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Unlocking The Potential of Gold-Based Compounds as Anticancer Chemotherapeutic and Targeted Agents

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Host: Aitziber L. Cortajarena

Wednesday, 11th June
12.00 p.m.

CIC biomaGUNE - Seminar Room

Gold compounds are now well-recognized for their anticancer properties, and their interactions with the immune system—particularly their ability to enhance immunogenicity—are increasingly being elucidated [1]. In this talk, I will present an overview of research carried out in my laboratory over the past 14 years on the anticancer activity of gold(I) and gold(I)-based heterometallic compounds, investigated in vitro, in cellulo, and in mouse models, including recent and unpublished results. Our studies encompass pharmacokinetic and histopathological analyses, which have demonstrated remarkably low systemic toxicity for several of the compounds evaluated [2]. I will also highlight recent findings on the ability of selected gold-based agents to induce immunogenic cell death.

Additionally, I will feature strategies developed in my group to enhance the safe delivery and tumor-targeting capabilities of gold(I) compounds, one example of which is illustrated in Figure 1 [3–4]. Targeted therapies represent a cornerstone of personalized medicine, offering treatment approaches tailored to a patient's tumor's specific genetic and molecular features. These types of strategies are expected to play a pivotal role in advancing the translational potential of gold-based chemotherapeutics in oncology.

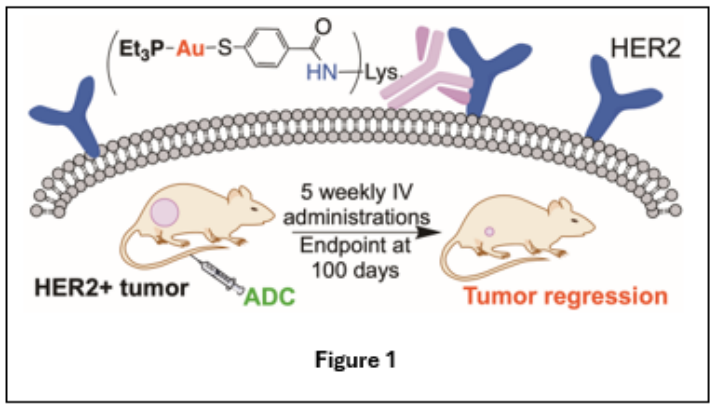

Figure 1

References

[1] Chang, M.R. et al. Leveraging Immunogenic Cell Death to Enhance the Immune Response against Malignant Pleural Mesothelioma Tumors. *J. Am. Chem. Soc.* **2025**, 147, 7008-7920.

[2] Lopez-Hernandez, J.; Contel. M. Promising Heterometallic Compounds as Anticancer Agents: Recent Studies In Vivo. *Curr. Opin. Chem. Biol.* **2023**, 72, 102250

[3] Marciano, Y et al. Encapsulation of Gold-Based Anticancer Agents in Protease-Degradable Peptide Nanofilaments Enhances Their Potency. *J. Am. Chem. Soc.* **2023**, 145, 1, 234–246.

[4] Ahad, A. et al. Shifting the Antibody–Drug Conjugate Paradigm: A Trastuzumab-Gold-Based Conjugate Demonstrates High Efficacy against Human Epidermal Growth Factor Receptor 2-Positive Breast Cancer Mouse Model. *ACS Pharmacol. Trans. Sci*. **2023**, 6, 12, 1972-1986.