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### Effect of Eosinophils in Purinergic Receptor P2X3 Expression in Mouse Sensory Neurons

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## Introduction

- P2X<sub>3</sub> purinoceptors are activated by extracellular ATP released during cell stress.
- In asthma, sensitivity to inhaled ATP is increased.
- Airway eosinophilia, which is common in asthmatics, increases airway epithelial sensory nerve density.

## **Research Question**

Do airway eosinophils increase **P2X<sub>3</sub>** expression in mouse sensory nerves?

## Methods

## Animals

- 1. WT: Normal level of eosinophils
- 2. PHIL: Transgenic absence of eosinophils

3. NJ16 (NJ1638 lineage): Transgenic chronic systemic eosinophilia

4. NJ17 (NJ1726 lineage): Transgenic chronic pulmonary eosinophilia

- Airway sensory ganglia and dorsal root ganglia (thoracic vertebrae 1-5) were labeled for  $P2RX_3$ mRNA using RNAscope in situ hybridization and imaged using an ApoTome confocal microscope (40X, 1.3 N.A.).
- P2X<sub>3</sub> expression was determined by measuring the Conclusions percentage of  $P2X_3$  positive pixels within three, randomly assigned, non-overlapping 50x50 micron sections of neurons.
- Data was analyzed using one-way ANOVA tests.

