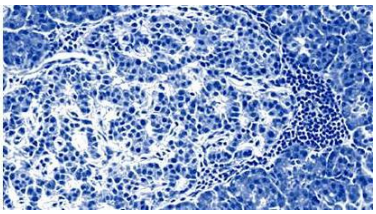
nPOD
Network for Pancreatic Organ Donors with Diabetes



Using HLA-DQ8 tetramers to diagnose and follow anti-islet autoimmunity

AUTHORS

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PURPOSE

Develop and deploy HLA-DQ8 tetramers to study the pre-clinical phase of type 1 diabetes.

METHODS

Protein engineering and multi-step purification procedures were used to produce a series of usable HLA-DQ8 and HLA-DQ2/8 tetramers. Peripheral blood was sampled using fluorescent tetramers and single cell analysis following cell sorting. Analysis was performed using a home-made single cell analysis algorithm and visualization software.

SUMMARY OF RESULTS

Analysis from circulating insulin-specific cells allowed to stage disease in mouse and human samples. Normal HLA-DQ8 donors were compared to “at-risk”, just-diagnosed, and long-established patients. While total numbers of tetramer reactive cells were unchanged between groups, in this preliminary study state of activation seemed to be a reliable marker of disease activity.

CONCLUSIONS

State of activation of antigen-specific CD4 T cells in blood seems to offer the potential of being used to follow organ-specific autoimmunity and progression of disease.