KONINKLIJKE
HOLLANDSCHE MAATSCHAPPIJ
DER WETENSCHAPPEN

Juryrapport
KHMW Jong Talent Afstudeerprijzen voor Life Sciences 2023

1st prize: Sofie van Dorst MSc, Utrecht University
A closer look at the surface; Structural biology of prokaryotic cell surface molecules

We are delighted to announce today the winner of the KHMW Young Talent Graduation Award for Life Sciences 2023: Sofie van Dorst with her thesis entitled "A closer look at the surface. Structural biology of prokaryotic cell surface molecules".

The jury was not only impressed by the exceptional scientific quality of Sofie's work but also by its significant contributions to the field of prokaryotic cell biology. The decision was unanimous.

Sofie chose to focus on the protective S-layers of prokaryotes, an essential component mediating their interaction with the surrounding environment. Using state-of-the-art techniques like cryogenic electron microscopy and cryogenic electron tomography, Sofie explored the intricate structures and organization of these S-layers across various prokaryotes. Her findings are insightful, revealing shared properties and adaptation strategies that these organisms have developed over time to thrive in their respective environments.

The amount and the quality of the work presented are impressive. All four sub-projects have provided interesting novel insights, and parts have already been published in top scientific journals.

In addition to her remarkable thesis, Sofie's impressive academic track record, marked by high grades and a commitment to her studies beyond the mandatory requirements, deserves mention.

All in all, the jury is delighted to assign the Life Science prize 2023 to Sofie van Dorst and we wish her all the best for a bright scientific future.

Congratulations, Sofie!

2nd prize: Ir. Tessa Loman, Eindhoven University of Technology
Rh-catalyzed Cyclopropanations and NH-Insertions using Amphiphilic Polymeric Nanoparticles in Complex Media

The winner of the second prize of the KHMW Young Talent Graduation Award for Life Sciences 2023 is Tessa Loman, who did her Master thesis project at Eindhoven University of Technology under the supervision of Prof. Anja Palmans.

Tessa is theoretically very strong (she finished both her Bachelor and Master program Cum Laude), but is also a highly skillful and careful experimentalist, with a great talent for

fundamental research. And not only that, she excels in collaborating with others, communication, and has a strong analytical ability. Her graduation research aimed to develop water-compatible, polymeric nanoparticles in which metal catalysts are entrapped. Thus, catalytically active nanoparticles are formed that eventually may be used in cells or perhaps even in organisms, to catalyze in situ the formation of biologically active compounds such as anticancer drugs.

The results were far above expectations and are summarized in a clear and structured report that she wrote completely independently and that also has been accepted in the journal *Nanoscale* with Tessa being a shared first author. Because of these impressive achievements Tessa receives this KHMW Young Talent Graduation Award.

3rd prize: Sophie Vromans MSc, Wageningen University & Research
RAIChU: Reaction Analysis through Imaging of Chemical Units

The third prize winner of the KHMW Young Talent Graduation Award for Life Sciences 2023 is Sophie Vromans on the basis of the impressive results of her Master project and MSc thesis.

Sophie did a double Master program in Medical Biotechnology as well as Bioinformatics. In a relatively short period of six months she developed a software program RAIChU (Reaction Analysis through Imaging of Chemical Units). This program uses bacterial DNA-information to predict the chemical structure of antibiotics and other bioactive natural substances that can be produced by these bacteria. The software visualizes the biosynthesis process, which allows the investigators to predict which genes code for promising metabolites. This makes the software program a potentially powerful tool in drug design as well as in the study of molecular interactions in biological organisms, such as the microbiome.

Sophie's thesis was graded with an exceptional score of 9,5 and has been the basis for several manuscripts in outstanding international scientific journals. Her unique combination of experience in the fields of Medical Biotechnology and Bioinformatics give her a solid basis in a further scientific career, which she now continues as a PhD student in the field of molecular oncology.

Prof. dr. R. (Roberta) Croce, hoogleraar biofysica van fotosynthese & energie Vrije Universiteit Amsterdam
Prof. dr. F.P.J.T. (Floris) Rutjes, hoogleraar synthetisch organische chemie Radboud Universiteit
Prof. dr. H.A.J. (Harry) Struijker-Boudier, emeritus-hoogleraar farmacologie Universiteit Maastricht, voormalig wetenschappelijk directeur CARIM

De jury vergaderde op 23 oktober 2023 via Zoom onder leiding van KHMW-maatschappelijk lid Mr. M. (Mieke) Zaanen. Tevens was ter vergadering aanwezig Prof. dr. A.P. (Ad) IJzerman, bestuurslid en secretaris natuur- en medische wetenschappen KHMW.