

## Electronic Supplementary Information

# Fluorescent silver(I) and gold(I) *N*-heterocyclic carbene complexes with cytotoxic properties: mechanistic insights

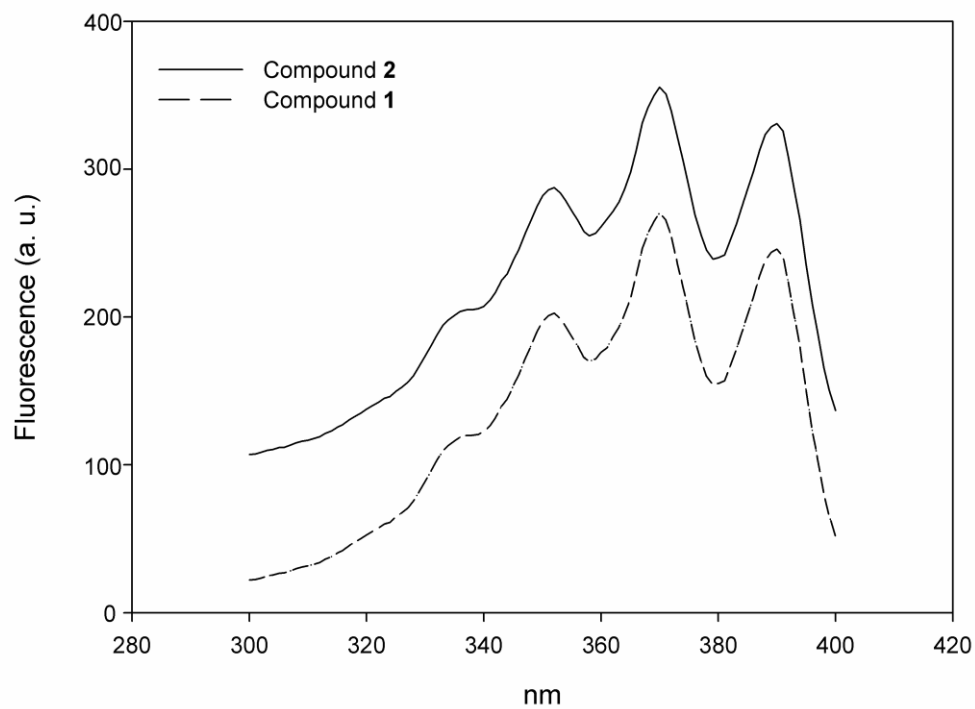
Anna Citta,<sup>a</sup> Esther Schuh,<sup>b</sup> Fabian Mohr,<sup>b\*</sup> Alessandra Folda,<sup>a</sup> Maria Lina Massimino,<sup>c</sup> Alberto Bindoli,<sup>c</sup> Angela Casini,<sup>d\*</sup> and Maria Pia Rigobello<sup>a\*</sup>

a. Dipartimento di Scienze Biomediche, Università di Padova, Viale G. Colombo 3, 35131 Padova, Italy, E-mail: mariapia.rigobello@unipd.it

