Siregal
the INRA Plant Genetic Resources Information System

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http://urgi.versailles.inra.fr/siregal

Abstract

The French National Institute for Agricultural Research (INRA) manages **genetic resource collections** [1] for more than 50 species (model species and crops). These genetic resources are regularly used for research programs of INRA or its partners, and are also widely distributed to the scientific community. The objectives of the Genetic Resources Centers (GRC) are to gather, conserve, and provide high quality materials for the scientific community. In order to do that, the GRCs have to be able to trace their actions and to assure the community of a high degree of quality.

URGI (Unité de Recherche Génomique-Info) is an INRA bioinformatics lab dedicated to plant and pest genomics. It hosts a **bioinformatics platform** included in the French ReNaBi bioinformatics platform network and certified Ibisa in 2009. One of the missions of the platform is to develop and maintain a genomic and genetic information system called GnpIS, for plants of agronomical interest and their bio-aggressors.

Siregal, the INRA **Plant Genetic Resource Information System**, fulfills the essential need to manage the collections and associated data following the recommendations of the Biological Resource Centers (OECD). Siregal is suitable for **all plant species** and is used by INRA staff and its partners. It respects community standards, and it makes the integration of existing and future genetic data possible. Siregal is one of the GnpIS applications.

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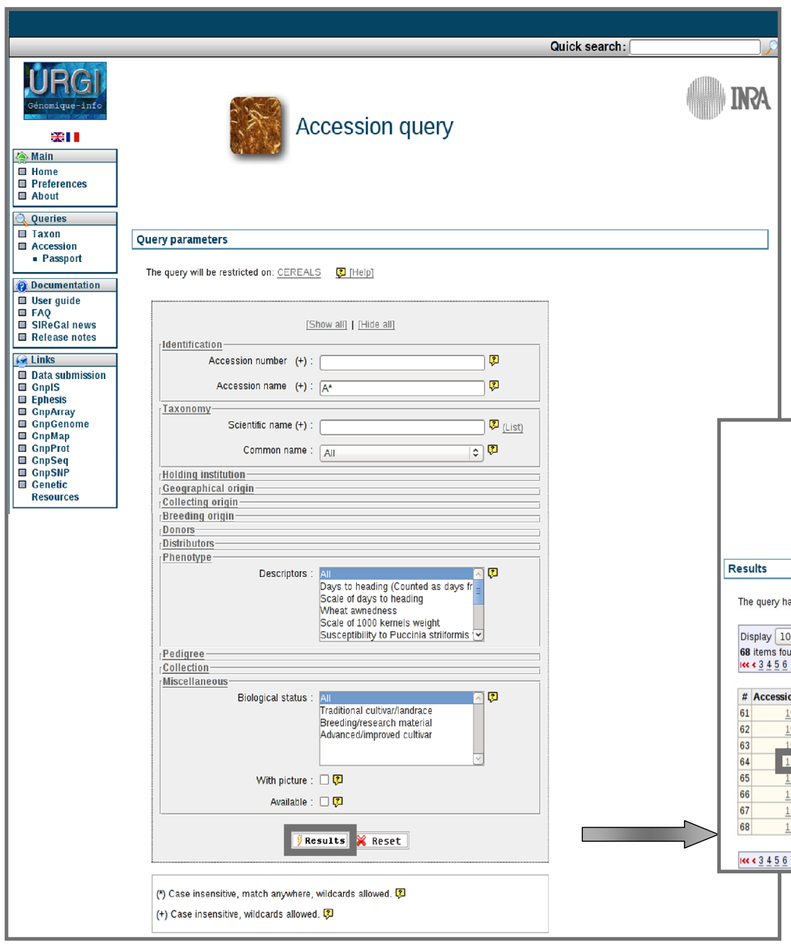
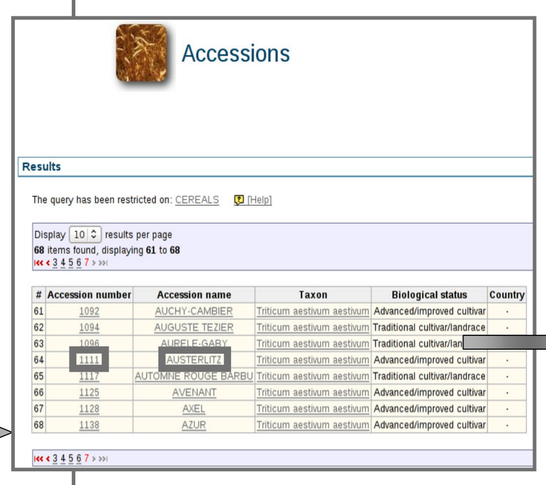
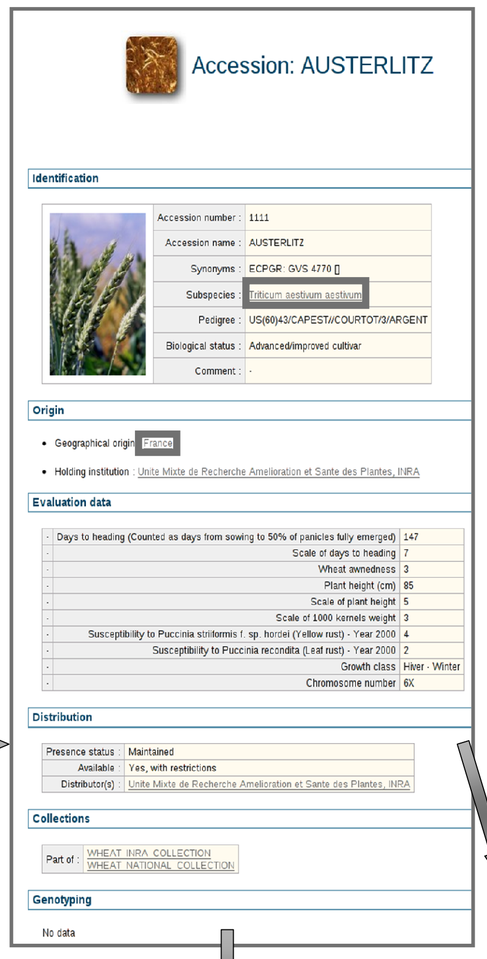




