Metabolic control of epithelial-immune interactions in the skin

Xiaolei Ding¹, Sebastian Willenborg¹, Parisa Kakanj², Maria Leptin^{2,3,4} and Sabine A. Eming^{1,3,4}

¹Dermatology; ²Institute for Genetics; ³Center for Molecular Medicine Cologne; ⁴Cologne Cluster of Excellence for Aging Research, University of Cologne, Germany

Introduction

- mTOR signaling plays fundamental role in epidermal morphogenesis and maintenance
- mTORC1 and mTORC2 have distinct functions in epidermal formation (Ding et al. Nat Commun 2016)

Results

Ric^{EKO} newborns display an ichthyosis-like phenotype

mTORC2 deficiency induces a compensatory transcriptional epidermal repair program in Ric^{EKO} mice

mTORC2 controls epidermal lipid metabolism

Impaired profilaggrin processing in Ric^{EKO} epidermis

mTORC2-Akt signaling pathway controls profilaggrin processing

Epidermal mTORC2 determines immune cell composition in the skin

Ric^{EKO} mice display enhanced percutaneous immune responses

Conclusions