Immunotherapy with Recombinant T-cell Receptor Ligand (RTL) for Retinal Degeneration

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Abstract

The proposed study will determine the potential of a novel immunotherapeutic approach in limiting retinal degeneration as a possible treatment for retinitis pigmentosa (RP), age-related macula degeneration (AMD), autoimmune retinopathy (AR), and other related retinal diseases. This pilot project aims to examine whether novel immunotherapy with recombinant T-cell receptor ligand (RTL) will protect photoreceptors and vasculature from degeneration in a rodent model for retinal degenerative diseases. The project represents a new avenue of research that has arisen out of recent discoveries made by the PI and her co-Investigators (Dr. Shaomei Wang) as well as other groups as described below. The intent of this project is to generate the proof of principle data to support a future NIH grant application. If positive results are obtained they will be applied to developing a pre-clinical application.

Specific Aim 1: To test the hypothesis that RTL220 is an effective drug in neuroprotection of the retina from degeneration in RCS rats: We will determine the efficacy of RTL220 treatment of RCS rats that develop spontaneous retinal degeneration by examining survival of photoreceptors, maintenance of visual function, microglia responses, and cytokine/chemokine activation.

Specific Aim 2: To examine the protective effects of RTL220 on progressive changes in the vasculature of RCS rats: We will evaluate the effects of RTL220 treatment on the alterations in vessels leakage and the formation of vascular complexes in RCS rats by examining visual function, retinal histology, vascular integrity, and immunological evaluation.