less sufficiently described in chapter 4. Rigorously, some portions are not detailed. However, the student did a lot of experimental work in connection with both molding and printing technology as well as with preparation of samples.
Results are presented in chapter 5 for both molding and printing methods. The results, supported by pictures show the clear advantage of the 3d-printing technology.
Discussion follows in chapter 6. Based on the preceding results, the author concludes about superiority of the 3d-printing technology.
To my opinion, a more precise study would require extensive testing of a number of different compositions of cellularized collagen gels to find their optimum compositions for each of the methods considered (not only two concentrations of collagen).

Overall, the thesis is written very well, logically and in good English.

To conclude, I have two minor, mainly editorial remarks:
- The Czech version of the Abstract does not literally correspond the English one (the term přesnější stabilita?).
- P. 26 Two concentrations I have been tested - maybe better to say "Two concentrations were tested..."

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