

## Ocular Immunology: In Face of Immune Privilege the Eye Remains Vulnerable to Autoimmune and Inflammatory-Mediated Diseases

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**Abstract :** Purpose of Presentation: The eye is one of a few sites in the body with immune privilege (IP). However, this IP is relatively easily bypassed in the face of sufficient strong local or systemic immunological responses. As immune responses are crucial elements of the repair response, the eye has developed distinct mechanisms to deliver immune responses to injury in the avascular regions of the eye. This presentation may cover and provide an overview of the mechanisms that dictate immune cell trafficking to the local ocular microenvironment in response to different autoimmune and inflammatory-mediated diseases. Recent Findings: Literature reviews declare that immune responses and inflammation play a key role in a diverse range of eye diseases. In recent years, our understanding of ocular immune responses has widely spread in ocular surface inflammation, uveitis, age-related macular degeneration (AMD), glaucoma, transplantation rejection, and other ocular diseases. It is becoming increasingly clear that multiple seemingly unrelated diseases involve immune responses with common themes in their ocular pathogenesis. Recent studies are focusing on elucidating the pathogenesis of ocular inflammatory disease to identify new targets for immunotherapy that will not only improve efficacy but also minimize adverse effects from traditional therapy. Summary: While IP was believed to protect the eye from day-to-day inflammatory insults, however, it is relatively easily breached in the face of different strong local or systemic immunological and inflammatory responses. Therefore, the ocular immune response encapsulates the full range of classical and non-classical immune responses and demonstrates many features which are reflected in other tissues, but eye tissues, by modifying these responses, may reveal unexpected and novel findings which are relevant to immune responses generally. This may have therapeutic potential for new targeting immunotherapy, restoring immune tolerance in ocular autoimmune and inflammatory diseases, and preventing rejection such as stem cells, currently being considered for treatment of worldwide blinding diseases such as AMD.

**Keywords :** ocular diseases, immunology, immune privilege, immunotherapy

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