Eosinophilic esophagitis (EoE) mouse model data

Learn more about epithelial cytokines in EoE murine models

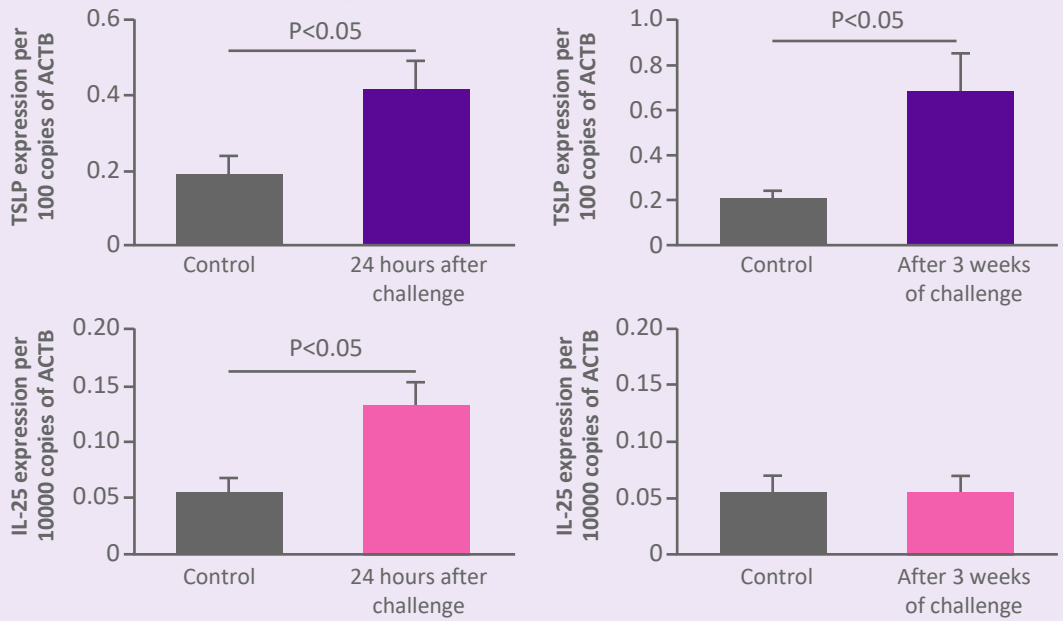
EpiCentral
UNDERSTANDING THE CENTRAL ROLE OF THE EPITHELIUM IN SEVERE ASTHMA AND BEYOND

Z4-79292; date of preparation: January 2026. © 2026 AstraZeneca. All Rights Reserved. This information is intended for healthcare professionals only. EpiCentral is sponsored and developed by AstraZeneca.

TSLP and IL-25 are elevated following allergen challenge and TSLP is implicated in the pathogenesis of EoE

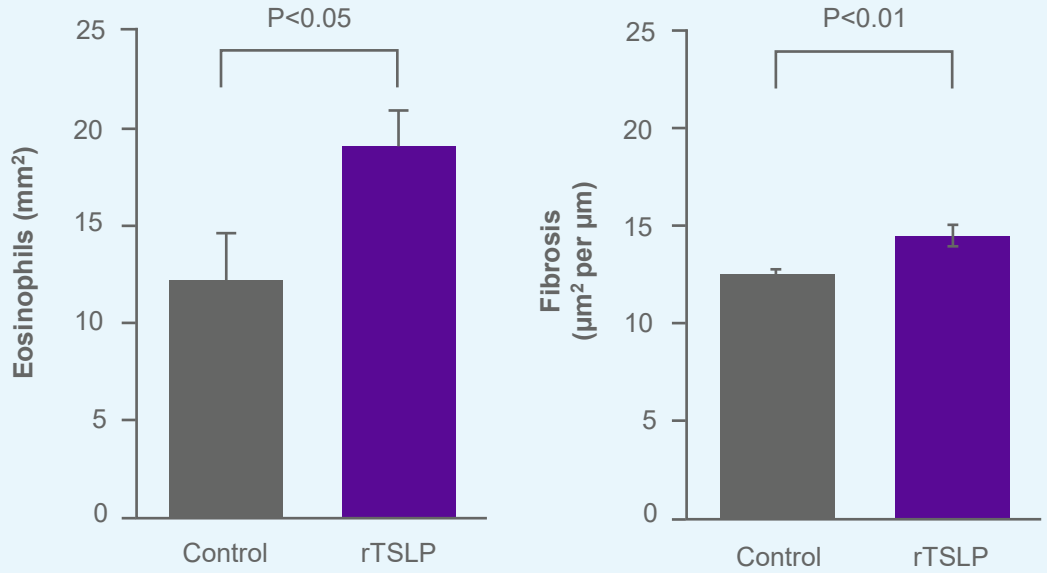
EpiCentral
UNDERSTANDING THE CENTRAL ROLE OF THE EPITHELIUM IN SEVERE ASTHMA AND BEYOND

