EpiTRAITS

Epigenetic regulation of economically important plant traits

Marie Curie International Training Network

High profile joint research & training network that will improve career prospects in academia & private sector

Keywords:
Epigenetics, suspension culture, epigenetic profiling, bioinformatics, plant biotechnology, barley, field crops, kit development

1 Postdoc position in Germany

For further information on EpiTRAITS the website: www.epitraits.eu

Application deadline: March 15, 2013

Summary

The mission of EpiTRAITS is to train young researchers in epigenetic gene regulation and flowering in the model plant *Arabidopsisthaliana* and the crop plants maize (*Zeamays*) and barley (*Hordeumvulgare*). Epigenetic gene regulation confers stability of gene expression patterns through cell divisions while allowing changes in expression in response to environmental or developmental cues. Although changes in epigenetic gene regulation are a major cause for trait variation, no rational strategies have been developed that utilize this knowledge for crop breeding purposes. EpiTRAITS will focus on one of the key plant traits, flowering, which is controlled by various epigenetic mechanisms. The scientific program aims to bridge the gap between fundamental and applied research by translating results from epigenetic research in model organisms to improved technologies for crop breeding and molecular diagnostic tools.

EpiTRAITS Training program

Objectives of the training program

The high profile EpiTRAITS program trains the appointed fellows tobecome

- Expert and leader in his/her research discipline
- Knowledgeable of cutting-edge technologies in other disciplines
- Skilled in presenting information both orallyand in writing
- Trained to communicate beyond the boundaries of his/her own research field
- Experienced in managing a scientific project as an independent researcher
- Capable of interacting with academic and industrial sectors, and society at large
- Skilled in exploring the commercial exploitation of results

EpiTRAITSwill offer an inter-disciplinary, custom developed training programme that promotes scientific excellence and exploits the interdisciplinary expertise and infrastructure present in the consortium.

The training program consists of:

- Local individual training
- Network-wide training in research and transferable skills
- Internships at full andassociated EpiTRAITS partners from the public and private sector.

Local Individual Training

The fellows will be embedded in the research groups at their home laboratories, and benefit from i) close supervision and mentoring, ii) access to expertise in the local research group, iii) activeparticipation in group meetings, company meetings and/or institute seminars, iv) access to courses provided by local graduate schools.

Network-wide training in research and transferable skills

A number of mandatory network-wide training activities will be organized for the fellows: (i) meetings/workshops, (ii) courses on research-specific skills (e.g. bioinformatics, image analysis, modelling, next-generationsequencing) and (iii) courses on transferable skills (e.g. project management, presentation skills, scientific writing, proposal writing).

Internships at partners from the public and private sector

The fellows will perform internships (secondments) at other academic and private sector partners. During these internships fellows will betrained in techniques and methods required for their project and will perform initial experiments applying those methods. The secondments are a network of reciprocal visits among and between the academic and private sector partners that promote synergies between the partners and fellows and provide the fellows with a multidisciplinary training.

