

Open Day Biology, Informatics, Mathematics 2020

OBJECTIFS

Large-scale biology is the source of a considerable amount of data that concerns all levels of life:

- genes, proteins and their interactions, omics data, their dynamics and evolution
- cells, their organisation and the underlying molecular mechanisms,
- organs and their functioning, organisms and their physiology,
- species and populations, ecological systems and their evolution. The exploitation of these data is at the heart of JOBIM.

It requires both models representing the complex laws of life, and computer science work to simulate or estimate these models, to search the data, and to integrate all these heterogeneous sources of information into databases and knowledge. The aim is to gain a better understanding of living organisms, with issues at stake in all fields, whether environmental, agronomic, medical or pharmaceutical. This interface work has developed in an extraordinary way in recent years (the most cited articles today, all sciences combined, are linked to the computer exploitation of omics data). This trend is currently continuing, particularly due to the acceleration of high-speed data acquisition technologies. This considerable acceleration now makes it possible to carry out studies that would have been unthinkable only a few years ago. Examples include the "1000 human genomes" project, which was completed in two years, whereas the sequencing of the first human genome took fifteen years, and the 3000 rice genomes project, in which the IRD and CIRAD are partners. Thanks to this data, the scientific community has an almost inexhaustible source of information, which can be used to answer many questions, such as the origin of domestication and agro-ecological diversity, the migration of human populations, or the predisposition to genetic and non-genetic diseases. These and other examples show very clearly that biology is undergoing a revolution, with the rise of "dry" biologists, modellers and/or bioinformaticians, in complementarity with "wet" biologists working at the bench. The objective of JOBIM is to promote this multidisciplinary research, by highlighting methodologically innovative work that addresses important biological questions. In connection with the Labex Agro, advances in bioinformatics and the biology/computing/mathematics association have led to significant developments in agronomy (genomic selection, high-throughput genotyping analysis), digital agriculture, modelling of leaf development, etc.). The support of JOBIM 2020 by the labex will enable this type of interaction between the agronomy community and very fundamental researchers to be increased.

Responsable :

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Montant :

