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4. 新型药物递送技术；

5. 临床前药物分析新技术；

6. 创新药物的临床转。

**Cisplatin/Cypate Micelles Circumvent Tumor Resistance to Cisplatin by Chemo-photothermal Combination Therapy**

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Cisplatin is a chemotherapeutic drug commonly used in clinics. However, acquired resistance confines its application in chemotherapeutics. To overcome the acquired resistance to cisplatin, a combination of chemotherapy and photothermal therapy has emerged as a promising strategy for drug-resistant cancer therapy.

To ensure the chemotherapeutic drug and photothermal agent could be simultaneously delivered to a tumor region to exert their synergistic effect, a safe and efficient delivery system is highly desirable. Herein, the copolymers consisting of monomethoxy poly (ethylene glycol) and alkylamine-grafted poly (L-aspartic acid) are assembled with carbocyanine dyes and cisplatin into theranostic. The nanoparticles exhibited good biodistribution and long-term retention of carbocyanine dyes at tumor, which result in enhanced NIRF imaging by generating stable retention of NIRF signals at both hypervascular and hypovascular tumors and consistent spectra characteristics compared with free Cypate or cisplatin. Moreover, the micelles exhibit severe photothermal damage on drug-resistant cancer cells via the destabilization of subcellular organelles upon photoirradiation, causing superior photothermal tumor regression. The micelles act as a powerful theranostic nanocarrier for simultaneous cancer imaging with high contrast and superior photothermal therapy.

**Keywords:** Cisplatin, Cypate micelles, Chemo-photothermal combination therapy, Nanocarrier, Cancer imaging

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