Expression of TSLP and IL-25 following allergen challenge



- *Aspergillus fumigatus* induced EoE in mice, with TSLP and IL-25 expression observed during the challenge period in epithelial and smooth muscle cells*
  - After 3 weeks of allergen challenge, TSLP expression remained elevated versus control; IL-25 expression was not elevated†

Inducement of oesophageal eosinophilia and fibrosis by rTSLP in a TRAIL-deficient mouse model of EoE



- In a murine model of EoE, TRAIL deficiency is associated with reduced TSLP expression and reduced EoE-type pathology
- Treatment with rTSLP is sufficient to induce oesophageal eosinophilia and fibrosis in TRAIL-deficient mice

*MID1 and CCL20 expression was also observed; †TRAIL and CCL20 expression was also not elevated, whereas MID1, CCL11, and CCL24 expression persisted versus control
ACTB, β-actin; EoE, eosinophilic esophagitis; IL, interleukin; rTSLP, recombinant thymic stromal lymphopoietin; TRAIL, tumour necrosis factor-related apoptosis-inducing ligand; TSLP, thymic stromal lymphopoietin

Collison AM, et al. J Allergy Clin Immunol 2015;136:971–982

AstraZeneca

Z4-79292; date of preparation: January 2026. © 2026 AstraZeneca. All Rights Reserved. This information is intended for healthcare professionals only. EpiCentral is sponsored and developed by AstraZeneca.

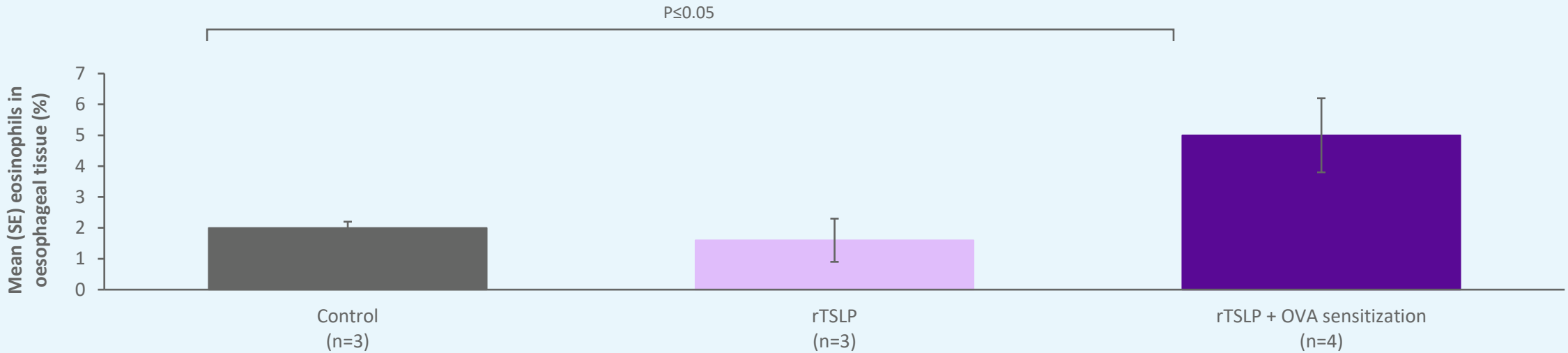
TSLP and IL-25 are elevated following allergen challenge and TSLP is implicated in the pathogenesis of EoE[1,2]

EpiCentral
UNDERSTANDING THE CENTRAL ROLE OF THE EPITHELIUM IN SEVERE ASTHMA AND BEYOND

In another murine model, the disruption of TSLP signalling prevents EoE development

- **TSLPR-deficient mice did not develop experimental EoE**
- Sensitisation of wild-type mice with **rTSLP leads to an EoE-like phenotype** following oral challenge

Oesophageal eosinophilia in mice following intradermal injection of rTSLP and oral challenge*



*Data depicted are from one experiment, and are representative of three independent experiments

EoE, eosinophilic esophagitis; IL, interleukin; OVA, ovalbumin; rTSLP, recombinant thymic stromal lymphopoietin; SE, standard error; TSLP, thymic stromal lymphopoietin; TSLPR, recombinant thymic stromal lymphopoietin receptor

1. Noti M, et al. Nat Med 2013;19:1005–1013; 2. Noti M, et al. Nat Med (suppl) 2013;19:1005–1013

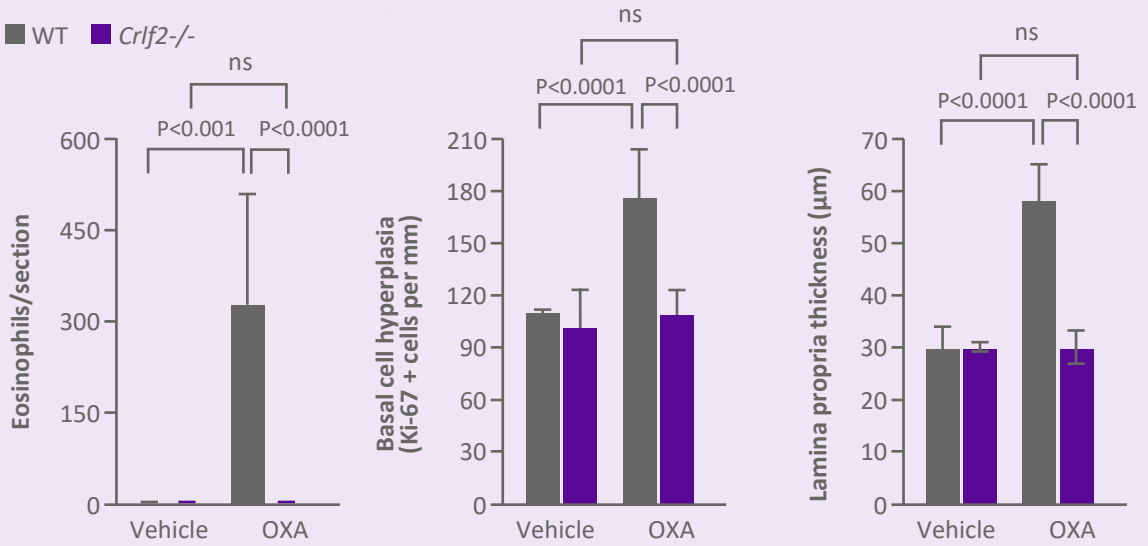
AstraZeneca

Z4-79292; date of preparation: January 2026. © 2026 AstraZeneca. All Rights Reserved. This information is intended for healthcare professionals only. EpiCentral is sponsored and developed by AstraZeneca.

