Cutting-edge of Meibomian Gland Research

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Meibomian glands secrete lipids (meibum) that form the surface oily layer of the tear film and thereby prevent excessive evaporation of tear fluid. Meibomian gland dysfunction is a major cause of evaporative dry eye. Noninvasive meibography can detect morphological changes of meibomian glands. Tear interferometry allows qualitative and quantitative evaluation of the lipid layer of the tear film. Such assessment of meibomian gland morphology provides clinical information that contributes to the diagnosis of evaporative dry eye, whereas that of the lipid layer of the tear film allows the monitoring of meibomian gland function. Tear interferometry has the potential to distinguish the normal tear condition from the dry eye condition. Furthermore, on the basis of the combination of the noninvasive breakup time of the tear film and the observed interferometric color pattern, tear interferometry is able to classify the subtype of dry eye as aqueous deficient or lipid deficient. In addition, the balance between the lipid and aqueous layers of the tear film revealed by tear interferometry has provided both support for the operation of a compensatory system that maintains tear film homeostasis as well as insight into the pathophysiology of dry eye.