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## Glypican 3 expression in human normal and neoplastic tissue: a tissue microarray analysis on 4338 tissue samples

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### Aims and methods

Glypican 3 (GPC3) belongs to the glypican family of GPI anchored heparan sulfate proteoglycans, which play a crucial role in cellular growth, cell migration and cell differentiation. Several studies have shown GPC3 to be a highly specific marker for hepatocellular carcinoma (HCC) and for differentiating non- and pre-neoplastic liver disease. To systematically investigate the epidemiology of GPC3 expression in non-neoplastic, pre-neoplastic and neoplastic tissues, we used tissue microarray (TMA) technology to analyze the immunohistochemically detectable expression of GPC3 in 3,678 tissue samples from 132 different tumor categories and 31 non-neoplastic and pre-neoplastic tissue types.

Furthermore, GPC3 expression was investigated in an additional TMA containing 405 non-neoplastic, pre-neoplastic and neoplastic liver samples.

### Results

GPC3 expression was found in 23% of non-neoplastic (liver cirrhosis), in 37% of pre-neoplastic (low- and high-grade dysplastic nodules) and in 64% of neoplastic liver disease. Furthermore, testicular non-seminomatous germ cell tumors (55%), squamous cell carcinoma of the lung (54%), liposarcoma (52%), cervical intraepithelial neoplasia (CIN) III (41%), melanoma (29%) and schwannoma (26%) also revealed consistent expression of GPC3.

### Conclusion

This study provides a comprehensive overview on the expression of GPC3 in normal and cancerous tissue. Among neoplastic tissue, our data underline the role of GPC3 in hepatocellular carcinogenesis and suggest a

potential role of GPC3 as a therapeutic target in these tumors. Moreover, several non-hepatic tumors can also show GPC3 positivity.