Fully automated diagnostic test for kidney graft rejection

BioLizard
case studies

AIM

Develop **personalized predictive diagnostic test to** predict patient & organ response using **high-throughput RNA profiling** from liquid biopsies.

CURRENT SITUATION

Personalized predictive diagnostic tests have immense potential to improve post-transplant care for kidney recipients, who still face high rejection rates. **Liquid biopsies**, using high-throughput RNA profiling, offer a **quick, cost-effective way to enhance care** by providing detailed molecular insights. **Scalable calculation of personalized risk scores** will be required for use in a **clinical setting.**

STRATEGY & PROCESS

- **Validated 2 academic publications** on client's data
- Developed a **custom bioinformatics pipeline** optimized for **high-volume processing & analysis**, for the client's proprietary technology
- Leveraged data to discover **two new biomarker panels** for acute & chronic rejection with improved predictive accuracy, & which are suitable for clinical use
- Created **two AI algorithms to calculate personalized risk scores** for acute & long-term kidney graft rejection using our IDx/MDx platform

RESULTS

AI-based development of biomarkers to predict adverse effects and personalized risk scoring is highly complex. BioLizard supported the client in **discovering new biomarker panels** alongside developing an **end-to-end analysis solution** with automated bioinformatics, QC & reporting. Altogether, we provided **highly reliable ML-driven personalized risk scoring**, with high test risk scores correlating with 83% of early biopsies indicating acute rejection. **CLIA validation** & data-driven algorithm refinement for **broader population applicability** through intelligent experimental design are ongoing.

ADDED VALUE

5-DAYS SAMPLE TO RESULTS PIPELINE: BioLizard enhanced cost-efficiency of sequencing depth via in-silico simulation, & streamlined processing time with automated technical & biological QC.

BEST IN CLASS DIAGNOSTIC TEST: Implemented a fully automated, scalable cloud-based solution with algorithms designed for full transparency using explainable AI.