

SYMPHONY: Synergistic Immuno Photothermal Nanotherapy

Unmet Need

Metastatic spread results in more than 90 percent of cancer deaths, and current therapeutic options, such as systemic chemotherapy, are often ineffective with harsh side effects. In recent years, immunotherapy using specific immune checkpoint modulators has provided a promising way to disrupt the tumor immunosuppressive environment. However, current immunotherapy methods employ antibodies that are effective only for a limited number of patients and can become ineffective over time. Therefore, it would be of great clinical significance to develop a method capable of broadening and stabilizing the effect of immunotherapy using a safe and effective synergistic combination treatment approach to achieve a long-term therapeutic effect and produce long-lasting effect for an extended patient population.

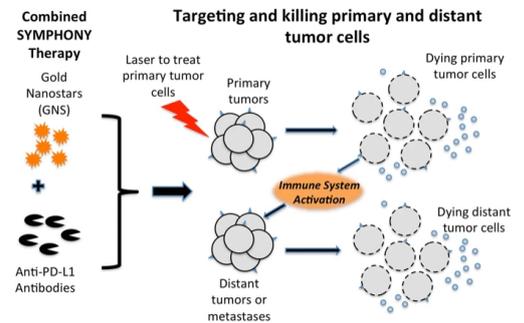
Technology

Duke inventors have reported a method for treating metastatic cancer called SYMPHONY (Synergistic Immuno Photothermal Nanotherapy). This is a novel two-pronged modality that has the potential to safely eradicate both primary tumors and distant metastatic foci. Using a combination of anti-PD-L1 immunotherapy and biologically compatible plasmonic gold nanostar (GNS)-mediated photothermal therapy, the inventors were able to achieve complete eradication of laser-treated primary tumors as well as untreated distant tumors in mice implanted with the MB49 bladder cancer cells. Delayed rechallenge with MB49 cancer cells injection in mice that were cured by SYMPHONY did not lead to new tumor formation after 60 days observation, indicating that SYMPHONY treatment induced effective long-lasting immunity like an 'anticancer vaccine effect' against MB49 cancer cells.

Advantages

- A rapid, safe, and effective cancer treatment
- Can trigger a powerful thermally enhanced systemic immune activation to rapidly eradicate locally aggressive as well as distant metastatic cancer
- Shows clear improvement over anti-PD-L1 therapy alone

Duke
LICENSING
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Duke File (IDF)

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Links

- [From the lab of Dr. Tuan Vo-Dinh](#)

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for cancer treatment of both primary tumors and distant metastasis

Publications

- [Synergistic Immuno Photothermal Nanotherapy \(SYMPHONY\) for the Treatment of Unresectable and Metastatic Cancers \(Scientific Reports, 2017\)](#)
- [Plasmonic gold nanostar-mediated photothermal immunotherapy for brain tumor ablation and immunologic memory \(Immunotherapy, 2019\)](#)
- [US Patent App 15/852,598](#)