

Role of new molecules and chemicals regulating inflammatory responses in the skin

Hiroyuki Oshiumi

Department of Immunology, Faculty of Life Sciences, Kumamoto University

RIG-I-like receptors (RLRs) recognize viral RNAs as well as endogenous retroelement RNA, leading to the expression of pro-inflammatory cytokines. Since abnormal regulation of RLRs causes auto-immune-like disorders, their activation should be strictly regulated. We investigated the proteins and small chemicals that affect this regulation and found that the Riplet ubiquitin ligase fine-tunes RLRs-mediated pro-inflammatory cytokines via K63-linked polyubiquitination of the LGP2 protein. Moreover, we conducted a chemical screening and identified several chemicals that augment RLR-mediated pro-inflammatory cytokine expression. Interestingly, the identified molecules target a metabolite that attenuates inflammatory responses. We found that the addition of the metabolite reduces pro-inflammatory cytokine expression in epithelial cells. These findings are expected to be utilized to develop a new method and chemicals to attenuate inflammatory reactions in the skin.