Non-invasive exosomal diagnostic screen for the detection of heart transplant rejection

Technology #cu15292

This technology utilizes exosomal protein profiling to non-invasively determine the risk of heart transplant rejection.

Unmet Need: Safe and simple detection of heart transplant rejection

Heart transplantation remains the definitive treatment for advanced heart failure. However, allograft transplantations carry the risk of immunological rejection, an unpredictable and dangerous condition. Current methods to assess rejection risk either require invasive and costly endomyocardial biopsy (EMB) or an AlloMap blood test that measures the amount of mRNA for a panel of rejection-related genes. However, AlloMap is unable to detect acute antibody-mediated rejection, preventing a patient’s full rejection risk from being determined. As such, there is a need for a detection method that can assess both cellular and antibody-mediated rejection for improved management of transplant patients.

The Technology: Exosomal profiling identifies risk of heart transplant rejection

This technology identifies a panel of biomarkers present in serum exosomes that enable the assessment of heart transplant rejection risk. Unlike mRNAs, exosomes are highly stable and can be used to detect both cellular and antibody-mediated rejection. These biomarkers are readily measured in the blood using established liquid chromatography-mass spectrometry methods, making this technology a noninvasive and economical method for detecting heart transplant rejection risk.

In a study of patients with either acute cellular rejection or antibody-mediated rejection, this technology successfully separated patients with rejection from the control population and also classified the type of rejection.
Applications:

• Method to assess probability of cardiac allograft rejection
• Biomarkers may aid detection of other cardiac disease states
• Biomarkers could be potential therapeutic targets
• Predicting allograft success in pre-transplant heart failure patients

Advantages:

• Non-invasive
• Well-established extraction and analysis methods
• Fewer risks and contraindications relative to biopsy
• Earlier detection of rejection
• Exosomal contents are remarkably stable, reducing the risk of sample degradation compared to mRNA
• Cost-effective

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Patent Information:

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Related Publications:


Tech Ventures Reference:

• IR CU15292

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