EpiTRAITSparticipants

Full partners

Partner	Company	Country	Legal Entity Name (short name)	Scientist-in-charge	Department/ Laboratory	Open Position	Type of Position
1		NL	Universiteit van Amsterdam (UvA)	Dr. Maike Stam (coordinator), Dr. Paul Fransz	SwammerdamInstitutefor Life Sciences (SILS)	**2 x PhD**	MolecularBiology/Biochemistry Cytology
2		DE	Max Planck Institutefor Plant Breeding Research (MPIPZ)	Dr. Franziska Turck	Plant DevelopmentalBiology	**PhD**	MolecularBiology/Biochemistry
3		NL	Wageningen University (WUR)	Prof. GercoAngenent	Plant Sciences Group	**PhD**	MolecularBiology/Biochemistry
4		ES	InstitutoNacional de InvestigacionesAgrarias (INIA)	Dr. Manuel Pineiro	Biotechnology	**PhD**	MolecularBiology/Biochemistry
5		DE	Heinrich-Heine-University Düsseldorf (UDUS)	Dr. Daniel Schubert	Institutefor Genetics	**PhD**	Biochemistry
6		PL	Institute of Plant Genetics, Polish Academy of Sciences (IPG-PAS)	Prof. PawelKrajewski	Laboratory of Biometry	**PhD**	Bioinformatics/Statistics
7	√	ES	Biomol-Informatics, S.L. (BIOMOL)	Dr. PaulinoGómez-Puertas		**PhD**	Bioinformatics
8		UK	University of Nottingham (UNOTT)	Prof. CharlieHodgman, Prof. Graham Seymour	Centre for Plant IntegrativeBiology	**PhD**	Bioinformatics/Modeling
9		FR	Institut National de la Recherche Agronomique (INRA)	Dr. Valerie Gaudin, Dr. Philippe Andrey	Institut Jean-Pierre Bourgin (IJPB)	**2 x PhD**	Cytology, Image analysis/Spatialmodeling
10	√	BE	Diagenode SA (DIAG)	Dr. Hélène Pendeville	Diagenode R&D Epigenetics	**Post-doc**	MolecularBiology
11	√	NL	Keygene (KG)	Dr. Marcel Prins	UpstreamResearch	**Post-doc**	Bioinformatics/Molecular Biology
12	√	DE	Phytowelt (PHY)	Dr. Peter Welters		**Post-doc**	MolecularBiology/ Biochemistry/CellBiology

Associated partners

Partner	Company	Country	Legal Entity Name (short name)	Scientist-in-charge	Department/ Laboratory	Expertise	Role
13	√	NL	RijkZwaanBreeding B.V. (RZ)	Dr. Rob Dirks	Dept. Biotechnology	Plant Breeding	Training
14	√	PL	HodowlaRoślinSmoliceSp. z	Prof. JózefAdamczyk		Plant Breeding	Training

			o.o. Grupa IHAR (Smolice)	Dr. JanuszRogacki			
15	√	UK	Vitae	Alison Mitchell	Vitae	Personal skilldevelopment	Training

Requirements & conditions

General information on PhD and Postdoc positions

Appointment

Based on a full-time appointment the duration of the appointment as a Marie Curie ITN fellow will be for a maximum period of 2 years (Post-doctoral fellow). Positions are aimed at beingfull-time, but if necessary (e.g. for family or medical reasons) part-time appointments are possible. In cases where researchers – in agreement with the host organisation, and with prior approval of the European Research Executive Agency – execute their project on a part-time basis, the duration of the appointment can be extended, but not longer than the duration of the EpiTRAITS project (48 months; end date Sept 30, 2016). All partners are committed to facilitate an appropriate work-life balance when needed. We strongly encourage woman to apply.

Requirements

- Candidates can only apply for a position in a country different from the one lived in for most of the time in the last three years. At the time of recruitment by the host organisation, researchers should not have resided or carried out their main activity (work, studies, etc) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date.
- **Post-doctoral fellow:** At the time of recruitment by the host organisation, experienced researchers (Post-docs) must be in possession of a doctoral (PhD) degree, or have at least four years of full-time equivalent research experience. In both cases, they should have less than 5 years of full-time equivalent research experience. This is measured from the date when they obtained the (MSc) degree that formally entitled them to become a PhD student.

Candidates need to register and provide the required information:

- Motivation letter
- C.V. (EU format; http://europass.cedefop.europa.eu/en/home), including:
  - TOEFL scores (www.ets.org; desiredifscores available).
  - List of internships (subject, name supervisor, grade, etc)
  - Publications (if applicable)
  - PhD project details (for post doctoral fellows only)
- Grades (with explanation on the grading system)
- Two letters of recommendation and contact information of two referees

Applications that are not eligible (do not meet the requirements listed) will not be considered and will not receive a reaction.

Salary

The fellows will obtain a monthly living and mobility allowance.

Living Allowance

The Living allowance is the salary that is paid on a monthly basis. The host organisation will appoint the candidate under an employment contract. The host organisation will ensure that the researcher is covered under i) the social security scheme that is applied to employers within the respective country, or ii) under a social security scheme that provides coverage for at least sickness and maternity benefits, invalidity and accidents at work and occupational diseases, and covers the researcher in every place at which Marie Curie ITN activities will take place.

