

Circulating CCL20: A potential biomarker for active vitiligo together with the number of Th1/17 cells

Vitiligo is an autoimmune disease with varying pathological features. Activation of the CCL20-CCR6 axis plays an important role in chronic inflammatory diseases. However, whether CCL20-CCR6 and Th1/17 cells are indicative of active vitiligo is unclear. Zhang L et al investigated the potential role of CCL20 and the involvement of Th1/17 and Tc1/17 cells in the mechanism in vitiligo. The serum CCL20 level was significantly elevated in patients with vitiligo. The level of serum CCL20 was higher in active than in the stable stage. Patients with active vitiligo had elevated numbers of circulating Th1/17 cells and Tc1/17 cells, and upregulated expression of CCR6 in PBMCs and lesions. After effective treatment, the level of CCL20 in sera and blister fluid was significantly decreased, as were the numbers of circulating Th1/17 cells and Tc1/17 cells. CCL20 might be a vital biomarker of active vitiligo, and circulating Th1/17 and Tc1/17 cells are involved in the pathogenesis of vitiligo.

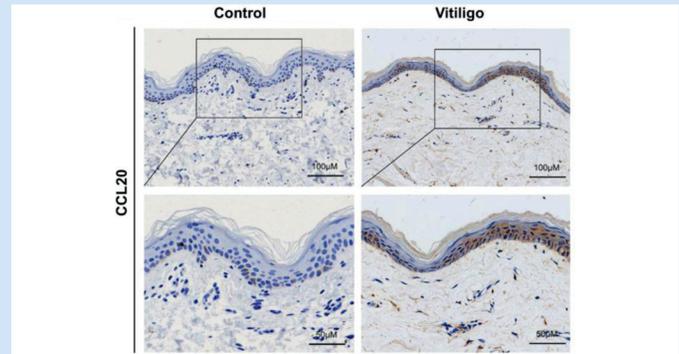


Fig. 4. Elevated expression of CCL20 in vitiligo lesions and in blister fluid. (A) Representative immunostaining images of CCL20 expression of skin biopsies from HCs and patients with active vitiligo are shown. Patients with vitiligo had high expression of CCL20.

Stat3 activation in epidermal keratinocytes induces Langerhans cell activation to form an essential circuit for psoriasis via IL-23 production

Psoriasis is an inflammatory disease associated with aberrant crosstalk between the epidermis and immune system. However, the role of Langerhans cells (LCs) in psoriasis remains controversial. Nakamura K et al elucidated whether LCs are functionally involved in the development of psoriasis using a mouse model. LCs were activated in psoriatic lesion of patients with psoriasis and K5.Stat3C mice. Compared with non-transgenic mice, K5.Stat3C mice constitutively showed an increased number of LCs in the lymph nodes before psoriasis-like lesion developed. Psoriasis-like lesion in K5.Stat3C mice were attenuated in the absence of LCs, indicating that LCs were essential to the development of psoriasis-like lesion. Furthermore, we also recognized that epidermal LCs in psoriatic lesion of not only K5.Stat3C mice but also psoriasis patients produced IL-23. These data suggested that Stat3 activation in keratinocytes may impact on LC activation in situ via IL-1 α stimulation, at least in part, and that their presence may be essential for the pathogenesis of psoriasis through producing IL-23.

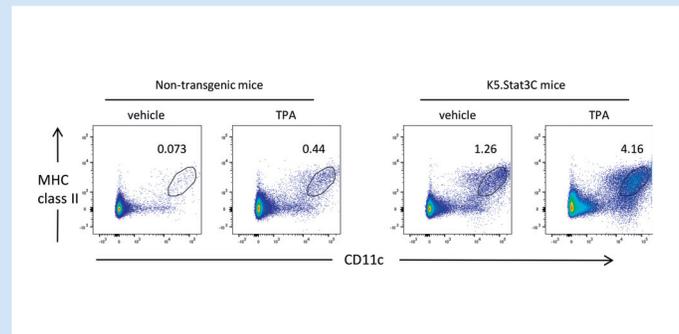


Fig. 2. Langerhans cells in Stat3 activated keratinocytes migrate to skin-draining lymph nodes (sDLNs). Flow cytometric analysis of migrating DCs, (CD11c⁺MHC-class II^{high} population) and LCs (CD207⁺CD326⁺ cells in subset of CD11c⁺MHC-class II^{high} population) in sDLNs of nontransgenic and K5.Stat3C mice treated with acetone (vehicle control) and TPA. (a, b) The representative plots with migrating DCs (oval areas in a, % shown by number) and LCs (square areas in b, % shown by number in the gated oval areas in Fig. 2a).

Atypical protein kinase C isoforms differentially regulate directional keratinocyte migration during wound healing

The epidermis possesses regenerative properties that become apparent only after wounding. Atypical protein kinase C (aPKC) isoforms aPKC ζ and aPKC ι form a ternary complex with Par3 and Par6, and play crucial roles in establishing and maintaining epithelial cell polarity. The epidermal loss of aPKC ι results in progressive depletion of hair follicle stem cells. However, it is unclear whether aPKCs have equivalent activities in epidermal regeneration. Noguchi N et al clarified functional differences between aPKC ζ and aPKC ι in cutaneous wound healing. Wound healing was significantly retarded in epidermis-specific aPKC ι knockout mice. In aPKC ι -deleted keratinocytes, the correct orientation of cell protrusions toward the wound was disrupted through the destabilization of Par6 β . The elongation of stabilized β -tubulin was also deteriorated in aPKC ι -deleted keratinocytes, leading to defects in cell spreading. Conversely, wound healing and directional cell migration in aPKC ζ -deleted mice were comparable to those in their control littermates. aPKCs are not functionally equivalent; aPKC ι , but not aPKC ζ , plays a primary role in cutaneous wound healing.

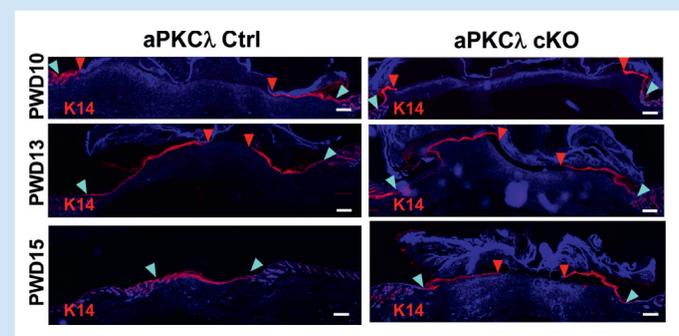


Fig. 1. Retarded wound healing in epidermis-specific aPKC λ -knockout mice. (C) Anti-K14 antibody immunostaining of the sections of the wound at the indicated PWDs. Bar = 500 μ m. Blue and red triangles indicate the original and healing wound edges, respectively