



## COURSE REGISTRATION FORM

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<b>Course</b>	Recombinant DNA Technology
<b>Target</b>	Agricultural Middle Schools
<b>Type</b>	blended
<b>Duration</b>	2 days - 16 hours

<b>Description</b>	<p>Recombinant DNA technology is relatively new technology created upon the findings in molecular biology, enzymology of the nucleic acids and in molecular genetics of bacteriophages and plasmids. It encompasses the variety of standard techniques that are already being used in biochemistry and molecular biology, but it also incorporates the entire set of newly developed methodologies. The methodology mainly implies the use of restriction endonucleases and DNA cloning.</p> <p>Considering that this technology is vastly applied in the medicine, pharmacy, agronomy, veterinary medicine but also in the environmental science, the main aim of this course is to explain and describe the aforementioned technologies to the teachers using the active learning method. Furthermore, the aim is to point out the significance of the development of the aforementioned disciplines with respect to these technologies and their future perspective and potential in the development of the agricultural production and technology in general. Teachers will be able to put the acquired knowledge to the use with their own students, which will have further effects on the students' motivation in their work and studies.</p>
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<b>Contents</b>	<ol style="list-style-type: none"><li>1. Recombinant DNA technology</li><li>2. Restriction enzymes</li><li>3. DNA cloning</li><li>4. Genetic engineering and transgenesis</li><li>5. Gene therapy</li></ol>
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<b>Objectives</b>	<p>The aim of the course is for the participants to:</p> <ol style="list-style-type: none"><li>1. Affirm and expand their knowledge in molecular biology and molecular genetics.</li><li>2. Acquire the knowledge and understand the specificity of the use of restrictive enzymes and DNA cloning technologies.</li><li>3. Comprehend the general significance of the current use of these technologies in the agricultural production, livestock farming and food industry, as well as the development trends of this contemporary methodology and its possible</li></ol>
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broader use in the future.

4. Simulate the execution of the bacterial genome sequencing technology which is used in food industry with the use of virtual laboratory.

#### Activities

1. Introductory lecture - Introduction of the subject, presentation of the instructions regarding the course, participants' registration on the *Moodle* platform and the initiation of the course.
2. Short discussion of the DNA structure and function with active involvement of the participants and the preparations for the main part of the lecture.
3. Execution of the study units following the schedule presented in the Contents using the *Power Point* presentation, short films on the internet and computer simulation.
4. Upon the completion of the study units, the participants commence the practical part of the course, i.e. individual problem solving in the virtual laboratory on the subject of genome sequencing and data search in the genome laboratory.
5. Upon the task completion, the collective evaluation of the results of the virtual experiment and the discussion of the possible errors will ensue. The participants compare the results and discuss the solutions with the assistance of the lecturers if further explanation is required.
6. After the examination of the practical use, the final theoretical exam in the *Moodle* application will follow.

#### Materials

1. *Power Point* presentation
2. *Moodle* application
3. Computer simulations of the virtual experiment
4. Video recordings and animations
5. Printed material for recording the results of the practical part