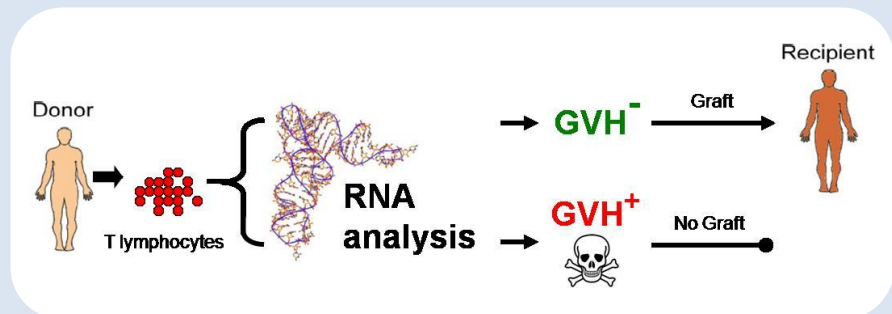


# TRANSPLANTATION & GVHD:

## Selecting the best donors



### BACKGROUND

Bone marrow and blood stem-cell transplantation (AHCT) is an established effective anti-cancer treatment. It is often the only hope therapeutically for many patients with certain poor-prognosis leukemias, lymphomas, or other blood cancers. Currently the major medical obstacle to successful AHCT and its broader medical application is still the 50-60% risk that a transplant recipient will be induced to suffer extreme rejection of his own tissues, an awful condition called GvHD (graft-vs.-host disease).

### INTELLECTUAL PROPERTY

PATENT PENDING  
USA, Canada, Japan and Europe

### KEYWORDS

Rejection, Graft-Versus-Host-Disease, GVHD, Transplantation, AHCT, Stem-cell, Diagnostic, qPCR

### TECHNOLOGY

A predictive diagnostic test based on gene expression profiling using multiplex quantitative PCR (qPCR), which identifies “good” blood donors who have a low risk of developing GVHD.

### DEVELOPMENT STATUS

Analysis of the T lymphocyte transcriptome of donors and recipients of a hematopoietic stem cell (HSC) graft showed that some donors are stronger alloresponders than others, and consequently more likely to elicit GVHD. This trait (high or low alloresponse) is under polygenic control by genes involved in the molecular pathway of TGF- $\beta$  and cell proliferation. Moreover, this trait is stable and intrinsic to the hematopoietic donor's stem cells. These findings strongly suggest that the gene expression profile of the donor has a dominant influence on the development of GVHD in the recipient. Each of the individual genes identified has a high predictive value that is increased to almost 100% with interaction analysis using a pair-wise interaction model.

### APPLICATIONS

- Identification of the best donors for AHCT
- Reduce GvHD by eliminating donors who present a risk in causing GvHD;
- Personalized transplantation medicine
- Once the best donor selected, will enable to adapt the immunosuppressive treatment of the host.

### OPPORTUNITIES

#### Major breakthrough in transplantation

Should be adopted quickly in transplantation practice since traditional histocompatibility testing (HLA typing) is unable to identify among potential donors, those likely to triggering GvHD and potentially cause the death of the recipient. The immediate market is estimated to 25 000 tests per year (2 or 3 potential donors tested/patient). The Bone Marrow Donors Worldwide bank comprises more than 14 millions donors.

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