The Assembly of Collagen IV in Drosophila

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Alport Syndrome (AS) is a rare genetic disease affecting 5,000 - 10,000 people in the United States. This disease is due to a mutation in collagen IV that leads to destruction of the basement membrane which results in improper kidney filtration, hearing loss, and vision loss. This research was conducted in order to determine the combination patterns of collagen IV in Drosophila, which is similar to human collagen but less complex. The research led to a greater understanding of how collagen combines; thereby, learning how it mutates in Alport Syndrome. Procedure plasmids were prepared for expression. CHO-S cells were grown and then transfected with purified plasmids and proteins. The expressed proteins were analyzed through gel filtration chromatography. The data gathered indicated the heterotrimer could only be formed with two genes and could not be a single gene trimer. Chloride was then removed from the media with the expectation of dissociation of combined NC1 domains. This research indicated that the heterotrimer was composed of both genes present in Drosophila. Unlike human collagen, the chloride had no effect on the oligmeric state.

Awards Won: