Type 2-high asthma is a chronic inflammatory airways disease characterized by T helper 2 (Th2)-dependent accumulation of eosinophils in the lungs. Regulatory cytokines such as TGF-β can restrain inflammatory reactions, dampen allergic Th2 responses, and control eosinophil activation.

The murine helminth parasite *H. polygyrus* releases a TGF-β mimic (*Hp*-TGM) that replicates TGF-β properties despite bearing no structural similarity to the mammalian protein. Here we show that *Hp*-TGM could alleviate airway and lung tissue eosinophilia, in association with control of IL-5 and IL-33 cytokine levels at 24 hours, or either IL-4 and eotaxin-1, or IL-4 and IL-13 responses in T-cell mediated models.
Figure 1

A

**Alternaria** i.n. → 24 hour Harvest → **Hp-TGM** i.n.

B

![Graph showing BALF Cells](image)

C

![Flow cytometry plots](image)

D

![Graph showing BALF Eosinophils](image)

E

![Graph showing Lung Eosinophils](image)

F

![Graph showing BALF Eosinophils](image)

G

![Graph showing Lung Eosinophils](image)
Chauché et al. Figure 2

(A) BALF IL-5 (pg/ml)

(B) Lung IL-33 (pg/ml)

(C) Lung IL-5 (pg/ml)

(D) Lung IL-13 (pg/ml)

(E) Lung Eotaxin-1 (pg/ml)
Figure 3

A.

HDM i.n. HDM i.n. Day 15 Harvest

Hp-TGM i.p.

B.

BALF Cells (x10^4)

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
**

C.

BALF Eosinophils (x10^4)

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
p<0.1

D.

Lung Cells (x10^4)

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
**

E.

Lung Eosinophils (x10^4)

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
**

F.

PBS HDM HDM + TGM

CD11c

SiglecF

0.71
16.6
0.61

G.

IL-13 (pg/ml)

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
**

H.

FoxP3+ % of Live CD4+ Cells

Sensitization Challenge
PBS PBS HDM HDM
PBS HDM HDM
*
**
Figure 4

A. Schematic diagram showing the experimental setup for the study.

B. Graph showing BALF cells (x10^4) across different treatment groups.

C. Graph showing BALF eosinophils (x10^4) across different treatment groups.

D. Graph showing lung cells (x10^4) across different treatment groups.

E. Graph showing lung eosinophils (x10^4) across different treatment groups.

F. Flow cytometry plots showing the expression of CD11c and SiglecF in different treatment groups.

Legend:
- PBS
- HDM
- HDM + TGM

Significance levels:
- **: p < 0.01
- ***: p < 0.001
- ****: p < 0.0001
Chauche et al. Figure 6

A

OVA+ALUM i.p.  OVA i.n.  Day 10 Harvest
Hp-TGM i.p.

B

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I

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J

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K

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<td>CD69 MFI in Lung Foxp3^+ Tregs</td>
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Supplementary Figure 1. Gating strategy for T cells, eosinophils, neutrophils and alveolar macrophages in BALF samples.
Supplementary Figure 2. Gating strategy for T cells, eosinophils, neutrophils and alveolar macrophages in lung samples.
Chauché et al. Suppl. Figure 5

A.

Eotaxin-1/HPRT1 mRNA (Fold change)

B.

IL-4/HPRT1 mRNA (Fold change)

C.

GM-CSF (pg/ml)

D.

IL-3 (pg/ml)

E.

IL-10 (pg/ml)

F.

IL-10/HPRT1 mRNA (Fold change)

G.

TGF-β/HPRT1 mRNA (Fold change)

H.

IL-4RA/HPRT1 mRNA (Fold change)

I.

Lung Th2 Cells (x10^4)

J.

Lung ILC2 Cells (x10^4)
A) CCR3+ % of Lung Eosinophils

Sensitization Challenge: OVA vs. OVA+TGM

B) CCR3 MFI in Lung Eosinophils

Sensitization Challenge: OVA vs. OVA+TGM