

University of Groningen

Structural and functional diversity of substrate-binding domains in ABC importers

Fulyani, Faizah

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2015

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Fulyani, F. (2015). Structural and functional diversity of substrate-binding domains in ABC importers [Groningen]: University of Groningen

Copyright

Other than for strictly personal use, 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), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

**Structural and functional diversity of
substrate-binding domains in
ABC importers**

Faizah Fulyani
2015



rijksuniversiteit
 groningen

faculteit wiskunde en
 natuurwetenschappen

Cover design : Crystal structure of SBD 1 from *E. faecalis*

Printed by : Ipskamp drukkers

ISBN : 978-90-367-8274-6 printed version
 : 978-90-367-8273-6 electronic version

The research described in this thesis was performed at the Membrane Enzymology group of the Groningen Biomolecular Sciences and Biotechnology Institutes (GBB), Department of Biochemistry, University of Groningen, the Netherlands. This research was financially supported by the Netherlands Organization for scientific Research (NWO) and partly funded by LPDP-Indonesia Endowment Fund for Education, Ministry of Finance Indonesia.

© 2015 Faizah Fulyani

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system of any nature, transmitted in any form or by any means, electronic, mechanical, now known or reafter invented, including photocopying or recording without prior written permission of the copyright holder.



university of
 groningen

Structural and functional diversity of substrate-binding domains in ABC importers

PhD thesis

to obtain the degree of PhD at the
 University of Groningen
 on the authority of the
 Rector Magnificus Prof. E. Sterken
 and in accordance with
 the decision by the College of Deans

This thesis will be defended in public on

Monday 16 November 2015 at 11.00 hours

by

Faizah Fulyani

born on 18 May 1984
 in Bandung, Indonesia

Supervisors

Prof. B. Poolman

Prof. D. J. Slotboom

Assessment committee

Prof. L. Schmitt

Prof. D. B. Janssen

Prof. J. Kok

Contents

Chapter 1	General introduction to ABC transporter	1
Chapter 2	Functional diversity of tandem substrate-binding domains in ABC transporters from pathogenic bacteria	25
Chapter 3	Crystal structure of SBD2 glutamine-binding protein of GlnPQ from <i>Enterococcus faecalis</i> at 1.4 Å resolution	63
Chapter 4	Relative rates of amino acid import via the ABC transporter GlnPQ determine the growth performance of <i>Lactococcus lactis</i>	73
Chapter 5	Small molecule interference of amino acid transport in (non-) pathogenic Gram-positive bacteria	95
Chapter 6	Purification and stabilization of the detergent-solubilized state of the osmoregulatory ABC transporter OpuA from <i>Lactococcus lactis</i>	119
Summary		143
Dutch summary-Nederlandse samenvatting		149
List of publications		153
Acknowledgments		155

