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Projet Coll-GATE

Anne-Françoise Adam-Blondon, Claude Pavis, Franciane Nuissier, Thierry Lacombe, Nicolas Guilhot, Cyril Pommier

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APPEL A PROJETS 2015

Centres de Ressources Biologiques

Coll-GATE

Mutualisation des applications web de gestion locale des collections

Collaborative development of a web application for the management of the collections

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Document 1

Présentation du responsable du projet et du CRB

Sélectionner un domaine : **Agronomie**

Titre du projet :

Coll-GATE Mutualisation des applications web de gestion locale des collections des CRB

Responsable du projet :

Anne-Françoise Adam-Blondon
Responsable du réseau des CRB Végétaux INRA

Département de Biologie et Amélioration des Plantes et URGI
INRA, Route de Saint-Cyr, 78026 VERSAILLES cedex
afadam@versailles.inra.fr

Réseau des CRB végétaux INRA

CRB BrACySol (**Inra** Ploudaniel)
CRB Pome fruits and rose (**Inra** Beaucouze)
CRB Large seeded legumes (**Inra** Dijon)
CRB Forage and turf (**Inra** Lusignan)
CRB Small grain cereals (**Inra** Clermont-Ferrand)
CRB Prunus (**Inra** Bordeaux)
CRB maize (**Inra** Montpellier)
CRB Vitis (**Inra** Vassal)
CRB Citrus (**Inra Cirad** San Giuliano)
CRB Plantes Tropicales (**Inra Cirad**, Petit Bourg)

Autres partenaires

CRB Plantes Pérennes (**Cirad** Guyane)
CRB VATEL (**Cirad** Saint-Pierre de la Réunion)
CRB Apiacees (**Agrocampus ouest**, Beaucouze)
Plateforme de bioinformatique URGI (**Inra**, Versailles)

Document 2 : Informations générales

1 : Le Centre de Ressources biologiques/biobanque a-t-il déjà bénéficié d'un financement IBISA ?

Oui

Réseau des CRB Végétaux Inra:

- 2009-2010 Cryoveg 299k€
- 2009-2010 molecular traceability 71k€
- 2009-2010 DNA Bank 50k€
- 2010-2012 BRC Tropical Plants 223 k€
- 2014-2015 Plant BRC Network 49.6k€
- 2014-2015 Update of the Vitis CRB web site, 7k€
- 2014-2015 Large seed legumes IBISA 54k€
- 2014-2015 Prunus QUAL 50k
- 2014-2015 Update of the Citrus CRB web site 7k€
- 2014-2015 Large seed legumes IBISA, 54k€
- 2014-2015 CRB BrACySol : IBISA SecureBracysol, 70 k€
- 2014-2015 CRB Pome fruits and Rose data management 56 k€
- 2014-2015 CRB Forage and turf 68k€

2 : Le Centre de Ressources biologiques/biobanque est-il adossé à une Infrastructure nationale du Programme « Investissements d'Avenir » ?

Biobanques	Non
CRB-Anim	Non
Autre :	IFB

3 : Le Centre de Ressources biologiques/biobanque a-t-il reçu un financement direct dans le cadre du Programme « Investissements d'Avenir »

Non

Document 3

Résumé du projet

BRCs need to manage their collections using effective information technology, based on open-access web technologies, adapted to their diverse management needs. For several years, various pragmatic initiatives have been developed independently by BRCs or groups of BRCs, in order to develop their tools. One of the pre-existing tools has been used for fifteen collections. It is currently being adapted, using this generic and consensual model. The work was led by four computer scientists, including a fixed-term contract, and by a group of collections managers and other IT professionals.

With the aim of sharing and improving performance, a working group was formed in November 2014 at the request of BAP department of INRA, for examining the situation, and for devising a joint development strategy shared by the BRCs in charge of plant genetic resources in France, overseas and mainland (INRA, Cirad, IRD). The group's conclusions are that it is necessary to come to a limited number of tools (ideally a single one) that are generic at all levels, configurable by the user according to his BRCs' specificity, with a collaborative maintenance and improvement. Three partners have already worked on this common concept and a conceptual data model has been validated by this group of BRCs.

The object of the present proposal is to go beyond that stage of "good will" and to develop an information system (Coll-GATE-IS) with the core functionalities for the BRCs who need it. This will be done through the improvement of one of the existing tools. Along with the local needs of collection management, this tool will take into account the needs of interoperability at the national level (link with GnpIS-Siregal, the RGScope, Florilège and other future portals), as well as at the European and international level (link with EURISCO, GBIF, ...). For this purpose, the project will contribute to the improvement of the use of international metadata standards and ontologies in the BRCs of the network by developing an online "cookbook" of good practices that will be in turn implemented in the .

Beyond the technical achievement, this project will allow us to continue the momentum of dialogue and networking we undertook, in order to gain relevance in our choice of tools, and finally to strengthen our international visibility.

Document 4

Production scientifique et technique Liste des 10 principales publications Brevets

Technical production of the network

Dessauw D. et al. (2011) Guide des bonnes pratiques pour les transferts de ressources génétiques. CIRAD-INRA-IRD, 60p.

Scientific production in collaboration with the BRCs (examples)

Bacilieri R, Lacombe T, Le Cunff L, Di Vecchi-Staraz M, Laucou V, Genna B, Péros, J-P, This P and Boursiquot J-M (2013) Genetic structure in cultivated grapevines is linked to geography and human selection. BMC Plant Biology. 13 (25).

