

GnpIS : genetic, phenomic and genomic information system



URGI integrative information System
for plants and their bioagressor



- GnpIS
- GnpIS Phenotyping Data : Ephesis
 - Ephesis Wheat
 - Ephesis Tree
- Integration in distributed information systems
- Perspectives

GNPIS OVERVIEW



Unité de Recherche en Génomique Info : URGI

- BAP, SPE, EFPA

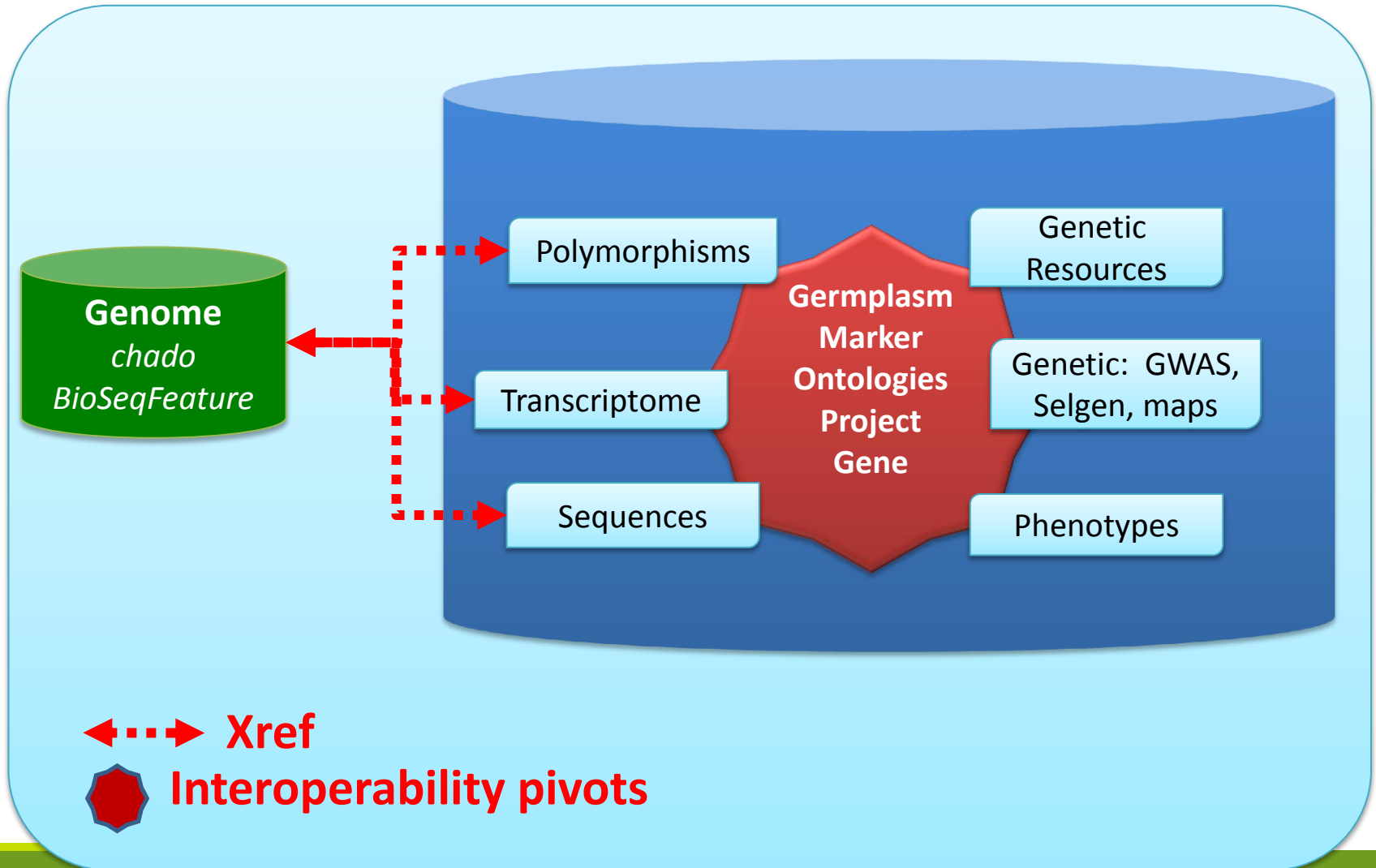
Integrative Information System

- Plant and bioagressors
- From **genomic** to **genetic** and **phenomic**
- Public and private data: national, international consortiums
- Data integration

Modular/layered system

- URGI specific tools
 - Internal research and development
- Open source tools
 - International community standards (GMOD)
- Configuration and adaptation

GnplS Core integrative database



Transversal tools

Quick search

QUICK SEARCH All species

VVIF52

You can find the indexed data list [here](#).

