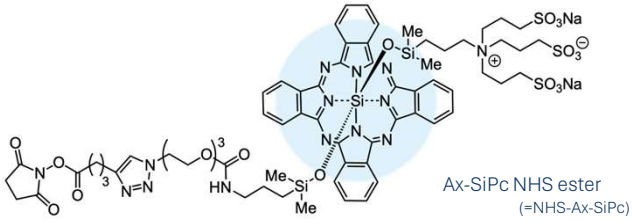
SINCE 1889 Yamato

Axially Substituted Silicon Phthalocyanine Payload for Antibody Drug Conjugates

CompleCure

What is Ax-SiPc ?

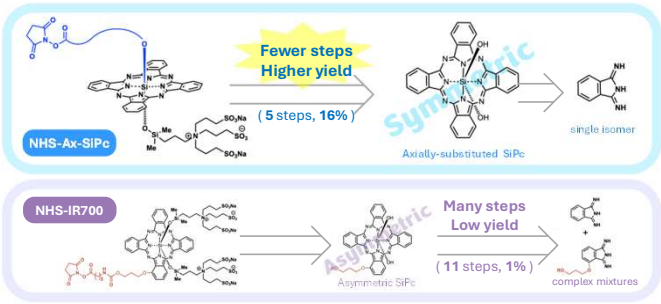
a *Novel* and *Proprietary* **Photosensitizer**



Ax-SiPc NHS ester
(=NHS-Ax-SiPc)

- Ideal payload for photoimmunotherapy
  - Axially substituted, symmetrical phthalocyanine skeleton
    - Simple 5 step synthesis process with higher yield
      - Effectively excited by near-infrared (NIR) irradiation

Easy synthesis of Ax-SiPc



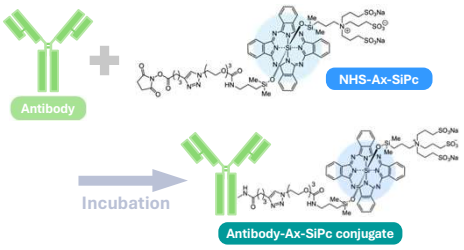
Singlet oxygen production

Optical properties of NHS-Ax-SiPc & NHS-IR700

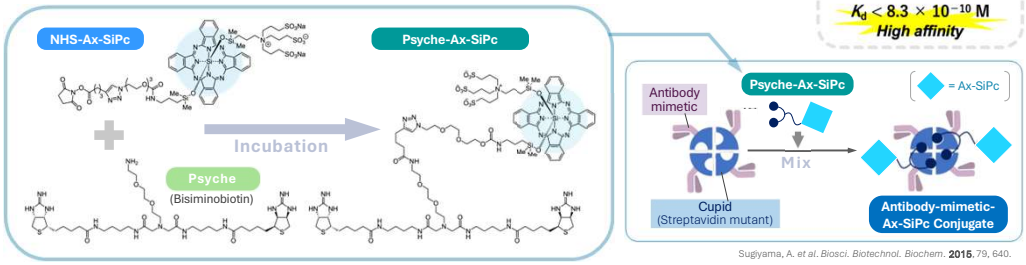
	λ_{max}[a]	λ_{em}[a]	ε[a] ($M^{-1}cm^{-1}$)	Φ_f[b]	Φ_Δ[c]
NHS-Ax-SiPc	**673** nm	675 nm	146,000	0.27	**0.40**
NHS-IR700	686 nm	688 nm	202,000	0.14	0.26

a: In DMSO, b: In PBS, c: In D_2O

Direct conjugation to antibody



Psyche-Ax-SiPc for antibody mimetic drug conjugate



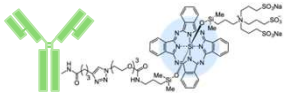
Sugiyama, A. *et al. Biosci. Biotechnol. Biochem.* **2015**, 79, 640.

Application to Photoimmunotherapy

in vitro — Cell viability assay

Materials & Methods

ADC



Trastuzumab-Ax-SiPc conjugate

Cell

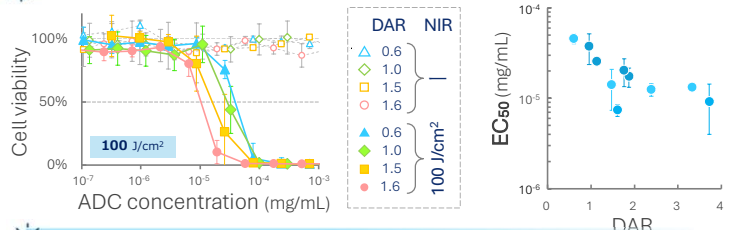
human breast cancer cell line **KPL-4**

Experiment flow

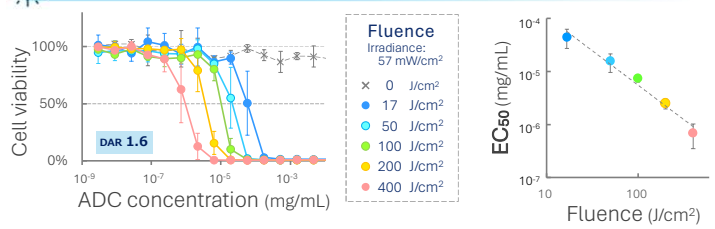
Day0 ① Seeding of KPL-4 cells
overnight in CO_2 incubator (37°C, 5% CO_2)
Day1 ② Addition of trastuzumab-Ax-SiPc conjugate
overnight in CO_2 incubator
Day2 ③ Replacement with new culture medium
④ Near-infrared light irradiation
680nm LED light (irradiance: 57 mW/cm²)
overnight in CO_2 incubator
Day3 ⑤ Cell viability measurement

Results

Influence of Drug-Antibody Ratio (DAR)



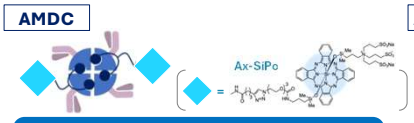
Influence of Near Infra-Red Fluence



in vivo — Xenograft model

Materials & Methods

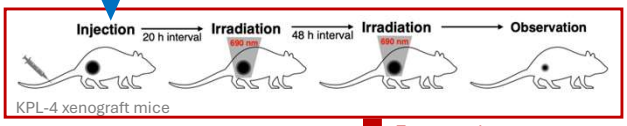
AMDC



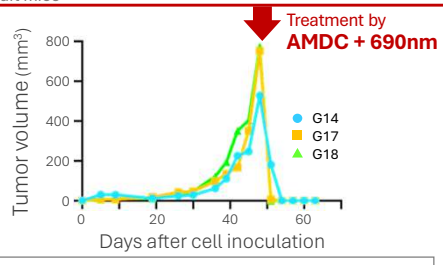
$Z_{HER2:342}$-Cupid-Psyche-Ax-SiPc conjugate

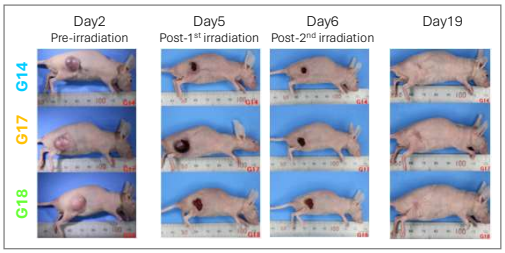
Animals

KPL-4 xenograft mice



Results





References

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