Burstin J, Salloignon P, Chabert-Martinello M, Magnin-Robert JB, Siol M, Jacquin F, Chauveau A, Pont C, Aubert, Delaitre C, Truntzer C, Duc G. Genetic diversity and trait genomic prediction in a pea diversity panel. BMC Genomics. (2015) Feb 21;16(1):105.

Tricon D, Mariette S, Decroocq V (2010) Search for natural variants of genes coding eukaryotic initiation factors in Prunus species: Identification of new sources of resistance to sharka disease. INTERNATIONAL SYMPOSIUM ON PLUM POX VIRUS, 5 - 9 September 2010, Sofia, Bulgaria

Esnault F., Solano J., Perretant M., Hervé M., Label A., Pellé R., Dantec J.P., Boutet G., Brabant P., Chauvin J.E. (2014) Genetic diversity analysis of a potato (*Solanum tuberosum* L.) collection including Chiloé Island landraces and a large panel of worldwide cultivars. Plant Genetic Resources: Characterization and Utilization, 12 (1): 74-82.

Lacombe T, Boursiquot J-M, Laucou V, Di Vecchi-Staraz M, Péros J-P, This P (2013) Large-scale parentage analysis in an extended set of grapevine cultivars (*Vitis vinifera* L.). Theoretical and Applied Genetics 126 (2), 401-414.

Luro F., Gatto J., Costantino G., Pailly O. 2011. Analysis of genetic diversity in Citrus. °Plant Genetic Resources, doi:10.1017/S1479262111000189.

Roux-Cuvelier M., Grisoni M. (2010). Conservation and Movement of Vanilla Germplasm. In "Vanilla" (E. Odoux, and M. Grisoni, Eds.), Vol. 47, pp. 31-41. CRC Press, Boca Raton, FL (USA).

Sadiki, M., G. Duc and B. J. Furman, (2009) Genetic resources faba bean worldwide. pp. 18-19 in Grain Legumes.

Santini J., Giannettini J., Pailly O., Herbette S., Ollitrault P., Berti L. and Luro F. 2012. Comparison of the photosynthesis and antioxidant performances in basic true species of Citrus and Fortunella growing under chilling conditions in a marginal zone. Tree Structure and Function. Doi: 10.1007/s00468-012-0769-5.

Document 5 - Présentation détaillée du projet pour l'AAP 2015

1 – : Projet

Background

The objectives of the BRCs are to gather, conserve, and provide high quality plant materials to their collaborators and users. For that purpose, they are ensuring a high degree of quality in their management systems and continuously improving it. For example, the Inra Plant BRC are currently giving access to their information through an information system organized in two layers, (i) an heterogeneous collection of local systems that allows the BRCs to manage their collection and to transfer curated data in central databases and (ii) a central system, the INRA Plant Genetic Resource Information System (GnpIS-Siregal <http://urgi.versailles.inra.fr/projects/Siregal/>), integrated with the GnpIS information systems of the URGI platform (ISO 9001, partner of the Institut Français de Bioinformatique – IFB). GnpIS allows linking information on plant genetic resources with genomic or phenotypic data. The most powerful way to improve visibility is to allow the data to be queried by portals and in the last four years, URGI has collaborated to two projects aiming at developing indexes and web services: the first one in the frame of the [TransPLANT European infrastructure](#) (EBI coord) which aims at developing a bio-informatics infrastructure for plant genomics and the second one in the frame of the ARCAD-FEDER project, which aims at developing a portal for Inra, Cirad and Ird plant BRCs (Florilège). The priority of the network is now to improve its system of local databases, to support the quality management of the BRCs and to improve the exposition of up-to-date data central information systems and portals (RG-Scope the [GBIF](#), [EURISCO](#), Florilège, TransPLANT,...)_ addressing different communities of users (biologists, users of biological resources, ...).

Needs and objectives

The BRCs are daily managing and updating very diverse data in relation to the collections: passport data (origin, introduction date, taxonomy, identifiers etc...), data on stocks (quantity, viability, sanitary state,...), tracking the propagations, the orders of samples, the characterization data, legal data (e.g. MTA)... Nearly all of them have developed or implemented local Information Systems (IS) and sometimes associated web portals. The funds necessary for the maintenance, implementation of these IS are coming more or less continuously from different kinds of projects (Inra, Cirad, IBISA, EU ...). As a result, most of the BRC are facing difficulties to adapt these IS on a middle-long term and some of the BRC are still lacking any information system. A solution to this problem would be to use a common IS that would be maintained by a group of BRC that would put their means together. Several tests of existing SI have been done in the past (LabKey, GRIN Global) that did convince neither the BRCs (ergonomy, functionalities) or the computer engineers in charge of the maintenance and evolution of the IS (use of proprietary languages for the IS).

A working group combining BRC managers and computer scientists was formed in November 2014 to produce specifications for the development of a generic IS, building on former and current experiences of evaluation of information systems, the development of IS used by several BRCs such as GnpIS-Siregal, Multicrop, OLGA and CRBTools or by individual BRCs (Citrus, Pome-Fruit-Rose, Vitis, ...). Compared to former projects, the importance of interoperability is much higher and the means to achieve it has been paved by the international community through the development of standards and formats and by the French community through the TransPLANT and ARCARD-FEDER projects. Another point to take into account is the necessity to include a module that would help the BRC to keep track of the informations necessary to manage the implementation of the Access Benefit Sharing (ABS), whatever the system used (Nagoya protocol or International Treaty).

