Genetic Engineering and Plant Biotechnology

1. Lecturer: Tymoshenko Volodymyr Fedorovych, associate professor of the department of plant and microorganism physiology and biochemistry.
2. Status: optional for masters.
3. Course, semester: 1th academic year, 2th semester.
4. Number of credits – 5, general academic hours – 150, lectures – 36, labs – 26, seminars – 10; self-study – 78.
5. Preliminary requirements: basics of Biochemistry, Plant Physiology and Biochemistry, Genetics, Biotechnology and Molecular Biology
6. Description of the course: methods of constructing hybrid cells by protoplast fusion are discussed. The course describes potential vectors, plant transformation methods using vectors that allow obtaining DNA with a new desirable combination of genes for crop production. Transgenic methods and detection of transgenic plants are highlighted. The main areas of biotechnology research as well as specific, significant achievements of genetic engineering in addressing important issues of the economy.

   Parts: 1) cell engineering; 2) vectors and genetic transformation of plants; 3) practical achievements of genetic engineering of plants.

   Knowledge and skills:
   - knowledge of methods of somatic hybridization;
   - knowledge of the main methods of using plant transformation vectors;
   - knowledge of methods of selection of genetically modified plants and proving them to be transgenetic;
   - information about the scope of biotechnological research.
7. Course organization, forms of control: lectures and seminars, writing tests, reports, writing final test.
8. Educational and methodological support: program, work plan, educational and scientific literature, laboratory equipment and reagents.
9. Language of teaching: Ukrainian.

   References:

1. *Божков А.И.* Биотехнология. Фундаментальные и промышленные аспекты.-2008.-Изд-во Федорко М.Ю. 363 с.
2. *Глик Н., Бернард В.* Молекулярная биотехнология. Принципы и применение: перевод с англ. Пастернак Н.Е., Баскакова Ю. М. - М. : Мир. – 2002. – 589 с. : (Лучший зарубежный учебник)
3. *Щелкунов С.Н.* Генетическая инженерия. Новосибирск.: Сибирское университетское издательство.-2004.- 496 с.
4. *Кучук Н.В.* Генетическая инженерия высших растений. Киев.: Наукова думка. - 2002. - 150 с.
5. *Генная инженерия растений*. Лабораторное руководство: Пер. с англ. /Под ред. Дж. Дрейпера, Р. Скотта, Ф. Армитиджа.- М.: Мир, 1991. 408 с