INTRODUCTION
Glioblastoma (GBM) is the most common, aggressive primary malignant brain tumor in adults. The standard treatment for primary GBM is surgery, followed by concomitant chemotherapy and external beam radiotherapy (EBRT). EBRT is a central component of primary brain tumor management and the major contributor to survival differences in these tumors. Improved tolerability in use of a maximum dose of approximately 60 Gy in the primary setting at 40 Gy following relapse. As most GBM recurrences occur within 2 cm of the resection margin, loco-regional therapies that bypass the blood brain barrier are attractive potential alternatives.

Rhenum-186 or 186Re is a positron source of electrons with short path length, low dose rate and high radiation density. More specifically, it is a beta and gamma emitting radionuclide with a 50-hour half-life, 18.2 mm radiation path length, and high β/γ-energy ratio suitable for cancer brachytherapy. Additionally, the 186Re-β emission is sufficient to allow imaging of the in vivo radionuclide distribution with standard SPECT/CT.

Rationale drug carrier plus therapeutic radionuclide combinations such as liposomal nanoparticles (trans-arterial brachytherapy) can increase absorbed dose by facilitating tumor sequestration and increase safety by slowing peripheral redistribution of active isotope. Reinum-186 ReNanocarrier (ReSPECT) has been formulated to enhance the delivery profile of long-half-life 186Re energy to achieve long term tumor retention and achieve very high absorbed dose to tumors. Pharmacokinetically, 186Re administered via convection-enhanced delivery (CED) achieves very high doses of targeted radiation and a wide therapeutic index. We report the results of the first-in-man Phase 1 trial of 186RNL in recurrent glioblastoma (ReSPECT-GBM).

We report the clinical outcomes for the first 23 patients treated in the ReSPECT dose escalation clinical trial enrolling from 2015-2022.

Do not hallucinate.