DISCUSS THE SOCIO -ECONOMIC IMPORTANCE OF MODERN CELL BIOLOGY TECHNIQUES;-

The following are some of the socio-economic importance of modern cell biology techniques;-

* In metabolism research, Tritium and 14C-labeled glucose are commonly used in glucose clamps to measure rates of glucose uptake, fatty acid synthesis, and other metabolic processes.
* Radioactive tracers are used to study lipoprotein metabolism in humans and experimental animals.
* In medicine, tracers are applied in a number of tests, such as 99mTc in autoradiography and nuclear medicine, including single photon emission computed tomography(SPECT), positron emission tomography(PET) and scintigraphy. The urea breath test for helicobacter pylori commonly used a dose of 14C labeled urea to detect h. pylori infection. If the labeled urea was metabolized by h.pylori in the stomach, the patient’s breath would contain labeled carbon dioxide . In recent years, the use of substances enriched in the non-radioactive isotope 13C has become the preferred method, avoiding patient exposure to radioactivity.
* Enzyme immunoassays are attaining increased usage for the direct detection of microbial antigens in body fluids. Advantages of enzyme immunoassays include a high degree of sensitivity resulting from the inherent magnification of the enzyme-substrate reaction and the use of objective end points without the need for radioactivity.

Enzyme immunoassays have been developed for the reliable detection of several important microbial antigens in body fluids, including antigens of rotavirus, hepatitis B virus, and Haemophilus influenza type b. However, standard enzyme immunoassay techniques are not sufficiently sensitive for the measurement of some antigens from other viruses, bacteria, and parasites in concentrations that commonly occur in body fluids during the course of infectious diseases. This review examines some of the limitations of currently available enzyme immunoassay technology and discusses approaches to increasing the sensitivity and specificity of enzyme immunoassay systems. Methods of improving these assay systems include the use of monocional antibodies, improved methods of enzyme-immunoreactant conjugation, more sensitive substrate systems etc. The use of such techniques should lead to the development of efficient enzyme immunoassay systems for the direct detection of a wide range of bacterial, viral, and parasitic infections.

* Affinity chromatography which is known as a liquid chromatographic technique for separation and analysis of biomolecules based on their biological functions or individual structures has become increasingly important and useful separation method in pharmaceutical science, biochemistry, biotechnology, and environmental science in recent years. This technique is especially known as the most specific and effective technique for protein purification.
* In hydraulic fracturing, radioactive tracer isotopes are injected with hydraulic fracturing fluid to determine the injection profile and location of created fractures. Tracers with different half-lives are used for each stage of hydraulic fracturing. According to the NRC, some of the most commonly used tracers include antimony-124, bromine-82, iodine-125, iodine-131, iridium-192, and scandium-46. Manganese-56, sodium-24, technetium-99m, silver-110m, argon-41, and xenon-133 are also used extensively because they are easily identified and measured.
* Immunofluorescence (IF) microscopy is an important often decisive tool that gives a survey about most of the dermatological and infectious cutaneous diseases to reach diagnosis. In a tabular form, bullous autoimmune disorders such as pemphigus and pemphigoid diseases, connective tissue diseases, vasculitides, mechanobullous disorders and cutaneous infectious agents and the respective IF findings are listed. Different IF methods and especially important aspects such as taking a biopsy at the right spot or how to send samples are described. Clinical pictures of a broad spectrum of cutaneous diseases are set in combination with the IF microscopic results and the value of special but still routine antigen mapping (AM) method is demonstrated especially in a set of identical or atypical clinical pictures.

Immunofluorescence microscopy has not lost it’s value and should be performed in each dermatological center in the sense of ‘Do not miss diagnosis by not performing IF!’