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Editorial

Omics: A New Approach in Modern Biology

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In today's era of science, developments and innovations are carried out day to day. Scientists are implementing countless advanced technologies in various areas of research. Researchers are delving deep into the molecular level and are analyzing and carrying out extensive advanced techniques in the field of Biology. Apart from the aforementioned advances, there are many innovative techniques adopted for gaining more introspect, clarity, depth and detail at the molecular level. "Omics" is an informal term that refers to a field of study-in Biology-with niches such as genomics, proteomics or metabolomics. It's used to represent the universal tools for studying Molecular Biology, which aids in the detection of genes (Genomics), mRNA (Transcriptomics), proteins (Proteomics) and metabolites (Metabolomics) while collecting specific biological samples, with a non-targeted and non-biased approach (Figure 1). These approaches are targeted towards understanding complex systems more thoroughly at the molecular level. This idea gives birth to the phenomena of Multi-Omics. They are used to investigate and correlate the cause of diseases with indicators, such as diet. Accurately detecting such environmental factors-responsible for the change in biological signalling-proves to be a difficult task, indeed. The vast majority of Omics studies provide an important insight into diseases. The main intent and benefits of this particular brand of medical research are its natural findings-from a living system-that possesses greater translational potential, as opposed to the conventional brand of research. A different approach to utilize Omics data, for example, is analysing genomic data to comprehend genetic disorder for a particular disease, whereas Proteomics-based data provides data for the expression of proteins, which is associated with cell signalling. When different entities of Omics data are found to align with a particular phenotype, they can be fitted in to coincide within the constraints of a logical framework that indicates the affected pathways and provides depth and clarity to the role (s) of different factors in disease development. These new approaches are accompanied by many challenges, for instance, the combination of advanced techniques and computational methods of Proteome and Metabolome, which is still an ongoing problem that proves to be a dilemma to researchers. Multi-Omics technology would represent an additional and novel means to generate discrete and testable biological data, comparing the hypotheses from large-scale high-throughput datasets. In terms of future scope of work in this field, Multi-Omics technology will help in revealing various unknown cellular mechanisms and interactions at the molecular level. It could substantially lead to a quantified description and/or modelling of cellular metabolism at a genome scale that can serve as a foundation for further hypothesis-driven investigations [1,2].

Figure 1: High-throughput OMICs analysis in Biological system

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