

Tools and Techniques in Biology

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Now a day's research in science is advanced and well developed, new methods and techniques were developed which helped in the study of structure of various kinds of organisms and their cells. Microscope revealed to study the minute organisms and also minute details of internal structure of organisms and cells. In the study of biology, various new methods and techniques have developed, like microscopy, liquid, chromatography, distillation techniques and paper chromatography.

Simple Microscopes are common method using to study the microorganisms. Simple microscope is divided into two types based on the lens used. One is Hand lens, it consists of a biconvex lens, mounted on a handle. This type of lens are commonly used to magnify an entire object. Second one is Dissecting microscope; it consists of a biconvex lens which is moved up and down by a screw attached, to bring the object in sharp focus. A full object can be seen through it.

Compound Microscopes are commonly used in the biology laboratories to view small size or minute organisms and parts and sections of larger organisms.

Autoradiography is a technique is used for study the location of molecules and to trace metabolic events in the cells. The radiolabelled compounds used for this technique and these radiolabelled compounds will injected into the organism. Different types of tissues are investigated to find out where the radioactivity is located. This is done by using photosensitive film of silver bromide. Whenever in the cell or tissue or the organism, the radio

labelled substance is present, silver gets reduced by radiation and is seen as black patches in the autoradiographs.

Cytochemical Methods is well developed and this method is using used to specific chemical constituents within the cells by differentiating a specific part from other parts with a specific stain or dye. Staining is done either by the use of certain dyes or by using the substrates of enzymes e.g. Schiff's reagent, Feulgen staining, is used to localize the presence of DNA in a cell.

Paper Chromatography is another method in the field of biology and it is well known method. In this method the chemical substances separated in mixture. A small drop of the mixture is put on one end of a long strip of the Whatman filter paper. The filter paper end with the drop of the mixture dips into the solvent mixture kept in the large tray. As the result liquid is drawn up on the filter paper. According to their molecular weight, size different substances in the mixture begin to separate. The result will be analysed by using specific chemicals for further investigation.

Blotting technique is advanced technique in the field of molecular biology. This type of techniques used to study molecules such as DNA, RNA and proteins. Based on the study of the molecule, blotting techniques are different types like southern, western and northern blotting. Blotting technique is done by mixture of DNA, RNA or protein flow through a slab agarose or polyacrylamide gel. This agarose gel allows small molecules to move faster than bigger ones. The separated molecules are then pressed against a membrane, which helps move the molecules from the gel onto the membrane.

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