Mobility Allowance

In addition to the living allowance, a mobility allowance will be paid on a monthly basis. This allowance is a contribution to cover personal household, relocation and travel expenses.

The amount of the mobility allowance depends on the family situation of the researcher *at the time of recruitment of the researcher:*

- €1000/month: Researcher with family responsibilities.
- €700/month: Researcher without family responsibilities.

A researcher with family responsibilities is defined as follows: persons linked to the researcher by (i) marriage, or (ii) a relationship with equivalent status to a marriage that is recognised by the national legislation of the country of the host organisation or of the nationality of the researcher; or (iii) dependent children who are actually being maintained by the researcher.

Interview Process

The application deadline is March 15, 2013. Please send the application to contact@phytowelt.com

The recruitment committee will select the eligible candidates based on the criteria listed under Requirements. The evaluation and selection procedure will occur in a non-discriminatory manner. We strongly encourage woman to apply.

Position

Postdoc position in Molecular Biology/Biochemistry/Cell Biology at the group of Dr.Renate Lührs, head of dept. of Cell Biology, PhytoweltGreenTechnologiesGmbH(PHY), Nattermannallee 1, D-50829 Cologne, www.phytowelt.com

Project: The role of epigenetic changes in plant regeneration potential

Somatic hybridization means the combination of nuclear and cytoplasmic genetic information by fusion of somatic cells, and is a powerful technique to develop new crop varieties with improved qualitative and quantitative traits. In Phytoweltwe use electrofusion of isolated protoplasts to achieve this somatic hybridization, a process that represents one of Phytowelt's core expertise. The generation of hybrids is, however, hampered in many plant species due to the loss of regeneration potential after protoplast electrofusion. In monocots, loss of regeneration potential already occurs after a cell culture phase of around 6 months. In order to improve the regeneration protocols for selected hybrids, we are interested in understanding the molecular mechanisms underlying the regeneration potential of some crop species and particularly in barley. **The aim of the project** is to determine the role of epigenetic mechanisms in regeneration of the crop plant barley. To achieve this goal, the **postdoc** appointed will perform genome-wide comparative analyses of transcriptome and methylation profiles of histones and DNA in regeneration competent vs. incompetent barley cells. The compiled data analyses will identify differentially regulated genes that are candidate to be involved in mediating the regeneration potential of plant cells. **Collaborations with partners**MPIPZ, UDUS, IPG-PAS, BIOMOL and DIAG will provide the training to efficiently address these objectives.

Requirements

- PhD in Molecular Biology, Cell Biology and/or Biochemistry (or equivalent)
- Experiencewithmolecularbiologytechniques
- Experience with basic plant cell culture technologies, preferentially embryogenic cell cultures
- Ability to work in a team and independently
- Highly motivated to pursue a career in science
- Background/expertise in (epigenetic) gene regulation

More information

Project information can be obtained from Dr. Peter Welters (CEO); e-mail: (contact@phytowelt.com); phone+49-(0)2162-77859.

Appointment

The appointment will be on a temporary basis for a maximum period of two years. A Personal Career Development Plan will be drafted that includes the attendance of EpiTRAITS courses and (international) meetings.

The gross monthly salary will be according to the salary scales of researchers in Germany.Besides the salary, the Postdoc will obtain a mobility allowance(see page 5).Positions are aimed at being full-time, but if needed for family reasons part-time appointments are possible.

Interview Process

The 1-days interview process will take place in the premises of Phytowelt in Cologne. Candidates selected for an interview will be notified 1-2 weeks in advance.

Host institution: PhytoweltGreenTechnologies GmbH

PhytoweltGreenTechnologies (GmbH) is a company in the newly developing area of industrial plant biotechnology (Green Chemistry and Green Energy) and has the objective of achieving optimized use of plants for industrial production processes. Depending on the task, plants are used as raw material (recyclable material), as production organisms or as models for process innovations (bionics and synthetic biology). We are continuously improving sustainability of production processes by converting renewable raw materials with innovative enzyme systems and fermentation processes. We also work to

specifically improve plants as renewable energy carriers and suppliers of renewable resources by using state-of-the-art breeding technologies, e.g. marker-assisted protoplast fusion.