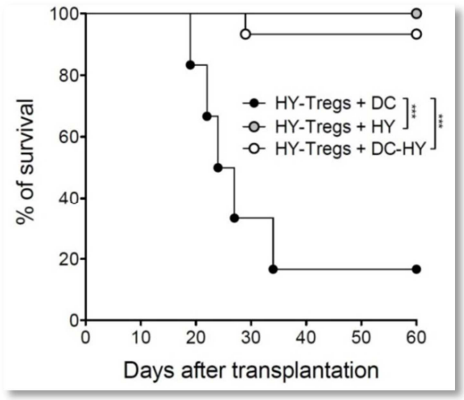
TECHNOLOGY OFFER

042 - Treatment of acute graft-versus-host disease with in vivo activated T-regulatory lymphocytes



Kaplan-Meier survival curves showing that Treg prevents GvHD when animals are injected with irrelevant peptide (HY) or cells loaded with peptide (DC-HY) © J. Cohen

PROBLEM Acute graft versus host disease (GvHD) is the main source of morbidity and mortality for patients after allogeneic hematopoietic stem cell transplantation (HSCT, 20 to 90% in severe cases) and has currently no specific and effective treatment.

SOLUTION Providing antigen-specific T regulatory cells that can be activated after the transplantation to prevent and/or treat GvHD without impairing anti-tumor effect and global immunosuppression (cause of infections)[1].

Acute graft versus host disease (GvHD) is caused by the reaction of conventional T cells contained in the grafted hematopoietic stem cells against host. These Allo Tregs have been used in several recent clinical trials to prevent GvHD but their efficiency is limited. Exo Tregs developed by this offer are specific to an irrelevant antigen (not present in host or donor) and can be activated after transplantation at a chosen time by administration of the irrelevant peptide to the transplanted patient. **With this inducible system, conventional T cells can elicit their anti-tumor effect before being suppressed by antigen-activated Tregs which prevent GvHD, thus optimizing the anti-tumor therapy and improving HSCTs outcomes.**

Competitive advantages

- 1st safe antigen-specific Tregs
- Good balance of anti-tumor vs GvHD
- Better efficiency than allo Tregs
- No global immunosuppression
- Inducible system allowing Graft-versus-Tumor effect optimization

Applications

- Prevention of acute GVHD
- Treatment of acute GVHD
- Allogenic Hematopoietic stem cell transplantation

Development Stage and IP

- Patent application: filed on Nov. 23, 2012
- Development stage: validated POC in live mouse models, ongoing POC with human T-cells
- Remaining development: 1st cGMP cell production

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[1] Relevant publication: Eur J Immunol 2013, PMID 23765389