

University of Groningen

## Chemical Modification of Peptide Antibiotics

de Vries, Reinder

DOI:  
[10.33612/diss.171585325](https://doi.org/10.33612/diss.171585325)

**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:*  
2021

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

*Citation for published version (APA):*  
de Vries, R. (2021). *Chemical Modification of Peptide Antibiotics*. University of Groningen.  
<https://doi.org/10.33612/diss.171585325>

### 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).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### 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.

# **Chemical Modification of Peptide Antibiotics**

**Reinder de Vries**

The work described in this thesis was carried out at the Stratingh Institute for Chemistry, Rijksuniversiteit Groningen, The Netherlands.

This work was financially supported by the Netherlands Organisation for Scientific Research (NWO) (Vici grant 724.013.003).

Cover design by Reinder de Vries

Printed by Ipskamp Drukkers, Enschede, The Netherlands



rijksuniversiteit  
groningen

# Chemical Modification of Peptide Antibiotics

## Proefschrift

ter verkrijging van de graad van doctor aan de  
Rijksuniversiteit Groningen  
op gezag van de  
rector magnificus prof. dr. C. Wijmenga  
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

vrijdag 25 juni 2021 om 16.15 uur

door

**Reinder Harmannus de Vries**

geboren op 15 oktober 1992  
te Groningen

## **Promotores**

Prof. dr. J.G. Roelfes

Prof. dr. A.J. Minnaard

## **Beoordelingscommissie**

Prof. dr. S. Harutyunyan

Prof. dr. M.D. Witte

Prof. dr. H.-D. Arndt

# Contents

<b>Chapter 1:</b>	Introduction	1
<b>Chapter 2:</b>	Selective Modification of RiPPs via Diels-Alder Cycloadditions on Dehydroalanine Residues	31
<b>Chapter 3:</b>	Synthesis of Thiostrepton-Siderophore Conjugates for the Selective Targeting of Gram-negative Bacteria	59
<b>Chapter 4:</b>	Rapid and Selective Chemical Editing of RiPPs via Cu(II)-Catalyzed $\beta$ -Borylation of Dehydroamino Acids	79
<b>Chapter 5:</b>	Cu(II)-Catalyzed $\beta$ -Silylation of Dehydroalanine Residues in Peptides and Proteins	103
<b>Chapter 6:</b>	Characterization of New Antimicrobial NRPs Isolated from <i>Brevibacillus laterosporus</i> MG64	119
<b>Chapter 7:</b>	Conclusions and Perspectives	139

