



First Annual Report

April 2011-June 2012

Plant Link is a competence resource in the area of molecular plant science in Southern Sweden. It was formed in 2011 as an alliance between Lund University (LU) and the Swedish University of Agricultural Sciences in Alnarp (SLU Alnarp) with support from the Skåne Regional Council (Region Skåne). Our ambition is to stimulate and coordinate plant research and higher education in the region.

Plant Link wants to bridge the gap between basic and applied plant research with the objective to improve crops and food products, and to enable production of materials, medication and energy from plants in a sustainable way. Associated to Plant Link are several within their field world-leading research groups.

We strive to increase the interest and competence in molecular plant science through education and information. Our goal is to create an environment that promotes research and innovation and leads to a dynamic interaction between the universities, private companies and the general public.

Research

Plant Link Focus Areas

- 1) Plant Breeding research, modeling and engineering
- 2) 'Post-harvest' – product quality and new products
- 3) Abiotic stress
- 4) Plant-microbe interactions
- 5) Plant-plant and plant-insect interactions

Plant Link seed money projects

During the first year Plant Link has announced two rounds of 'seed money' projects (deadlines 15 June 2011 and 7 May 2012) for smaller 1-year-long projects establishing new collaborations between the two universities. In 2011 the following five projects out of 11 submitted proposals were supported with a total of SEK 1.874 million:

Insect pheromone production in plants: proof of principle

Project leader: Christer Löfstedt, LU
Collaborators: Sten Stymne and Per Hofvander, SLU

Influence of hemoglobin expression on oil seed qualities

Project leader: Li-Hua Zhu, SLU
Collaborators: Leif Bülow, LU, Syngenta Seeds AB, Croptailor AB

Plant-Fungus-Insect Interaction

Project leader: Peter Witzgall, SLU
Collaborator: Jure Piskur, LU

Enzymatic fractionation of oils from new crops

Project leader: Patrick Adlercreutz, LU
Collaborators: Sten Stymne and Li-Hua Zhu, SLU

Redox restrictions in plant biotic stress responses

Project leader: Allan Rasmusson, LU
Collaborator: Erik Andreasson, SLU

In 2012 fifteen proposals were received. The decision which projects to support will be taken early fall 2012.

Seed money takes root

Insect pheromone production in plants: proof of principle.

Three enzymatic steps can transform fatty acids to insect pheromones. In this Plant Link 'seed money' project, genes coding for enzymes in these steps plus a thioesterase have been introduced into tobacco to function as a plant factory for the pheromones. Baojian Ding, PhD student at Lund University, has succeeded in producing many types of insect pheromone components. Isolated,



Per Hofvander, SLU

purified and mixed in a way to mimic the female moth pheromone composition as close as possible, it was demonstrated that males from two targeted moth species were attracted to traps baited with the plant-produced moth pheromones. In

this collaboration SLU Alnarp has contributed with the plant biotechnological work whereas Lund University has contributed with knowledge of the genes as well as insect pheromones and their composition.

– Based on these promising results we are now planning a larger project aiming at full scale production of insect pheromones in genetically modified plants and the use of such plants in pest control, says Per Hofvander at SLU Alnarp.

Major research projects associated to researchers in Plant Link

- ICON — New crops to break the chemical industry's dependency on crude oil (EC FP7 project)
- Potato late blight resistance (SSF)
- ICE3 — Insect Chemical Ecology, Ethology and Evolution (Linnaeus project)
- Developing Sustainable and Energy Efficient Alternatives to Petroleum-Based Production of Energy and Materials (Formas)
- TC4F Theme 4 — Other renewable plant resources, non-food crops
- Mistra Biotech

Technical platforms

The following technical platforms have been identified as important to researchers within Plant Link and for future plant molecular research in the region:

- Proteomics centre, LU
- Bio-imaging centre, LU
- Bioinformatics resources and computational biology, LU
- MAX lab and ESS, LU
- Electron microscopy, LU and SLU Alnarp
- Spectroscopy/spectrometry (NMR, GC-MS, IR-MS, Raman), LU and SLU Alnarp
- Biotron, SLU Alnarp
- Field trials, SLU Alnarp

Focus on bioinformatics

The need to strengthen the bioinformatical competence in plant research in Southern Sweden was recognized early and the recruitment of a bioinformatician was initiated spring 2012. From 11 June 2012 Estelle Wéra is working as a bioinformatician within Plant Link. She is associated to BILS (Bioinformatician in Life Science), a national knowledge resource network in Sweden with more than 20 bioinformaticians. Estelle is setting up a new server for fast computing and storage of large amount of data.

