

## **ABSTRACT**

**SCIENCE IS GOING THROUGH TWO RAPIDLY CHANGING PHENOMENA:** one is the increasing capabilities of the computers and software tools from terabytes to petabytes and beyond, and the other is the advancement in high-throughput molecular biology producing piles of data related to genomes, transcriptomes, proteomes, metabolomes, interactomes, and so on. Biology has become a data intensive science and as a consequence biology and computer science have become complementary to each other bridged by other branches of science such as statistics, mathematics, physics, and chemistry. The combination of versatile knowledge has caused the advent of big-data biology, network biology, and other new branches of biology. Network biology for instance facilitates the system-level understanding of the cell or cellular components and subprocesses. It is often also referred to as systems biology. The purpose of this field is to understand organisms or cells as a whole at various levels of functions and mechanisms. Systems biology is now facing the challenges of analyzing big molecular biological data and huge biological networks. This review gives an overview of the progress in big-data biology, and data handling and also introduces some applications of networks and multivariate analysis in systems biology.