

REVIEW
of the official reviewer for dissertation work
Alzhanuly Bakhytzhan on the theme «Development of a cell therapy approach for diabetes by
engineering tunable insulin production in β -cells», presented for the degree of Doctor of Philosophy (PhD) in the speciality «6D060700 -
Biology».

№	Criteria	Eligibility (one of the options must be checked)	Justification of the position of the official reviewer
1.	The topic of the thesis (as of the date of its approval) corresponds to the directions of development of science and/or state programs	1.1 Compliance with priority areas of science development or government programs: 1) The thesis was completed within the framework of a project or target program financed from the state budget (indicate the name and number of the project or program) 2) The thesis was completed within the framework of another state program (indicate the name of the program) 3) The dissertation corresponds to the priority direction of the development of science, approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan (indicate the direction)	AP08857430 "Identification of a new minimally invasive biomarker for the diagnosis and prognostics of diabetic retinopathy based on microRNAs"
2.	Importance for science	The work makes/does not make a significant contribution to science, and its importance is well disclosed/not disclosed	The work makes a significant contribution to science, and its importance is well-disclosed
3.	The principle of independence	Self-reliance level: 1) High; 2) Medium; 3) Low; 4) No independence	Self-reliance level is high
4.	The principle of inner unity	4.1 Justification of the relevance of the thesis: 1) Justified; 2) Partially justified; 3) Not justified. 4.2 The content of the thesis reflects the topic of the thesis:	The relevance of the thesis is justified The content of the thesis reflects the

		<p>1) Reflects; 2) Partially reflects; 3) Does not reflect</p> <p>4.3. The purpose and objectives correspond to the topic of the thesis: 1) <u>correspond</u>; 2) partially correspond; 3) do not correspond</p> <p>4.4 All sections and provisions of the thesis are logically interconnected: 1) <u>completely interconnected</u>; 2) the interconnection is partial; 3) there is no interconnection</p> <p>4.5 The new solutions (principles, methods) proposed by the author are reasoned and evaluated in comparison with the known solutions: 1) <u>there is a critical analysis</u>; 2) partial analysis; 3) the analysis does not represent one's own opinions, but quotes from other authors</p>	<p>topic of the thesis</p> <p>1) <u>correspond</u></p> <p>1) <u>completely interconnected</u></p> <p>1) <u>there is a critical analysis</u></p>
5.	Scientific novelty principle	<p>5.1 Are the scientific results and provisions new? 1) completely new; 2) <u>partially new (25-75% are new)</u>; 3) not new (less than 25% are new)</p> <p>5.2 Are the dissertation findings new? 1) completely new; 2) <u>partially new (25-75% are new)</u>; 3) not new (less than 25% are new)</p> <p>5.3 Technical, technological, economic or management decisions are new and reasonable: 1) completely new; 2) <u>partially new (25-75% are new)</u>; 3) not new (less than 25% are new)</p>	<p>2) <u>partially new (25-75% are new)</u>;</p> <p>2) <u>partially new (25-75% are new)</u>;</p> <p>2) <u>partially new (25-75% are new)</u>;</p>

6.	The validity of the main findings	All main conclusions are/are not based on scientifically significant evidence or well-grounded (for qualitative research and areas of training in the arts and humanities)	
7.	The main provisions for the defence	<p>It is necessary to answer the following questions for each provision separately:</p> <p>7.1 Is the provision proven? 1) proven; 2) rather proven; 3) rather not proven; 4) not proven</p> <p>7.2 Is it trivial? 1) yes; 2) no</p> <p>7.3 Is it new? 1) yes; 2) no</p> <p>7.4 Application level: 1) narrow; 2) medium; 3) wide</p> <p>7.5 Is it proven in the article? 1) yes; 2) no</p>	<p>1) proven;</p> <p>2) no</p> <p>2) no</p> <p>2) medium;</p> <p>1) Yes;</p>
8.	The principle of reliability Reliability of sources and information provided	<p>8.1 Choice of methodology - is justified or the methodology is described in sufficient detail 1) yes; 2) no</p> <p>8.2 The results of the thesis were obtained using modern methods of scientific research and methods of processing and interpreting data using computer technologies: 1) yes; 2) no</p>	<p>1) yes;</p> <p>1) yes;</p>

		<p>8.3 Theoretical conclusions, models, identified relationships and patterns have been proven and confirmed by experimental research (for areas of training in pedagogical sciences, the results have been proven on the basis of a pedagogical experiment):</p> <p>1) yes; 2) no</p> <p>8.4 Important statements are confirmed / partially confirmed / not confirmed by references to current and reliable scientific literature</p> <p>8.5 Used literature sources are sufficient/not sufficient for a literature review</p>	<p>1) yes; Important statements are confirmed by references to current and reliable scientific literature</p>
9	Practical value principle	<p>9.1 The thesis has theoretical value:</p> <p>1) yes; 2) no</p> <p>9.2 The thesis is of practical importance and there is a high probability of applying the results obtained in practice:</p> <p>1) yes; 2) no</p> <p>9.3 Are the practice suggestions new?</p> <p>1) completely new; 2) partially new (25-75% are new); 3) not new (less than 25% are new)</p>	<p>1) yes; The literature sources used are sufficient for a literature review</p> <p>2) partially new (25-75% are new);</p>
10.	The quality of writing and design	<p>Academic Writing quality:</p> <p>1) high; 2) average; 3) below average; 4) low.</p>	1) high;
11.	Notes on a thesis		<p>This is a very good work; however, it is represented in only one peer-reviewed journal (the experimental part), which is not included in the Web of Science database. The source of HEK293 cells differs between the thesis and the published paper.</p>

