



Universiteit  
Leiden  
The Netherlands

## **Design and synthesis of metal-based chemotherapeutic agents for targeted DNA interactions or DNA repair pathway modulation**

Griend, C.J. van de

### **Citation**

Griend, C. J. van de. (2024, February 27). *Design and synthesis of metal-based chemotherapeutic agents for targeted DNA interactions or DNA repair pathway modulation*. Retrieved from <https://hdl.handle.net/1887/3720005>

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/1887/3720005>

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

## Acknowledgements

The accomplishments presented in this thesis could not have been achieved without the continuous support of my supervisors, Sylvestre Bonnet & Remus T. Dame. I would like to express my gratitude to them for their professional guidance and personal encouragement. Their support in nurturing my independence as a scientist and providing the opportunity to develop my own skills as a researcher, along with their guidance, has been invaluable.

I would like to extend my deepest gratitude to three mentors who played a pivotal role in shaping my journey towards a PhD. Firstly, I owe a great deal of my foundational knowledge to Rian van den Nieuwendijk for guiding me during my HBO internship. His mentorship provided me with a solid foundation in organic synthesis and the separation of diastereomers, a theme that haunted my scientific career ever since. It was this internship which inspired me to continue my studies and pursue a Master's degree. My sincere thanks also go to Lucien Lameijer for overseeing my first Master's internship. His guidance in the intricate world of inorganic compound synthesis and photochemistry not only broadened my scientific understanding but also led to my first publication as a first author. I am honored to have been his paranymph. Lastly, my gratitude extends to Daniel Lahav, my final internship supervisor, who shifted my focus towards the field of biology. His mentorship instilled in me an understanding of the fourth and final field that collectively shaped and defined my work throughout my PhD journey. I am grateful to Lies and Dennis for their fruitful discussions and guidance ever since my time as a Master's student in the MCBIM research group.

I want to express my sincere appreciation to everyone at MCBIM and MACBIO for their support and for creating a productive and enjoyable work environment. The collaborative spirit, insightful feedback, and professional guidance I received have been instrumental in my development and success. For collaboration and support in my research, I extend my gratitude to Ludo, Fons, Karthick, Sipeng, Yvonne, Patrick, Annaloes, Bianka, and Maxime. Your contributions have been invaluable. Special thanks go to Erik, Andrea, and Valeria for being the best officemates. I cherish the fun times and multilingual banter/curses we shared. I would also like to acknowledge the students I had the privilege of supervising, whose work has significantly contributed to this thesis: Hans, Maarten, Chantal, Chucky, Lars, and Amanda.

Hans and Coen thank you for your unwavering support ever since our first meeting in Rotterdam. The moments we have shared, filled with board games, whiskey and good food have been incredibly valuable to me. Similarly, my gratitude extends to Daan, Olivier, and the late Dorus. I had a great time at Vrijheidslaan playing catan and zoveren

learning the important lesson that you don't always have to follow.

I would also like to thank my in-laws, the Vlaar family, for your motivating words, interest and understanding during the completion of my PhD.

Mom and Dad, I am deeply grateful for your unwavering belief in me and your lifelong support. Your encouragement has undoubtedly contributed to my ability to pursue a PhD. And Marco, despite my PhD, as my older brother, you always seem to know better. Special thanks to my creative sister for her invaluable advice on color matching and for welcoming the newest addition to our family.

Judith, I am certain that achieving this PhD would not have been possible without your continuous support. In you, I have found not only a partner but also someone who has the same childlike playfulness, while also rivaling me in stubbornness. I look forward to the future we will build together.

## List of publications

### **Ruthenium-Locked Helical Chirality: A Barrier of Inversion and Formation of an Asymmetric Macrocycle.**

Corjan van de Griend, Johannes J. van de Vijver, Maxime A. Siegler, Remus T. Dame, and Sylvestre Bonnet.

*Inorg. Chem.* **2022**, *61*, 40, 16045–16054.