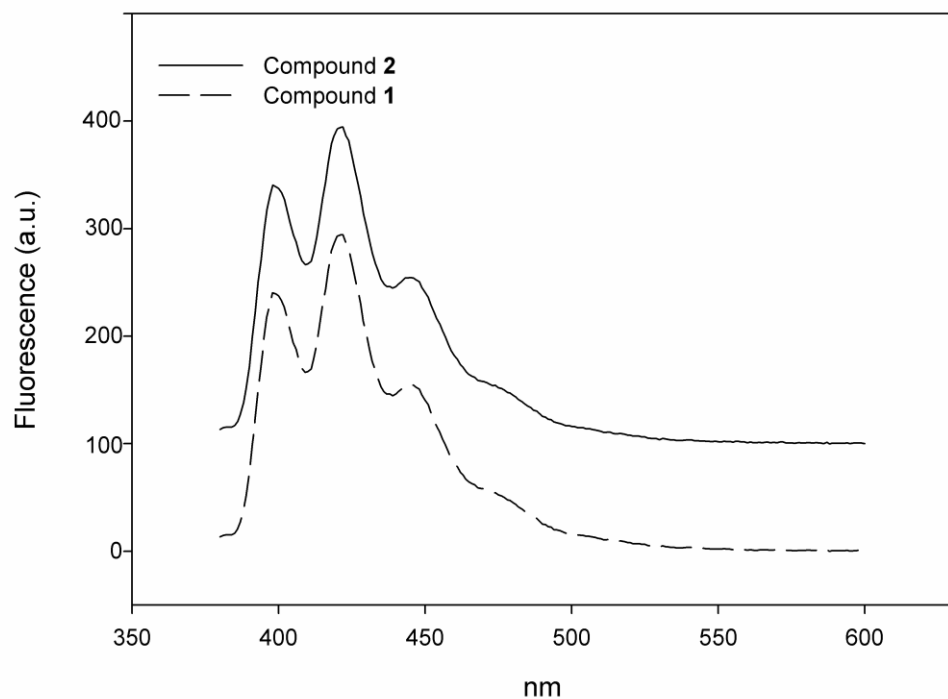
b. Fachbereich C, Anorganische Chemie, Bergische Universität Wuppertal, Gaußstr. 20, 42119 Wuppertal, Germany, E-mail: fmohr@uni-wuppertal.de

c. Istituto di Neuroscienze (CNR) Sezione di Padova, c/o Dipartimento di Scienze Biomediche, Viale G. Colombo 3, 35131 Padova, Italy, E-mail: alberto.bindoli@bio.unipd.it

d. Pharmacokinetics, Toxicology and Targeting, Research Institute of Pharmacy, University of Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands, Email: a.casini@rug.nl

