

# Structuring Plant Genomic Research in Europe

***1<sup>st</sup> Call for Proposals  
(2006)***



## Preamble

Virtually all aspects of human nutrition fundamentally rely on plants. With pressures of sustainable land use and increasing population, there is need for new and different techniques to supplement the knowledge base in the plant breeding industry. Advances in recent years are also beginning to yield new uses for plants; as resource for both renewable raw material and energy, and in synthesis of a great variety of pharmaceutical compounds. There is still enormous unexplored potential in the study of plants; to reach the goals of stable yield under low input conditions and fluctuating climate; to meet consumer demands for nutritional value, taste, and price; to show benefit to industry, for example in improved storage and processing properties. Plant genome research is an essential approach to achieve these goals.

In recent years, the release of the first genome sequence of a reference/model plant, arabidopsis, was soon followed by that of an economically important plant, rice. Combined with the development of genomic tools this encouraged the launching in Europe and elsewhere of initiatives to develop plant genomic research. In particular, this led to the launching of several national programmes, e.g., GABI in Germany, GARNet in the UK, Génoplante in France, BioSystems Genomics in The Netherlands and national initiatives in other countries in Europe, to structure genomic research at the national level and provide the corresponding scientific communities with the necessary tools. Soon after the implementation of these programmes it was recognized that, in addition to the strong promise offered by this initial structuring step, there was a further need to develop programmes of cooperation at the European level. The ambition of this cooperation would be to avoid duplication of efforts and facilitate a transnational collaborative effort towards more ambitious and competitive goals. During the last four years, the first steps of this process were seen in the establishment of bilateral and trilateral cooperative projects between European countries, also with an emphasis on a better integration of public and private activities.

The creation of a European Research Area (ERA) was launched as a major strategic goal for Europe by European heads of state and government at the Lisbon Council in March 2000. Under the Sixth Framework Programme (FP6), the first steps towards the ERA have been taken. A major element of the specific FP6 programme 'Integrating and strengthening the European Research Area' is the ERA-NET scheme, designed to provide targeted support for the coordination and co-operation of national and regional research programmes. The productive experience of bilateral and trilateral cooperative European projects in plant genomics provided a strong basis for extending the activity under this new scheme, and the ERA-NET Plant Genomics (ERA-PG) was one of the first of these coordination actions to be funded. It has been very successful in unifying its members and also in providing information for scientists and policy makers in the area of plant genomics research. ERA-PG started in 2004 as a network of twelve national and regional funding organisations, in 2005 five more members joined the network (for further details see [www.erapg.org](http://www.erapg.org)).

It is now in the remit of ERA-PG to continue this coordination and cooperation by implementing a joint call. The ultimate goal of the network is to have a fully integrated European plant genomics programme where all partners can participate on an equal footing.

## 1. Purpose of the Call

The ERA-NET Plant Genomics' first call for proposals coming into effect on February 1<sup>st</sup> 2006 is entitled: "**Structuring Plant Genomic Research in Europe**". The ambition of the call is to increase

synergies between research teams around Europe and to increase the quality as well as the competitiveness of plant genomics research in Europe. In order to achieve the ambitions of ERA-PG, both scientifically and in terms of funding agency cooperation, the call will have overarching themes described in section 3, which address the common priorities identified in the ERA-PG Planning Workshop (June 2005, Norwich) and the ERA-PG survey in 2004 described in the report ‘Plant Genomics Research in Europe’ (2005). The topics are also clearly in alignment with the objectives of other strategic groups in plant science currently active in Europe, including the Technology Platform “Plants for the Future”.

There is no central EU funding support for collaborative research between national genomics programmes. The ERA-PG network aims to establish a transnational funding programme in plant genomics, transcending national boundaries, as efficiently as possible and with minimal bureaucracy.