The objectives of the Coll-Gate project are therefore:

- To make a review of the stable ontologies, taxonomies and dictionaries of controlled vocabularies to be used by the IS
- To clarify the rules for the management of medias (e.g. images linked to plant varieties) and documents (e.g. MTA) necessary for the management of the BRC: standards for metadata, repositories, IP rules,... Currently, all these documents are stored in a very heterogeneous way, poorly linked to other data and very poorly interoperable.
- Develop a first version of the generic local information system, Coll-GATE IS

Project Work Plan

WP0. Coordination of the project

Coord: A-F Adam-Blondon, Claudie Pavis

One general meeting with all participants will be organized to test the web application developed and to make a jamboree on metadata and ontology developments. Three meetings with the task coordinators will be organized in order to ensure a proper coordination of the project by visio conferences.

WP1. Recommendations on data standards to promote data interoperability and re-use.

Coord. Cyril Pommier, Thierry Lacombe

Partners involved: all

Interoperability relies on the following foundations: metadata standards, ontologies for descriptors, dissemination of good practices and unambiguous identification of pivotal data.

The metadata standard must describe the full set of information linked to genetic resources, organized as objects and fields/attributes that can be implemented in databases and exchange formats. The FAO/Biodiversity Multicrop Passport Data Standard (MCPD) is widely recognized as the [metadata standard for crop genetic resources](#) and has been generalized into the [Darwin Core Germplasm standard](#) for plant genetic resources in general in

collaboration with the TDWG international consortium. This standard is already implemented in all national and international information systems for plant genetic resources but in a more heterogeneous way in local information systems. Ontologies ensure data quality and interoperability for the descriptors of genetic resources between countries and institutes. Such descriptors are already organized in dictionaries for many species under the umbrella of international organizations such as [IPGRI/Bioversity International](#) or the [International Organization of Vine and Wine](#). Some of those dictionaries are already managed in the [CropOntology](#) and used in international and local information system, although with a heterogeneous degree of compliance. Breeders and researchers are interested by the properties of varieties/wild individuals or of taxons (species, genus, etc...) and they can observe these properties on accessions from germplasm collections. Accessions identification (number/ID in a given species and institution) are cognized as a pivotal data that must be unambiguous, stable over time and never deleted. In turn, varieties names can have synonyms/homonymes, be misnamed and different taxonomies do exist, due to methodological issues or evolution of knowledge in the field. The unicity rule of the accession name and ID/number is respected within institutes, BRC and international information systems. Regarding the taxonomy and variety name issues, several more or less wide international initiatives are trying to give unique identifiers to taxons and to help linking one name to all its synonyms (e.g. [International Plant name index](#); the [Vitis International Variety Catalogue](#), [USDA GRIN taxonomy for plants](#)) and are progressively considering the use of URIs. Interoperability standards must be disseminated worldwide through every possible and relevant mean (e.g. the online [cookbook](#) under development in the frame of the international G20 initiative WheatIS).

Finally, the BRC managers are dealing with a variety of documents in relation with the accessions (e.g. pictures of the accessions, of specific organs, etc) or their exchange (e.g. MTA, PIC, MAT, sanitary passport, etc...). Part of these documents have no vocation for becoming public but must be traceable by the BRC manager and, for long term legal issues, by the holding Institutes. The other part of the documents contributes to the scientific information supporting the characterization and use of genetic resources and must be as interoperable as the rest of the data. For both categories, their storage with correct metadata would improve their long term use and could be developed, based on the [Dublin Core](#). The objectives of WP1 are:

- (i) to summarize the recommendations to the BRC partners for the use of standards, controlled vocabularies and ontologies for germplasm and attached documents into an online WIKI/blog. The gaps for future developments will also be identified.
- (ii) ensure their implementation in the Coll-GATE IS and facilitate their use by the BRC managers
- (iii) in the frame of the Breeding API Project, to contribute to the development/implementation of a standard API based on the MCPD/Darwin Core

Germplasm that will be implemented both on the national (GnpIS-Siregal) and the local (Coll-GATE IS) information systems. This will facilitate future communications with various dedicated portals such as the Florilège portal for the plant genetic resources of Cirad, Inra and Ird under development in the frame of the ARCAD FEDER project. It will also facilitate reciprocal updates between GnpIS-Siregal and the Coll-GATE IS.

WP2. Development of a generic local information system for the BRCs.

Coord : Nicolas Guilhot, Franciane Nuissier

Consultant database expert : Sophie Durand.

Partners: all

The aim of the Coll-GATE group is to develop a generic core application that will be improved in the future with different modules addressing specific processes deployed by the BRC managers. The objective of the present project is to develop a first version of the generic core application through the improvement of one of the existing tools already managing diverse types of crop and based on open source frameworks (Multi-crop, OLGA V2, Angers Plant Database). The choice will be made before the start of the project, by the end of 2015. The application that will be delivered should allow managing:

- the creation/edition/deletion, query and consultation of accessions and lots, passport data (accessions) with possible additional information linked to regulation related to the exchange of accessions (e.g. EURISCO metadata and possible recommendations from the IBISA project “Mise-en-œuvre de l’APA pour les CRB détenant des ressources agronomiques / Implementation of ABS in BRC holding resources for agriculture” (coord BRC-T) submitted at the present call) and localization of the lots (fridge, field plots, etc...).
- groups of accessions on various criteria (panels, CRB, projects, regulation issues...)
- orders of accessions: clients and associated list of order, date of query, date of sending. At this stage of the project the whole process of diffusion will not be managed.
- Descriptors of the accessions and lots, n-1 parentage of a taxon/accessions
- access rights to information and security aspects
- medias or documents linked to the data (see WP1)
- data export via an API or csv files allowing data submission to GnpIS-Siregal, possibly GBIF and EURISCO and interoperability with any portals (see WP1)
- to choose the language of the web application and possibly of data (translator) for a use by the technical staff while keeping the international interoperability
- to easily provide various indicators on the accessions, orders, etc...(statistics)
- to automatically trace and consult all data modifications in the database

The database should allow the management of data from several BRCs in a single application. Installation and updates should be very easy for each BRC possibly using Virtual Machines. The frameworks used for the database and its interface should be open.