### **Photochemical Resolution of a Thermally Inert Cyclometalated Ru(phbp) (N–N)(Sulfoxide)<sup>+</sup> Complex.**

Lucien N. Lameijer, Corjan van de Griend, Samantha L. Hopkins, Anne-Geert Volbeda, Sven H. C. Askes, Maxime A. Siegler, and Sylvestre Bonnet.

*J. Am. Chem. Soc.* **2019**, *141*, 1, 352–362.

### **Induction of a Four-Way Junction Structure in the DNA Palindromic Hexanucleotide 5'-d(CGTCAG)-3' by a Mononuclear Platinum Complex.**

Vincent H. S. van Rixel, Anja Busemann, Mathijs F. Wissingh, Samantha L. Hopkins, Bianka Siewert, Corjan van de Griend, Maxime A. Siegler, Tiziano Marzo, Francesco Papi, Marta Ferraroni, Paola Gratteri, Carla Bazzicalupi, Luigi Messori, Sylvestre Bonnet.

*Angew. Chem. Int. Ed.* **2019**, *131*, 9478–9482.

### **A biophysical study of the interactions of palladium(ii), platinum(ii) and gold(iii) complexes of aminopyridyl-2,2'-bipyridine ligands with RNAs and other nucleic acid structures.**

Francesca Binacchi, Cassandra Elia, Damiano Cirri, Corjan Van de Griend, Xue-Quan Zhou, Luigi Messori, Sylvestre Bonnet, Alessandro Pratesi and Tarita Biver.

*Dalton Trans.* **2023**, *52*, 598–608.

### **A Lock-and-Kill Anticancer Photoactivated Chemotherapy Agent.**

Erik Pieter van Geest, Sina Katharina Götzfried, David M. Klein, Nadiya Salitra, Sorraya Popal, Yurii Husiev, Corjan van de Griend, Xuequan Zhou, Maxime A. Siegler, Gregory F. Schneider, Sylvestre Bonnet.

*Photochem. Photobiol.*, **2023**, *99*: 777–786

Manuscripts in preparation.

### **pH dependence and structure-activity relationship for square planar Pt(II) and Pd(II) tetrapyrridyl complexes interacting with DNA.**

Corjan van de Griend, Chucky Chau, Chantal Huisman, Lars Mensink, Maxime A. Siegler, Remus T. Dame, Sylvestre Bonnet.

### **Photocaging of RAD51 inhibitor by ruthenium.**

Corjan van de Griend, Maarten van Ginkel, Anita Milisav, Ludo R. Bretin, Amanda Harris, Yurii Husiev, Maxime A. Siegler, Sylvia E. Le Dévédec, Remus T. Dame, Sylvestre Bonnet.

### **Dual photoactivation of ruthenium-caged inhibitors**

Corjan van de Griend, Maxime A. Siegler, Remus T. Dame, Sylvestre Bonnet.

## Curriculum vitae

Cornelis Johannes van de Griend was born November 1<sup>st</sup>, 1989 in Cromstrijen, the Netherlands. In 2011 he finished his pre-university education (HAVO) at Willem van Oranje, in Oud-Beijerland and continued his education with a bachelor Chemistry at the Hogeschool in Rotterdam. In this period, he did an internship ‘Shelf-life determination of polymer additives concentrates’ at AkzoNobel in Deventer and another internship in the group of Hermen Overkleef at Leiden University entitled “The synthesis and characterization of enantiomer pure iminosugar derivatives”. In 2014, he entered the master Chemistry program at Leiden University, where he did an internship in the Bio-organic Synthesis department in the Hans Aerts lab focused on substrate synthesis to identify the origin of melanoma in advanced Gaucher disease. He performed his main master research internship in the MCBIM sub-group of Sylvestre Bonnet, where he started working with ruthenium complexes for photoactivated chemotherapy. After obtaining his Master of Science degree in 2017, he started a PhD position in the Leiden Institute of Chemistry under the co-supervision of Sylvestre Bonnet and Remus T. Dame. During his PhD thesis he studied the design and synthesis of metal-based chemotherapeutic agents for targeted DNA interactions or DNA repair pathway modulation, and wrote this PhD manuscript. Since 2023, he continues his career as a consultant in chemistry and sustainability at Hezelburcht Grant & Funding Consultancy.