Biotron

The biotron at Alnarp is in need of refurbishment and an action group has been appointed where Plant Link is represented. During spring 2012 an electronic survey on the needs and usage of the Biotron was sent out to researchers at Lund University and SLU Alnarp. We also directly interviewed users of the Biotron about current and future needs. The work is ongoing and proposals from an external consultant will be presented during the fall 2012.

New research program



Mistra Biotech is an interdisciplinary research program focusing on biotechnology in agriculture. The program started spring 2012 and involves scientists from several universities, mainly from SLU but also from Lund University, KTH, and Aarhus and Roskilde Universities in Denmark. Several of the scientists are active in Plant Link. Six component projects (CPs) deal with the different aspects of the program: from new methods

and crops to the ethical aspects, economics, legislation and consumer perceptions.

– All the Plant biotechnology in the program is done at SLU Alnarp, says Erik Andreasson, deputy leader of CP1. His group at SLU Alnarp and the group headed by Fredrik Levander at Lund University work on the use of protein based markers as a future breeding tool.

– The project would be impossible to do within only one of the groups, says Erik Andreasson,

commenting on the importance of collaboration across faculties and disciplines.

Mistra Biotech's goal is to contribute to sustainable agricultural and food production, from an environmental, social and economic perspective. The program is sponsored by The Swedish Foundation for Strategic Environmental Research, Mistra and SLU.

Read more at:
www.slu.se/mistrabiotech



Education

PhD Education

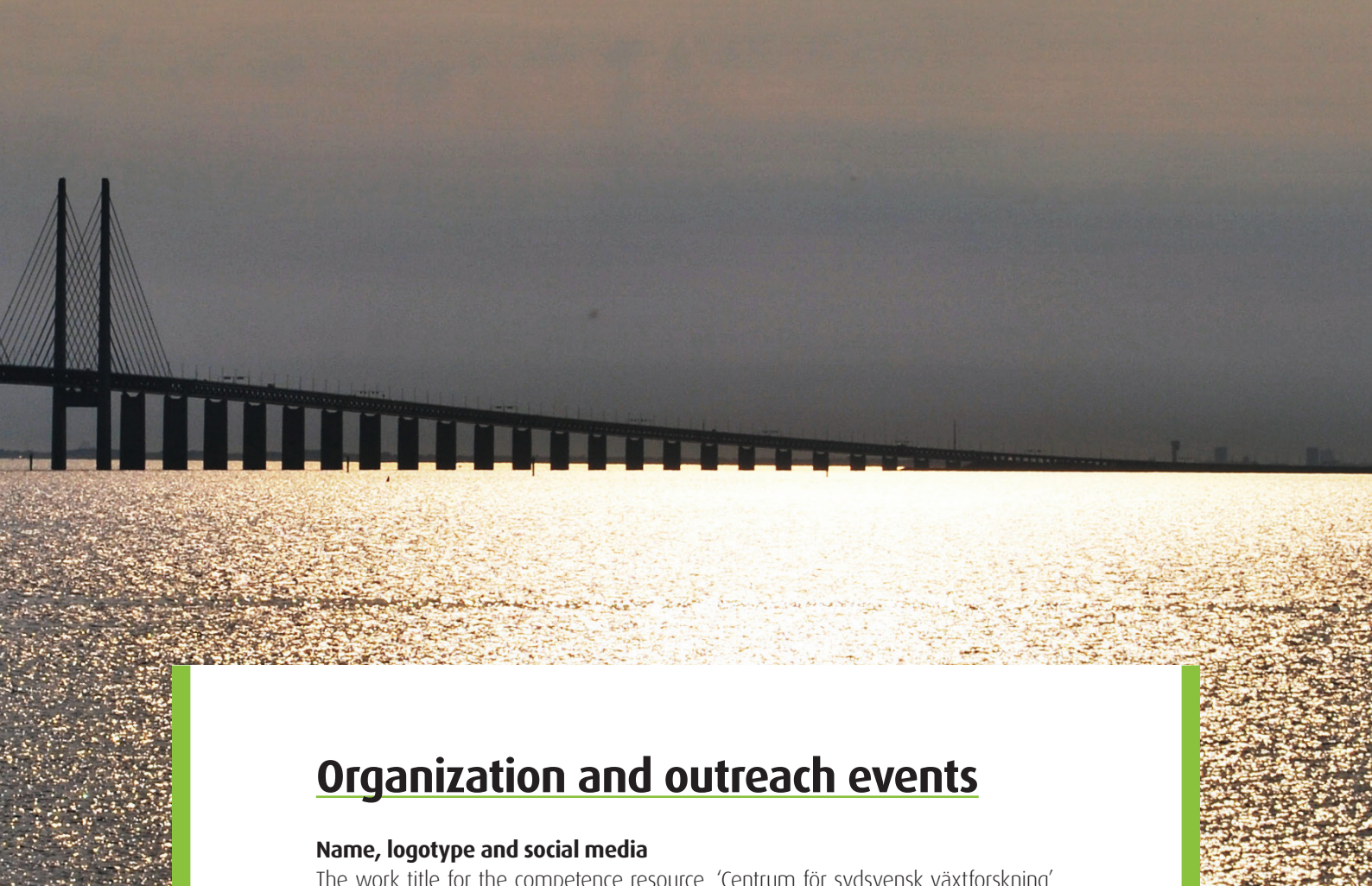
Plant Link has signed an agreement with Post Graduate Courses in Life Science (PCLS) at Lund University that will give PhD students at SLU Alnarp full access to 16 PhD-courses in molecular biology at Lund University. Two new, plant-related, courses (“Analytical and quantitative GC-MS” and “Microscopy in plant biology-related research”) will be arranged at SLU Alnarp during the fall semester 2012 as part of PCLS.