Task 2.1 Finalization of the technical specifications

The reference terms will be specified prior to the start of the project, building on former experience. A first version of the data model will be generated by the Coll-GATE group prior to the project based on the comparison of the [GnplS-Siregal](#), [OLGA](#), [Multi-crop](#), Angers Plant Database data models and taking the best of each of them and with the aim to improve one of them. At the start of the project, a final review of the specification, of data model and a choice of the frameworks to be used will be made with all partners, module by module and screen mock-ups will be generated for a check with the BRC managers of the specifications. The type of open-source license under which the application will be disseminated will be chosen in interaction with Inra and Cirad layers.

A set of real data for future tests will be prepared by URGI and the BRC managers. For some volunteer BRC, these data will be the complete collection so that the managers of these BRCs can use the information system as soon as possible

Task 2.2 Iterative development of first version of Coll-GATE IS

The development of the database will be built as much as possible on an existing one to save time. If necessary, translation from a framework to another can be done to meet the final technical specifications. The test data will be transferred in the database.

The interface will be developed, building as much as possible on an existing one, module by module and tested by the BRC managers.

The development will be done by iterations: at each iteration the progresses will be checked by the users. The developments will be stored and documented on a software forge compliant with IP issues (e.g. RENATER SourceSUP) to facilitate future co-developments.

In conclusion, the present Coll-GATE project will allow the BRC to progress toward a reliable data management system which is of great help to move forward in the BRC quality management system. It should be noted that the discussions of the group have already led to improvements (under development) of the OLGA application. Another ambition of the project is to enable sustainable projects of co-development under good practices in distributed units under the supervision of a Bioinformatic facility member of the IFB Infrastructure (URGI). Finally, this project will be an opportunity for all BRC and associated IT engineers to develop a shared strategy on standards and formats in relation with germplasm management, well inserted in international initiatives, which the ground of data interoperability and international visibility. This will build on the experience gained by URGI and many of the BRC managers in the frame of large national (e.g. PIA projects BreedWheat, Amazing, Rapsodyn, BFF, Peamust, PHENOME, ARCAD FEDER) or international (e.g. TransPLANT, WheatIS, Breeding API,) projects that deal with data management.

2 – Description du ou des centres de ressources biologiques et des partenaires impliqués dans le projet

The consortium of partners is composed of (i) managers and quality managers of 13 BRCs (see the list p1) among which 2 are certified NF S96-900, (ii) the IT engineers linked to the BRCs and (iii) IT project managers and developers from the URGI bioinformatics platform (labelled IBiSA, IFB and certified ISO 9001), that is in charge of the development of the Inra BRC central IS, GnpIS-Siregal. This collectif represents most of the IBiSA labeled plant BRCs, manages hundreds of thousands of accessions and yearly distributes around 20,000 samples. Other BRC which are not "IBiSA labelled" (CRB Coffea Montpellier, CRB Arbres forestiers Orléans, CRB Medicago Montpellier, CRB Maraîchères Avignon,...) and the coordinator of the development of the Florilège Plant-BRC portal (C. Jenny, Cirad Montpellier) will give a contribution to D1.1, D1.4 and D2.1 (see below) without being official partners. We also plan to interact with the Animal National Cryobank to check whether the tool is generic enough for being adapted in the future for their needs (D2.1).

The Inra Plant BRC Network, and the other partners of the Coll-GATE project are also involved in several other collective projects submitted to the present call: one on the implementation of APA in BRCs, one aiming at building a web portal for all Biological Resources for Agriculture (animal, plant, microbe and environment).

Coll-GATE deliverables

WP1

D1.1 : Online WIKI/Blog of recommendations for the germplasm data management

D1.2: Implementation/preparation of new lists of descriptors ready for submission to the Crop Ontology.

D1.3: Development/improvement of the MCPD/Darwin Core Germplasm in the frame of the Breeding API initiative and implementation on GnpIS and Coll-GATE IS.

D1.4: Recommendation/specifications for a common image bank with metadata and right management, plus direct download and URL/URI referencing capabilities.

WP2

D2.1. Technical specifications (with screen mock-ups) for all the modules of the targeted Coll-GATE IS v0. Definition of the license for dissemination.

D2.2 Coll-GATE IS v0

Table 1. Rôle of the partners in the project.

