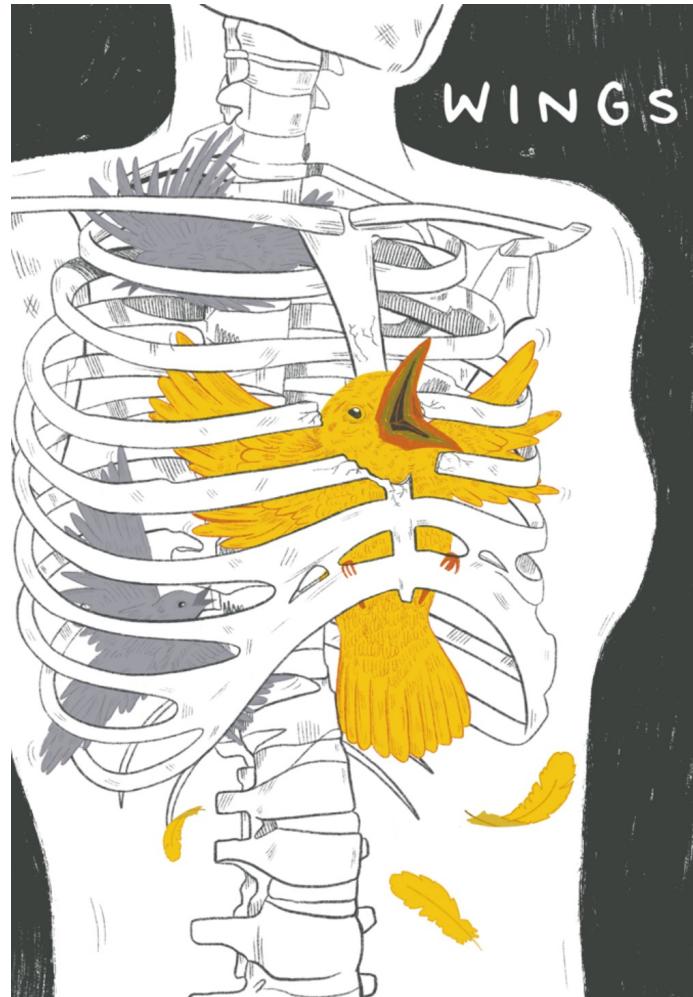


SSC Project :