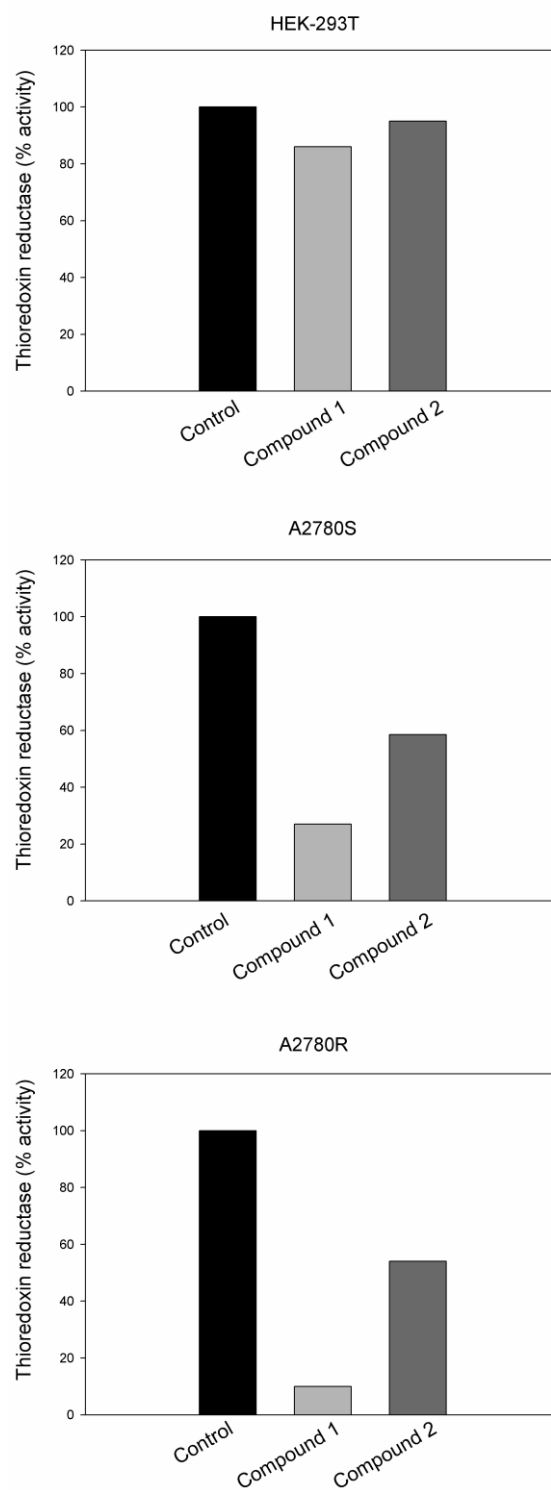


**A**

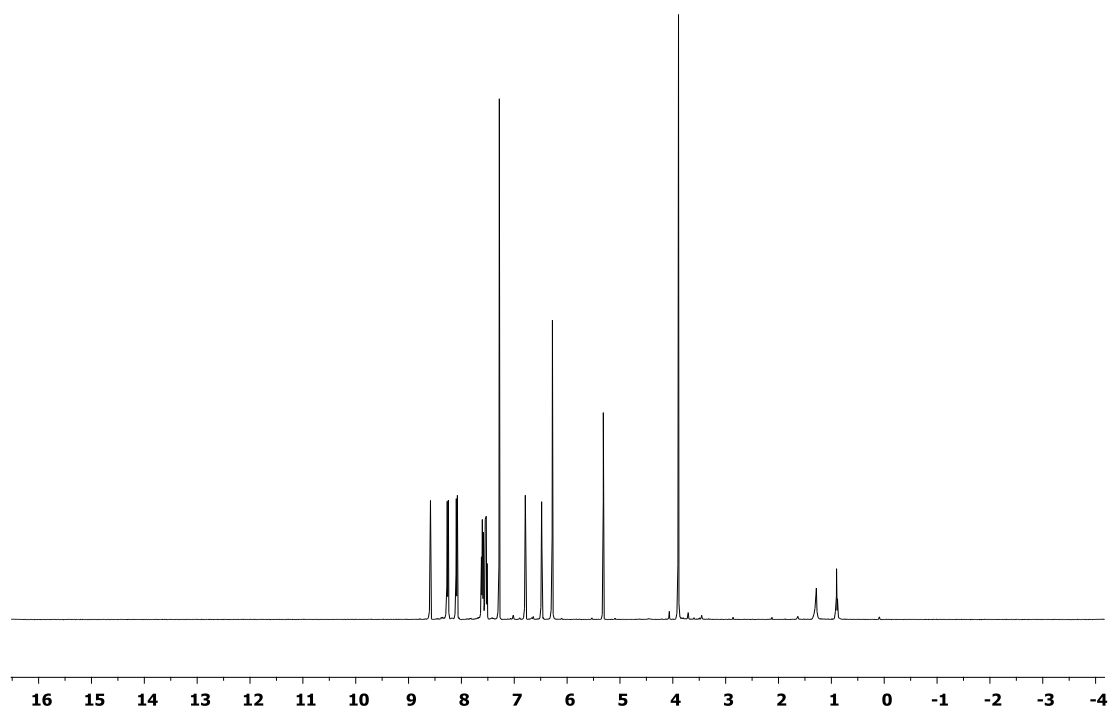


**B**

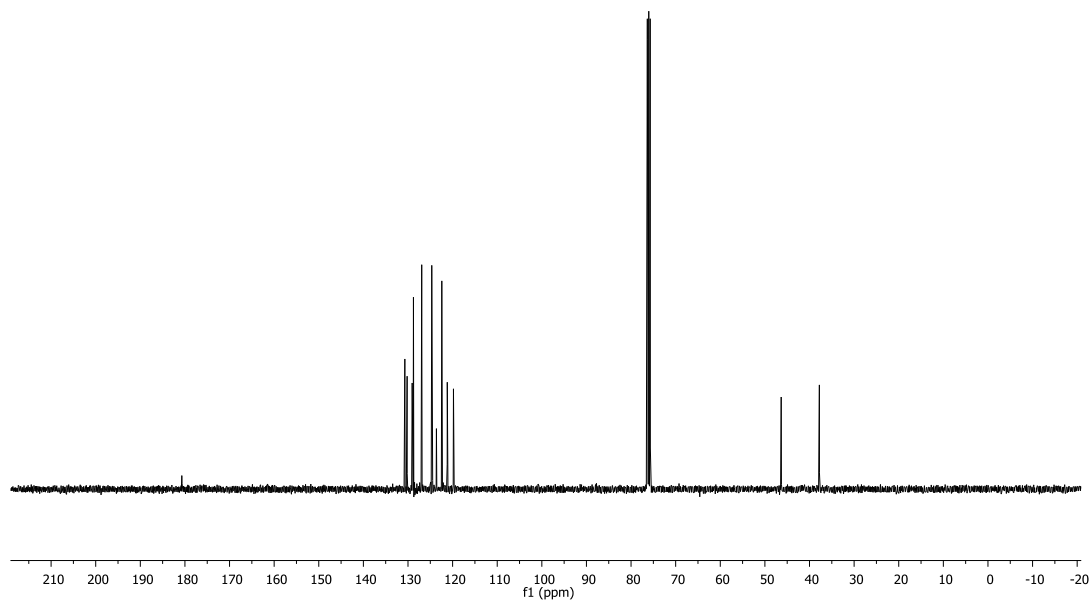
**Fig. S1** A: Excitation spectra of compound 1 and 2. B: Emission spectra of compound 1 and 2. Compound 1 and 2 (100  $\mu$ M) were dissolved in DMSO and then diluted in 0.1 mM Na,K-phosphate buffer (pH 7.4).



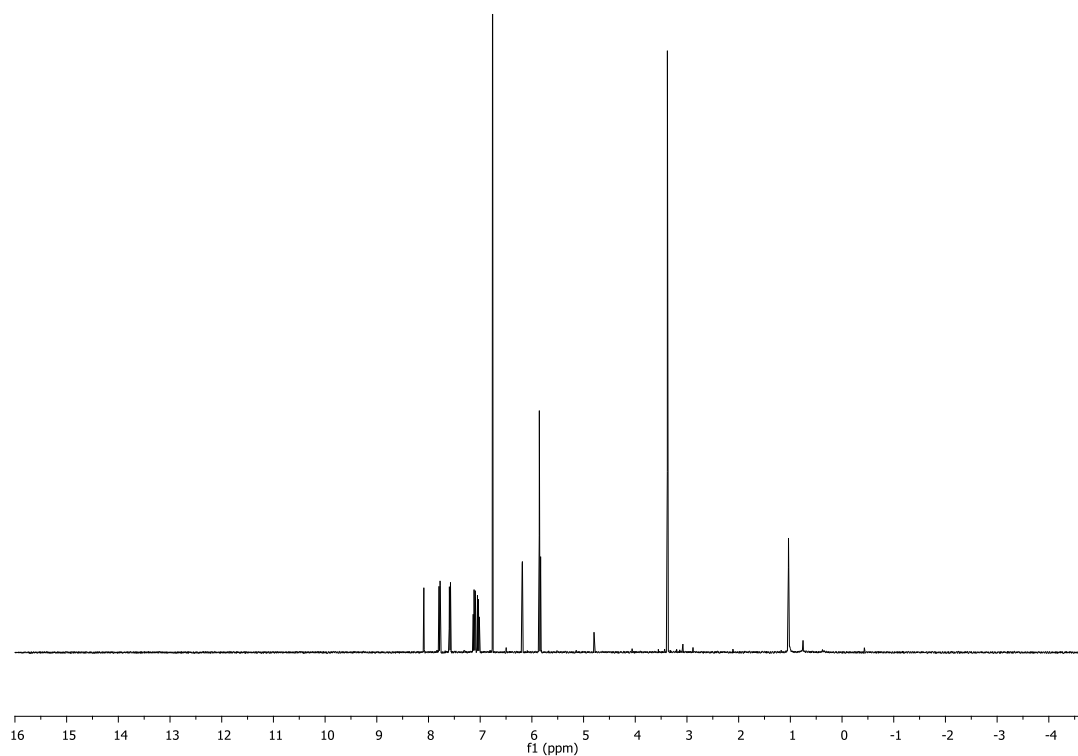
**Fig. S2.** Thioredoxin reductase estimated in cell lysates with the insulin reduction test: 12  $\mu\text{g}$  protein of cell lysates, treated with 8  $\mu\text{M}$  compound **1** and compound **2**, were incubated for 40 min in a final volume of 50  $\mu\text{l}$  in presence of 1.5 mM NADPH, 0.25mM insulin and 100 $\mu\text{M}$  Trx from *E.coli*. The reaction was stopped by addition of 1mM DTNB dissolved in 7.2M guanidine and estimated at 412 nm.



