Universiteit Leiden
The Netherlands

Discovery and exploitation of the transcriptional regulatory system of pectinases in Aspergillus niger

Alazi, E.

Citation

Alazi, E. (2018, June 6). *Discovery and exploitation of the transcriptional regulatory system of pectinases in Aspergillus niger*. Retrieved from https://hdl.handle.net/1887/62740

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/1887/62740

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

Cover Page

Universiteit Leiden

Leiden University Repository

The handle http://hdl.handle.net/1887/62740 holds various files of this Leiden University dissertation.

Author: Alazi, E.
Title: Discovery and exploitation of the transcriptional regulatory system of pectinases in Aspergillus niger
Issue Date: 2018-06-06

Discovery and exploitation of the transcriptional regulatory system of pectinases in *Aspergillus niger*

Ebru Alazi

Cover & layout design: Ebru Alazi

Printed by: Ridderprint BV, Ridderkerk, The Netherlands

ISBN: 978-94-6299-971-8

Funding statement: This research was funded by BE-Basic (Flagship 10).

Discovery and exploitation of the transcriptional regulatory system of pectinases in *Aspergillus niger*

Proefschrift

ter verkrijging van

de graad van Doctor aan de Universiteit Leiden,

op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,

volgens besluit van het College voor Promoties

te verdedigen op woensdag 6 juni 2018

klokke 16.15 uur

door

Ebru Alazi

geboren te Üsküdar, Turkije

in 1985

Promoter:	Prof. dr. P.J. Punt
Co-promoter:	Dr. A.F.J. Ram
Promotiecommissie:	Prof.dr. H.P. Spaink (Leiden University)
	Prof.dr. G.P. van Wezel (Leiden University)
	Prof.dr. H.A.B. Wösten (Utrecht University)
	Prof.dr. J.H. de Winde (Leiden University)
	Prof.dr. N.L. Glass (The University of California)
	Prof.dr. R.P. de Vries (Utrecht University)

Contents

Chapter 1	Aim and outline of the thesis	7
Chapter 2	Modulating transcriptional regulation of plant biomass degrading enzyme networks for rational design of industrial fungal strains	11
Chapter 3	The transcriptional activator GaaR of *Aspergillus niger* is required for release and utilization of D-galacturonic acid from pectin	35
Chapter 4	An evolutionarily conserved transcriptional activator-repressor module controls expression of genes for D-galacturonic acid utilization in *Aspergillus niger*	53
Chapter 5	The pathway intermediate 2-keto-3-deoxy-L-galactonate mediates the induction of genes involved in D-galacturonic acid utilization in *Aspergillus niger*	81
Chapter 6	Inducer-independent production of pectinases in *Aspergillus niger* by overexpression of the D-galacturonic acid responsive transcription factor *gaaR*	99
Chapter 7	W361R mutation in GaaR, the regulator of D-galacturonic acid responsive genes, leads to constitutive expression of pectinases in *Aspergillus niger*	125
Chapter 8	Conclusions and outlook to the future	151
	Summary	158
	Samenvatting	159
	Curriculum vitae	161
	Publications	162