**Understanding the nature of asthma
exacerbations in patients on tezepelumab**

Raphael Birch

The burden of living with severe asthma



Artist Danielle Glover's interpretation of living with severe Asthma

Mary's asthma story

Inhalers and routine check-ups

Harder and harder to control

The highest doses of inhaled steroids

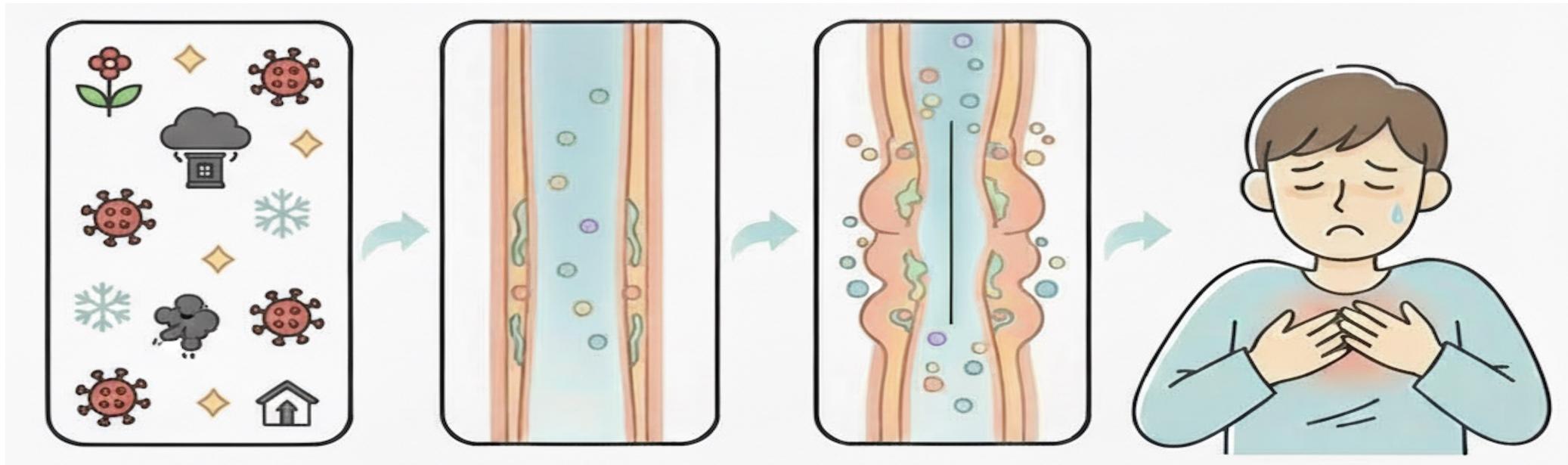
Life-threatening attacks

Frightening

Uncontrolled



How does an asthma attack occur?



Person inhales cold air, viruses, allergens, pollution ect

Airways release chemical signals that trigger inflammation

Inflammation causes airway narrowing

Asthma attack (exacerbation)

