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The Extensive Dendritic Cell and Macrophage Networks in the Uveal Tract Are Not CX3CR1 Dependant in Their Homing and Distribution

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Abstract

Purpose: CX3CR1, the sole receptor for the chemokine fractalkine, is expressed by all monocyte-derived cells including dendritic cells (DC) and macrophages. CX3CR1 is believed to mediate leukocyte migration and adhesion in both homeostatic and inflammatory conditions. This study used transgenic CX3CR1GFP mice in which either one (heterozygous) or both (homozygous) copies of the CX3CR1 gene have been replaced by the enhanced green fluorescent protein (eGFP) reporter gene. Previous studies have shown homozygous mice manifest different distribution and functions of CX3CR1+ cell subpopulations, especially intraepithelial DC, including corneal epithelium (Chinnery et al, IOVS in press). The aim of this study was to determine whether this phenomenon was also true in the uveal tract of the eye.

Methods: To characterise eGFP/CX3CR1+ cells in homozygous and heterozygous CX3CR1GFP mice, tissue wholemounts of iris and choroid were immunostained using a range of anti-leukocyte mAbs. The phenotype and distribution of eGFP/CX3CR1+ cells in these tissues were analysed using confocal microscopy and the mean cell density was calculated and compared in homozygotes and heterozygotes.

Results: The phenotype, distribution and density of eGFP/CX3CR1+ cells in the iris and choroid confirmed previous studies of DC and macrophages in the uveal tract. The majority of eGFP/CX3CR1+ cells were positive for MHC Class II (68% iris, 90% choroid), whilst all eGFP/CX3CR1+ cells in both iris and choroid co-expressed CD45, CD169, CD68 and CD11b. Comparison of uveal tract tissues in homozygote and heterozygote mice revealed that there were no significant differences in cellular morphology or mean cell...
density of DC and macrophages.

**Conclusions:** These data suggest CX3CR1 expression appears unlikely to play a role in the homing of DC and macrophages to normal murine uveal tract tissues. This contrasts with the role of this receptor-ligand in the homing of DC to mucosal epithelial surfaces.

**Keywords:** uvea • cytokines/chemokines • immunohistochemistry

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