

- Attractive target for development of new anti-cancer therapies
- Potential for monoclonal antibody therapy
- Expressed in multiple tumour types
- Acts in multiple tumorigenic pathways
- Potential as a biomarker of disease
- Patent application filed

## Background

Glypican-5, a cell surface protein, has been discovered to be overexpressed in rhabdomyosarcomas and expression levels correlated positively with tumour proliferation. Glypican-5 is expressed in other tumour types and RNA expression levels of Glypican-5 positively correlate with histopathological grade in breast cancers and are higher in malignant versus benign prostatic disease.

The over expression and oncogenic properties of Glypican-5 make it an ideal opportunity to develop novel therapies to target tumours. An antibody against Glypican-5 could be used to treat several different types of cancer including rhabdomyosarcoma, soft tissue sarcomas, lung carcinoma, breast cancer, prostate cancer and neurological tumours.

The Glypican-5 protein is shed from the cell surface into culture medium demonstrating potential as a biomarker of disease.

## Target Validation

The scientific team at ICR have shown that Glypican-5 is an attractive target for novel therapies for a number of reasons:

- Knockdown of Glypican-5 produces a concomitant decrease in proliferation in rhabdomyosarcoma cell lines.

- Glypican-5 is a cell surface protein and is physically accessible to a number of potential anti-Glypican-5 therapies.
- Glypican-5 is rarely expressed in non-foetal tissues other than low levels in the cerebellum and therefore represents a tumour specific target.
- Glypican-5 acts as a modulator of multiple growth factors; therapies that reduce the function of Glypican-5 should affect multiple tumorigenic pathways.
- Glypican-5 may represent a therapeutic target in multiple tumour types.

Because Glypican-5 functions as a cell surface modulator through protein protein interaction it is unlikely to be amenable to small molecule therapies but represents an attractive target for monoclonal antibody intervention.

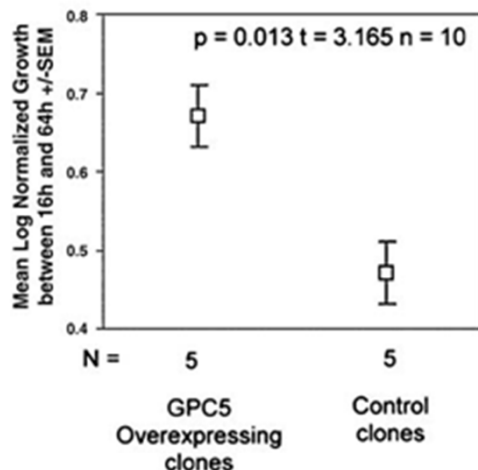
The team have also demonstrated that overexpression of Glypican-5 in rhabdomyosarcoma cells results in shedding of a soluble N-terminal protein fragment into tissue culture media. Detection of the shed Glypican-5 protein may serve as a marker of the presence, progression or response to therapy of disease. Assays could be developed as useful prognostic and diagnostic tools.

## Contact

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# Glypican-5

The plot below shows log-normalized growth of rhabdomyosarcoma cell lines with a significant difference in GPC5-overexpressing clones compared with control clones.



## Intellectual Property

ICR has filed a PCT patent relating to the use of Glypican-5 as a treatment for cancer and as a diagnostic marker: PCT/GB2005/001085 and this is now being progressed to National filing stage. In addition ICR has a considerable body of expertise and know-how surrounding GPC5 which will be made available to a commercial partner.

## Commercial Opportunity

ICR has full commercialisation rights to this technology and is seeking a licensee and/or an industrial partner to collaborate on developing Glypican-5 therapies and assays. In particular ICR is looking to develop a monoclonal antibody therapy to Glypican-5. The partner would receive exclusive commercialisation rights.

## Inventors

Dr Janet Shipley is the scientist leading this project, and is based in the Section of Molecular Carcinogenesis at ICR in Sutton, UK.

## Key Publications

Janet Shipley et al.

"Role for Amplification and Expression of Glypican-5 in Rhabdomyosarcoma,"  
Cancer Res (2007) 67, 1 p57-65

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