T2 vs non - T2 Asthma

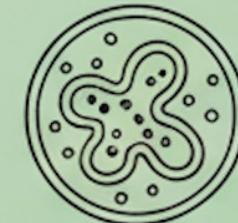
T2 Inflammation

Driven by high levels of eosinophils

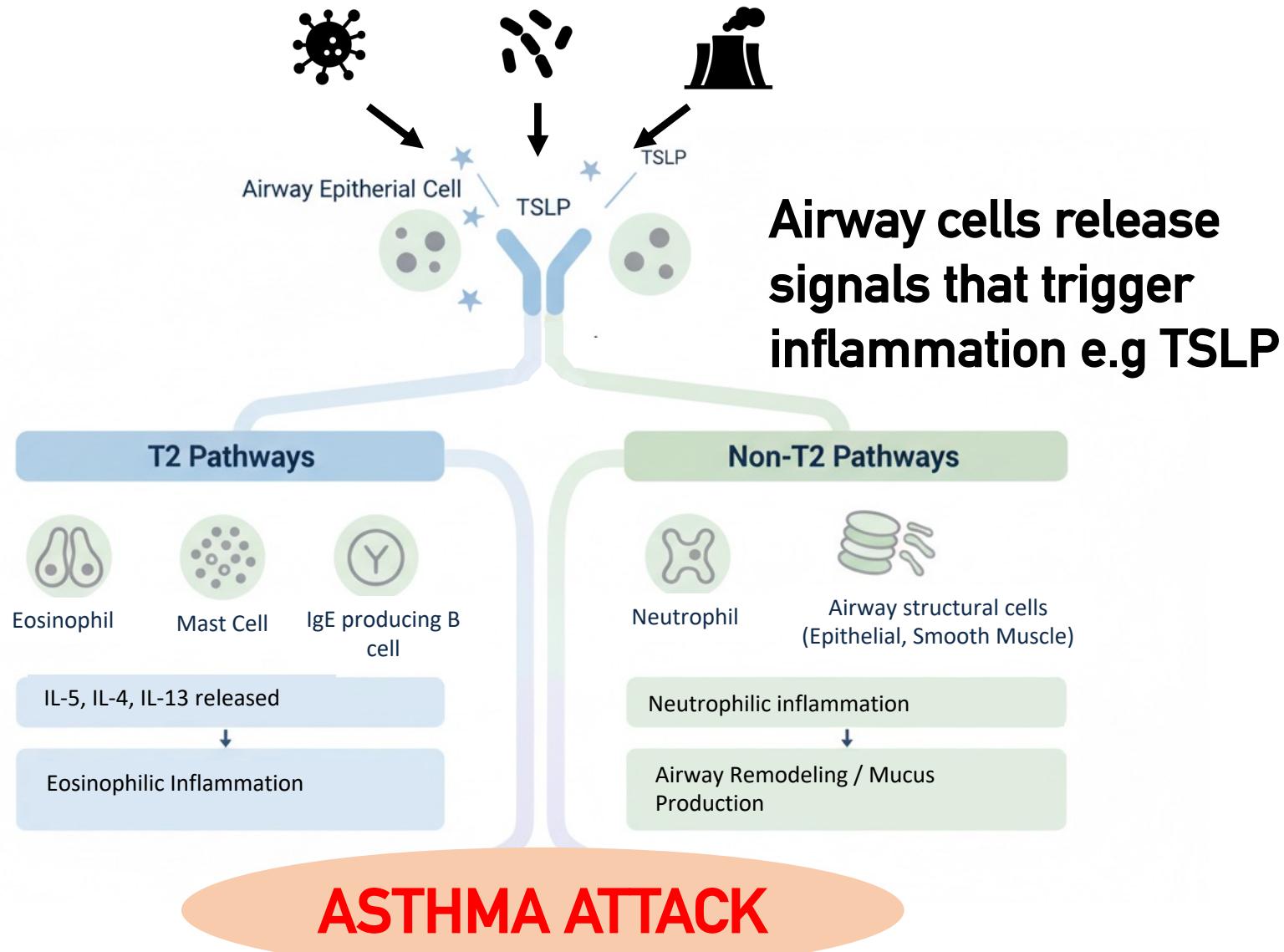