Plant Link will support two upcoming PhD courses: ‘Plant Protection Biology’, 20-31 August 2012, and ‘Field-omics’, 15-19 October 2012. Discussions have also been initiated with Geneco research school about future collaboration on PhD courses.

Higher education and Master’s program

Plant Link strives to combine the expertise and knowledge within the plant science area at Lund University and SLU Alnarp to offer a unique combination of courses in plant biology. With information and marketing towards students, we aim at raising interest and knowledge for the subject and courses given at the two universities. We have established contact with a number of regional plant companies that can offer internships or applied project works for students. Plant Link is also working for the establishment of an international Master’s program in molecular plant science at the two universities to further strengthen the field. During the first year the interest and need for such a program have been surveyed among students, teachers and industry as well as potential collaborating universities throughout Europe.

Plant Link has initiated a new subject area in ‘Molecular breeding and plant biotechnology’ within ELLS (Euroleague for Life Sciences), a collaboration between six leading life science universities in Europe including SLU. Five of the universities are represented in the subject area work group with Plant Link as coordinator. This group will survey the possibility to establish joint PhD and summer courses as well as a new ELLS Master’s program related to the subject area. The group will also discuss and find new ways to exchange knowledge and strengthen higher education related to the field ‘Molecular Breeding and Plant Biotechnology’ within ELLS and in Europe. Within the ELLS framework we are presently working on an application for funds to start a Master’s summer school at Copenhagen University summer 2013 with the name “Plant molecular breeding to meet the challenges posed by climate change”.



Organization and outreach events

Name, logotype and social media

The work title for the competence resource, 'Centrum för sydsvensk växtforskning', was changed to Plant Link in August 2011 and a logotype was presented soon thereafter. Plant Link has been working extensively with social media during its first year and is active on Twitter and Facebook since September 2011 and on LinkedIn since January 2012. A monthly/bimonthly newsletter has been distributed since September 2011. Our homepage (www.plantlink.se) was launched in January 2012. This carries information on Plant Link's work and structure, associated researchers, relevant courses, highlighted news items, upcoming events, etc. Information material presenting Plant Link has been produced and distributed.

