

## ELIMINATION OF HCMV INFECTED CELLS FROM BONE MARROW TRANSPLANTS

Professor Paul Lehner and his team have developed a method of identifying and eliminating human cytomegalovirus (HCMV) infected cells from bone marrow transplants

### Potential Uses

- To increase survival rates of transplant recipients
- To reduce disease complications in transplant recipients
- May avoid routine prophylactic treatment following transplantation

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### Background

After primary infection HCMV typically establishes latent infection and virus reactivation can lead to serious disease in immunocompromised individuals. This is a problem in bone marrow transplant recipients where HCMV remains one of the most significant causes of morbidity and mortality. Transplants from HCMV positive donors to HCMV negative recipients result in particular risk of death with one study reporting mortality after transplantation to be 9.7% in HCMV negative patients receiving HCMV negative cells compared to 18.3% in HCMV negative patients receiving HCMV positive cells. The ability to reduce the number of latently infected cells would reduce the incidence of HCMV disease in transplant patients but previously it has not been possible to identify these rare infected cells.

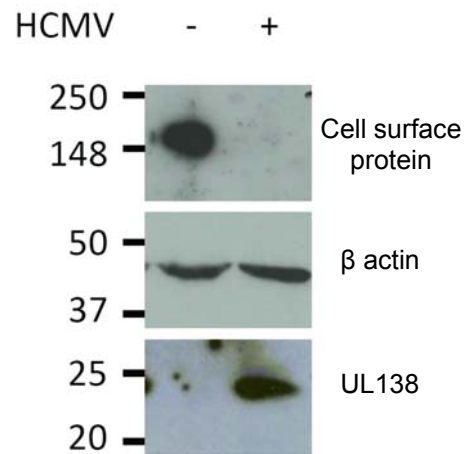
### Technology

Professor Paul Lehner and his team in the Department of Medicine at the University of Cambridge have identified a number of cell surface receptors whose expression is altered upon CMV latent infection. One of these cell surface proteins is downregulated 6-8 fold on cells infected with latent HCMV (Figure 1). They have shown that in the absence of this protein a fluorescent dye accumulates in infected cells enabling them to be identified by established techniques eg FACS and removed (Figure 2). Some cytotoxic drugs also accumulate in infected cells in the absence of this protein, leading to cell death. Eliminating infected cells prior to transplantation may increase the chance of survival of transplant recipients and remove the need for routine prophylactic treatment in some patients. HCMV infection is also a leading cause of morbidity in solid organ transplant recipients and this technology could be developed to enable infected cells to be removed prior to transplantation.

### Commercialisation

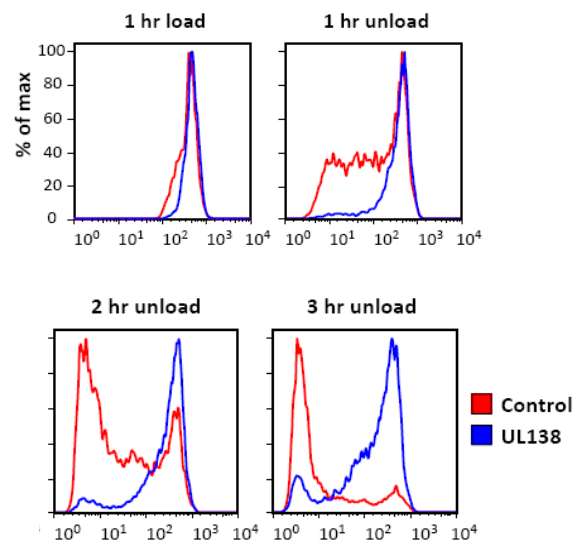
We are seeking a commercial partner for licensing, collaboration and development of this technology which is protected by UK patent application number 1108272.4.

**Figure 1:** Cell surface protein is downregulated in HCMV infected cells



Immunoblot showing cell surface protein is downregulated in cells infected with HCMV

**Figure 2:** Identification of cells infected with HCMV



Flow cytometry (FACS) analysis of THP-UL138 (infected) cells (dark) and control cells (light) following loading with fluorescent dye