BRC/Unit	WP	Deliverable	Role
URGI (Inra Plant BRC Network)	0		Co-coordination of the project, organization of meetings, reports
All BRCs, URGI	1, 2	D1.1, D1.2, D1.4, D2.1	Contribution to the online "cookbook" (D1.1) – to

			dictionaries of controlled vocabularies and possible evolution in ontologies (D1.2) - Contribution to the definition of a strategy for the management of medias and documents (D1.4) - Contribution to the technical specifications (D2.1)
URGI	1	D1.2 D1.3	Co-Coordination of the WP1 - Dissemination to the BRC managers of the CropOntology templates (D1.2) - Development and implementation of the API on GnpIS and Coll-GATE IS (contribution) (D1.3) -
URGI	2	D2.1, D2.2	URGI is specialized in database and will closely follow the specifications (D2.1) and the process of development (D2.2). URGI will contribute to the production of datasets for the test of CollGATE IS.
UR ASTRO (Tropical Plant BRC)	0		Co-coordination of the project, organization of meetings, reports
UR ASTRO (Tropical Plant BRC)	2	D2.2	Co-coordination of WP3 - - Development and test of the Coll-GATE IS (D2.2)
UMR GDEC (Small Grain Cereals BRC)	1	D1.3	Implementation of the Standard API on Coll-GATE -
UMR GDEC (Small Grain Cereals BRC)	2	D2.2	Co-coordination of WP2. Development (D2.2) of the Coll-GATE IS; tests of Coll-GATE IS on small grain cereal data
UMR AGAP/UE Vassal (Vitis BRC)	1		Co-coordination of WP1
UMR AGAP/UE Vassal (Vitis BRC)	2	D2.2	Test of migration from an existing database to Coll-GATE IS (2.2)
UMR Agroécologie (Legume BRC)	2	D2.2	Test of Coll-GATE IS on pea data (D2.2)
UMR IGEPP/UE Ploudaniel (BraCySol BRC)	1	D2.2	Test of Coll-GATE IS on Brassica, Solanum and Allium data (D2.2)
UMR PVBMT La Réunion (Vatel BRC / UMR PVBMT La Réunion (Vatel BRC)	2	D2.2	Test of Coll-GATE IS on vanilla, garlic and NUS data (D2.2)

List of five publications (or productions) relevant to the project:

Bonnet P, Lacombe T, Barbe J, Belluau M, Audeguin L, Boursiquot J-M, Séréno C, Barthélémy D, Birnbaum P, Edelin C, Liens B, Molino J-F, Prospero J, Théveny F, This P (2011) PlantGrape, le catalogue des vignes cultivées en France. INRA-IFV. Site Internet : <http://plantgrape.plantnet-project.org/>

Krajewski P, Chen D, Ćwiek H, van Dijk ADJ, Fiorani F, Kersey P, Klukas C, Lange M, Markiewicz A, Nap JP, van Oeveren J, Pommier C, Scholz U, van Schriek M, Usadel B, Weise S (2015) Towards recommendations for metadata and data handling in plant phenotypic experiments, *Experimental Botany*, in press

Lerigoleur-Balsemin E, Persohn T (2012) Implementation of an European database for the genetic resources of the main cultivated Prunus species: « The European Prunus data base (EPDB) »: <http://www.bordeaux.inra.fr/euprunusdb/> in the frame of ECPGR (European Cooperative Programme for Crop Genetic Resources Networks)- Bioversity International.

Nuissier F., Pyrée C., Hilaire W. & Pavis. C. (2014). OLGA, a web software for managing phylogenetic resources. APP-IDDN.FR.001.210021.000.R.P.2014.000.10000

Steinbach D., Alaux M., Amselem J., Choisne N., Durand S., Flores R., Keliet A., Kimmel E., Lapalu N., Luyten I., Michotey C., Mohellibi N., Pommier C., Reboux S., Valdenaire D., Verdelet D. and Quesneville H. (2013) GnpIS: an information system to integrate genetic and genomic data from plants and fungi. Database. doi:10.1093/database/bat058

Document 6 : Ressources nécessaires au projet et sources de financement

- Les financements :

- Le coût global du projet

The total requested funding is 89 520 €

- Description des coûts en fonction des productions livrables

WP1 deliverables : Recommendations on data standards to promote data interoperability and re-use.

The corresponding tasks will be done on our own human resources. The only costs will be travel expenses, evaluated to about a quarter of the total travel expenses.

Total : 5 800 €

WP2 deliverables : Generic local information system for the BRCs

The main cost will be personal costs, corresponding to 20 months of developer for Coll-GATE IS: **63 200 €**

9 additional months will contribute to the development obtained from other sources of funding (see below).

A computer for the developer : **1 500 €**

Fees for data storage and office supplies : **1 400 €**

Travel expense, evaluated to about 3 quarters of the total travel expenses : **17 620 €**

Total : 83 720 €

Total travel expenses: 23 420 €

Most of the meetings will be done using visio-conference. However some “physical” meetings will be necessary and are described below.

A single workshop gathering all partners will be held at mid-term of the project, in Versailles, to (i) make a jamboree of tests on the Coll-GATE IS application and (ii) to make a training session on ontologies and metadata on real data.

Other meetings will be necessary for WP leaders and informaticians, to follow-up the project, and to collaborate on informatic developments.

- Les ressources propres, les autres financements éventuellement obtenus (ANR, projet européen...) et leurs durées ; joindre un tableau récapitulatif des financements obtenus

CPER 2015-2017 (FEDER-Région Guadeloupe) got by BRC Tropical Plants in Guadeloupe. It will allow to hire a temporary staff in informatics (IT Engineer). It will be dedicated to the Coll-GATE project for 6 months, corresponding to 18 960 €

2015-2016 (Région Réunion Projet Germination) requested by CRB VATEL, will allow to hire a VSC as informatician, who will work for Coll-GATE during 3 month, corresponding to 6 750 €.

Table2. Other funds contributin to the project obtained by the consortium

Project name	Partner	Amount (€)	object
CPER 2015-2017	BRC Tropical	18960	Developer
Germination	BRC VATEL	6750	Developer
Total		25710	

- Les financements demandés et leurs durées
- Les besoins en équipements, consommables et personnels, en les justifiant

Personnel expenses: 63 200 €

We plan to hire an ingenior for 20 month, in charge of the informatic developments in collaboration with the permanent staff. He will be located in Clermont-Ferrand, the Small Grain Cereals BRC and its linked developers being strongly involved in Coll-GATE developments and in the coordination of the WP2.