Examples: [VV1](#), [VVIF52](#), [gene.arabidopsis](#), [AY109603](#), [Xvnc430](#)

ADVANCED TOOLS

- Genomes**
Genome annotation data. GnpGenome.
- Taxons**
Taxonomic data.
- Sequences**
NGS projects description. GnpSeq.
- Genetic maps**
Genetic maps and QTLs. GnpMap.
- Polymorphisms**
Molecular polymorphism. GnpSNP.
- Phenotypes**
Phenotypic and environmental experiments. Ephis.
- Association**
Association studies, GWAS. GnpAsso.
- Genetic resources**
Plant genetic resources data. Siregal.
- Arrays**
Expression data. GnpArray.

Biomart

Intermine

Thematic

Genomic

Syteny

Sequences
Polymorphisms
Markers

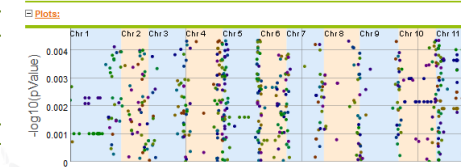
Maps
QTLs/MetaQTLs

Expression

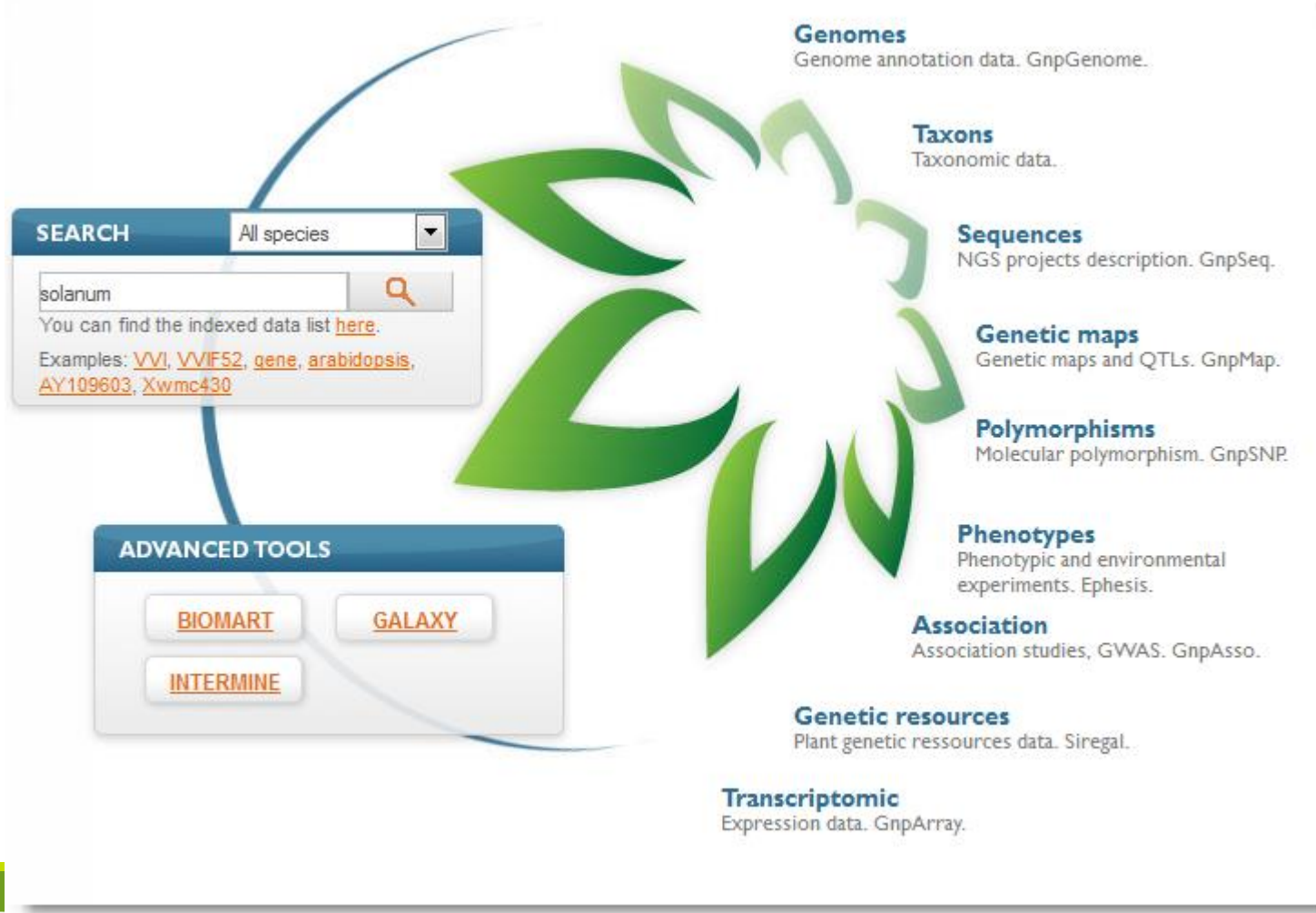
GWAS, Selgen

Phenotypes

Genetic
Resources



- Portal



- Taxon, Genetic Resources overview

All species

[General information](#)
[Botrytis \(B0510\) functional](#)
[Botrytis \(T4\) functional](#)
[Botrytis \(T4\) genome](#)

