

“VIRUS CAPSID BASED METAL COMPLEXES FOR CANCER CHEMOTHERAPY”

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Abstract: Despite the many cancer drugs on the market, there is still a need for safe and effective methods of killing cancer cells. Cancer drugs that kill malignant cells unfortunately kill normal host cells as well. Cisplatin is limited in usefulness, due to its level of toxicity. We aim to develop a technique that allows toxic cargo, platinum ions, to target malignant cells without affecting normal host cells. Our aim is to use non-replicating virus-like particles designed so that toxic cargo is carried by the viral capsid protein. Our protein carrier, Cp149, is derived from hepatitis B Virus (HBV) and is expressed in *E. coli*. To purify Cp149, it is run over a series of columns that separate based on molecular size. To test whether the Cp149 protein is able to carry toxic cargo, we will incubate Cp149 with a platinum donor, K₂PtCl₄. We then run a series of column fractionation experiments that will allow the protein- platinum mixture to pass through. We will then test for the presence of platinum in protein- containing fractions to determine whether the platinum has bound to the protein. Cp149 expressed in *E. coli* is easily manipulated and may provide a cost effective therapy. Ongoing research by others in our laboratory is -aimed at finding methods to specifically target these platinum-containing complexes to cancer cells.