## 2. Call Structure

The ERA-PG network currently consists of seventeen funding organisations of which twelve participate in this first call. These twelve funding organisations (of eleven countries), will jointly provide funds in the order of 30 million Euros to support the call (for individual country commitments please see National Annexes). Each national funding organisation will fund only the project participants from its own country.

**Table 1. ERA-PG network partners organisations financially contributing to the first call.**

Country	Organisation
Belgium (BE):	Ministry of Flanders, Science and Innovation Administration
Denmark (DK):	Danish Research Council for Production and Technology Sciences
Finland (FI):	Academy of Finland (AKA)
France (FR):	National Research Agency (ANR)
Germany (DE):	Federal Ministry of Education and Research (BMBF)
Germany (DE):	German Research Foundation (DFG)
Italy (IT):	Ministry of University Education and Research (MIUR)
The Netherlands (NL):	Netherlands Genomics Initiative (NGI/NWO)
Norway (NO):	The Research Council of Norway (RCN)
Portugal (PT):	Foundation for Science and Technology (FCT)
Spain (ES):	Ministry of Education and Science (MEC)
United Kingdom (UK):	Biotechnology and Biological Sciences Research Council (BBSRC)

Other ERA-PG partners not contributing to this first call are the Federal Ministry of Education, Science and Culture (BMBWK) in Austria, The Ministry of Agriculture and Rural Development (MOARD) in Israel, the Swedish Research Council (VR) and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) in Sweden, and the Swiss National Science Foundation (SNF) in Switzerland.

Structurally, the call will be divided into two Sub Calls, Sub Call A; “Broad Call for Publicly Funded Research in Plant Genomics”, and Sub Call B; “Trilateral Partnership and beyond; the Future for European Public-Private Partnerships in Plant Genomics”. This is in order to satisfy the diversity of priorities and strategic ambitions of the partner countries of ERA-PG.

**Table 2. Outline of the two Sub Calls.**

<b>Sub Call A (academic)</b> <b>Call for Publicly Funded Research in Plant Genomics</b>	<b>Sub Call B (public-private)</b> <b>Trilateral Partnership and beyond; the Future for European Public-Private Partnerships in Plant Genomics<sup>1</sup></b>
<b>Addressing:</b> Consortia of <i>universities and public research institutions</i> , involved in basic research in one of the themes listed in section 3.1	<b>Addressing:</b> <i>Public-private partnerships</i> , involved in application-oriented research in one of the themes listed in section 3.2
<b>Financed by:</b> BE, DE(DFG), DK, FI, IT, NL, NO, PT and UK	<b>Financed by:</b> DE (BMBF) <sup>2,3</sup> , ES <sup>2</sup> and FR <sup>2,4</sup> , and other partners (e.g. UK) as described below.
<b>Open for:</b> Research groups of the funding countries, subject to eligibility criteria as stated in the respective National Annexes. The Sub Call is also open for additional research partners from other countries - bringing their own funds and demonstrating true added value to the partnership.	<b>Open for:</b> Research groups of the <i>Trilateral Initiative</i> (DE(BMBF), ES and FR). The Sub Call is also open for additional research partners from other countries, preferably ERA-PG countries – bringing their own funds and demonstrating true added value to the partnership.
<b>Consortium:</b> A consortium should minimally include three public partners from three financially contributing ERA-PG countries. Projects may be supported by companies, but companies may not receive public funds. The conditions for company participation will depend on individual national regulations.	<b>Consortium:</b> Public/private consortia need a minimum of one private partner of the <i>Trilateral Initiative</i> , although the participation of two or more private partners from different countries of the <i>Trilateral Initiative</i> will be favoured. In addition, at least two public partners from two countries of the <i>Trilateral Initiative</i> need to participate in such a consortium. A minor proportion of consortia without direct industrial/private participation might be eligible for funding if at least three academic partners from all three countries of the <i>Trilateral Initiative</i> participate. Such collaborations need to demonstrate that they pursue truly application-oriented objectives. Regarding the evaluation it will be positively rated if consortia without direct industrial/private participation can adequately show substantial/relevant external industrial/private support.
<b>Funding modalities:</b> According to national terms.	<b>Funding modalities:</b> According to national terms.

