



UvA-DARE (Digital Academic Repository)

Photocatalysis for applications in living cells

Liu, J.

Publication date
2024

[Link to publication](#)

Citation for published version (APA):

Liu, J. (2024). *Photocatalysis for applications in living cells*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

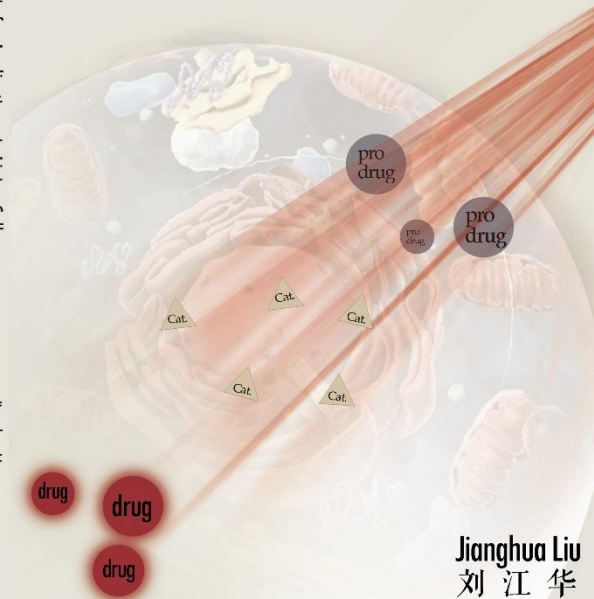
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Photocatalysis for Applications in Living Cells

Photocatalysis for Applications in Living Cells



Jianghua Liu

Jianghua Liu
刘江华

Photocatalysis for Applications in Living Cells

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. P.P.C.C. Verbeek

ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Agnietenkapel
op maandag 15 april 2024, te 14.00 uur

door Jianghua Liu
geboren te Henan

Promotiecommissie

<i>Promotor:</i>	prof. dr. J.N.H. Reek	Universiteit van Amsterdam
<i>Copromotor:</i>	dr. S. Pullen	Universiteit van Amsterdam
<i>Overige leden:</i>	prof. dr. A. Kros prof. dr. J.L. Mascareñas prof. dr. B. de Bruin dr. H. Zhang dr. M.A. Fernández Ibáñez dr. ir. I.M. Ilie	Universiteit Leiden University of Santiago de Compostela Universiteit van Amsterdam Universiteit van Amsterdam Universiteit van Amsterdam Universiteit van Amsterdam

Faculteit der Natuurwetenschappen, Wiskunde en Informatica

Photocatalysis for Applications in Living Cells

PhD thesis, University of Amsterdam, The Netherlands

ISBN: 978-94-6473-451-5

Printed by Ipskamp Printing

Copyright 2024, Jianghua Liu

The work presented in this thesis was performed at the Homogeneous, Supramolecular and Bio-Inspired Catalysis group at the Van 't Hoff Institute for Molecular Sciences of the University of Amsterdam. This work was financially supported by the China Scholarship Council for a PhD fellowship (CSC 201906200131), and the University of Amsterdam.

Table of Contents

Chapter 1	Photocatalysis for Applications in Living Cells	1
Chapter 2	A Photoresponsive Gold Catalyst Based on Azobenzene-Functionalized NHC Ligands	41
Chapter 3	Self-Assembled Ru-Polysaccharide Photocatalyst for Targeted Visible-Light-Induced Activation of Prodrugs	69
Chapter 4	Development of Photocatalysts for Azide Reduction Reactions by Red Light	115
Chapter 5	Near-Infrared Light Induced Azide Reduction Reactions Using a Photocatalyst Linked to an Upconversion Nanoparticle	153
Summary		171
Samenvatting		177
List of publications		185
Acknowledgement		187