Equipment : 1 500 €

We will only need to buy a personal computer for the informatician to be hired in Clermont-Ferrand.

Consommables: 24 720 €

This corresponds mainly to travel expenses. The rest corresponds to provisions for data storage and back-up.

Document 7

Document d'engagement

Les soussignés : responsable du projet, responsable du CRB et personne habilitée à engager l'organisme, déclarent avoir pris connaissance de l'ensemble du document et donnent leur accord pour leur participation à ce projet dans les conditions décrites de répartition des tâches et de financement demandé.

Titre du projet : **Coll-GATE** Réseau français des CRB de plantes : mutualisation des applications web de gestion des collections

Aide financière demandée :

- coût total: 89 520 €

Somme sur Coût HT	Type de dépenses					
Partenaire bénéficiaire	CDD	Déplacements	Equipement	Fournitures et petits matériels	Prestation	Total
P-01 INRA San Juliano		2000				2000
P-02 INRA Ploudaniel		2000				2000
P-03 INRA Clermont-Ferrand	63200	3940	1500	150		68790
P-04 INRA Lusignan		480				480
P-05 INRA Beaucauzé		560				560
P-06 INRA Montpellier		610				610
P-07 CIRAD Guyane		1260				1260
P-08 INRA Antilles-Guyane		3480		150		3630
P-09 INRA Dijon		1120				1120
P-10 INRA Bordeaux		550				550
P-11 INRA Vassal		1220				1220
P-12 CIRAD Réunion		4200				4200
P-13 INRA Versailles		1700			1400	3100
Total	63200	23420	1500	300	1000	89520

- **P-13 INRA Versailles** : will manage and redistribute the funds for all partners

Somme sur Coût HT	Type de dépenses				
Partenaire gestionnaire	Equipement	Fonctionnement	Personnel	Total	
P-13 INRA Versailles	1500	24720	63200	89520	

Signatures (Daté, signé)

Responsable du projet et du CRB

Nom, prénom : ADAM-BLONDON Anne-Françoise

Affiliation : INRA

Représentant légal

Nom, prénom : Caranta Carole

Titre : Chef du département de Biologie et amélioration des plantes INRA

Affiliation : INRA

Adresse : Route de Saint Cyr – RD 10 – 78026 Versailles

Téléphone : 01.30.83.34.73

Télécopie : 01.30.83.32.22

Courriel : bap@versailles.inra.fr

Le 21/05/2015



ANNEXE 1: Personnels impliqués dans le projet

	Nom	Prénom	Statut	Coordonnées	Fonction	ETP	Source financement
P-01	CRB Agrumes (Corse) AGRUMES						
	BLOQUEL	Emmanuel	CP	bloquel@corse.inra.fr	BRC manager	0.10	Inra
	COSTANTINO	Gilles	CP	costantino@corse.inra.fr	Contribution to data management	0.05	Inra
	CURK	Franck	CP	curk@corse.inra.fr	Contribution to germplasm management	0.05	Inra
	GUENIOT	Florian	CP	curk@corse.inra.fr	Informatic development	0.05	Inra
	LURO	François	CP	luro@corse.inra.fr	Scientific management of the CRB	0.05	Inra
	PAILLY	Olivier	CP	pailly@corse.inra.fr	Quality management	0,10	Inra
P-02	CRB BraCySol (Ploudaniel) BRACYSOL						
	ESNAULT	Florence	CP	florence.esnault@rennes.inra.fr	BRC manager	0.1	Inra
	LABEL	Alain	CP	alain.label@rennes.inra.fr	Germplasm management	0.1	Inra
	MORICE	Jérôme	CP	jerome.morice@rennes.inra.fr	Informatic development	0.1	Inra
P-03	CRB Céréales à Paille (Clermont) CAP						
	DIDIER	Audrey	CP	audrey.didier@clermont.inra.fr	BRC manager	0.2	Inra
	GUILHOT	Nicolas	CP	nicolas.guilhot@clermont.inra.fr	Co-coordination WP3, développement web	0.4	Inra
	SCHERMA	Frédéric	CP	frederic.scherma@clermont.inra.fr	Développement web	0.4	Inra
P-04	CRB Fourrages (Lusignan) FOURRAGES						
	SAMPOUX	Jean-Paul	CP	Jean-Paul.Sampoux@lusignan.inra.fr	BRC manager	0.1	Inra
P-05	CRB Fruits à Pépins et Rosiers (Angers) FRAPER						
	BOURBEILLON	Julie	CP	julie.bourbeillon@agrocampus-ouest.fr	Data manager	0.1	Inra
	LEGUYADER	Arnaud	CP	Arnaud.leguyader@angers.inra.fr	Germplasm management	0.1	
	PERNET	Alix	CP	Alix.pernet@angers.inra.fr	Germplasm management	0.1	
	DUPUIS	Fabrice	CP	fabrice.dupuis@angers.inra.fr	Informatic development	0.05	Inra
	GAILLARD	Sylvain	CP	sylvain.gaillard@angers.inra.fr	Informatic development	0.05	Inra
P-06	CRB Maïs (Montpellier) MAIS						
	ZANETTO	Anne	CP	zanetto@supagro.inra.fr	BRC manager - Germplasm management	0.1	Inra