<sup>1</sup> Sub Call B is based on the positive experiences of the partners of the *Trilateral Initiative*, France, Germany, and Spain. It intends to continue and extend their cooperation calling for application-oriented research projects, within the framework of public/private partnerships.

<sup>2</sup> The funds provided by the DE (BMBF), ES (MEC) and FR (ANR) are exclusively devoted to Sub Call B.

<sup>3</sup> The participation of the BMBF in this 1<sup>st</sup> Call for Proposals of ERA-PG is subject to approval by the newly elected federal government - in terms of time schedule and content - as well as provision of pre-assigned funds by the parliament.

<sup>4</sup> The participation of the ANR in this 1<sup>st</sup> Call for Proposals of ERA-PG is subject to the availability of the respective financial resources.

### 3. Themes of Research

Headline topics have been identified and are broad and inclusive, addressing common issues. It should be noted that scientific approaches should be genomic and/or post-genomic in nature and applications will not be considered where they primarily address the elucidation of function of single genes. A combination of various genomics and quantitative genetics tools should be employed. Within this framework there is the opportunity to emphasise specific activities in defined collaborations and in the context of two Sub Calls.

#### 3.1 Research Themes for Sub Call A

Plants under investigation can be reference/model plants as well as crops including ornamentals, trees and forage plants.

The following topics are included:

- Genomic approaches to adaptation and acclimation to abiotic and biotic stresses
- Yield stability and intrinsic genetic potential of plants including natural variation and its utility in breeding programmes
- Development of crop and forage plants for low input systems including protein crops for Europe and crops for animal feed
- Quality traits including traits associated with food storage and processability, quality modification for foods and feeds, specialised uses of crops
- Genomic research into the development of high value crops, and also non-food uses for crops including; trees for fuel and fibre production; other plant sources of fuel, fibre and biodegradable packaging materials; bioproduction of therapeutics and other nutraceuticals
- Joint development of genomic tools (technologies and resources), where this addresses and supports the overall scientific objectives of ERA-PG
- Other topics are also suitable that contribute to the development of the European Research Area in plant genomics.

Applications for technology development should be clearly described in the context of hypothesis-driven biological questions addressing the scientific content of the call. There should be demonstrable evidence of collaborative use and dissemination of such resources and technologies.

#### 3.2. Research Themes for Sub Call B

The research themes have been defined in the consultation between the countries of the *Trilateral Initiative* (Cordoba meeting, October 2005) and address application oriented research under the headline “*Genomic Approaches for the Investigation of Genetic Diversity in Crop Plants and its Use for Innovation*” in following themes:

- Improved quality in food and feed
- Sustainable agriculture with improved productivity and yield stability under low input production systems and under biotic and abiotic stress

- Plants for innovative uses such as energy crops or plants as factories
- Plants to improve and stabilize our environments

Corresponding research projects should be based on a combination of genomics and quantitative genetics tools, tackle global or regional challenges, and be oriented at crop species with high agronomic as well as economic relevance for the partners of the *Trilateral Initiative*.

## 4. Delivery of Objectives

The common programme aims to deliver its objectives in a combination of ways;

- Establishment of collaborative research projects between researchers in participating countries
- Funding for training activities including associated PhD positions, student workshops and summer schools<sup>+</sup>
- Networking activities for students and researchers<sup>+</sup>

(<sup>+</sup> Where permitted by the funding organizations. Please contact your National Call Coordinator for more details. Contacts may be found at the end of this document or on the ERA-PG website)

The expected duration of projects will be up to three years, though exceptionally projects of four year duration may be funded if appropriately justified.