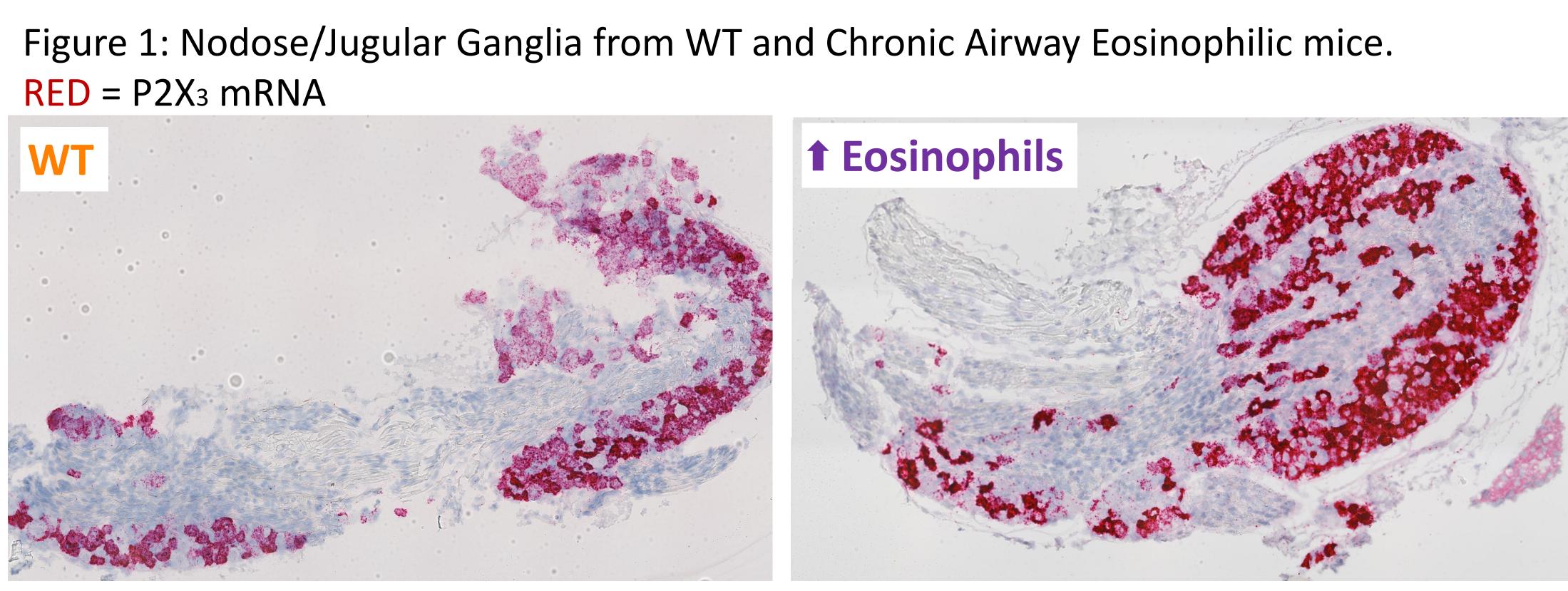
### Funding

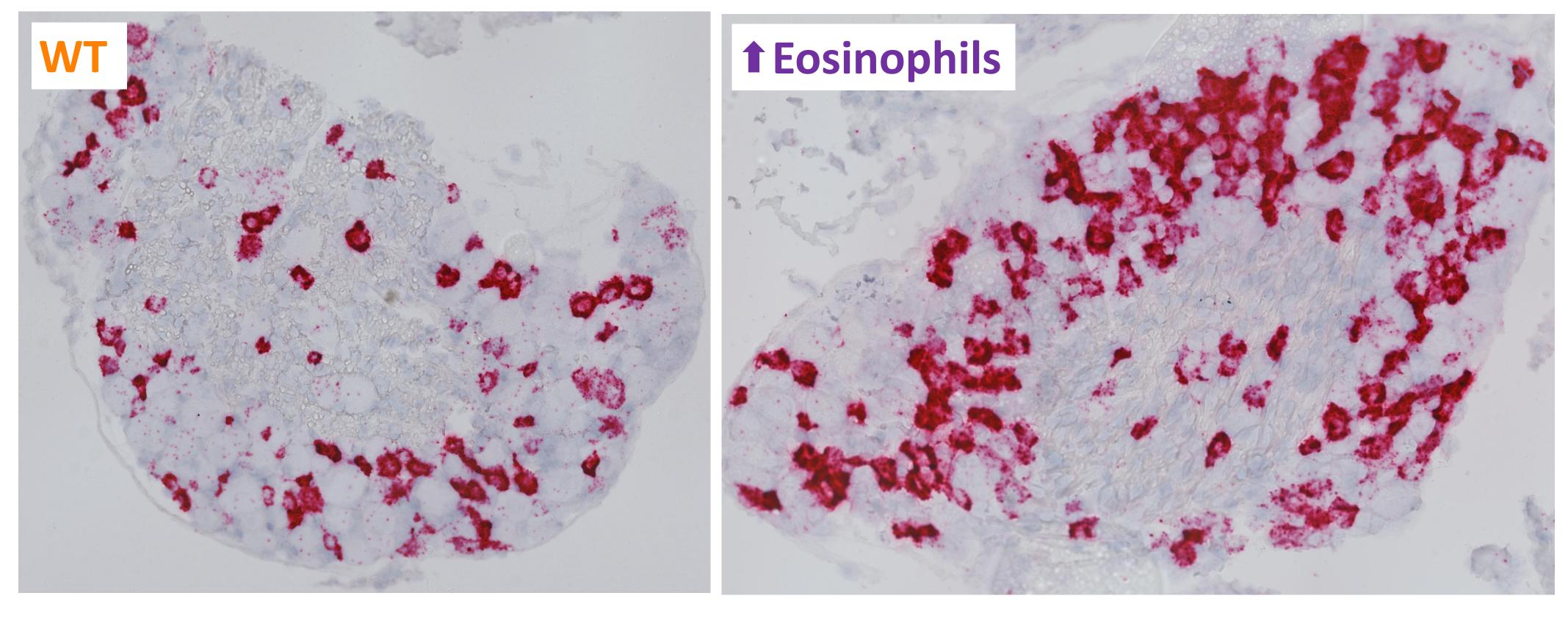
BUILD: Work reported in this poster was supported by the National Institutes of Health Common Fund and Office of Scientific Workforce Diversity under three awards UL1GM118964, RL5GM118963, and

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HL155623 (MGD), AI152498 (DBJ), HL144008 (DBJ)

