The Ocular Surface
A JOURNAL OF REVIEW, LIVING LABORATORY SCIENCE, CLINICAL SCIENCE, AND CLINICAL PRACTICE

Fate Mapping Mammalian Corneal Epithelia

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PII: S1542-0124(16)00004-5

DOI: 10.1016/j.jtos.2015.11.007

Reference: JTOS 162

To appear in: *Ocular Surface*

Received Date: 15 September 2015

Revised Date: 16 November 2015

Accepted Date: 18 November 2015

Please cite this article as: Richardson A, Wakefield D, Di Girolamo N, Fate Mapping Mammalian Corneal Epithelia, *Ocular Surface* (2016), doi: 10.1016/j.jtos.2015.11.007.

SECTION: Laboratory Science, James V. Jester, MD, Editor

TITLE: Fate Mapping Mammalian Corneal Epithelia

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SHORT TITLE: Fate Mapping Mammalian Corneal Epithelia/Richardson et al

FOOTNOTES

Accepted for publication December 2015.

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Funding for this work was provided by The University of New South Wales and the Ophthalmic Research Institute of Australia.

The authors have no commercial or proprietary interest in any concept or product discussed in this article. Single-copy reprint requests to Nick Di Girolamo (address below).

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ABSTRACT The anterior aspect of the cornea consists of a stratified squamous epithelium, thought to be maintained by a rare population of stem cells (SC) that reside in the limbal transition zone. Although migration of cells that replenish the corneal epithelium has been studied for over a century, the process is still poorly understood and not well characterized. Numerous techniques have been employed to examine corneal epithelial dynamics, including visualization by light microscopy, the incorporation of vital dyes and DNA labels, and transplantation of genetically marked cells that have acted as cell and lineage beacons. Modern-day lineage tracing utilizes molecular methods to determine the fate of a specific cell and its progeny over time. Classically employed in developmental biology, lineage tracing has been used more recently to track the progeny of adult SC in a number of organs to pin-point their location and understand their movement and influence on tissue regeneration. This