## 5. Application

For both Sub Calls, in formulating the applications the following should be noted;

- Proposals should take into account and search for solutions to the problems of data sharing and management
- There should be demonstration of due consideration of issues of protection of Intellectual Property Rights and envisaged exploitations
- Exchange of personnel for significant periods during the lifetime of the project will be encouraged.

Since the call aims at developing new European cooperation as well as strengthening and enlarging existing partnerships, each joint proposal will encourage movement of personnel to carry out research in countries other than their own when necessary.

### 5.1. Application Procedure

The call was introduced by a pre-announcement, issued on 15<sup>th</sup> December 2005, to offer interested parties more time to build their consortia and start preparing their proposals. There will be a two-stage procedure for joint applications (pre-proposals and full proposals) and accordingly a two-stage review procedure. All applications should be written in English and strictly follow the application guidelines.

## 5.2. Pre-Proposals (for 1<sup>st</sup> step evaluation)

Pre-proposals must be submitted in electronic form to the central Call Secretariat before **16<sup>th</sup> March 2006, 12.00 CET**, and strictly follow the “Guidelines for Pre-Proposal Application” (Annex I). The application forms and the guidelines are available at [www.erapg.org](http://www.erapg.org). The decision on selection of applications for invitation to full proposal will be communicated by **5<sup>th</sup> May 2006**. Guidelines for the full proposal will be sent with the invitation to submit after the pre-proposal selection process.

A project leader (applicant 1) should be identified for each collaborative proposal (primary contact person for consortium). In addition, a principal investigator should be designated from each of the other collaborative institutions (applicants 2, 3 etc.).

A pre-proposal must contain:

1. A project description (maximum four A 4 pages).

This should be a short description of the scientific ideas and research hypothesis of the joint project including an overview of the work programme, expected duration of the project, shared know-how and distribution of work during the course of the project. The research plan should briefly describe the following:

- objectives of the project
- links to the research themes of the programme
- main research methods employed
- links with existing work in researchers lab
- existing national or international co-operation
- significance and applicability of the research results (plan for use and dissemination of knowledge)
- added value of the collaboration
- plan for co-ordination and networking of participants
- plan for researcher training (if applicable)

2. Estimate of total costs (1 page).

An estimate of total project costs and costs per partner including details of personnel costs and material costs.

3. A CV of each co-applicant (1 page per co-applicant) including full contact details.

4. A complete publication list for the co-applicant from the past three years, highlighting the five most relevant publications.

In addition to the above conditions, applicants are requested to refer to National Annexes and follow the national regulations. Applications not fulfilling national criteria will be rejected without further consideration.

### **5.3. Full Proposals (for 2<sup>nd</sup> step evaluation)**

Full proposals must be submitted on the application form to be downloaded from the website ([www.erapg.org](http://www.erapg.org)). Detailed instructions on completion of the electronic forms will be provided in the application guidance notes. Applicants should take note of individual National Annexes, and should contact their National Call Coordinators for any queries related to these Annexes.

The deadline for receipt of full proposals by the central Call Secretariat is **29<sup>th</sup> June 2006, 12.00 CET**.

The decision on full proposals will be communicated to applicants between November 2006 and January 2007, depending on national funding organisation procedures.

## **6. Evaluation Procedure**

### **6.1 Programme Board**

The evaluation of applications will be overseen by a Programme Board, selected from the scientific community by the countries participating in the call. Expertise within this Programme Board will cover the topics in the call and may be complemented by independent experts if appropriate. The Programme Board will be headed by an independent chairperson. Final agreement on the composition of the Programme Board will be reached by the Network Steering Committee (NSC) of ERA-PG.

### **6.2. Pre-proposal Evaluation**

The Programme Board will make a short assessment of the pre-proposals, resulting in either *invitation to submit a full proposal* or *rejection*. Selection of pre-proposals will be according to the following criteria;

- Relevance to the aspirations and content of the Call Notice, taking into account specific considerations of Sub Call A and Sub Call B
- Added value of joint working including evidence of true cooperation within the collaboration
- Feasibility of the project
- Scientific innovation and excellence
- Adequateness of used resources and finance requested

Full assessment of the scientific content of the pre-proposals will not be carried out at this stage.

