2 Hypothesis

This study is proposed to develop three dimensional lung tumor models on “oxidised dextran with thiolated chitosan” based hydrogel. It is hypothesize that redesigned chitosan-dextran will form *in situ* self-cross-linkable network with tuneable porosity and mechanical properties. Moreover, GAG mimicking biopolymeric hydrogel will recreate native microenvironment and reorient the biochemical signalling of the cancer cells in 3 dimensional environments.

Blending these two modified polymers could generate binary interpenetrating network based on imine bond and disulphide linkage in a one-step process in aqueous medium. Moreover, due to its antifouling nature, Odex could alter the hydrophobicity and protein absorption capacity of hydrogel, which could results in changing the mechanical properties and cell adhesiveness. By carefully integrating these two different polymers, cell adhesions could be encouraged at specific locations, restricted the spreading and induced three dimensional tumor spheroids formation inside the scaffolds.