Advances in stem cell biology have clarified that a tumour is a collection of heterogeneous cell populations, and that only a small fraction of tumour cells possess the potential to self-renew. Delta-like 1 protein (Dlk-1) is a surface antigen present on foetal hepatic stem/progenitor cells but absent from mature hepatocytes in neonatal and adult rodent liver. Using a monoclonal antibody (mAb) against hDlk-1, Yanai et al. (Dlk-1, a surface antigen on foetal hepatic stem/progenitor cells, is expressed in hepatocellular, colon, pancreas and breast carcinomas at a high frequency. J. Biochem. 2010;148:85–92) have shown that human (h) Dlk-1 is expressed in human foetal, but not adult, liver and that 20% of all hepatocellular carcinomas (HCCs) are hDlk-1+. Importantly, an even higher percentage of HCCs in younger patients are hDLK-1+. These authors also found that hDlk-1 is present at high frequency in colon adenocarcinomas, pancreatic islet carcinomas and small cell lung carcinomas. Here, I discuss the implications of the expression of foetal hepatic stem/progenitor cell antigens on carcinoma cells.

Keywords: carcinoma/cell surface antigen/liver/monoclonal antibody/stem cell.

Abbreviations: AFP, alpha-feto protein; Dlk-1, delta-like 1 protein; EGF, epidermal growth factor; HCC, hepatocellular carcinoma; mAbs, monoclonal antibodies; NASH, non-alcoholic steatohepatitis.
factor and EGF. However, the precise physiological role of Dlk-1 in these situations is not clear. Using a mAb recognizing human (h) Dlk-1, Yanai et al. (6) showed that hDlk-1 is expressed in human foetal liver but not in adult liver. Significantly, 20% of all human hepatocellular carcinomas (HCCs) are positive for hDlk-1, with an even higher percentage of all human hepatocellular carcinomas (HCCs) that are foetal liver but not in adult liver. Significantly, 20% showed that hDlk-1 is expressed in human hepatocellular carcinomas. This work positions hDlk-1, a cell surface molecule of hepatic stem/progenitor cells, as a molecular marker of cancer stem/progenitor cells in several hard-to-detect malignancies. It may be possible to generate a diagnostic or therapeutic mAb targeting hDlk-1 that will identify early stage carcinomas and bring concrete clinical benefits to patients. Yanai et al.'s findings also imply that other cell surface molecules present on normal tissue stem/progenitor cells may emerge as useful markers of cancer stem/progenitor cells in a variety of tumours.

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Conflict of interest
None declared.

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