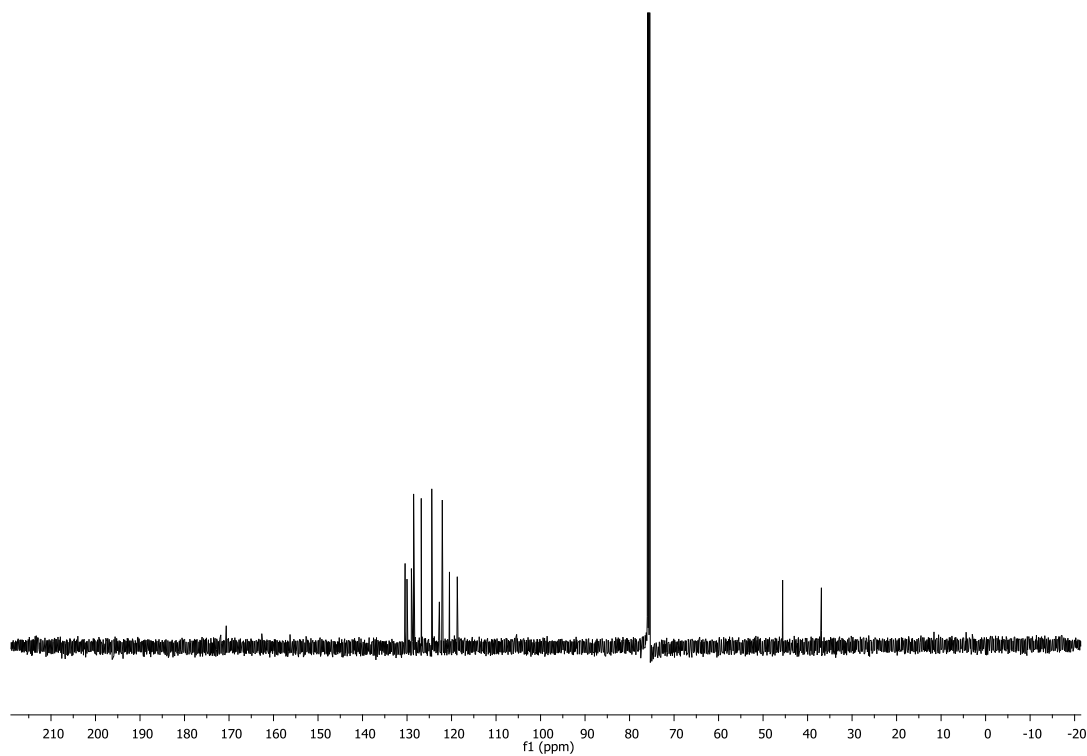
**Fig. S3:**  $^1\text{H}$ -NMR spectra of **1-(Anthracen-9-ylmethyl)-3-methylimidazol-2-ylidene silver chloride (1)**