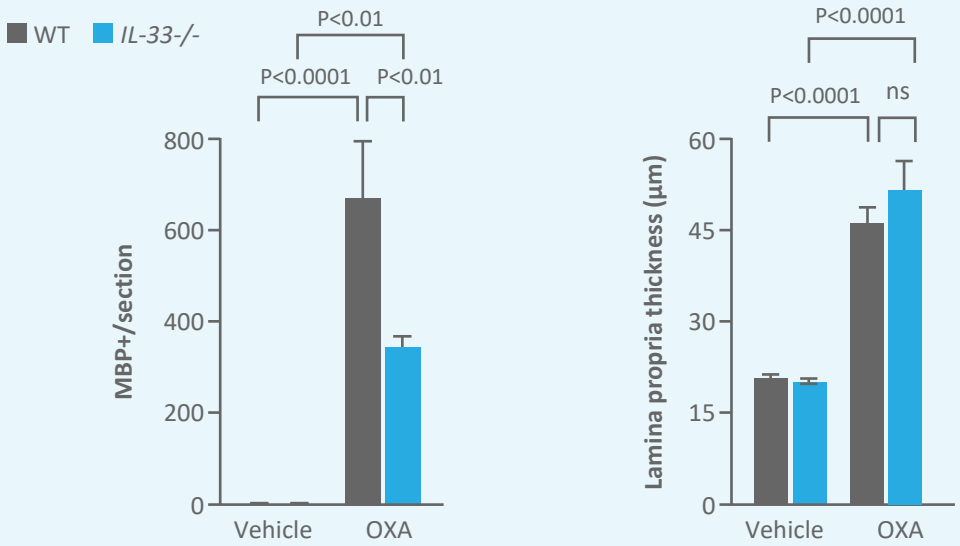
Distinct roles for TSLP and IL-33 in EoE

EpiCentral
UNDERSTANDING THE CENTRAL ROLE OF THE EPITHELIUM IN SEVERE ASTHMA AND BEYOND

Markers of experimental EoE in *TSLPR*-deficient mice*



Markers of experimental EoE in *IL33*-deficient mice



- TSLP was associated with eosinophil infiltration, basal cell proliferation and thickening of the lamina propria
  - Pharmacological blockade of TSLP resulted in a decrease in eosinophilia, basal cell proliferation and lamina propria thickening and vascularisation
- IL-33 was associated with eosinophil infiltration, but other structural changes were independent of IL-33

*_CRLF2_ encodes TSLPR

EoE, eosinophilic esophagitis; IL, interleukin; ns, not significant; OXA, oxazolone; TSLP, thymic stromal lymphopoietin; TSLPR, thymic stromal lymphopoietin receptor; WT, wild-type

Dsilva A, et al. Allergy 2025;80:3095–3107

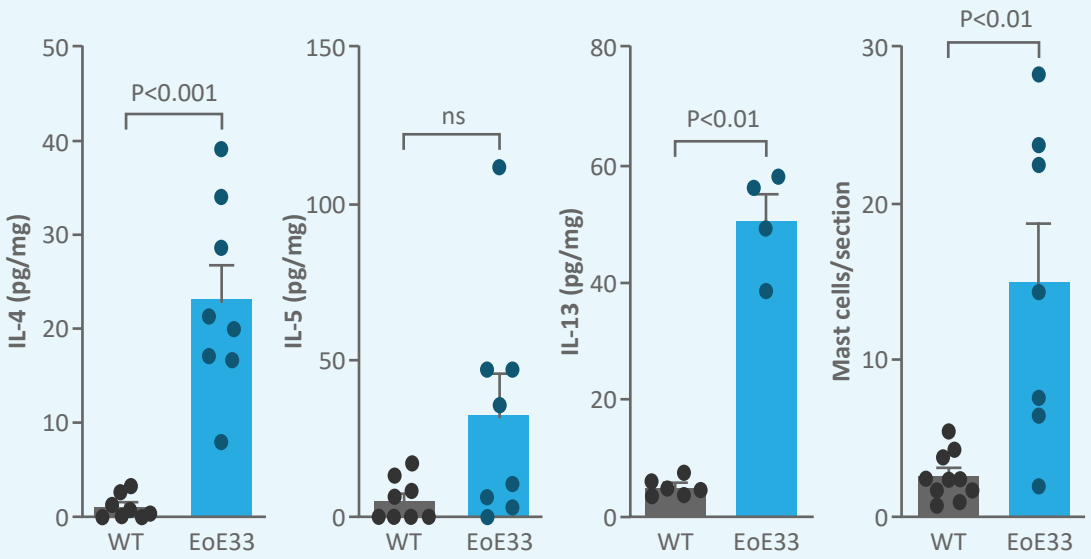
AstraZeneca

Z4-79292; date of preparation: January 2026. © 2026 AstraZeneca. All Rights Reserved. This information is intended for healthcare professionals only. EpiCentral is sponsored and developed by AstraZeneca.

