



Universiteit
Leiden
The Netherlands

Arabidopsis AGC3 kinases and PIN plasma membrane abundance

Gelderen, K. van

Citation

Gelderen, K. van. (2017, July 6). *Arabidopsis AGC3 kinases and PIN plasma membrane abundance*. Retrieved from <https://hdl.handle.net/1887/50504>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/50504>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/50504> holds various files of this Leiden University dissertation

Author: Gelderen, Kasper van

Title: Arabidopsis AGC3 kinases and PIN plasma membrane abundance

Issue Date: 2017-07-06

Acknowledgements

I would like to thank everyone and everything that contributed towards the completion of this thesis. It has been a difficult journey at times, but in the end, thanks to everyone's support, it is finally finished.

First of all, I want to thank Nora, for her support, during my biology degree and my PhD research. Your love and friendship has always been a beacon of support in private life and work. Together in 2010 we started the journey towards our PhD degree, dreaming of a shared career in science. Sadly due to circumstance this is no longer possible for you. However in May 2016 you received your PhD after almost six years of hard work and I can think of few people who deserved that more.

Of course, I'd like to thank my supervisor and promotor Remko Offringa, who gave me the opportunity to do the work described in this thesis at his lab and it is an honor to be his first PhD student as a promotor. I'd like to thank my thesis committee members, Herman Spaink, Paul Hooykaas, Jiri Friml and Christa Testerink for reviewing my thesis. Also a special thank you to Christa for giving good career advice and helping me along!

Cheryl Philipsen receives my heartfelt thanks for being a very friendly and fun colleague. Most of all I thank you for your part of our effort to finish our PhD's. I was very happy to attend your ceremony a few months ago and I am glad that you can be my paranymph for this occasion.

During my PhD I received the help of many colleagues at the lab of Molecular and Developmental Genetics, but I especially would like to thank two people for their help, Myckel Habets and Eike Rademacher. Myckel was already a fixture in the lab when I arrived. Myckel, you're a very kind person and nice colleague, who is always able to help when asked. I hope you finish your thesis soon as well. Eike, you started a two-year Post-Doc shortly after I arrived and I enjoyed many interesting discussions with you during this time, which helped me to understand this whole science thing in a better way. I'm glad we're still friends and I wish you and Paula all the best. From that remark follows thanks to Paula: I thank you for your understanding, cynicism and help with the whole PhD-finishing process.

Thanks to all other colleagues at the Molecular and Developmental Genetics lab who helped me along and made the work fun: Marijn, Maartje, Daan, Felix, Yuanwei, Omid, Martijn, Phillipe, Xiaorong, Arezoo, Majid, Emma, Elco, Ward, Jan, Johan, Paul, Sylvia, Bert, Kees, Niels, Gary, Qi, Hexi, Xiong, Cibele, Suyung and Bart. Of course thank you to Gerda for running such an excellent microscopy facility and being a very nice person in general! Thank you to Fang, Carlos and Felipe for doing the work that most of my PhD was based upon. Thanks in advance to my successors Yao, Kiki, Yohanna and Xiao for helping me either with this thesis or making sure my work doesn't go wasted.

I want to give my heartfelt thanks to all my students I supervised during my PhD research: The ones that did large projects: Martin, Valery, Stefan, Stef and Edward. Also thanks and the ones that stayed somewhat shorter. Maritza, even though you were Eike's student, your data features in my thesis, so I guess I claimed you a bit :). thanks for that! Supervising all of you was very enjoyable and a learning experience for me and I hope for you as well. A special shout-out to Martin, who was the best student. Remko and I awarded you a 9.75 for your Master thesis and incredibly this did not increase your average grade (!). I taught you about microscopy, cloning and general molecular biology stuff, you were able to teach me sectioning, scanning electron microscopy and the importance of time in development, but I think the main thing you taught me was how to be an exemplary scientist. We had very fruitful ;) discussions about the data and I hope you make it in academia, if not, surely something must be wrong.

Thanks to my current boss, Ronald Pierik, for allowing me to keep doing science in a great lab, while trying to finish my PhD-thesis. Thanks to my Plant Ecophysiology colleagues for giving me support, Lot, Paulien, Chrysa, Debatosh, Scott, Chiakai, Emilie and everyone else from the Ecofys lab. You endured my complaints about this whole process quite well :).