Non - T2 Inflammation

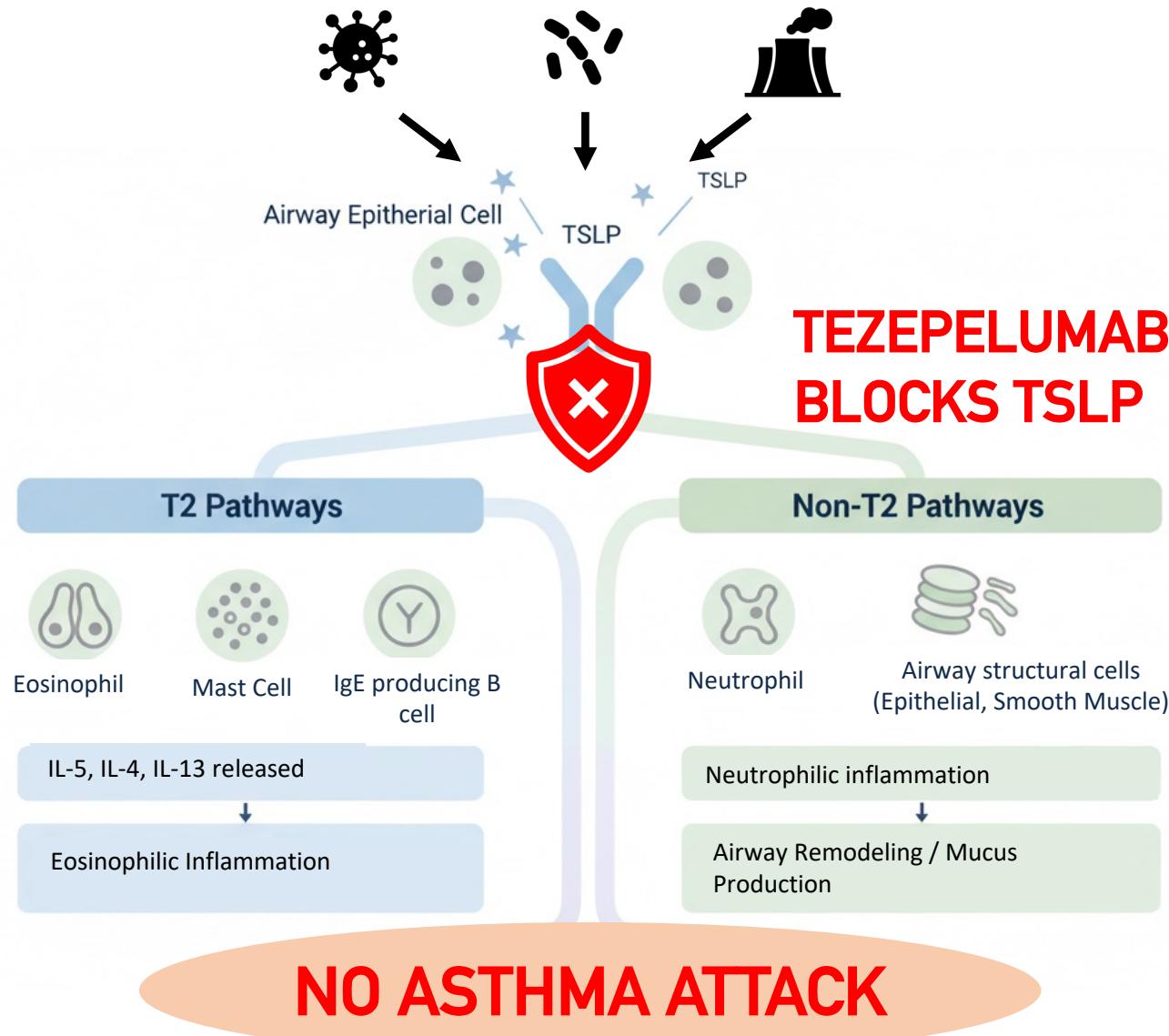
Driven by high levels of neutrophils +/- lymphocytes