Definitions

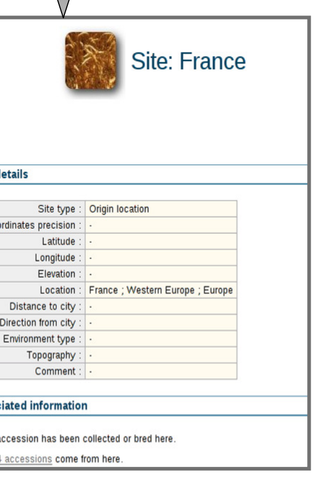
Accession: virtual genetic entity = *germplasm, genotype*

Lot: physical representation of an accession = *plant material (ex. seed lot, tree)*



Data

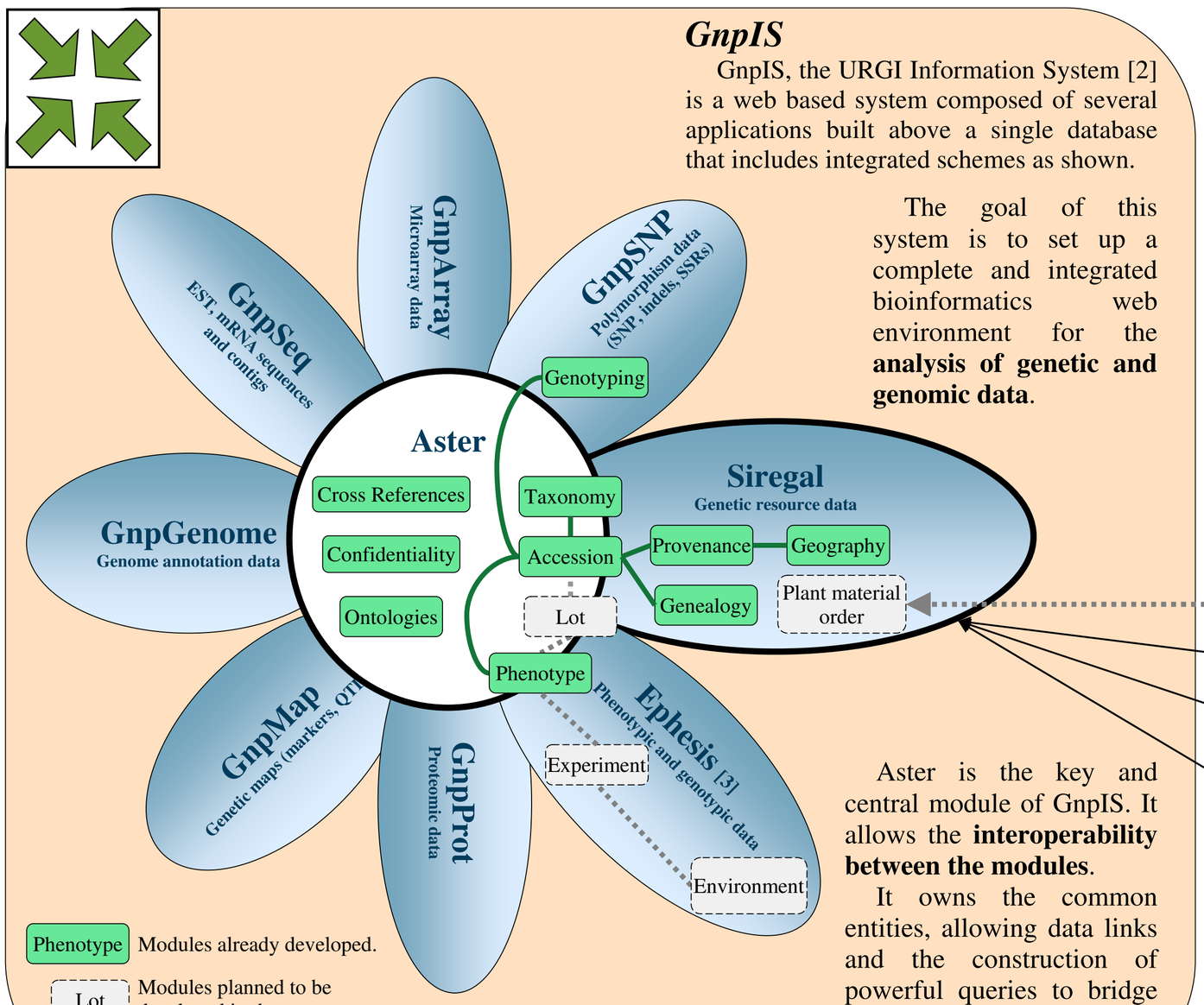
Grapevine	*Vitis* genus 4,451 taxons and cultivars 7,862 accessions 51,558 phenotypes
Cherry	*Prunus* genus 115 taxons 178 accessions
Chestnut	*Castanea* genus 29 taxons 25 accessions 160 phenotypes
Bread wheat	*Triticum* genus 32 taxons 1,744 accessions 16,201 phenotypes
Pea	*Pisum* genus 17 taxons 240 accessions
TOTAL	4,644 taxons and cultivars 10,049 accessions 67,919 phenotypes