P-07	CRB Plantes Pérennes Tropicales (Guyane) PPG						
	CHARMETANT	Pierre	CP	pierre.charmetant@cirad.fr	BRC manager - Germplasm management	0.20	Cirad
	LACHENAUD	Philippe	CP	philippe.lachenaud@cirad.fr	Germplasm management	0.05	Cirad
	PERTHUIS	Bernard	CP	bernard.perthuis@cirad.fr	Quality control - Germplasm management	0.10	Cirad
P-08	CRB Plantes Tropicales (Antilles françaises) PT						
	BOISSEAU	Marc	CP	marc.boisseau@cirad.fr	Quality control	0.05	Cirad
	PAVIS	Claudie	CP	claudie.pavis@antilles.inra.fr	BRC co-manager of the project	0.10	Inra
	ROQUES	Danièle	CP	daniele.roques@cirad.fr	BRC manager	0.05	Cirad
	NUISSIER	Franciane	CP	franciane.nuissier@antilles.inra.fr	Informatic development - WP co-coordination	0.40	Inra
	X	x	CDD	-	Informatic development	0.50	Inra (FEDER)
P-09	CRB Protéagineux (Dijon) PROTEAGINEUX						
	DELAITRE	Catherine	CP	catherine.delaitre@dijon.inra.fr	BRC Manager - Germplasm management	0.20	Inra
	KREPLAK	Jonathan	CP	Jonathan.kreplak@dijon.inra.fr	Informatic development	0.20	Inra
P-10	CRB Prunus (Bordeaux) PRUNUS						
	BLOUIN	Marine	CP	Marine.blouin@bordeaux.inra.fr	BRC manager - Germplasm management	0.20	Inra
P-11	CRB Vitis (Vassal) VIGNE						
	LACOMBE	Thierry	CP	lacombe@supagro.inra.fr	BRC manager - Database management	0.10	Inra
	Y	y	CP	(recrutement en cours)	Germplasm management	0.10	Inra
P-12	CRB VATEL (La Réunion) VATEL						
	BROUCHOUD	Henri	CP	henri.brouchoud@cirad.fr	Informatic networks	0.05	Cirad
	DESSAUW	Dominique	CP	dominique.dessauw@cirad.fr	BRC manager	0.05	Cirad
	GRISONI	Michel	CP	michel.grisoni@cirad.fr	Germplasm management	0.05	Cirad
	ROUX-CUVELIER	Michel	CP	michel.roux-cuvelier@cirad.fr	Germplasm management	0.05	Cirad
	Z	z	CDD	-	Informatic development	0.25	Cirad (Germination)
P-13	URGI						
	ADAM-BLONDON	Anne-Françoise	CP	afadam@versailles.inra.fr	Co-Manager of the project	0.15	Inra
	DURAND	Sophie	CP	sophie.durand@versailles.inra.fr	Informatic project leader - developer	0.25	Inra
	LETELLIER	Thomas	CP	thomas.letellier@versailles.inra.fr	developer	0.1	Inra

	POMMIER	Cyril	CP	cyril.pommier@versailles.inra.fr	Informatic project leader - developer	0.15	Inra
P-14	CRB Apiacées (Beaucouzé)						
	GEOFFRIAU	Emmanuel	CP	emmanuel.geoffriau@agrocampus-ouest.fr	CRB manager	0.1	AgroCampus Ouest

Curriculum vitae des responsables du projet

Anne-Françoise ADAM-BLONDON

UR Génomique-Informatique (URGI)
INRA Bât 18, RD10, Route de Saint-Cyr
78026 VERSAILLES
tel: 33 1 30 83 37 49

<http://urgi.versailles.inra.fr>

Email : afadam@versailles.inra.fr

Education

Engineer of the National School of Agronomy of Montpellier (SupAgro Montpellier)
PhD on Genetics and Plant Breeding

Expertise:

Plant Genetics, Plant Genomics

Experience:

Deputy Director of URGV (2008-2010)

Deputy director of the Plant Breeding Division of INRA in charge of the genetic resources and Bioinformatics (2010-2012)

Deputy director of the Plant Biology and Breeding Division of INRA in charge of the genetic resources and Bioinformatics (2013-)

Member of the INRA working group on genetic resources since 2010

Member of the scientific committee of the National institute for extension in viticulture and wine industry (IFV) since 2008 and deputy head for the Plant material sector activities since 2011.

Projects coordination

- 2004-2007: Trilateral GABI-Génoplane-MyCT, TRI017 « CoreGrapeGene : Exploitation of the natural diversity of grape through functional genomics for improved resistance and quality »
- 2005- 2008: ANR-05-GPLA-014 « Sequencing the grape genome » complementary with the italian VIGNA project.
- 2009-2011: Trilateral GABI-Génoplane-MyCT, KBBE-008-01 “GrapeReSeq : Large scale re-sequencing in the *Vitis* genus for identification of resistance genes, SNP discovery and high throughput genotyping”
- 2013-2016 : FP7-KBBE « INNOVINE. Combining innovation in vineyard management and genetic diversity for a sustainable European viticulture”
- 2014-2016: IBISA project Inra Plant BRC Network

Five representative publications link to the project:

Grimplet J, Adam-Blondon A-F, Bert P-F, Bitz O, Cantu D, Davies C, Delrot S, Pezzotti M, Rombauts S, Grant R Cramer GR (2014) The grapevine gene nomenclature system. BMC Genomics, 15 :1077

