



Universiteit  
Leiden  
The Netherlands

## **The advantages and disadvantages of bioorthogonal proteins**

Groenewold, G.J.M.

### **Citation**

Groenewold, G. J. M. (2021, February 17). *The advantages and disadvantages of bioorthogonal proteins*. Retrieved from <https://hdl.handle.net/1887/3142384>

Version: Publisher's Version

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

Downloaded from: <https://hdl.handle.net/1887/3142384>

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

Cover Page



Universiteit Leiden



The handle <https://hdl.handle.net/1887/3142384> holds various files of this Leiden University dissertation.

**Author:** Groenewold, G.J.M.

**Title:** The advantages and disadvantages of bioorthogonal proteins

**Issue Date:** 2021-02-17

# **The advantages and disadvantages of bioorthogonal proteins**

Proefschrift

ter verkrijging van

de graad van Doctor aan de Universiteit Leiden,  
op gezag van Rector Magnificus Prof. dr. ir. H. Bijl,  
volgens besluit van het College voor Promoties  
te verdedigen op woensdag 17 februari 2021  
klokke 15:00 uur

door

**Gerdientje Johanna Mirjam Groenewold**

Geboren te Harderwijk in 1990

## Promotiecommissie

**Promotor:** Dr. S.I. van Kasteren  
Prof. dr. H.S. Overkleeft

**Overige leden:** Prof. dr. J.M.F.G. Aerts (voorzitter)  
Prof. dr. M. van der Stelt (secretaris)  
Dr. A.L. Boyle  
Prof. dr. G.P. van Wezel  
Prof. dr. G. van den Bogaart *Rijksuniversiteit Groningen*  
Prof. dr. D.J. Scheffers *Rijksuniversiteit Groningen*

ISBN: 978-94-6421-214-3  
Printed by: Ipskamp Printing  
Cover design: Mirjam Groenewold

© The copyright of this thesis remains with the author.  
No quotation from this thesis should be published without author's prior consent and information derived from it should be acknowledged.





## **Table of contents**

|   |            |
|---|------------|
| <b>Chapter 1</b>  | <b>7</b>   |
| <b>General introduction</b>   |            |
| <b>Chapter 2</b>  | <b>39</b>  |
| <b>Expression and purification of bioorthogonal ovalbumin</b>                 |            |
| <b>Chapter 3</b>  | <b>81</b>  |
| <b>T cell activation by bioorthogonally labelled tetanus toxin C fragment</b> |            |
| <b>Chapter 4</b>  | <b>109</b> |
| <b>Exploring azido-HRP as a tool in immunocytochemistry</b>                   |            |
| <b>Chapter 5</b>  | <b>143</b> |
| <b>Summary and future prospects</b>   |            |
| <b>Nederlandse samenvatting</b>   | <b>165</b> |
| <b>List of publications</b>   | <b>171</b> |
| <b>CV</b>   | <b>172</b> |
| <b>Dankwoord</b>  | <b>176</b> |

