Big Data in Omics Science: Challenges and Opportunities

Guest Editor:

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Message from the Guest Editor

Omics data are big and people are less aware of omics science. The challenges to face now are how to handle the complexity, the heterogeneity, and the storage of these immense collections of data, to better elucidate the mechanism underlying the work of the cellular machinery.

Parallel and distributed computing can be employed to provide the researcher with new scalable bioinformatics software tools and techniques, as well as to upgrade existent bioinformatics software tools, combined along with machine learning, data mining, and statistical analysis capabilities, enabling the efficient analysis, integration, and storage of biological data, as well as translating these considerable amounts of data into actionable knowledge, which can be employed to better understand how a genome is organized.

Further, bioinformatics tools could be made available as cloud services, making it possible to further increase the spread and utilization of advanced bioinformatics tools, even in small research centers. Thus, new bioinformatics software tools exploiting high-performance computing, along with the use of machine learning algorithms, can speed up the analysis of complex living organisms.

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