Biotechnology assignment

Technology

Forensic or Identity testing, or example examination of semen for sexual offenders and analysis of blood, bone or hair for murder victims. During diagnostics scientist scan DNA for errors or mutations. Two Techniques are mainly used, the first involves the use of a short strand of DNA know as a “ probe” to identify mutations and the second involves the use of genes and comparing it’s sequences to that of a healthy individual. Therapeutic Biotechnology Uses Biotechnology contributes to the treatment against disease In two ways. Gene therapy and pharmacopoeias.

Gene Therapy involves the treatment of disease by hanging the genetic message or instructions of body cells. There are three approaches to gene therapy; replace a faulty gene with a functional one, the ‘ knocking out’ of a faulty gene and introducing a new gene into the body to fight disease. Therapeutic Cloning Is a procedure In which cells are taken from a patient and Inserted Into a fertilized egg whose nucleus has been removed. The resulting cell is stimulated to divide repeatedly to form a mass consisting of 100-200 cells.

Stem cells are then extracted from the blastoffs and used to grow tissues that are a reflect genetic match for the patient. The differentiated cells can potentially be transplanted into the patent to treat disorders such as diabetes, Alchemist’s disease, and Parkinson disease. Pharmacopoeias involves pharmacology which is the study of pharmaceuticals and how they react with a person’s specific genetic make- up. By knowing a person’s genetic makeup a doctor would be able to prescribe the right medication as well as the right dosage.

The risk of allergic reactions, side effects and over dosage will be minimal. Pharmacopoeias involves the identification of SNAPS. Biomedical Electronics- involves working closely with nurses, technicians, physicians and other hospital staff who use the wide range of electronic devices in modern medical practice. Bombs advise and assist the hospital staff with the safe operation of the technical equipment. These devices include things such as nerve stimulator, infusion pumps and electronic thermometers, CT and MR. imaging systems, surgical lasers, heart lung bypass machines, dialysis machines and many others.

Bioinformatics – is an applied science aiming to combine mechanical elements, electronics and parts of biological organisms. Bioinformatics includes aspects of biology, mechanics and electronics. It also encompasses the fields of robotics and neuroscience. The goal of these experiments is to make devices interact with human muscle, skeleton, and nervous systems. The end result is the devices will help with human motor control lost or impaired by trauma, disease or birth defects. Familiarization- is the application of electronics and measurement techniques to develop devices used in diagnosis and treatment of disease.

Computers are an essential part of familiarization, from the microprocessor in a single-purpose instrument used to do a variety of small tasks to the microcomputer needed to process the large amount of information in a medical imaging system. Bimetallism- include both living tissue and artificial materials used for implantation. Understanding the properties and behavior of living material is vital in the design of implant materials. The selection of

an appropriate material to place in the human body may be one of the most difficult tasks faced by the biomedical engineer.

Certain metal alloys, ceramics, polymers, and composites have been used as implantable materials. Bimetallism must be non-toxic, non-carcinogenic, chemically inert, stable, and mechanically strong enough to withstand the repeated forces of a lifetime. Newer bimetallism even incorporate living cells in order to provide a true biological and mechanical match for the living tissue. Bohemianism- applies classical mechanics (static, dynamics, fluids, solids, thermodynamics, and continuum mechanics) to biological or medical problems.

It includes the study of motion, material deformation, flow within the body and in devices, and transport of chemical constituents across biological and synthetic media and membranes. Progress in bohemianism has led to the development of the artificial heart and heart valves, artificial Joint replacements, as well as a better understanding of the function of the heart and lung, blood vessels and capillaries, and bone, cartilage, interlibrary discs, ligaments and tendons of the musculoskeletal systems.

Examples of Biomedical Engineering Projects Artificial organs – hearing aids, cardiac pacemakers, artificial kidneys and hearts, blood oxygenation, synthetic blood vessels, Joints, arms, and legs. Automated patient monitoring – during surgery or in intensive care, healthy persons in unusual environments, such as astronauts in space or underwater divers at great depth. Blood chemistry sensors – potassium, sodium, 02, CA, and PH. Advanced therapeutic and surgical devices – laser system for eye surgery,

automated delivery of making- computer-based systems for diagnosing diseases.

Design of optimal clinical laboratories- computerized analyses for blood samples, cardiac categorization laboratory. Medical imaging systems- ultrasound, computer assisted tomography, magnetic resonance imaging, positron emission tomography. AGRICULTURAL USES Agricultural biotechnology is a collection of scientific techniques used to improve lands, animals and microorganisms. Based on an understanding of DNA, scientists have developed solutions to increase agricultural productivity.

Starting from the ability to identify genes that may include advantages on certain crops, and the ability to work with such characteristics very precisely, biotechnology enhances breeders' ability to make improvements in crops and livestock. Biotechnology enables improvements that are not possible with traditional crossing of related species alone. Genetic engineering: Scientists have learned how to move genes from one organism to another. This has been called genetic modification, genetic engineering or genetic improvement.

Regardless of the name, the process allows the transfer of useful characteristics (such as resistance to a disease) into a plant, animal or microorganism by inserting genes (DNA) from another organism. Virtually all crops improved with transferred DNA (often called GM crops or Smog) to date have been developed to aid farmers to increase productivity by reducing crop damage from weeds, diseases or insects. Molecular markers:

Traditional breeding involves selection of individual plants or animals based on visible or measurable traits.