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

Lameijer, L.N.

Propositions (stellingen)

accompanying the thesis

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

1. Since cancer is ultimately the result of mutations in DNA caused by –among others- xenobiotics, it is curious that there is still an emphasis on the targeting of DNA in the field of metallodrugs.
*A. C. Komor, J. K. Barton, Chem Commun **2013**, 49, 3617-3630.*

2. It is curious that the finding of a significant contribution of organic cation transporters (OCT2) in the uptake of glucose-platinum conjugates (ANIE) is not taken into account in a later paper (JACS)
*M. Patra, T. C. Johnstone, K. Suntharalingam, S. J. Lippard, Angew Chem Int Ed **2016**, 55, 2550-2554.; M. Patra, S. G. Awuah, S. J. Lippard, J Am Chem Soc **2016**, 138, 12541-12551.*

3. The use of transition metals in conventional chemotherapy is only justified if they allow a mode of action that cannot be acquired with an organic molecule.

4. The idea that every metal complex can be purified by precipitation is incorrect.
Chapter 2

5. It's remarkable that minor structural differences between different ruthenium polypyridyl complexes lead to a dramatic difference in cytotoxicity.
Chapter 3 and 4

6. The cytotoxicity of a ruthenium complex is not necessarily related to its cellular uptake.
Chapter 3 and 4; U. Schatzschneider, J. Niesel, I. Ott, R. Gust, H. Alborzinia, S. Wolfl, *ChemMedChem* **2008**, *3*, 1104-1109.

7. One cannot make statements such as "*the complexes are exceptionally stable in the dark*" based on the results of electronic absorption spectroscopy without applying baseline corrections and in the absence of supporting mass spectrometry data.
*Chapter 6; A. Li, R. Yadav, J. K. White, M. K. Herroon, B. P. Callahan, I. Podgorski, C. Turro, E. E. Scott, J. J. Kodanko, Chem Commun **2017**, 53, 3673-3676.*

8. The ‘thuiskopieheffing’ should be replaced with a form of taxation in which the revenues are redistributed to donation-dependent organizations dedicated to collecting knowledge from the public and sharing knowledge with the public such as Wikipedia.

9. Peer reviewing in science should be carried out “triple blind”: Neither the editor, nor referees or refereed party should know each other’s identity to reduce bias in the refereeing process.

10. The current publishing system is perverted: Scientists often have to *i.* pay to get their work published *ii.* review articles for a commercial party without being compensated *iii.* pay to read their own work. Commercial publishers of scientific work should all be replaced with one non-profit umbrella-organization, to avoid the appearance of ‘illegal’ websites such as Sci-Hub.

11. The quality of food provided by the cafeteria does not justify the prices offered: Either the prices need to be lowered, or competitive parties should be allowed to sell their food products in the university leading to lower prices