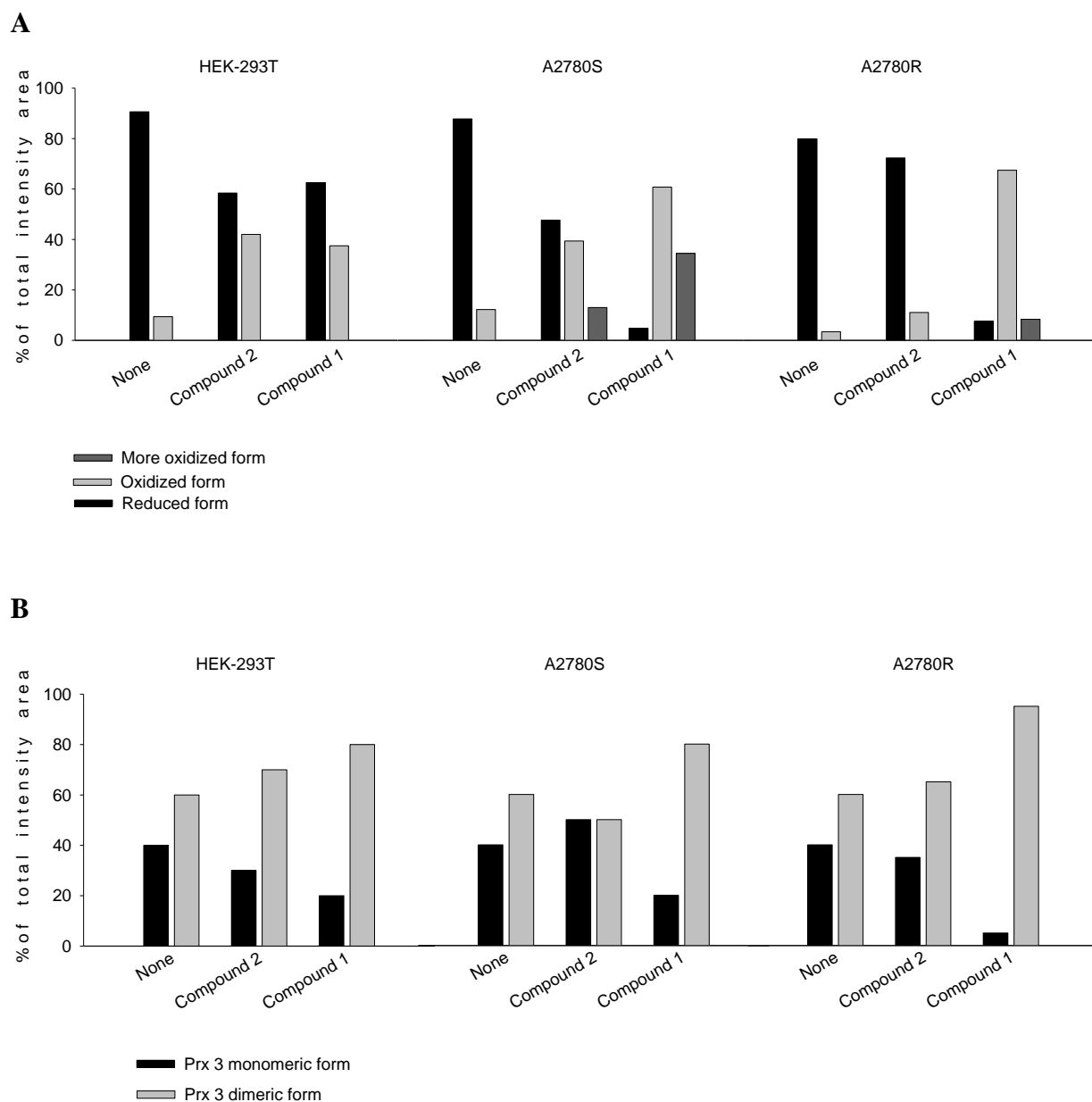
**Fig. S4:**  $^{13}\text{C}$ -NMR spectra of **1-(Anthracen-9-ylmethyl)-3-methylimidazol-2-ylidene silver chloride (1)**



**Fig. S5:**  $^1\text{H}$ -NMR Spectra of **1-(Anthracen-9-ylmethyl)-3-methylimidazol-2-ylidene gold chloride (2)**



**Fig. S6:**  $^{13}\text{C}$ -NMR spectra of **1-(Anthracen-9-ylmethyl)-3-methylimidazol-2-ylidene gold chloride (2)**



**Fig. S7.** Densitometric evaluation: (A) Thioredoxin 1; (B) Peroxiredoxin 3.

Area intensity of the bands referring to Trx1 and Prx3 of Figure 3A and 3C, was estimated with ImageJ (software version 1.46).