GnpIS

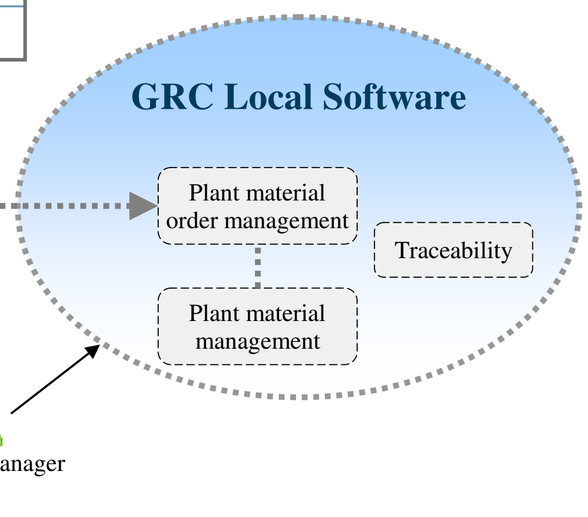
GnpIS, the URGI Information System [2] is a web based system composed of several applications built above a single database that includes integrated schemes as shown.

The goal of this system is to set up a complete and integrated bioinformatics web environment for the **analysis of genetic and genomic data**.



Aster is the key and central module of GnpIS. It allows the **interoperability between the modules**.

It owns the common entities, allowing data links and the construction of powerful queries to bridge genomics and genetics.



Data export

Data analysis

- Variety identification
- Extraction of core collections (subset of a large germplasm collection, maximizing the genetic variability)
- Statistical analysis
- Population genetics
- Quantitative genetics

International databases

- Data exchange
- Cross references exchange
- International visibility

Ex: EURISCO, GBIF

References

[1] The plant genetic resource collections at INRA
http://www.international.inra.fr/research/scientific_resources/collections/plant

[2] GnpIS: Plant and pest genomic and genetic Information System
http://urgi.versailles.inra.fr/projects/Softwares/ (project description)
http://urgi.versailles.inra.fr/gnpis (software)

[3] Ephesis: Environment and Phenotypes Information System, a GnpIS module
http://urgi.versailles.inra.fr/projects/Ephesis, see Poster

Acknowledgements

Siregal is realized in close cooperation with the **resource managers**, **bioinformaticians** and **researchers** of the INRA Genetic Resource Centers: F. Balfourier, E. Balsemin, T. Barreneche, JP. Bouchet, A. Cadic, F. Curk, M. Delalande, A. Didier, L. Feugey, S. Gaillard, N. Guilhot, A. Guyader, A. Label, T. Lacombe, G. Lassalle, F. Lechevallier, L. LeDantec, F. Luro, JB. Magnin-Robert, M. Pitrat, JM. Prosperi, JP. Sampoux, C. Tromeur, A. Zanetto.
Siregal is carried out under cover of a **steering committee** made up of experts of the field: A. Charcosset, C. Christophe, A. Gauffreteau, JY. Lorendeau, H. Quesneville, JM. Prosperi, P. Roumet.
Siregal is developed and maintained by experienced **bioinformatics engineers** at URGI: S. Durand, E. Kimmel, C. Pommier, I. Luyten, S. Reboux, E. Karsenty.
The development is funded by INRA and the code is **open source** and available by request.