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Biotechnology

Bio 206

Socio-economic importance of modern cell biology techniques

Cell biology techniques are used to study the physiological properties of cells, their structures, the organelles they contain, interactions with their environment, their life cycles, division, death and cell functions etc. Few such techniques are; General biochemical and biophysical methods, differential electrophoresis, immunoassays hybridization and blotting techniques.

By understanding how cells work in healthy and diseased states, cell biologists working in animal, plant and medical science will be able to develop new vaccines, more efficient medicines, plants with improved qualities and through increased knowledge of understanding better in how all living things are/live.

The techniques by which cells are studied have evolved due to advancements in microscopy, techniques and technology have allowed scientists to hold a better understanding of the structure functions of cells.

Cell biology is not just about diseases, it has greatly assisted the human fertility programme. DNA testing has been used in archaeology to provide evidence that a living person is related to a long dead ancestor.

In plant science, it has been used to show that two plants that look different have the same genetic origin.

Forensic medicine uses cell biology and DNA fingerprinting to help solve murders and assaults. Neither the court of law nor the criminals can escape the importance of cell biology.

Biotechnology uses techniques and information from cell biology to genetically modify crops to produce alternative characteristics; to clone animals and crops, to produce and ensure high quality food is available at lower costs, to produce purer medicines and in time organs for the many people who need transplants.

Cell biology techniques are often used to determine the trafficking pathway taken by bacterial toxins.

Microtubules in vitro – Experimental cell biology, biochemistry and structural biology have provided a wealth of information about micro tubule function and mechanism in which a zygote is prepared outside before infusing into the female’s womb.

Stem cells and CNS Repair – stem cell biology represents a strong foundation for neural repair, this technology is applicable to treat patients. It has the potential to give rise to a variety of functional human cells, it is conceivable that stem cells will play an important role in disease modelling and drug testing. It also used to study early steps of human development, it has the true potential to transform modern medicine.

Measuring biological responses with automated microscopy – systems cell biology will be applied to the whole continuum of the drug discovery and development process. Cellular models of diseases are being created to better understand the selected targets along with the systems response of the cell models to optimise selection of lead compounds.