[Leptosphaeria genome](#)
[Leptosphaeria functional](#)
[Poplar genome](#)
[Sclerotinia functional](#)

[Tomato](#)
[Vitis \(12X\) genome](#)
[Wheat 3B genome](#)
[Phenotype](#)
[Genetic resources](#)

Taxons (8)	Collections (1)	Accessions (1)
Solanum chmielewskii... ★★★★★	SOLANUM TUBEROSUM NA... ★★★★★	SOLANUM, SOL000858 ★★★★★
Solanum pennellii, t... ★★★★★	-	-
Solanum cheesmaniae... ★★★★★	-	-
Solanum lycopersicum... ★★★★★	-	-
Solanum habrochaites... ★★★★★	-	-
Solanum lycopersicum... ★★★★★	-	-
Solanum pimpinellifo... ★★★★★	-	-
Solanum tuberosum tu... ★★★★★	-	-
-	-	-
-	-	-

8 items found, displaying 1 to 8 | Display results per page

- Phenotyping overview

All species

General information

Botrytis (B0510) functional

Botrytis (T4) functional

Botrytis (T4) genome

Leptosphaeria genome

Leptosphaeria functional

Poplar genome

Sclerotinia functional

Tomato

Vitis (12X) genome

Wheat 3B genome

Phenotype

Genetic resources

Taxons (8)	Trials (2)	Accessions (1)
Solanum chmielewskii... ★★★★★	GWAS Tomato Solcap f... ★★★★★	SOLANUM, SOL000858 ★★★★★
Solanum pennellii, t... ★★★★★	GWAS Tomato Solcap A... ★★★★★	-
Solanum cheesmaniae... ★★★★★	-	-
Solanum lycopersicum... ★★★★★	-	-
Solanum habrochaites... ★★★★★	-	-
Solanum lycopersicum... ★★★★★	-	-
Solanum pimpinellifo... ★★★★★	-	-
Solanum tuberosum tu... ★★★★★	-	-
-	-	-
-	-	-

8 items found, displaying 1 to 8 | Display results per page

- Phenotyping dedicated interface (Ephesis)

Phenotypes

Back to form

☐ [Search parameters](#)

☐ [Headers](#)

Available trait and environment variables (observed level)

Available phenotyping Campaign

Trial ▼

2007-2008 ▼

Refresh results

⏪
⏩
1-10 of 163
▶
⏮
⏭
| Display 10 results per page

lotNumber	trialName	trialSite	campaign	ASA(ASA)	Asparagine(Asparagine)	Aspartate(Aspartate)
CR092	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.52125097914594	0.231139499068855	-0.0914471125385168
CR094	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.53012925853269	0.228700008588301	-0.125433616414266
CR001	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.61032228596119	0.27879659948396	0.0299111432764638
CR002	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.4411080400329	0.117337489780296	0.176543177224439
CR003	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.34240811837432	0.100003578654824	0.336132628782009
CR005	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.31741833390072	0.176238604143185	-0.311879187252402
CR006	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.33438716377931	0.334558741937535	0.0222684179363312
CR011	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.47850591260691	0.284278408071404	0.0219844224737174
CR017	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.38928240794137	-0.074188127191161	-0.20953185007079
CR020	GWAS_Tomato_Solcap_Avignon	Avignon	2007-2008	1.10893738013556	0.0094501908256715	-0.0582516000327633

Ephesis data export
 ISATAB export

Agroclim Data
(INRA LDAP)

