

Tissue Science and Molecular Biology, Stem Cells & Separation Techniques

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Clinical Separation Techniques, Drugs and Nanotechnology

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Molecules in nature stay in complex form. To analyze those molecules various separation techniques have evolved. The separation can be based on size, affinity or towards a particular bonding. This is the era of nanotechnology and nanomedicine. Along with former cell-based treatment, now various nanoparticle helps to activate specific drugs. Various separation techniques will be discussed in this talk. MALDI-TOF-ESI helps to separate and analyze bacterial and viral proteins. We use ESI to add extra ions in the reaction chamber. During drug production, molecules can be in isomer and enantiomer form. To make it more effective, the same structure gets separated during drug production.

Clinical laboratories use a lot of liquid chromatography. HPLC-MS, UPLC is very frequently used. Nanoparticles and Nanomedicine are taking the market. Efficiency, effectivity and the cost cutting are important in the clinical world and in various separation techniques. Some chemicals are toxic for environmental disposal. Combination of liquid chromatography and mass spectrometry brought the different level of dimension in molecular separation techniques. Liquid chromatography combined with Mass Spectrometry and the

microfluidic device gives the ultimate sensitivity to detect single nucleotide polymorphism and an early stage of disease detection. Drug delivery purposes various new molecules are getting explored. Nested molecules help with the slow release of drugs and a keeps a long-term dosage activity.

Speaker Biography

Jayita Goswami is a researcher and faculty for several years. She taught in the colleges and performed research in various laboratories. She got a fellowship from NIH (USA) right after her graduation. Her graduate research was based on bioenergetics and molecular biochemistry. The model organism was *Chlamydomonas reinhardtii*. This organism is getting explored for biofuel research purposes by various research institutions. Molecular, biochemical and biophysical techniques were used to address my research questions. I explored the importance of the hydrogen bond between molecules. She was involved with cancer drug discovery research. She worked with various breast, prostate and blood cancer cell lines and designed drugs. She got the opportunity to explore molecular forensic world too. She gained the expertise to make various molecular tags that has many fold applications. One of her works got patented. She worked in the food microbiology and infectious disease field as well. Although she started my career with botany, my passion for the biomedical science brought me here.

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