



UvA-DARE (Digital Academic Repository)

Phenotypic variation in plants

Roles for epigenetics

Lauss, K.

Publication date

2017

Document Version

Other version

License

Other

[Link to publication](#)

Citation for published version (APA):

Lauss, K. (2017). *Phenotypic variation in plants: Roles for epigenetics*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Phenotypic Variation in Plants: Roles for Epigenetics



Kathrin Lauss

Phenotypic Variation in Plants: Roles for Epigenetics

Kathrin Lauss

Phenotypic variation in plants: Roles for epigenetics

The research described in this thesis was funded by the Centre for Improving Plant Yield (CIPY), which is part of the Netherlands Genomics Initiative and the Netherlands Organization for Scientific Research and was carried out at the laboratory of Synthetic Systems Biology and Nuclear Organization, Swammerdam Institute for Life Sciences, University of Amsterdam, The Netherlands.

Title:

A picture of *Arabidopsis thaliana* plants.

“Dark in here, isn’t it?”

Terry Pratchett

Phenotypic variation in plants: Roles for epigenetics

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. K.I.J. Maex
ten overstaan van een door het College voor Promoties ingestelde
commissie,
in het openbaar te verdedigen in de Aula der Universiteit
op woensdag 11 januari 2017, te 13:00 uur

door

Kathrin Lauss
geboren te Rohrbach, Oostenrijk

Promotiecommissie

Promotor: prof. dr. H.V. Westerhoff,
Universiteit van Amsterdam

Copromotor: dr. M.E. Stam,
Universiteit van Amsterdam

Overige leden:

prof. dr. M.A. Haring,
Universiteit van Amsterdam

prof. dr. R.E. Koes,
Universiteit van Amsterdam

dr. J.M. Kooter,
Vrije Universiteit Amsterdam

prof. dr. C.S. Testerink,
Universiteit van Amsterdam

dr. S. Scholten,
University of Hamburg, Germany

prof. dr. B.J. Zwaan,
Wageningen Universiteit

Faculteit der Natuurwetenschappen, Wiskunde en Informatica

Table of Contents

Chapter 1: Introduction	1
Chapter 2: QTL^{epi} mapping in <i>Arabidopsis thaliana</i>	15
Abstract	16
Introduction	16
Materials	19
Methods	23
Chapter 3: Epigenetic divergence is sufficient to trigger heterosis in <i>Arabidopsis thaliana</i>	41
Abstract	42
Introduction	43
Results and Discussion	44
Material and Methods	58
Supporting Information	63
Chapter 4: Molecular insights into four epiHybrids and their parental lines	122
Abstract	123
Introduction	123
Results	128
Discussion	154
Material and Methods	163
Supporting Information	171
Chapter 5: Paramutation at the <i>b1</i> locus is associated with RdDM activity at the paramutable <i>B-1</i> allele	188
Abstract	189
Introduction	189
Results	194
Discussion	214
Material and Methods	224
Supporting Information	229

Chapter 6: General Discussion	255
Bibliography	280
Summary	297
Samenvatting	301
Zusammenfassung	305
Acknowledgements	309