

# Co-localization of Immunoglobulin G4 (IgG4) and Milk Proteins is Associated with Eosinophilic Esophagitis Disease Activity

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# Immunoglobulin G4 (IgG4) Co-localizes with Milk Proteins and Correlates with Eosinophilic Esophagitis Disease Activity

## INTRO

- EoE is a chronic disease primarily triggered by food antigens
- Recent studies show that IgG4 co-localizes with food proteins in esophageal tissue
- We hypothesize that co-localization of IgG4 with milk proteins is associated with disease activity

## Methods

- We performed a case control study nested within the prospective University of Virginia EoE Cohort
- 15 patients (EoE n=10 and controls n=5)
- We examined, via confocal microscopy, paired biopsy samples of active EoE and remission while on a.) swallowed steroids (n=5) and b.) dairy elimination diet (n=5) and compared to non-EoE controls (n=5)
- Immunofluorescence staining** performed using antibodies directed against IgG4 and milk proteins (bos d 4,5,8)
- Analysis:** Co-localization was determined using Pearson's Correlation Coefficient (PCC). Between group comparisons made with Mann-Whitney U test on GraphPad Prism

## Results

- Immunofluorescence staining was performed on 75 esophageal biopsies (15 patients, ages 19-41 yo, 53% male)
- PCC for co-localization of IgG4 and milk proteins significantly decreased in paired active v. remission samples in the same patient (p=0.02, p=0.002, and p=0.002 respectively for Bos d 4, 5, and 8)
- No significant difference in co-localization between remission samples and controls (p=0.57, p=0.21, p=0.74 for Bos d 4, 5, and 8; respectively)

## Conclusion and Discussion

- We demonstrate that IgG4 co-localizes with milk proteins and is associated with disease activity in EoE
- Whether these deposits contribute to the underlying inflammation of EoE, and whether IgG4 co-localization could be used to identify specific food triggers in EoE patients remains unknown and warrants further study
- Future studies should also address the role of bos d 5 and potential immune implications

