Electronic Supplementary Information for

One- and two-photon activated phototoxicity study of biocompatible conjugated 
porphyrin dimers with high two-photon absorption cross-sections

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Effect of blue light irradiation on the viability of SK-OV-3 cells

Fig. S1 Effect of 470 nm, 1.7 mW irradiation on the viability of SK-OV-3 cells.

Incubation time-dependent phototoxicity of the dimers

(a) (b) (c)

Fig. S2 Effect of incubation time with $\text{P}_2\text{NMeI}$ on the PDT efficiency on three different days. SK-OV-3 cells were incubated with 10 $\mu$M drug before exposure to a 657 nm, 3.2 mW, 10 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control. The dark cell viability after the longest incubation time (18 h) was found to be (a) 105 $\% \pm 13$, (b) 97 $\% \pm 11$ and (c) 97 $\% \pm 7$. The error bars denote one standard deviation from 5 replicates.

(a) (b) (c)

Fig. S3 Effect of incubation time with $\text{P}_2\text{C}_2\text{NMeI}$ on the PDT efficiency on three different days. SK-OV-3 cells were incubated with 10 $\mu$M drug before exposure to a 657 nm, 3.2 mW, 10 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control. The dark cell viability after the longest incubation time (18 h) was found to be (a) 96 $\% \pm 14$, (b) 101 $\% \pm 6$ and (c) 105 $\% \pm 6$. The error bars denote one standard deviation from 5 replicates.
**Fig. S4** Effect of incubation time with $\text{P}_2\text{-NMeOAc}$ on the PDT efficiency on three different days. SK-OV-3 cells were incubated with 10 $\mu$M drug before exposure to a 657 nm, 3.2 mW, 10 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control. The dark cell viability after the longest incubation time (18 h) was found to be (a) 96 ± 11, (b) 86 ± 14 and (c) 101 ± 11. The error bars denote one standard deviation from 5 replicates.

**Fig. S5** Effect of incubation time with $\text{P}_2\text{-SO}_3\text{NH}_4$ on the PDT efficiency on three different days. SK-OV-3 cells were incubated with 10 $\mu$M drug before exposure to a 657 nm, 3.2 mW, 40 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control. The dark cell viability after the longest incubation time (18 h) was found to be (a) 99 ± 9, (b) 97 ± 7 and (c) 94 ± 8. The error bars denote one standard deviation from 5 replicates.

**Fig. S6** Effect of incubation time with $\text{P}_2\text{C}_2\text{-CO}_2\text{NH}_4$ on the PDT efficiency on three different days. SK-OV-3 cells were incubated with 10 $\mu$M drug before exposure to a 657 nm, 3.2 mW, 40 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control. The dark cell viability after the longest incubation time (18 h) was found to be (a) 101 ± 8, (b) 97 ± 13 and (c) 97 ± 6. The error bars denote one standard deviation from 5 replicates.
Concentration-dependent phototoxicity of the cationic dimers

Fig. S7 Effect of concentration on SK-OV-3 cell viability of 18 h incubation with \( \text{P}_2\text{NMeI} \). The PDT efficiency was determined on three different days (a-c); dark controls (shaded), and irradiated with 657 nm, 3.2 mW, 4 min light dose (white). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.

Fig. S8 Effect of concentration on SK-OV-3 cell viability of 18 h incubation with \( \text{P}_2\text{C}_2\text{NMeI} \). The PDT efficiency was determined on three different days (a-c); dark controls (shaded), and irradiated with 657 nm, 3.2 mW, 4 min light dose (white). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.

Fig. S9 Effect of concentration on SK-OV-3 cell viability of 18 h incubation with \( \text{P}_2\text{NMeOAc} \). The PDT efficiency was determined on three different days (a-c); dark controls (shaded), and irradiated with 657 nm, 3.2 mW, 4 min light dose (white). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.
Light exposure-dependent phototoxicity

Fig. S10 Effect of irradiation on SK-OV-3 cell viability after 4 h incubation with 10µM P₂NMeI. The PDT efficiency was determined using 657 nm, 3.2 mW light dose on three different days (a-c). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.

Fig. S11 Effect of irradiation on SK-OV-3 cell viability after 4 h incubation with 10µM P₂C₂-NMeI. The PDT efficiency was determined using 657 nm, 3.2 mW light dose on three different days (a-c). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.

Fig. S12 Effect of irradiation on SK-OV-3 cell viability after 4 h incubation with 10µM P₂NMeOAc. The PDT efficiency was determined using 657 nm, 3.2 mW light dose on three different days (a-c). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.
**Fig. S13** Effect of irradiation on SK-OV-3 cell viability after 4 h incubation with 10μM Visudyne. The PDT efficiency was determined using 657 nm, 3.2 mW light dose on three different days (a-c). The percentage cell viability was calculated relative to the corresponding dark control. The error bars denote one standard deviation from 5 replicates.

**Comparison of the one-photon PDT efficiency in vitro**

**Fig. S14** Comparison of the PDT efficiency on three different days. SK-OV-3 cells were incubated for 6 h with 10 μM drug before exposure to a 657 nm, 3.2 mW, 20 min light dose. The control represents cells that have been administered no drug but exposed to the same light dose. The percentage cell viability was calculated relative to the corresponding dark control.