IL-33 is implicated in symptomology and pathophysiology of EoE

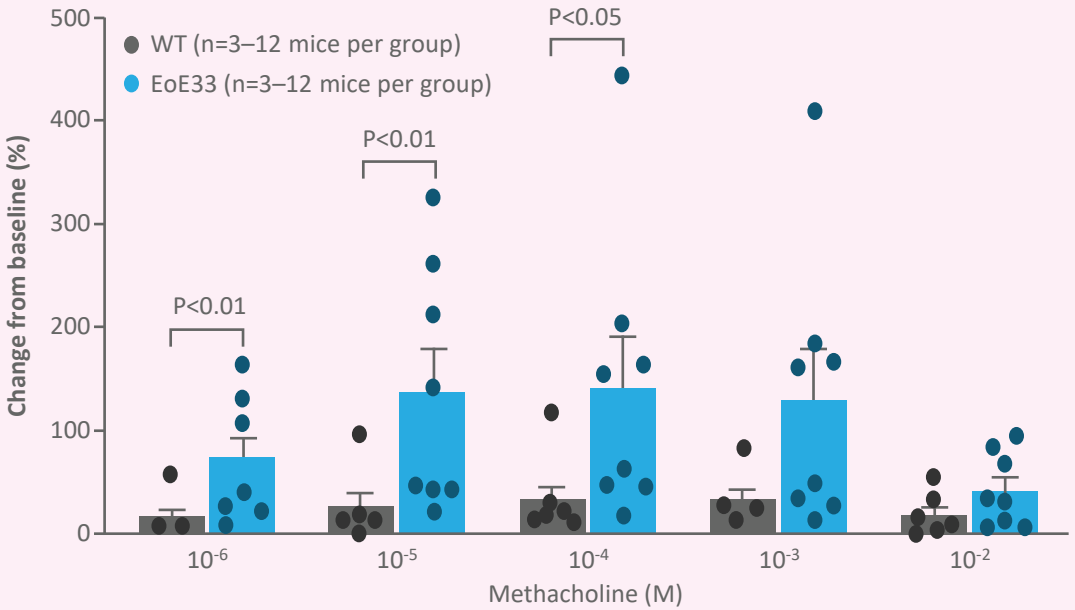
EpiCentral
UNDERSTANDING THE CENTRAL ROLE OF THE EPITHELIUM IN SEVERE ASTHMA AND BEYOND

Oesophageal levels of T2 cytokines and mast cells[1]



- Mice with increased expression of IL-33 (EoE33 mice) in the oesophageal epithelium demonstrated **EoE-like pathology**, as well as a **failure to thrive**[1]
  - Increased T2 cytokines, including IL-13 and IL-4, eosinophil and mast cell infiltration, and tissue remodelling were observed[1]

Muscle tension in response to methacholine challenge[1]



- **Oesophageal muscle tension** in response to methacholine was **increased in mice with IL-33-induced EoE**, compared with WT[1]
- The **IL-33-ST2 axis** has also been implicated in the **development of EoE** in a murine model[2]

EoE, eosinophilic esophagitis; IL, interleukin; ns, not significant; T2, type 2; WT, wild-type

1. Masuda MY, et al. J Allergy Clin Immunol 2024;153:1355–1368; 2. Venturelli N, et al. J Allergy Clin Immunol 2016;:1367–1380

AstraZeneca

Z4-79292; date of preparation: January 2026. © 2026 AstraZeneca. All Rights Reserved. This information is intended for healthcare professionals only. EpiCentral is sponsored and developed by AstraZeneca.