



Universiteit
Leiden
The Netherlands

The synthesis and biological applications of photo-activated ruthenium anticancer drugs

Lameijer, L.N.

Citation

Lameijer, L. N. (2017, December 14). *The synthesis and biological applications of photo-activated ruthenium anticancer drugs*. Retrieved from <https://hdl.handle.net/1887/58398>

Version: Not Applicable (or Unknown)

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

Downloaded from: <https://hdl.handle.net/1887/58398>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/58398> holds various files of this Leiden University dissertation.

Author: Lameijer, L.N.

Title: The synthesis and biological applications of photo-activated ruthenium anticancer drugs

Issue Date: 2017-12-14

The synthesis and biological applications of photo-activated ruthenium anticancer drugs

PROEFSCHRIFT

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus Prof. mr. C.J.J.M Stolker
volgens besluit van het College voor Promoties
te verdedigen op donderdag 14 december 2017
klokke 12.30 uur

door

Lucien Nathanaël Lameijer

geboren te Nieuweschans in 1985

Samenstelling Promotiecommissie

Promotor

Prof. Dr. E. Bouwman

Co-promotor

Dr. S. Bonnet

Overige Leden

Prof. Dr. H.S. Overkleeft

Prof. Dr. G.A. van der Marel

Dr. W.C. Szymanski (University of Groningen)

Dr. G. Gasser (Chimie ParisTech, France)

ISBN: 978-94-6299-802-5

Cover: Elian Kloppenburg

Banner image: Samantha Hopkins

Printed by Ridderprint

"It is not down in any map; true places never are"
Herman Melville, Moby Dick

Table of contents

Chapter 1	7
General introduction	
Chapter 2	25
The synthesis of <i>O</i> -1 to <i>O</i> -6 substituted positional isomers of D-glucose-thioether ligands and their ruthenium polypyridyl conjugates	
Chapter 3	55
D- versus L-glucose conjugation: Mitochondrial targeting of a light-activated, dual-mode of action ruthenium-based anticancer prodrug	
Chapter 4	73
Photodynamic therapy or photoactivated chemotherapy? Effects of the bidentate ligand on the photophysical properties, cellular uptake, and (photo)cytotoxicity of glycoconjugates based upon the $[\text{Ru}(\text{tpy})(\text{NN})(\text{L})]^{2+}$ scaffold	
Chapter 5	97
$[\text{Ru}(\text{phbpy})(\text{N-N})(\text{dmsO-kS})]^{+}$: A new photo-active chiral cyclometalated analogue of the $\text{Ru}(\text{tpy})(\text{N-N})(\text{dmsO-kS})^{2+}$ scaffold	
Chapter 6	123
Efficient red light-activation of a NAMPT inhibitor under hypoxia using water-soluble ruthenium complexes	
Chapter 7	141
Summary, conclusions & outlook	

Appendix I	151
General procedures	
Appendix II	157
Supporting information for Chapter 3	
Appendix III	169
Supporting information for Chapter 4	
Appendix IV	173
Supporting information for Chapter 5	
Appendix V	177
Supporting information for Chapter 6	
Samenvatting	187
Curriculum Vitae	193
List of publications	195

