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(54) Title: PHOTOSENSITIZING ANTIBODY-FLUOROPHORE CONJUGATES

(57) Abstract: The present disclosure relates to compositions and methods of killing cells. In particular examples, the method includes contacting a cell having a cell surface protein with a therapeutically effective amount of an antibody-IR700 molecule, wherein the antibody specifically binds to the cell surface protein, such as a tumor-specific antigen on the surface of a tumor cell. The cell is subsequently irradiated, such as at a wavelength of 660 to 740 nm at a dose of at least 1 J cm^{-2}. The cell is also contacted with one or more therapeutic agents (such as an anti-cancer agent), for example about 0 to 8 hours after irradiating the cell, thereby killing the cell. Also provided are methods of imaging cell killing in real time, using fluorescence lifetime imaging. Also provided are wearable devices that include an article of clothing, jewelry, or covering; and an NIR LED incorporated into the article, which can be used with the disclosed methods.

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