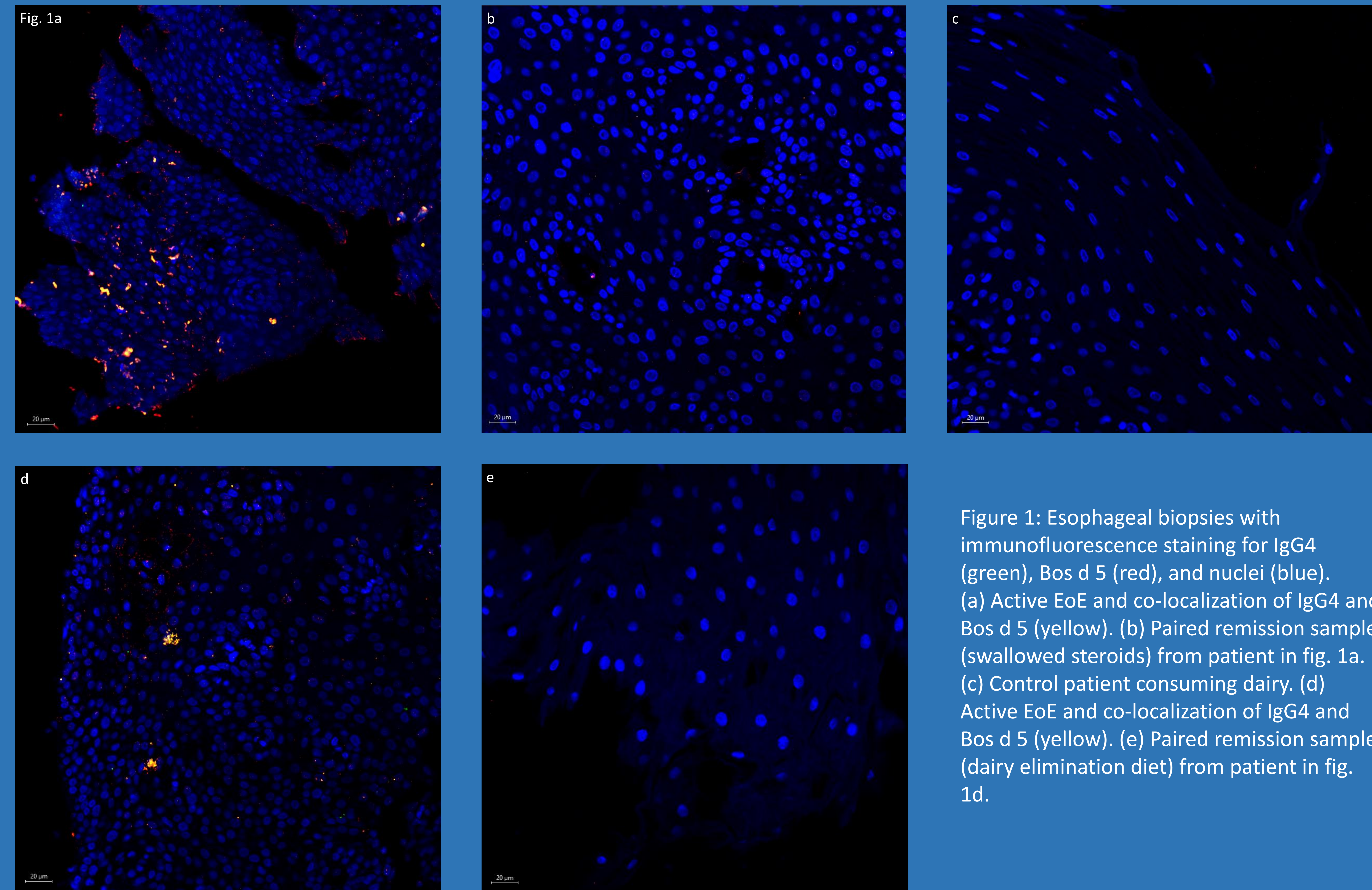
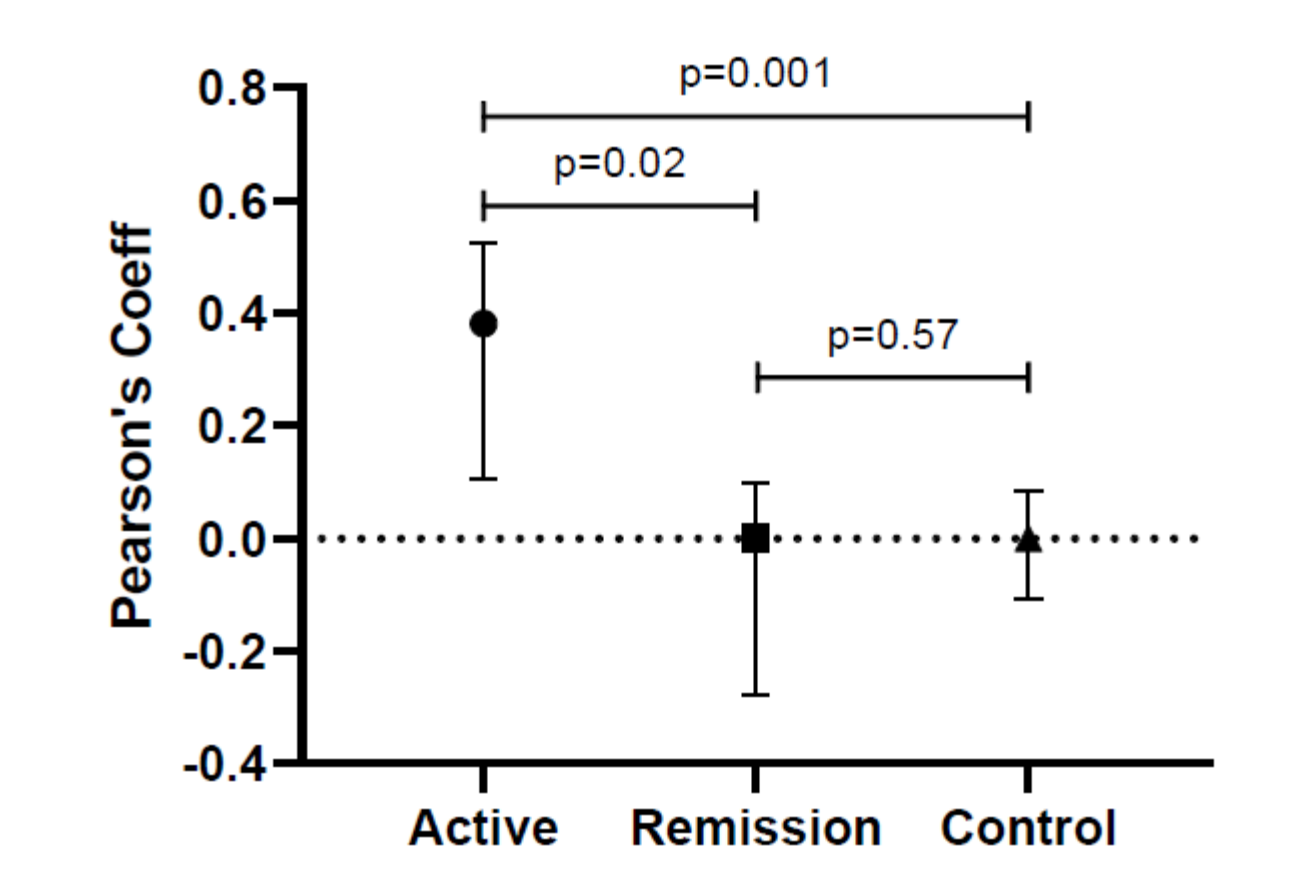


Figure 1: Esophageal biopsies with immunofluorescence staining for IgG4 (green), Bos d 5 (red), and nuclei (blue). (a) Active EoE and co-localization of IgG4 and Bos d 5 (yellow). (b) Paired remission sample (swallowed steroids) from patient in fig. 1a. (c) Control patient consuming dairy. (d) Active EoE and co-localization of IgG4 and Bos d 5 (yellow). (e) Paired remission sample (dairy elimination diet) from patient in fig. 1d.