According to the results of this first stage, full proposals will then be invited from selected applicants.

### **6.3. Full Proposal Evaluation**

#### ***6.3.1. Peer review and Programme Board Evaluation***

Full proposals will be sent out for external peer review by a minimum of two reviewers, before further consideration and ranking by the Programme Board.

Evaluation of the proposals will be according to the following criteria.

- Novel, innovative research within the scientific scope of the call and innovative potential of the expected results for industrial application where appropriate
- Scientific merit and feasibility of project
- Transnational added value and complementarity of expertise
- Scientific track record of applicants
- Evidence of true cooperation within the collaboration
- Economic, societal and environmental relevance
- Adequateness of used resources and financial requirements.

A list of high quality proposals considered worthy of funding will be identified by the peer review process.

### ***6.3.2. Sub Call Panel Moderation***

Following selection of proposals by the Programme board there will then be further consideration by moderating panels of the two Sub Calls based on financial and strategic criteria. These criteria will include availability of funds from the contributing organizations in each collaborative proposal. The Sub Call panels will consist of representatives from the funding organizations responsible for the selected projects and additional membership to consider strategic issues (e.g. public private partnership). The panels will also have crossover membership from the Programme Board for continuity and oversight of scientific aspects of the proposals.

### ***6.3.3. Approval by NSC and Final Funding Decision***

The final ranked list will be formally approved by the Network Steering Committee

Once all evaluation steps have been completed, the final funding decisions rest with the corresponding national authorities and at the end of this process the decision will be communicated to the project leader.

## **7. Intellectual Property Rights, Consortium Agreement and State Aid Rules**

Transnational co-operation at the level of Collaborative Research Projects needs special attention - in particular concerning rules related to Intellectual Property Rights (IPR) - which cannot be covered properly by the national funding regulations. In order to address this issue adequately the funding partners of the ERA-PG 1st Call for Proposals agreed about "Intellectual Property Rights Conditions for Collaborative Research Projects" – called "IPR Conditions" (Annex II).

These "IPR Conditions" are complementary to the national funding rules and their application is highly recommended to all funding organisations of ERA-PG. The conditions may become obligatory if so approved unanimously by the national funding organisations prior to the end of April 2006. In that case they shall be binding in their entirety and directly applicable in all countries of ERA-PG in

connection with national funding regulations. Consortia invited to submit full proposals will be informed in advance about the status of this decision.

All funding decisions arising from this ERA-PG 1<sup>st</sup> Call for Proposals will be in line with the regulations of the European State Aid Rules. Funding rates for participants of the Collaborative Research Projects cannot exceed the Community Framework for State Aid for Research and Development.

Each consortium is required to sign a Consortium Agreement before the start of the project. Such an agreement shall not affect the participants' obligations to the national funding organisations and to one another arising out of the “IPR Conditions” or the national funding rules. The funding partners of a particular Collaborative Research Project may withhold the funding until the Consortium Agreement has been signed by all participants of that Collaborative Research Project.

With respect to the effective execution of Collaborative Research Projects including using and disseminating of research results as well as protection of intellectual property rights (IPR) arising from the Collaborative Research Projects the Consortium Agreement shall address topics such as the intellectual property rights arrangements, confidentiality, publication, internal organisation of the consortium, and settlement of internal disputes. A model of a Consortium Agreement which is in line with the “IPR Conditions” is presently under preparation and can be downloaded from websites of ERA-PG in due time.

If required additional information can be obtained from the Call Secretariat or National Call Coordinators (contacts may be found at the end of this document or on the ERA-PG website).

