Supplementary Figure S1. MC903 treatment does not affect IFN\(\gamma\) or IL-17 mRNA levels in ear-draining lymph nodes at D5. Relative RNA levels were calculated using HPRT as internal control. EtOH, ethanol (as vehicle control)-treated. Values are mean ± SEM (n≥3 mice per group).
**Supplementary Figure S2.** Skin TSLP-promoted IL-4 priming in CD4⁺ T cells is abolished upon Ba103 antibody-mediated basophil depletion. Wildtype (WT) Balb/c mice were injected i.v. with 30 μg of antibody specific to CD200R3 (Ba103) at D-2, followed by MC903 treatment on ears at D0, D2 and D4. (a) Frequency and total number of basophils in ear-draining lymph nodes (EDLN) of Isotype or Ba103 antibody (Ab)-injected WT Balb/c mice, upon MC903 treatment at D5. (b) Comparable number of CD4⁺ T cells in EDLN of Isotype or Ba103 Ab-injected WT mice upon MC903 treatment at D5. (c) Frequency and total number of IL-4⁺CD4⁺ T cells in EDLN of isotype- or Ba103-injected WT mice upon MC903 treatment at D5. (d) Relative IL-4 mRNA level in EDLN of isotype- or Ba103-injected WT mice upon MC903 treatment at D5. *, p<0.05; **, p<0.01 (student’s t-test). Values are mean ± SEM (n=3 mice per group).
Supplementary Figure S3. Frequency (a) and total number (b) of OX40^+CD4^+ T cells in ear-draining lymph nodes (EDLN) from MC903-treated wildtype Balb/c mice at D0 and D3.*p<0.05 (student's t-test). Values are mean ± SEM (n=3 mice per group). Data are representative of two independent experiments with similar results.
Supplementary Figure S4. Decreased IL-4 and IL-13 expression in the skin-draining LNs in basophil-depleted mice upon MC903 treatment at D11.

(a) Experimental protocol. Diphtheria toxin (DT) was injected i.p. at D-2, D3 and D9, and MC903 or ETOH was topically applied on mouse ears every other days from D0 to D10.

(b) Relative IL-4 and IL-13 mRNA levels in EDLN at D11. Mcpt8\textsuperscript{DEP}, DT-injected Mcpt8\textsuperscript{DTR} mice; CT, DT-injected wildtype littermate control mice.* p<0.05 (Student’s t-test). Values are mean ± SEM (n=3). Data are representative of two independent experiments.
**Supplementary Figure S5. IL-3 induces IL-4 production by mouse splenic basophils *in vitro.***

Basophils were freshly isolated from spleens of naive mice by first enrichment of CD49b⁺ cells using anti-CD49b beads (Miltenyi Biotec), followed by sorting of CD49b⁺CD45low FcεRI⁺ cells using FACS Aria II (BD). The purity of isolated basophils was >95%. The 5x10⁴ basophils were then cultured in 100 μl of medium (RPMI 1640 without HEPES supplemented by 10% FCS, 2mM glutamine, 100U/ml penicillin, and 100μg/ml streptomycin) or medium supplemented with recombinant mouse IL-3 (10ng/ml; R&D) or/and recombinant mouse TSLP (10 ng/ml; R&D), for 18 hours.  (a) IL-4 mRNA levels in cultured cells, measured by quantitative RT-PCR. (b) IL-4 protein levels in cultured medium, measured by ELISA. Values are mean ± SEM (n=3 or 4 per group).
Supplementary Figure S6. Eosinophils or mast cells are not required for TSLP-induced Th2 initiation.

(a) Frequency and total number of basophils in ear-draining lymph nodes (EDLN) of wildtype (WT) Balb/c or ΔdblGATA1 mice (in Balb/c background) upon MC903 treatment at D5. (b) Total CD4⁺ T cell number in EDLN of WT or ΔdblGATA1 mice upon MC903 treatment at D5. (c) Relative IL-4 mRNA (left panel) and IL-3 mRNA (right panel) levels in EDLN of WT or ΔdblGATA1 mice upon MC903 treatment at D5. (d) Relative IL-4 mRNA in EDLN of WT or Kit<sup>Wsh/Wsh</sup> mice upon MC903 treatment at D5. Values are mean ± SEM (n≥3 mice per group).
Supplementary Figure S7. *In vitro* OX40 activation does not induce IL-2 expression in naive CD4+ T cells.

Naive CD4+ T cells were isolated from wildtype mouse spleen, and cultured in the presence (+) or absence (-) of agonistic OX40 antibody (α-OX40), with the stimulation of anti-CD3 antibody (α-CD3) or anti-CD28 antibody (α-CD28). IL-2 mRNA levels at 24 hrs in cultured CD4+ T cells were assessed by quantitative RT-PCR, showing that the activation of OX40 signaling did not induce the expression of IL-2. Values are mean ± SEM (n=3). Data are representative of two independent experiments with similar results.