Thanks to Niels for being such good friends! Although our drinking sessions will probably not have had a net positive effect on the outcome of this thesis, I enjoyed them very much. Thanks to everyone from H.M.I.D.H.D. De Zvevelpin BRAND!!! BRAND!!! BRAND!!! AI is het leven nog zo zuur, het lab is vol met (milt)vuur! Special mention for all the Zvevelpinners that did a PhD before me and inspired me to do this as well, such as Rudy and Wiebe, thanks! And thanks to Hammie for lighting up student life as well. Many thanks to Marloes, Erik, Maartje, Ronald, Percy, Sander and Yvonne from EJC CUPIDITAS for being great friends and coaching me through student life. The 'verassend festival' group, thanks for great moments of mental (not physical) relaxation during many a music festival. I would like to thank my fellow board members of 'Das Direktorat' for indirectly showing me the advantage of science, where I can at least postpone administrative duties for some years. Thanks to all other friends in and out of science who've given me joy and interesting conversations.

Of course, I'd like to thank my sisters, Saskia and Marieke, you're great and smart sisters and have given me much encouragement, not in the least to beat you to graduating through high and school and university :). Thanks to my dad Henk for encouragement and financial support. Thanks to the rest of my family as well! Finally and most of all thanks to my mother, Kunnie, for never losing faith in me during my education and being such a kind mother, who stimulates her children to discover life.

Finally I want to thank Iliana for doing a good job with the layout and thanks to everyone not listed here, if I forgot someone, a thousand apologies!

Curriculum vitae

Kasper van Gelderen was born on the April 26th, 1982 in De Bilt, the Netherlands. He went to high school at the Nijmeegse Scholengemeenschap in Groenewoud, and in 2001 he started his Biology study at Wageningen University. After obtaining his BSc degree in Cell Biology in 2004, Kasper took a break to become a full-time board member of the student association SSR-W. In 2007 he continued with his Master studies at Wageningen University. He did an internship at the Nematology department under the supervision of Dr. Geert Smant and Dr. Wiebe Postma, where he worked on the interaction between the golden nematode (*Globodera Rostochiensis*) effector SPRYSEC19 and the tomato R-gene SW5F (Postma *et al.*, 2012) and is most likely triggered by the recognition of effectors in stylet secretions. However, the actual role of these secretions in the activation and suppression of effector-triggered immunity is largely unknown. Here we demonstrate that the effector SPRYSEC-19 of *Globodera rostochiensis* physically associates in planta with the leucine-rich repeat (LRR). For his second internship, Kasper worked under the supervision of Dr. Paul Bundock and Dr. Robert Sevenier at Keygene NV on dsRNA induced double-stranded-breaks in order to facilitate gene editing in tomato protoplasts. After obtaining his Master degree in Cell Biology in September 2010, Kasper started as PhD student in the group of Prof. Remko Offringa at the Institute of Biology of Leiden University, studying the role of plant-specific AGC kinases in promoting polar auxin transport by stabilizing the plasma membrane abundance of the PIN auxin efflux carrier. These studies are described in this thesis, of which Chapter 4 has been published in *Molecular Plant* (van Gelderen *et al.*, 2016). In November 2014 Kasper started as Post-Doctoral researcher in the group of Prof. Ronald Pierik at the Plant Ecophysiology department of Utrecht University, where he currently investigates the effect of Far-Red-light induced shade avoidance on root development in *Arabidopsis thaliana*.

List of publications

- Postma, W.J., Slootweg, E.J., Rehman, S., et al.** (2012) The Effector SPRYSEC-19 of *Globodera rostochiensis* Suppresses CC-NB-LRR-Mediated Disease Resistance in Plants. *Plant Physiol.*, **160**, 944–54.
- van Gelderen, K., van Rongen, M., Liu, A., Otten, A. and Offringa, R.** (2016) An INDEHISCENT-Controlled Auxin Response Specifies the Separation Layer in Early Arabidopsis Fruit. *Mol. Plant*, **9**, 857–869.

Cover design: Iliana Boshoven-Gkini | AgileColor.com

Thesis layout: Iliana Boshoven-Gkini | AgileColor.com

Printed: GVO drukkers & vormgevers | gvo.nl