Identification of Phospho-tyrosine Biomarkers for Hepatocellular Carcinoma

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The general 3-year survival rate for the most common form of primary liver cancer, hepatocellular carcinoma (HCC), is below 20%. More developed stages of HCC are usually not amenable to the same treatment strategies as less developed stages leaving few survival-enhancing treatment options for advanced HCC. Given only 33% of liver and intrahepatic bile duct cancer patients are diagnosed early in the U.S., time to detection is one of the greatest obstacles for effective treatment of HCC. Proteins expressed by cancerous liver cells are modified differently than those expressed by healthy liver cells. Kinase dysregulation and altered phosphorylation are common in HCC tumors. Phosphorylation of tyrosine residues provides an important mechanism in eukaryotic signal transduction and is commonly disrupted in cancer. Discovery of new phosphotyrosine-based protein biomarkers could provide clinicians with a means detecting HCC at its early stages while it is more susceptible to conventional therapies. In this project, a pair of candidate tyrosine phospho-proteins were identified by computer-aided analysis of a global phospho-proteome database. Overall expression levels of the candidate proteins in malignant and adjacent healthy liver tissue samples were then quantified by western blot.