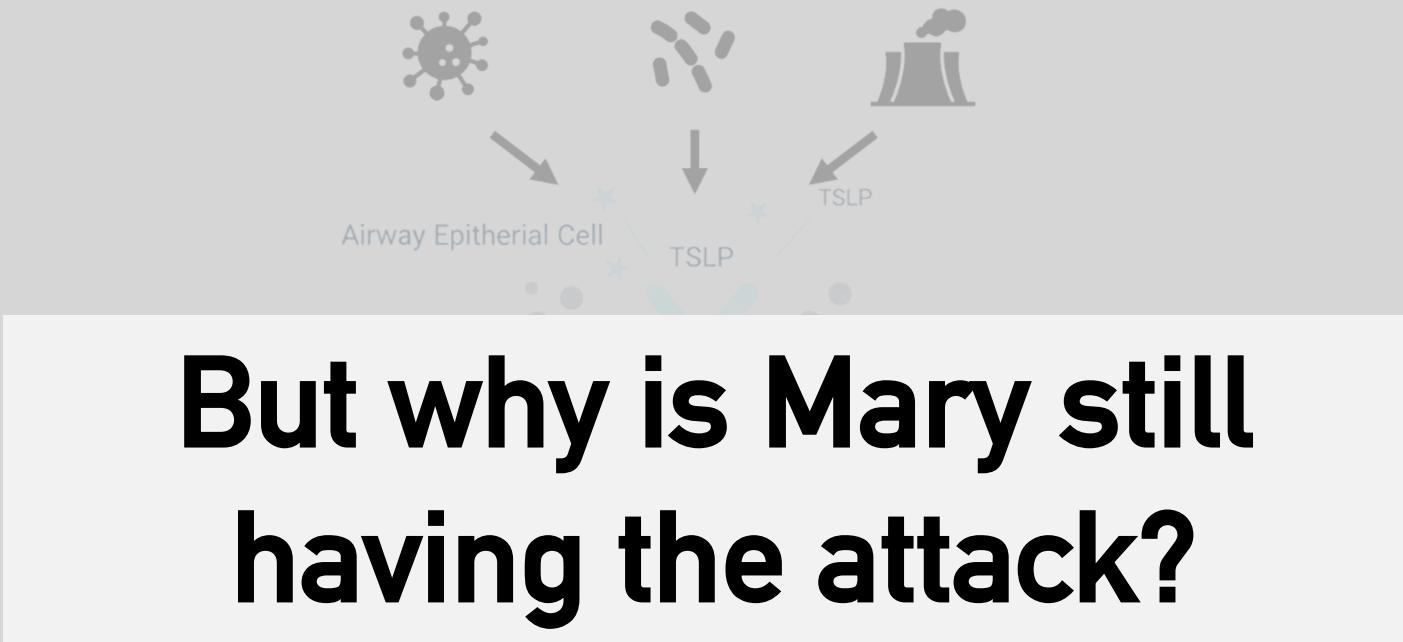
Airway inflammation



How Tezepelumab works



How Tezepelumab works



Eosinophil



Mast Cell



IgE producing B cell



Neutrophil



Airway structural cells
(Epithelial, Smooth Muscle)