Plant Link public events (number of attendees in brackets)

- Kick-off Plant Link, 27 Sept. 2011 (107)
- Seminar series on Next-Generation Sequencing (3 times; ca 100)
- 'Växtkemi istället för petrokemi', 10 May 2012 (joint seminar day with TC4F; 80)
- Fascination of Plants Day, 18 May 2012 (ca 100 and ca 1400 visitors on Facebook event page)
- Alnarpsdagen, 27 May 2012 (ca 400)

Interactions and entrepreneurship

During its first year Plant Link has interacted with several initiatives both inside and outside of our region including FoodBest – KIC, TC4F, UPSC, CPSC, Partnerskap Alnarp, Innovation Alnarp, Innovationscentrum Syd, LU Biofuels, Packbridge, Skånes Livsmedelsakademi. We have also made site visits at several companies. This rich network of external partners will form a platform for our future efforts to receive external funding from national and international research agencies.

A number of guided visits for high school students have been done upon requests from high schools in the Skåne region. In a pilot project together with Skånes Forskningsnätverk two high school students have done two-week long summer internships in plant biology laboratories.



Budget

Plant Link has an annual budget of 4 million SEK, with SLU and LU contributing 1 million respectively, and 2 million from Region Skåne (Skåne Regional Council). The funding from Region Skåne runs for a total of four years (until 2014).

During the period from July 2011 to June 2012 the total salary costs was SEK 840,000. Positions funded are one director (20%), one scientific coordinator (30%), one education coordinator (50%, part of the period), one assistant during 9 months (10%) and administration. Other costs include website and design, information and outreach events, seminars and travels. Five projects were granted in total SEK 1,874,000, which has been distributed between SLU and LU. Unused resources will be reallocated to the coming year. A person working with bioinformatics was appointed on 11 June, 2012.

Plant Link Personnel

Leif Bülow (director) From May 2011

Mirja Carlsson Möller (education coordinator) From May 2011

Erik Alexandersson (research coordinator) From July 2011

Knut Wälstedt (administrator) From April 2011

Sofia Hydbom (coordinator assistant) December 2011 and 9 months onwards

Estelle Wéra (bioinformatician) From June 2012

Steering committee

Marianne Sommarin, Umeå University, chair

Erik Andreasson, SLU

Jerker Bjurnemark, Region Skåne

Leif Bülow, LTH (director)

Ylva Hillbur, SLU

Carin Jarl-Sunesson, LU

Annette Olesen, Lantmännen Lantbruk

Sten Stymne, SLU

Anders Tunlid, LU

Ashfaq Ali, PhD student representative, SLU

Johanna Emgård, student representative, LU

Steering committee meetings and workshop

7 April 2011, Alnarp

26 August 2011, Lund

18 November 2011, Alnarp

20 January 2012, Lund

9 March 2012, Alnarp (strategic meeting)

10 March 2012, Alnarp

15 June 2012, Lund



Upcoming events 2012

Scandinavian Plant Proteomics Day together with Umeå Plant Science Center and KBC, Umeå University, 20 September 2012 in Umeå

Plant Link Day, 24 September 2012 in Lund

The Future of Plant Biotechnology in Europe – emerging technologies and policy making together with Mistra Biotech, 7 November 2012 in Alnarp



Contact and more information

Follow us on Facebook and Twitter to get continuous updates from Plant Link.
For more information also check our homepage: www.plantlink.se

Name	E-mail	Telephone
Leif Bülow Director	leif.bulow@tbiokem.lth.se	+46 (0)46-222 95 94
Erik Alexandersson Research Coordinator	erik.alexandersson@slu.se	+46 (0)40-41 53 38
Mirja Carlsson Möller Education Coordinator	mirja.carlsson_moller@biol.lu.se	+46 (0)46-222 77 39
Estelle Wéra Bioinformatician	estelle.wera@slu.se	+46 (0)40-41 55 48
Knut Wålstedt Administrator	knut.walstedt@slu.se	+46 (0)40-41 55 48