## Results







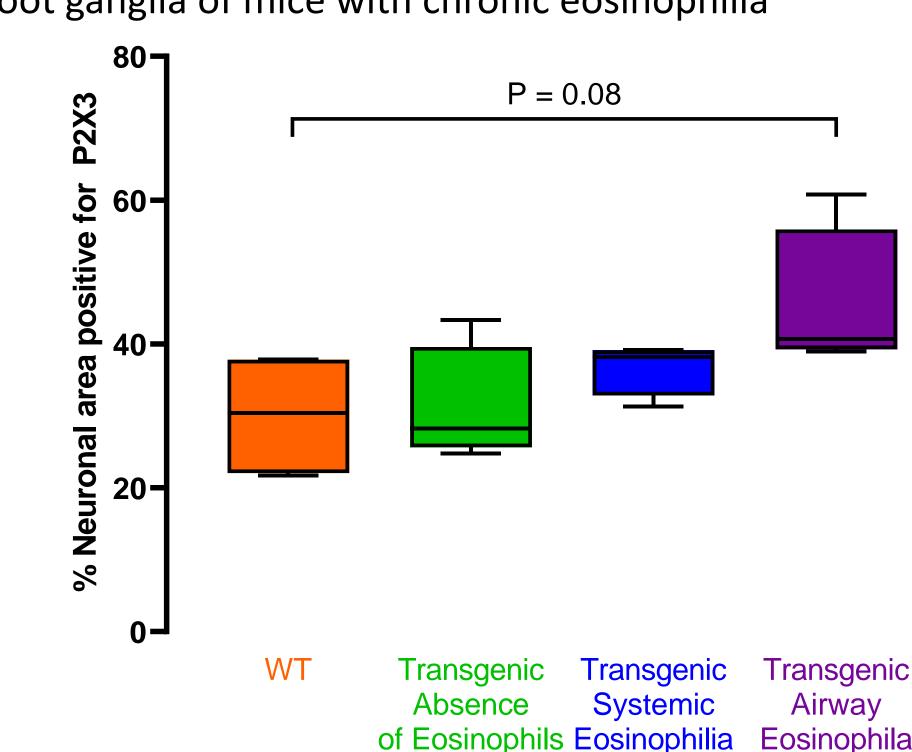


• P2X<sub>3</sub> is highly expressed in airway sensory neurons. • Eosinophils positively regulate sensory nerve P2X<sub>3</sub> expression. • Eosinophils may increase neuronal ATP sensitivity in asthma.

# Effect of Eosinophils on Purinergic Receptor P2X<sub>3</sub> Expression in Mouse Sensory Neurons

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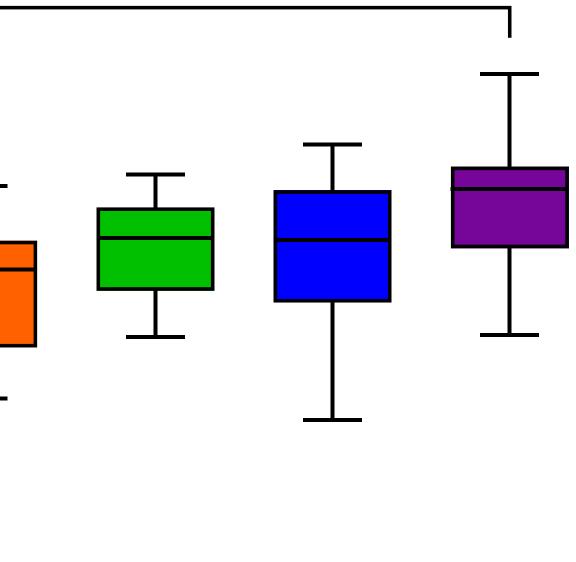
Figure 2: Dorsal Root Ganglia from WT and Chronic Airway Eosinophilic mice.  $RED = P2X_3 mRNA$ 



**40** 

## Figure 3: P2X<sub>3</sub> expression is increased in the nodose/jugular ganglia of mice with chronic eosinophilia P = 0.1180-





eosinophilia (NJ17)

Figure 4: P2X<sub>3</sub> expression is increased in the dorsal root ganglia of mice with chronic eosinophilia



(NJ17)