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Research in Genomic-Info (URGI)

Management

Anne-Françoise ADAM-BLONDON,
head

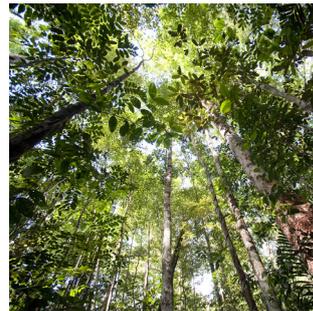
Key figures

- 6 researchers
- 11 engineers and assistant engineers
- 1 administrative staff
- 1 bioinformatics platform: PlantBioinfoPF

Mission and objectives

URGI is a research unit dedicated to plant and pathogens bioinformatics. Its research activity focuses on the integration of data and on the dynamics of genomes in relation to repeated elements. The unit is certified ISO9001 v.2015.

The unit hosts the Plant Bioinformatics Facility [<https://doi.org/10.15454/1.5572414581735654E12>] This facility belongs to the French Institute of Bioinformatics [<https://www.france-bioinformatique.fr/>] which represents the French node of Elixir [<https://elixir-europe.org/>] the European bioinformatics infrastructure for the life sciences.



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The Plant Bioinformatics facility proposes:

- services and expertise in the fields of data management according to FAIR* principles, in connection with the information system developed in the unit: Genetic and Genomic Information System (GnpIS).
- support to international federations of data information systems in agronomy, wheat, plant biology, genetic, genomic and biological resources associated with domestic animals, model or cultivated plants, wild species, micro-organisms, etc.
- genome annotation with the high throughput transposable element annotation pipeline: REPET [<https://bio.tools/repet>].

Workspaces in its cloud and training related to its areas of expertise.

*FAIR: concept covering the ways of constructing, storing, presenting or publishing data so as to allow the data to be "Findable, Accessible, Interoperable, Reusable".



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T Digital Sciences &
Systems Modelling

T Plant Science, Diversity,
Health & Biotechnology

Topics

Research

URGI produces knowledge on the evolution of transposable elements and endogenous viruses in the genomes of plants and fungi as well as on the impact of these elements on the structure and evolution of genomes. For this, the unit's scientists rely on a high-throughput transposable element annotation pipeline, REPET. They have contributed to a large number of genome sequence publications, mainly of plants and plant pathogenic fungi (more than 70).

URGI is also developing methods and tools for integrating heterogeneous data. Its goal is to help develop hypotheses on the impact of genes and transposable elements on the adaptation of plants to their environment. This part of the research in the unit is based on standardization and modeling of the data to be integrated (structural and functional annotations, synteny, polymorphism, phenotypes data) as well as on computer developments with tools allowing to integrate and visualize this data.

Collaboration

URGI has long been involved in national and international scientific events around transposable elements.

The unit is developing collaborations related to data integration and semantic approaches abroad (University of Rothamsted, UK) and in France, with academic partners and at INRAE (MISTEA, MAIAGE, CATI GREP units).

The Plant Bioinformatics platform is also rich in collaborations developed with numerous structures:

- RARe and Phenome-Emphasis infrastructures: leadership and coordination roles around plant and forest genetic resources and plant phenotyping data, data management and web portals, development of data standards and training on standardized data management.
- IFB and ELIXIR infrastructures: coordination roles more particularly in connection with ELIXIR. They contribute to the emergence of a federation of standardized and open data in the service of plant biology.
- Wheat Initiative and IWGSC: the platform manages the data portal of an international initiative on wheat and international data related to the reference sequence of the wheat genome.

The members of the unit are very active in leading working groups, hackathons and / or in consortia steering committees or international initiatives in the field of data standardization with strong collaborations with the Management to INRAE Open Science (DipSO).



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