Docket #: S21-215

Methods for Diagnosing and Treating Ischemic Eye Disease

Stanford researchers in the Mahajan Lab have created a customizable proteomics platform that can identify protein biomarkers to differentiate among ischemic eye diseases and identify novel therapeutic targets to treat them. Ischemic eye diseases, such as diabetic retinopathy, are some of the leading causes of vision loss in adults. Treatments aimed at currently known therapeutic targets, like VEGF (Vascular Endothelial Growth Factor), fail in a large proportion of patients in addition to carrying safety risks. Using this new platform, the Mahajan Lab discovered 117 previously unreported proteins that are differentially expressed in Proliferative Diabetic Retinopathy (PDR) compared to control samples and identified two existing drugs that could possibly be repositioned for treating patients with PDR. This new proteomics platform offers the potential to better characterize ischemic eye diseases and identify new treatment options for patients.

Stage of Development:

- Early Stage, in vivo data

Applications

- Ischemic eye diseases: diabetic macular edema (DME), diabetic retinopathy (DR), wet Age-related Macular Degeneration (wAMD)/neovascular Age-related Macular Degeneration (nAMD)
- Identification of protein biomarkers of ischemic eye diseases
- Identification of novel therapeutic targets for ischemic eye diseases

Advantages

- Can characterize dynamic changes in the proteome correlated with disease progression, severity and response to therapy
- Detection is not biased towards highly abundant proteins like "shotgun" mass spectrometry (MS) based approaches
- Customizable for detection of viable, validated, and clinically translatable proteins

Patents

- Published Application: WO2023019216
- Published Application: 20240353426

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