

sDiv Workshop Summary

"sEpiDiv"

The workshop dealt with the emerging field of ecological epigenetics in plants. The discussions covered three broad areas:

1. The current knowledge on molecular mechanisms of epigenetics, as derived from the model species *A. thaliana*, maize and rice.
2. The molecular and bioinformatic approaches currently available to answer questions in ecological epigenetics, and
3. Possible approaches in ecological epigenetics regarding non-model species, ecological relevance, epigenetic diversity and others.

The participants of the workshop came from three different disciplines: ecology, molecular biology, and bioinformatics. Consequently, the presentations covered these fields of expertise and tackled theoretical and practical questions as outlined above.

The workshop is expected to have four major outputs:

1. An application for a *New Phytologist* Symposium on "*Plant Ecological Epigenetics: From mechanisms to ecological relevance*" to be held in Vienna in 2016. Led by Dr. Ovidiu Paun, this application was already submitted directly after the workshop.
2. A review and methods paper on the current status and future approaches of plant epigenetics to be submitted in *Trends in Ecology and Evolution*. The paper should be submitted the latest at the second sEpiDiv workshop. Writing the paper is coordinated by Dr. Christina Richards, with specific inputs from many of the workshop participants.
3. An application for a European Training network on Plant Ecological Epigenetics. We aim to finalize the application during the second workshop in September 2015 and it will be submitted in January 2016. The designated coordinator of this network is Dr. Koen Verhoeven.
4. A possible proposal for a DFG Priority Program on ecological epigenetics. We are currently checking whether the necessary critical mass for such a program could be reached.

The balance between work on outputs, general brainstorming/ information exchange and participants presentations was roughly 45%/15%/40%. Although the number of presentations was rather too high during the first two days, the workshop greatly benefited from the information delivered during that phase.

sEpiDiv was very inspiring for all participants. The conclusions regarding the content of the future collaborations was surprising. Both molecular biologists and ecologists realized they had to leave their respective “comfort zone” in order to advance the field of ecological epigenetics and the research ideas developed during the workshop were beyond what we had hoped before the workshop. The workshop agreed on a common research agenda that represents the middle ground between ecology, molecular biology and bioinformatics, and to which all participants feel committed. Agreeing on this middle ground enabled the formulation of novel research ideas for the common research project, and this represents an important development in the young field of ecological epigenetics. Thus, the workshop helped to catalyze the development of truly novel research approaches. Furthermore, the willingness of bioinformaticians to participate in this early conceptualization of the research program was extremely beneficial. sEpiDiv thus triggers a truly interdisciplinary research approach. Due to the workshop, collaborations among different participants have immediately begun, e.g. ecologists and bioinformaticians will work together on the optimization of the data analysis of newly developed methods that facilitate methylome sequencing in non-model plant species.

The general working atmosphere was exceptionally positive and constructive, and concentrated. Despite a rather large group of 25 participants there was a sense of full dedication throughout the workshop. Besides the good composition of the workshop group the support of sDiv was absolutely key for the success of the workshop.

The next steps will be to prepare the deliverables outlined above and in preparation for workshop II in September.

Participant list

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