## **8. Eligibility and Special Terms and Conditions for the Sub Calls**

### **8.1. Sub Call A: “Broad Call for Publicly Funded Research in Plant Genomics”**

#### ***8.1.1. Background and Themes***

Sub Call A is a broad call and has the ambition to open access to the ERA-PG to all interested plant genomic researchers. This could include researchers from non ERA-PG countries, but will depend on the ability of the potential participant to provide evidence of funding organisation involvement. For this reason the themes of this Sub Call are not defined more narrowly than the overall themes of the programme already outlined in section 3. From ERA-PG the Sub Call will be financed by the Ministry of Flanders, Science and Innovation Administration (Belgium), The Danish Research Council for Production and Technology Sciences (Denmark), AKA (Finland), DFG (Germany), MIUR (Italy), NCI/NWO (The Netherlands), RCN (Norway), FCT (Portugal), and BBSRC (UK).

#### ***8.1.2. Eligibility***

All European researchers working in the themes of the present ERA-PG call as defined at section 3 above and eligible to apply for financial support from the participating national research councils are cordially invited to apply for funding. Consortia for funding should consist of a minimum of three public partners from three different contributing countries. In principle this Sub Call is open to both academic institutions as well as private companies, but the conditions for company participation will depend on individual national regulations. In all cases, collaborations should be developed where true working partnerships will deliver results over and above the impact of single projects funded by

individual nations. Applicants should refer to the annexes of their national funding organisations for guidance on all details of eligibility and funding availability.

## **8.2 Sub Call B: “Trilateral Partnership and beyond; the Future for European Public-Private Partnerships in Plant Genomics”**

### **8.2.1. Background**

Within GABI-Génoplatte, French and German private partners successfully identified pre-competitive research areas of mutual interest eligible for co-operations based on public-private partnerships. The pre-existence of a successful framework for collaboration has been instrumental in facilitating the ambition of so-called “bridging projects”, based on fundamental research but ranging to application-oriented as well as applied research.

Based on these positive experiences the partners of the *trilateral initiative*, France, Germany, and Spain intend to continue their cooperation calling for application-oriented research projects, within the framework of public-private partnerships and open to partners from other countries, preferably ERA-PG partners.

### **8.2.2. Eligibility**

Collaborative Research Projects shall be established *bottom up* by consortia of excellent academic/public and industrial/private partners. Such co-operations on themes of the ERA-PG Sub Call B (see section 3.2.) have to demonstrate that their working partnerships will deliver results over and above the impact of single projects funded by individual countries.

Researchers working in France, Germany and Spain are eligible to apply for financial support from their participating national funding organisations. On an individual project basis, public and private partners from other countries - preferably from other ERA-PG countries - are cordially invited to participate in pre-built consortia within Sub Call B. All applicants shall refer to terms and conditions of their responsible funding organisations.

Public-private consortia need a minimum of one private partner of the *trilateral initiative*, although the participation of two or more private partners from different countries of the *trilateral initiative* will be favoured (Note: the number of participating industrial partners and the intensity of their involvement will positively affect the funding decision). In addition, at least two public partners from two countries of the *trilateral initiative* need to participate in such a consortium.

A minor proportion of consortia without direct industrial/private participation may be eligible for funding if at least three academic partners from all three countries of the *trilateral initiative* participate. Such collaborations need to demonstrate that they pursue truly application-oriented objectives. For evaluation purposes, projects without direct industrial/private participation will be positively rated if they can adequately show substantial/relevant external industrial/private support (e.g. in form of in-kind transfers, such as the free of charge provision of plant material or the performance of field trials at no charge).

## 9. Synopsis of the Time Schedule

Call announcement:	1 <sup>st</sup> February 2006
Due-date pre-proposals:	16 <sup>th</sup> March 2006, 12.00 CET
Communication of evaluation results:	5 <sup>th</sup> May 2006
Due-date full proposals:	29 <sup>th</sup> June 2006, 12.00 CET
Communication of evaluation results:	November 2006
Start of selected projects:	December 2006 (at the earliest)

## 10. List of Contact Persons

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