



Universiteit  
Leiden  
The Netherlands

## **Bioorthogonal antigens as tool for investigation of antigen processing and presentation**

Pieper Pournara, L.

### **Citation**

Pieper Pournara, L. (2021, November 16). *Bioorthogonal antigens as tool for investigation of antigen processing and presentation*. Retrieved from <https://hdl.handle.net/1887/3239301>

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/1887/3239301>

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

Stellingen behorend bij het proefschrift getiteld

## **Bioorthogonal Antigens as Tool for Investigation of Antigen Processing and Presentation**

- 1.** The problem of antigen processing is one of kinetics, topology, and chemistry rolled into one. [this thesis chapter 1]
- 2.** Using bioorthogonal antigens (instead of pre-labelled reporter antigens) for intracellular antigen tracing reduces the chance of biases in the results although it requires two reaction steps instead of one. [this thesis chapter 3]
- 3.** Fluorophore modified antigens preclude the study of any post-translational modification of lysine residues, such the antigen carbamylation that occurs in rheumatoid arthritis (Trouw *et al.* 2017<sup>262</sup>). [this thesis chapter 5]
- 4.** The poor predictability of adverse/unexpected (CD4-)T cell responses seen with using artificial intelligence (AI)-based optimized neo-epitope vaccines (Ott *et al.* 2020<sup>69</sup>) demonstrates the enormous complexity of the human immune system and indicates the need for further fundamental research. [this thesis chapter 6]
- 5.** It is not easy to convey to laymen how scientists can develop a vaccine against COVID-19 in 1 year but have not managed to eradicate HIV since 1984.
- 6.** Bioorthogonal chemistry can find an application in organ on a chip models to replace animal experimentation and help to expand this technology from experimental to translational research (Rogozhnikov *et al.* 2016<sup>308</sup>).
- 7.** Fear is part of human nature. Dealing with fear of a virus on the one hand and fear of a vaccine on the other hand needs a multidisciplinary approach no matter how irrational the fear is from a scientific point of view.
- 8.** Open vaccine patents can save lives.
- 9.** The essence of a (bio)orthogonal reaction is that one pair of reaction partners is inert to interaction with other surrounding ones. The essence of intellectual interaction in research should be the opposite.
- 10.** COVID has turned the Netherlands not just into a nation of football coaches and epidemiologist, but also budding immunologists. The latter should be fostered.

*These propositions are considered opposable and defensible and as such have been approved by the promotor, co-promotor and the Dean.*