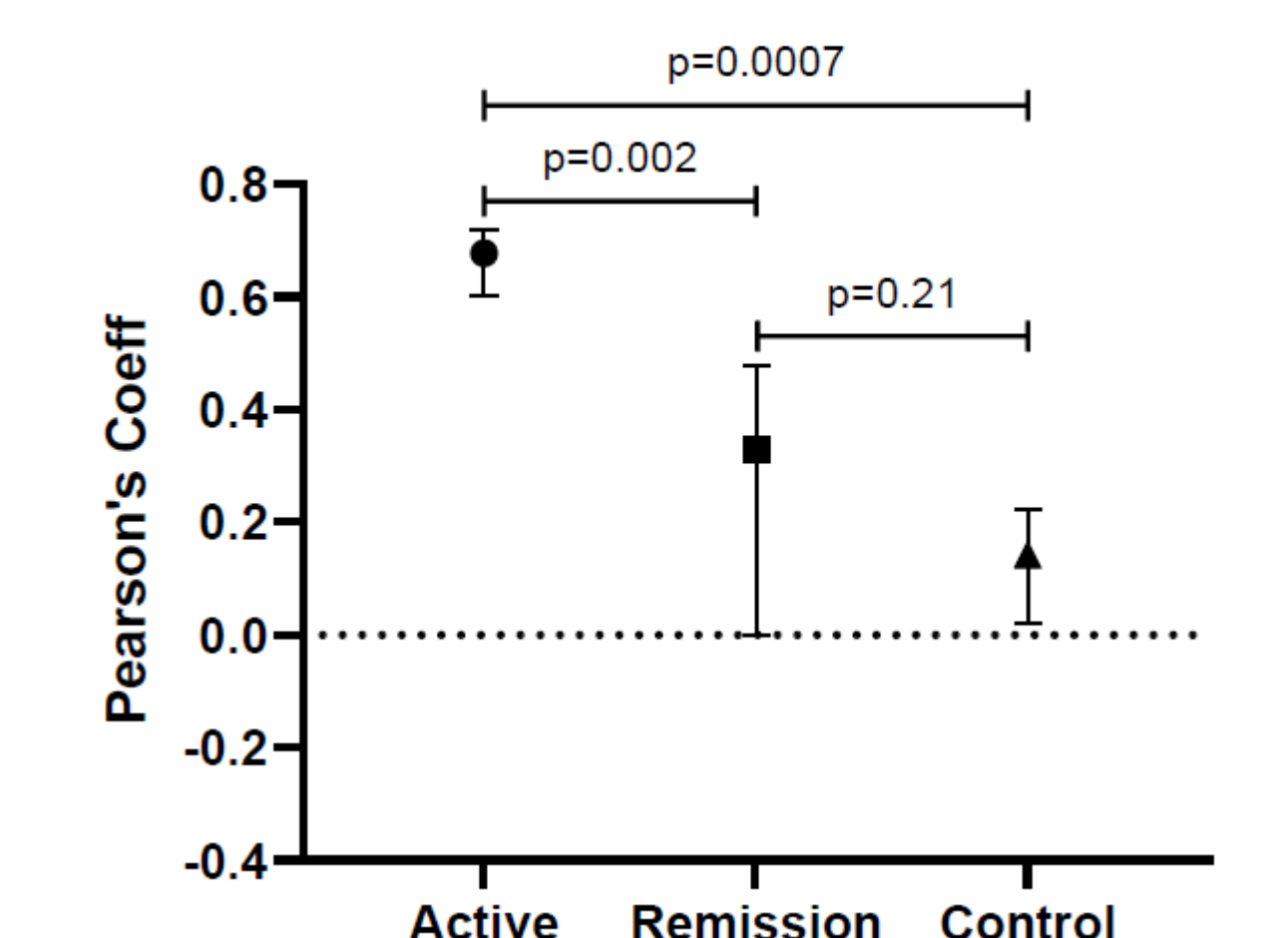
## Demographic and Clinical Characteristics of EoE vs Control Group

Characteristic	EoE n=10	Control n=5
Male Sex	6 (60%)	2 (40%)
Non-Hispanic White Race	8 (80%)	5 (100%)
Age (y)	32.8 (20-41)	23.2 (19-34)
Atopic Conditions		
Eczema	3 (30%)	2 (40%)
Asthma	6 (60%)	3 (60%)
Immediate Food Allergy	4 (40%)	2 (40%)
Rhinitis	7 (70%)	3 (60%)

### Co-localization IgG4 and Bos d 4



### Co-localization IgG4 and Bos d 5



### Co-localization IgG4 and Bos d 8

