ELISPOT in Organ Transplantation

In the field of organ transplantation, there is a great need for the development of reliable *in vitro* assays to predict outcome and guide for therapeutic interventions after transplantation. The ELISPOT assay has proven to be a promising tool to generate these markers, since it can accurately quantify the frequency and cytokine profile of circulating donor-reactive T lymphocytes. Different studies have shown that the number of IFN-γ producing T cells correlated with posttransplantation outcomes. Increased frequency of donor-specific IFN-γ producing cells before transplantation was related with risk of acute rejections and impaired posttransplant function. Additionally, the assay has high value in immune monitoring of alloreactivity after reduction or withdrawal of toxic immunosuppressants and identifying patients tolerant to their allograft. Frequent and reliable T-cell monitoring is feasible by the ELISPOT assay. Therefore, clinicians may use the ELISPOT assay in conjunction with additional tests as a routine basis to optimize immunosuppressive therapy with minimal side effects to prolong transplant and patient survival.

For example, Van Besouw *et al.* (2005) measured the number of IFN-γ producing cells reactive to donor cells in peripheral blood mononuclear cells (PBMC) of heart transplant patients with the human IFN-γ ELISPOT before, during and after a period of acute rejection (AR). The recognition of allo-major histocompatibility complex (MHC) antigens by T cells is the central event that initiates AR. The authors showed that the T cell response directed against donor antigens was always readily detectable (Figure 1). This response increased significantly during an episode of AR and after successful treatment the response decreased (p<0.05). Van Besouw *et al.* showed in their study that the ELISPOT assay is a useful tool to determine T cell alloreactivity.
Examples of studies using our ELISPOT assay:

van Besouw NM, Zuijderwijk JM, Vaessen LMB, Balk AHMM, Maat APWM, van der Meide PH, and Weimar W.  
The direct and indirect allogeneic presentation pathway during acute rejection after human cardiac transplantation.  
Abstract  
U-CyTech products used in this study:  
Human IFN-γ ELISPOT kit

Gerrits JH, van de Wetering J, Drabbels JJ, Claas FH, Weimar W, and van Besouw NM.  
Donor-reactive cytokine profiles after HLA-identical living-related kidney transplantation.  
Abstract  
U-CyTech products used in this study:  
Human IFN-γ ELISPOT kit  
Human IL-10 ELISPOT kit  
Human IL-13 ELISPOT kit  
Human Granzyme B ELISPOT kit
U-CyTech products used in this study:
Rat IFN-γ ELISPOT kit

U-CyTech products used in this study:
Human IFN-γ ELISPOT kit
Human IL-2 ELISPOT kit
Human IL-4 ELISPOT kit
Human IL-10 ELISPOT kit

U-CyTech products used in this study:
Human IFN-γ ELISPOT kit
Human IL-2 ELISPOT kit

U-CyTech products used in this study:
Rat IFN-γ ELISPOT kit

U-CyTech products used in this study:
Human IFN-γ ELISPOT kit