

## **Update from Professor David Adams, Birmingham University (January 2009)**

“One out of three deaths in the world related to cancer is due to primary liver cancer (hepatocellular carcinoma). However, unless the cancer is caught at an early stage when surgical resection or liver transplantation is possible, there are very few treatment options. We and others have shown that the immune system reacts to hepatocellular carcinoma but that in most cases the immune response is suppressed and ineffective. We are interested in understanding how the cancer and its environment within the liver suppress anti-cancer immune responses. If we can understand this process better we can use our knowledge to develop novel therapies that overcome cancer-related immune suppression and allow the generation of effective anti-tumour immune responses. We are currently concentrating on cells called dendritic cells. These cells are required to stimulate and maintain effective immune responses.

They take up pieces of tumours or viruses and present them to the immune system in such a way that potent and specific immune responses against the antigen are generated. We are currently studying how the liver environment alters the function of dendritic cells. We have shown that these cells are defective in hepatocellular carcinoma as a consequence of factors secreted by the tumour. To overcome this we have been growing dendritic cells from patients with cancer in the laboratory, stimulating them and loading them with tumour antigens in the test tube and returning them via an infusion into a vein to the patient. Our preliminary results are encouraging (paper recently published in the scientific journal *Hepatology* – D Palmer et al *Hepatology*. 2009 Jan; 49(1):124-32.). We have shown that this treatment is safe and moreover that in a proportion of patients we can stimulate anti-tumour immune responses that slow the cancer progression.

We are currently studying how best to activate and deliver the dendritic cells to provide maximum clinical benefit. This work is being done within the NIHR Biomedical Research Unit for Liver disease in Birmingham in collaboration with colleagues in the CRUK Institute for cancer Studies.”