Houel C, Martin-Magniette M-L, Nicolas S, Lacombe T, Le Cunff L, Franck D, Torregrosa L, Conéjéro G, Lalet S, Patrice This P, Adam-Blondon A-F (2013) Genetic diversity of berry size in grapevine (*Vitis vinifera* L.), Aust. J Grape Wine Res, 19:208-220

- Mejía N, Soto B, Marcos Guerrero M, Casanueva X, Houel C, de los Angeles Miccono M, Ramos R, Le Cunff L, Boursiquot J-M, Hinrichsen P, Adam-Blondon A-F (2011) Molecular, genetic and transcriptional evidence for a role of *VvAGL11* in stenospermocarpic seedlessness in grapevine. *BMC Plant Biol*, 11:57
- Houel C, Bounon R, Chaïb J, Guichard C, Péros JP, Bacilieri R, Dereeper A, Canaguier A, Lacombe T, N'Diaye A, Le Paslier MC, Vernerey MS, Coriton O, Brunel D, This P, Torregrosa L, Adam-Blondon AF (2010) Patterns of sequence polymorphism in the fleshless berry locus in cultivated and wild *Vitis vinifera* accessions. *BMC Plant Biol*, 10:284.
- Lecunff L, Fournier-Level A, Laucou V, Vezzulli S, Lacombe T, Adam-Blondon A-F, Boursiquot J-M, This P (2008) Construction of nested core collections to optimize the exploitation of natural diversity in *Vitis vinifera* L. subsp *sativa*. *BMC Plant Biology*, 8:31
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Claudie PAVIS

UR Agrosystèmes Tropicaux (ASTRO)

INRA Domaine Duclos

97170 Petit-Bourg - Guadeloupe

Tel: 590 (0)590 25 59 02

Email : claudie.pavis@antilles.inra.fr

Formation

Doctorat en Entomologie

Expertise

Protection intégrée, Ressources biologiques

Environnement et aires protégées

Expérience professionnelle

Animatrice puis directrice du CRB Plantes Tropicales (2005-2015)

Directrice de l'unité de recherche en Productions Végétales (2002-2009)

Chercheur en écologie chimique et interactions plantes / bioagresseurs (1986-2005)

Coordination de projets

- 2013-2015 - CPER - MALABAR : Caractérisation et maintien des ressources *biologiques végétales en vue de leur diffusion auprès des professionnels de l'agriculture, volet 2.*
- 2013-2015 - RITA Guyane (Réseau d'innovation et de transfert agricole) - *Gestion de l'information et de la communication via des outils web.*
- 2012-2015 - NetBiome - *Safe-PGR : Towards Safer Plant Genetic Resources through improved viral diagnostics.*
- 2010-2012 - IBiSA - *Inter-TROP Mise en réseau des CRB de plantes tropicales.*
- 2010-2012 - CPER - CARAMBA : *Caractérisation et maintien des ressources biologiques végétales en vue de leur diffusion auprès des professionnels de l'agriculture, volet 1.*
- 2009-2011 - Trans-FAIRE : Mise en œuvre d'un outil web de communication sur les résultats transférables du Centre Antilles-Guyane.
- 2005-2007 - MRT - *Mise en place d'un CRB 'plantes tropicales et pathogènes associés' dans les Antilles françaises.*
- 2002-2004 - CPER - *Mise en œuvre d'un atelier de caractérisation des ressources biologiques et d'une halle technologique dans le cadre du programme Interbio-Caraïbes.*
- 2002-2003 - AIP PIC - *Détermination et gestion des facteurs biotiques et abiotiques responsables des pullulations de Bemisia tabaci et des épidémies de Begomovirus en systèmes maraîchers tropicaux.*

Publications et produits 2010-2014

- Umber, M., Filloux, D., Muller, E., Laboureau, N., Galzi, S., Roumagnac, P., Iskra-Caruana, M.-L., Pavis, C., Teycheney, P.-Y., Seal, S. E. (2014). The genome of African yam (*Dioscorea cayenensis-rotundata* complex) hosts endogenous sequences from four distinct badnavirus species. *Molecular Plant Pathology* (Online). DOI : 10.1111/mpp.12137.
- Acina-Manbole, I, Bonheur, L., Svanella Dumas, L., Filloux, D., Gomez, R.-M., Faure, C., Lange, D., Anzala, F., Pavis, C., Marais, A., Roumagnac, P., Candresse, T., Teycheney, P.-Y. (2014). Molecular characterization of Yam virus X, a new Potexvirus infecting yams (*Dioscorea* spp) and evidence for the existence of at least three distinct Potexvirus species infecting yams. *Archives of Virology*. DOI 10.1007/s00705-014-2211-3.
- Pavis, C., Nuissier, F., Hostache (2011) Trans-FAIRE, site internet sur le transfert des résultats de la recherche du Centre Inra Antilles-Guyane <http://transfaire.antilles.inra.fr/>
- Muniz, Y., Granier, M., Caruth, P., Umaharan, P., Marchal, C., Pavis, C., Wicker, E., Martinez, Y. & Peterschmitt, M. (2011). Extensive Settlement of the Invasive MEAM1 population of *Bemisia tabaci* (Hemiptera: Aleyrodidae) in the Caribbean and Rare Detection of Indigenous Populations. *Environmental Entomology*, 40 (5), 10 pp.
- Boissot, N., Thomas, S., Sauvion, N., Marchal, C., Pavis, c. & Dogimont, C. (2010). Mapping and validation of QTLs for resistance to aphids and whiteflies in melon. *Theoretical & Applied Genetics*, DOI 10.1007/s00122-010-1287-8.