IL-5, IL-4, IL-13 released



Eosinophilic Inflammation

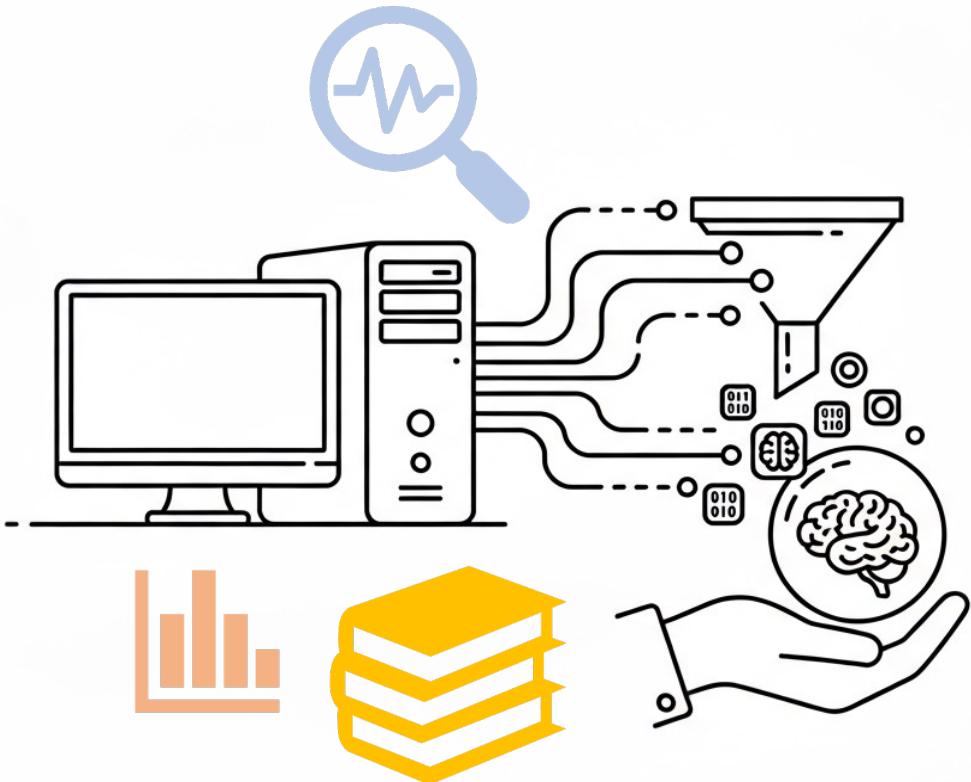
Neutrophilic inflammation



Airway Remodeling / Mucus Production

NO ASTHMA ATTACK

My research method

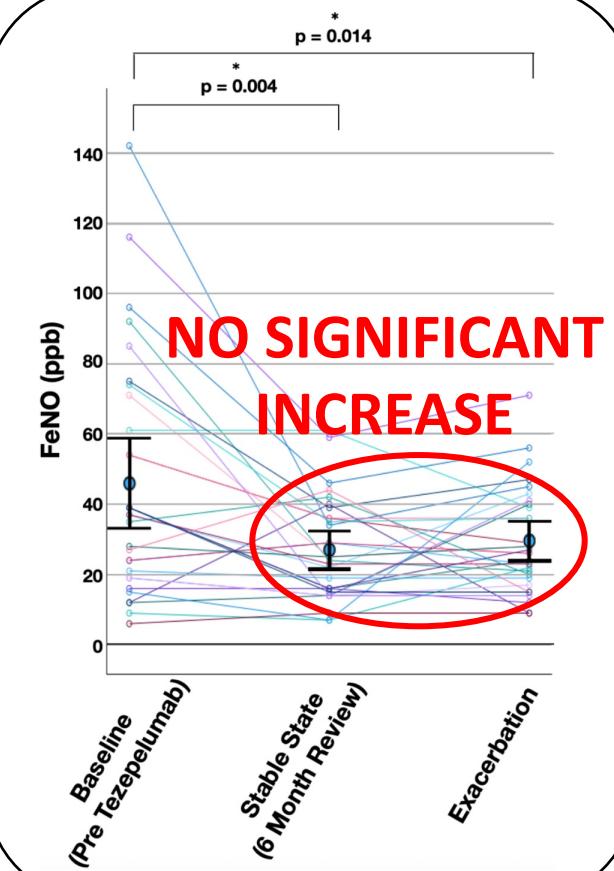


- I collected data about 26 patients who have had an asthma attack while on tezepelumab.
- These included : **Blood Eosinophil Count and FENO** from 3 timepoints:
 - Before starting tezepelumab,
 - After 6 months on tezepelumab
 - At exacerbation

