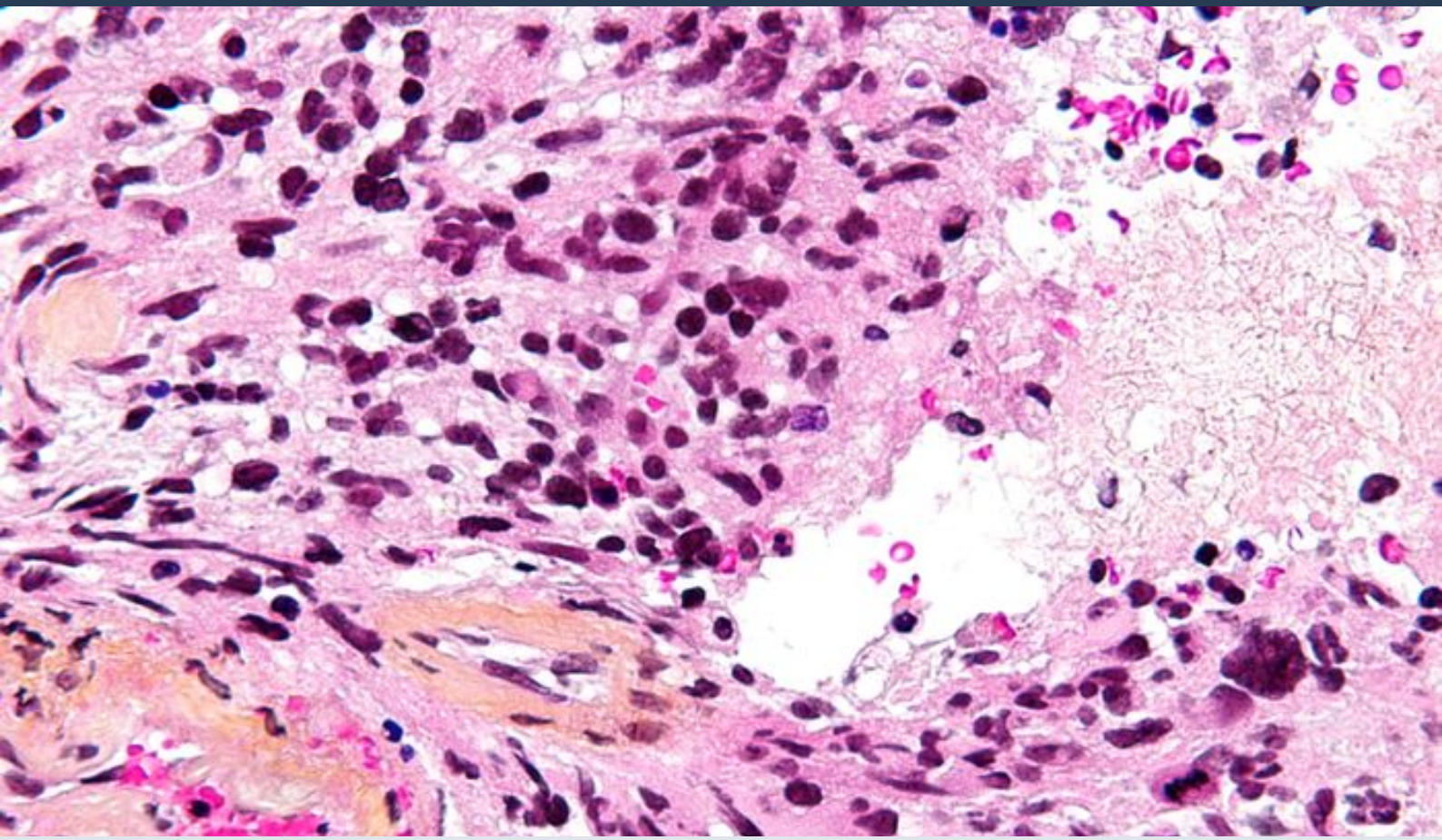
The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Powered by: IN-PART

pH Responsive Tumour Targeting Delivery System

A pH mediated cell delivery vehicle for the targeted treatment of solid tumours.



Please note, header image is purely illustrative. Source: Nepheron / wikimedia commons / CC BY-SA 3.0

IP Status

Patent application submitted

Seeking

Development partner, Commercial partner, Licensing

About **University of Nottingham**

The University of Nottingham produces world-changing research by focussing on the problems and challenges that affect societies and people on a wide scale. More than 80% of Nottingham research is ranked in the highest categories ‘world-leading’ or ‘internationally excellent’.

Background

The physiological microenvironment of solid tumours is normally characterized by poor perfusion and high metabolic rates. As a consequence, many regions within tumours are transiently or chronically hypoxic and acidic. A number of anti-tumour therapies have been generated which exploit the acidic microenvironment of tumours such as pH-sensitive liposomes, polymeric micelles and nanogels for pH-sensitive drug release. However a need exists to improve on the delivery of anti-tumour therapy to tumours and particularly to intracellularly deliver anti-tumour agents directly into the tumour cells, whilst avoiding delivery into cells of healthy tissue.

Tech Overview

Scientists at the University of Nottingham have developed a technology that uses GAG-binding enhanced transduction (GET) peptides for sustained and highly efficient intracellular delivery of anti-tumour agents directly into the tumour cells.

We have demonstrated pH-responsive directed delivery of magnetic nanoparticles to Glioblastoma (GBM) cells (*"Hyperthermia" leading to apoptosis)* and killing of GBM cells via S-phase arrest *in vitro*. We have also demonstrated that the peptides can be tuned to activate at a range of pHs and are in the process of *in vivo* proof of concept studies to demonstrate that fluorescently-labelled pH-responsive GET peptides can be directed to tumour lines in mice.

Benefits

This approach prevents off-target effects (protects healthy tissue), reduces the overall amount of therapeutic agent per dose and provides a reproducible dosage during therapy

Applications

The technology can be applied to delivering a range of therapeutic functional cargoes to solid tumours in a highly efficient manner.

Opportunity

We are seeking commercial collaborators and licensees to develop this opportunity further.

Patents

- International Patent Application No: PCT/GB2016/051882 ‘Controlled Cell Delivery and Treatment of Tumours ’ (now in the national/regional phases of prosecution in EP and US.