Program Midterm of Discipline “Risk management of transgenes

Biotechnology

**Module 1**

Describe feature and functions Genetic engineering.

Show the methods of recombinant DNA technology

 What is the GMO process?

 Analyze the techniques to create recombinant DNA (Genetic modification)

Give characterization creating a GMO is a multi-step process.

What is molecular cloning

How to use plasmids c as cloning vectors to carry genes.

Show the examples of the DNA sequences that are difficult to clone are inverted repeats (перевернутые повторы),

Cloning a Eukaryotic Gene in a Bacterial Plasmid

Choice of host organism and cloning vector

Gene cloning using plasmids

Gene cloning using Bacteriophage

Describe the steps of molecular cloning

Give characterization of preparation of DNA to be cloned

Give characterization of a preparation of vector DNA

Describe using Restriction Enzymes to Make Recombinant DNA

Structure, feature, and functions of nucleic acids

Methods of extraction of nucleic acids from different biological materials.

Analyze the Cosmid as vector DNA

How to analyze PCR product

Give characterization of types electrophoresis.

How to apply isoelectric focusing and for what purposes?

Show the principles and applications of two-dimensional electrophoresis.

What is the conventional PCR

Hybridization conditions and melting temperature of DNA.

Analysis and characterization of nucleic acids.

Show important factors that affect stringency and hybridization.

Describe relation between melting temperature and oligonucleotide concentration.

Give characterization of approaches and methods of modification of nuclear acids.

Show different types of endonucleases and their use in molecular biotechnology.

Present the main principles of electrophoresis for analysis of nucleic acids.

Describe the methods of nucleic acid detection DNA.