} 2015 february

GNPIS PHENOTYPING FOCUS



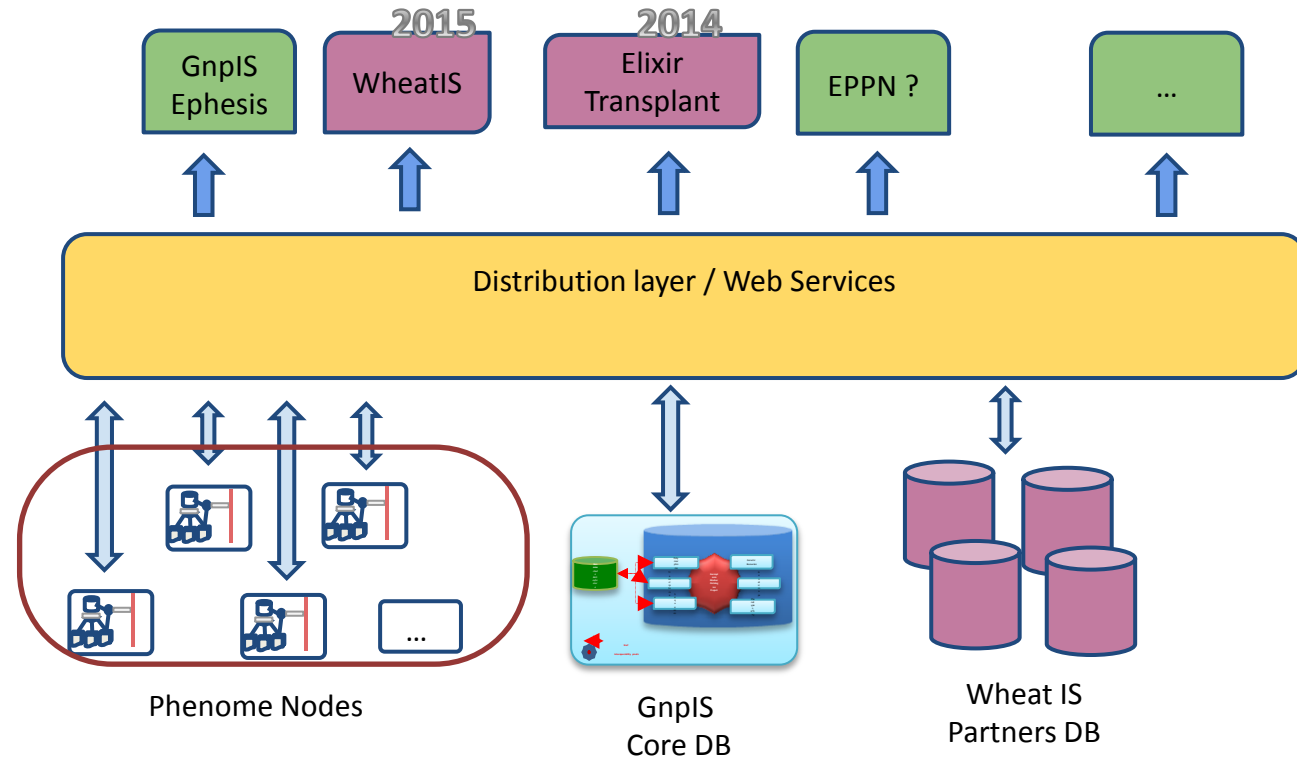
EPHESIS

Phenotyping in GnpIS scientific perimeter

- Ephesis
- Geneticist and Agronomist
 - Ephesis partners
- Phenotype and environment Experimental data
 - Generic : Ontology driven
 - Multiple factors
 - Genotype , treatments, stress, etc...
 - Single observation or temporal series/kinetic
- Environment and Phenotype
 - Whole trial level
 - Plant/plot level
- Raw or elaborated data
 - Alphanumeric or complex
 - Volume limitation
 - archiving system : Phenome example.

GnpIS/Ephesis in distributed Information System

- Phenome
 - Integrative portal
- Transplant
 - Phenotype Data provider
 - Standards
 - Ontologies
 - File format ISA TAB



Data quality for distributed information systems

- **Genotype identification**
 - Collection or Panel
 - Genetic resource centers coordination
- **Trial identification**
- **Ontologies (Variables)**
 - References
 - Application Ontologies
 - Crop Ontology : www.croponontology.org
 - Vitis : Grape Ontology
 - Wheat : Wheat ontology
 - EO, to be developed
 - Chebi, Brenda Enzyme, Golm Metabolome
 - User specific ontology

Soybean 1835 terms **MAXGLYCINE**
Soybean Growth and Trait Ontology v2.0 revision 7

Trait Ontology 1292 terms **LMATTEIS**
Trait Ontology from Gramene

Vitis 248 terms **ERIC_DUCHÈNE**
trait ontology for Vitis provided by INRA, France

Wheat trait 318 terms **SHRESTHA**
Describes wheat traits.

common bean trait 181 terms **HARISH**
common bean trait ontology

- Partnership
 - Ephasis
 - EFPA
 - Phenome
 - Elixir, Transplant
 - Projets Investissements d'Avenir
 - INRA Metaprogram
 - Selgen
 - ACCAF
- Open Data
- Distributed IS
 - Elixir
 - WheatIS
- Interoperability and strengthening
 - Genomic
 - Genetic
 - Phenomic
- Phenotyping Improvement
 - Environment
 - Long temporal series
 - Complex data
 - NIRS
 - Microdensitometry
 - Metadata enrichment
 - Ontologies
 - Standard Exchange Format



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Operating Manager: Delphine Steinbach

Fungi Platform

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Sandrine Nsigue Meilo

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