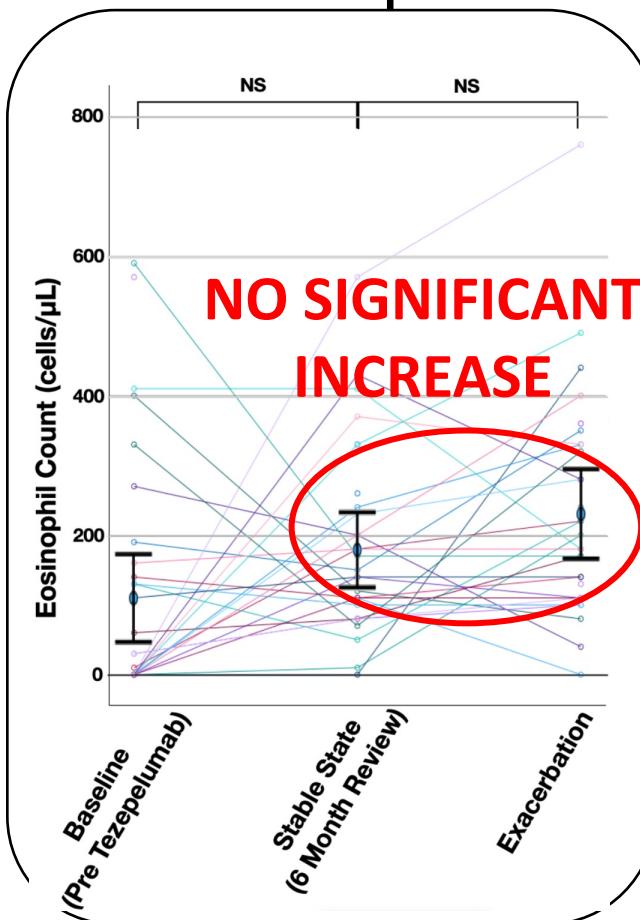
Key results – T2 Inflammatory Markers



FENO

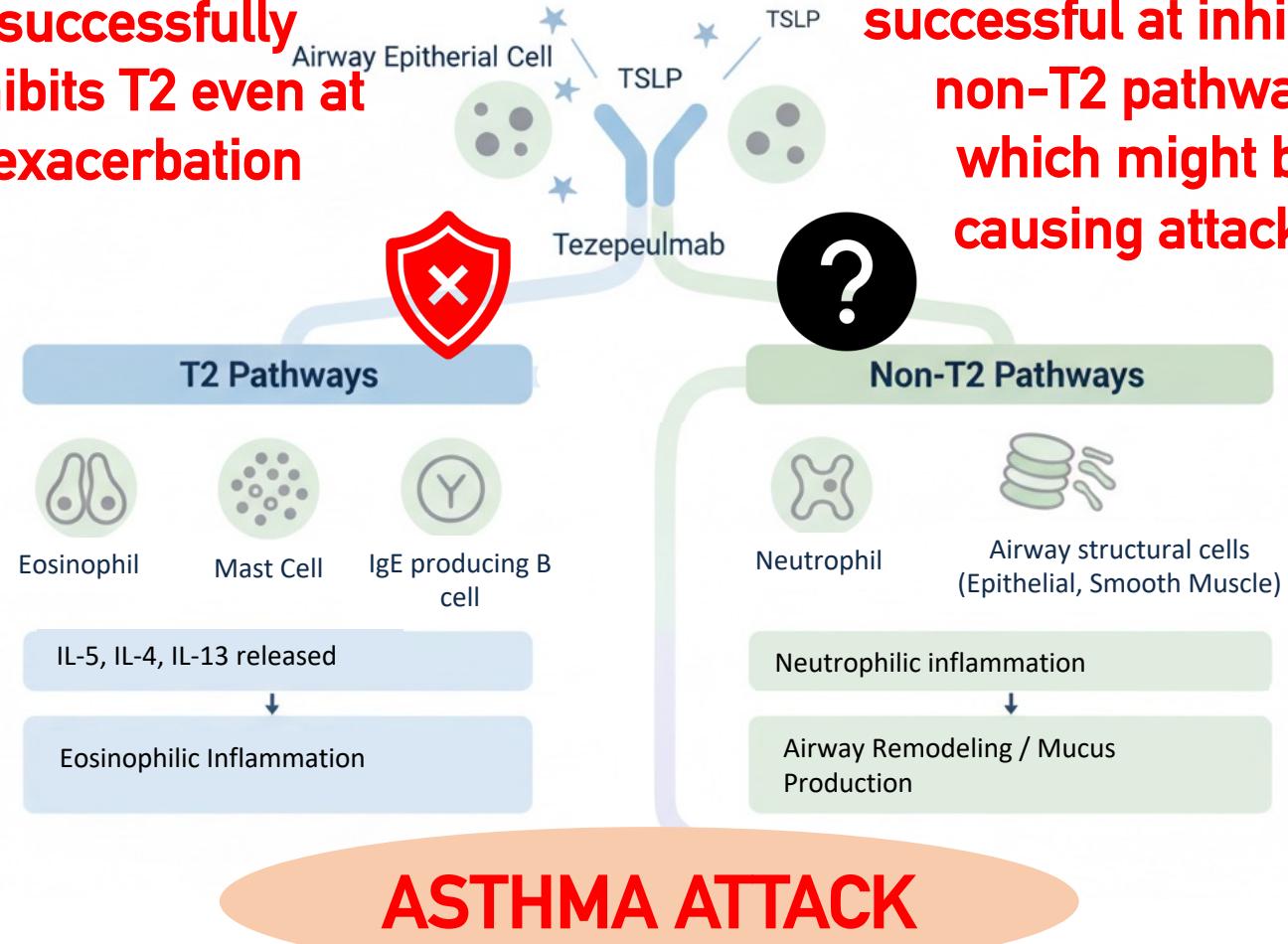


Blood Eosinophil Count

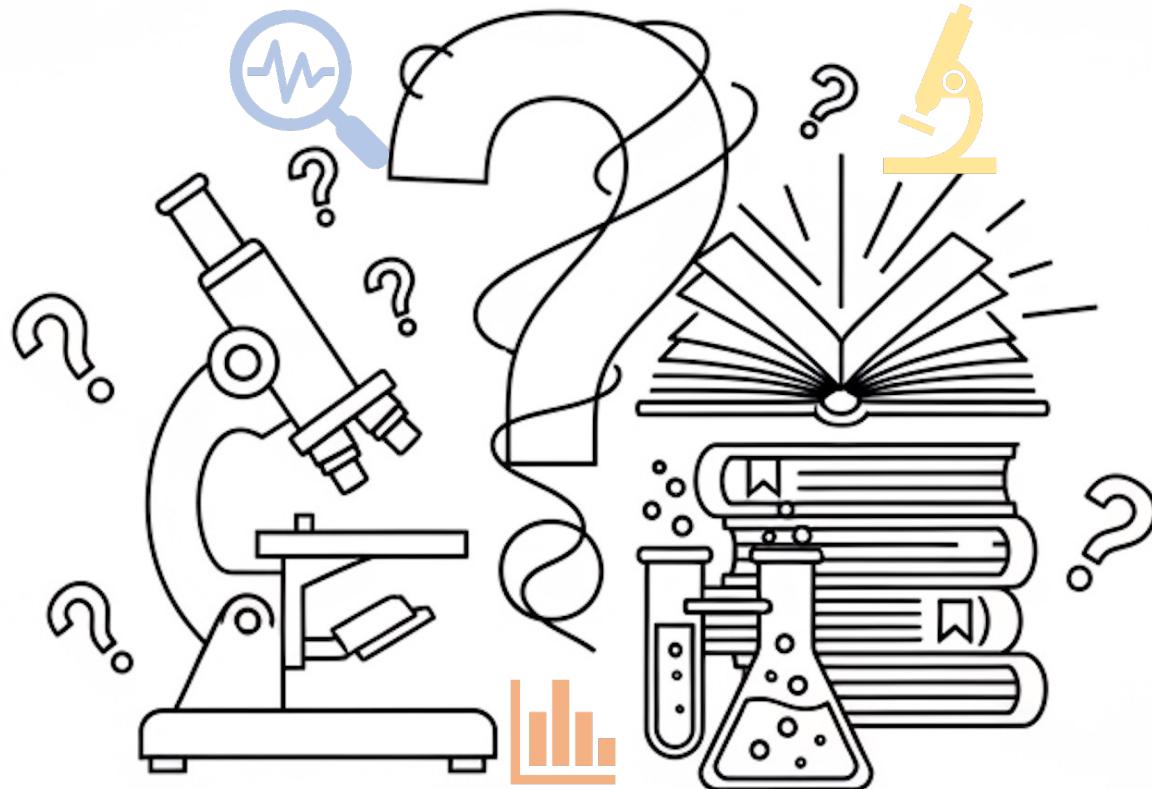


Interpretation of the results

**TEZEPELUMAB
successfully
inhibits T2 even at
exacerbation**

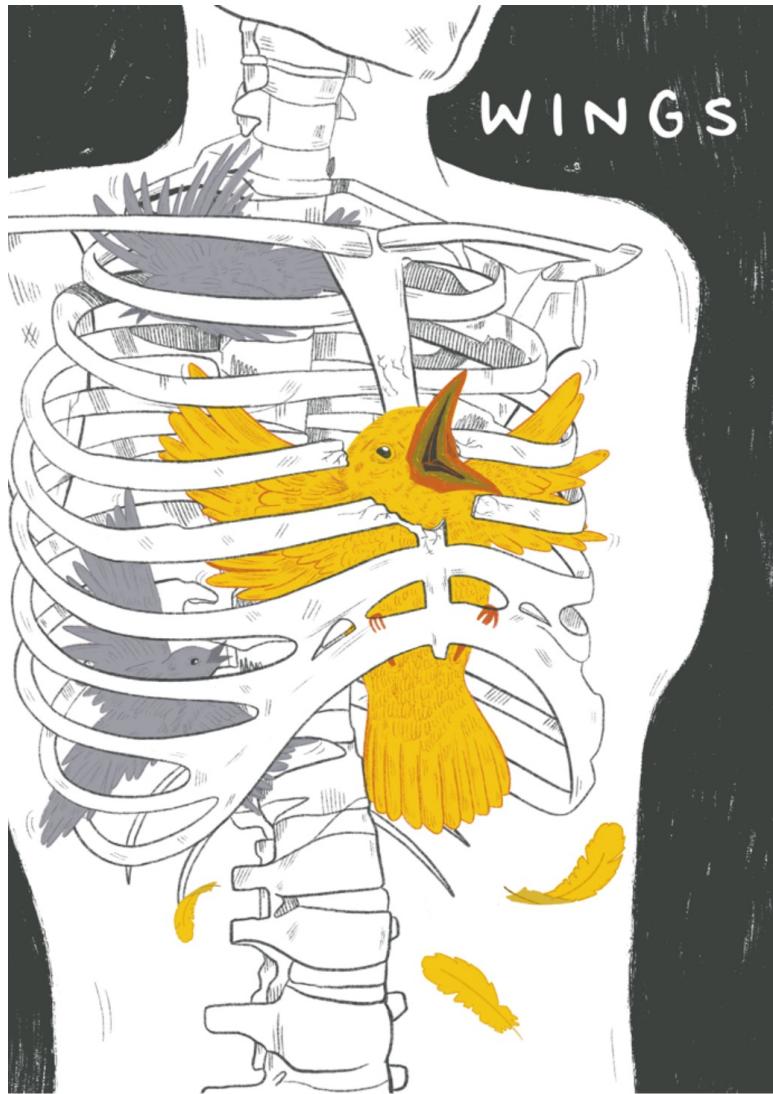


Future research



- Investigate non T2 inflammatory markers during asthma exacerbations in tezepelumab patients
- Trial non-T2 targeting medications alongside tezepelumab to reduce non T2 inflammation.

Guidelines and Patient Care



- Patient experiences changed how I interpret guidelines.
- Realised guidelines are population-based and don't always fit individual patients.
- Learned the importance of recognising guideline limitations in managing expectations and finding the best treatments.
- This SSC highlighted the need for personalised, flexible, patient-centred practice.