Figure S1. Two STAT6 binding sites in the promoter region of the _CAPN14_ gene affect IL-4-induced _CAPN14_ promoter activity. _A, B, CAPN14_ promoter reporter constructs with or without mutated STAT6 sites (See **Figure 1 A**) were transfected into esophageal epithelial cells followed by treatment with or without IL-4 or IL-13 (100 ng/mL) for 24 h. For each sample, nanoluciferase activity was normalized to firefly luciferase activity. Data are shown as mean ± S.E.M (***, $p < 0.001$; n = 3 per group; data representative of three independent experiments).
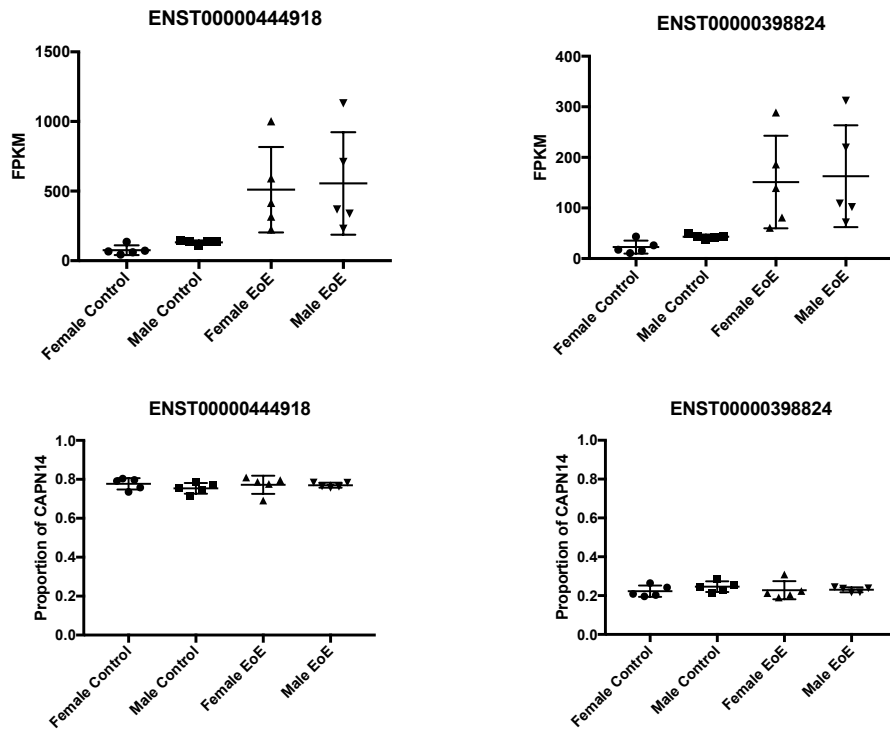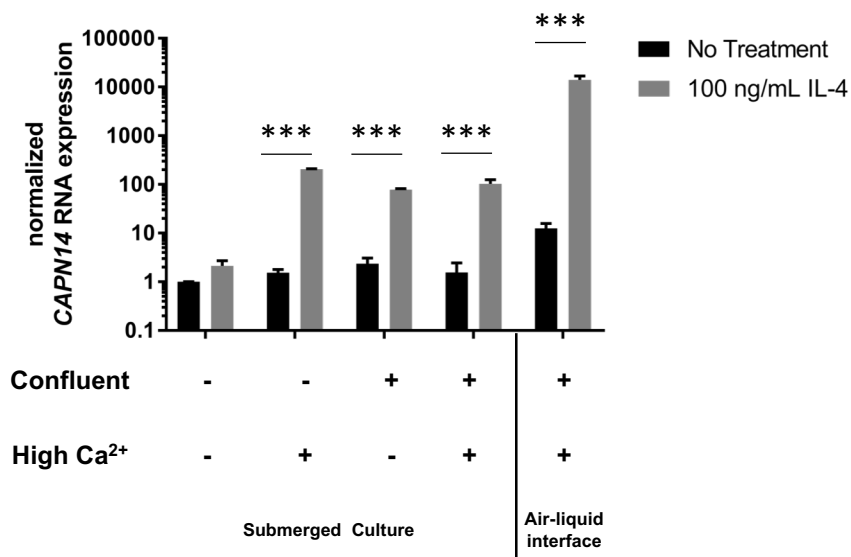
Figure S2. Expression of four isoforms of *CAPN14* from an RNAseq study of subjects with (n=10) and without (n=10) EoE.

A. *CAPN14* RNA

Confluent	-	-	+	+	+
High Ca^{2+}	-	+	-	+	+

Submerged Culture | Air-liquid interface

B. Calpain-14 Protein

										Over
Confluent:	-	-	-	+	+	+	ALI	ALI	ALI	Expressed
1.8 mM Ca^{2+}:	-	-	+	-	+	+	+	+	+	*CAPN14*
100 ng/mL IL-4:	-	+	+	-	-	+	-	+	-	
100 ng/mL IL-13:	-	-	-	-	-	-	-	-	+	

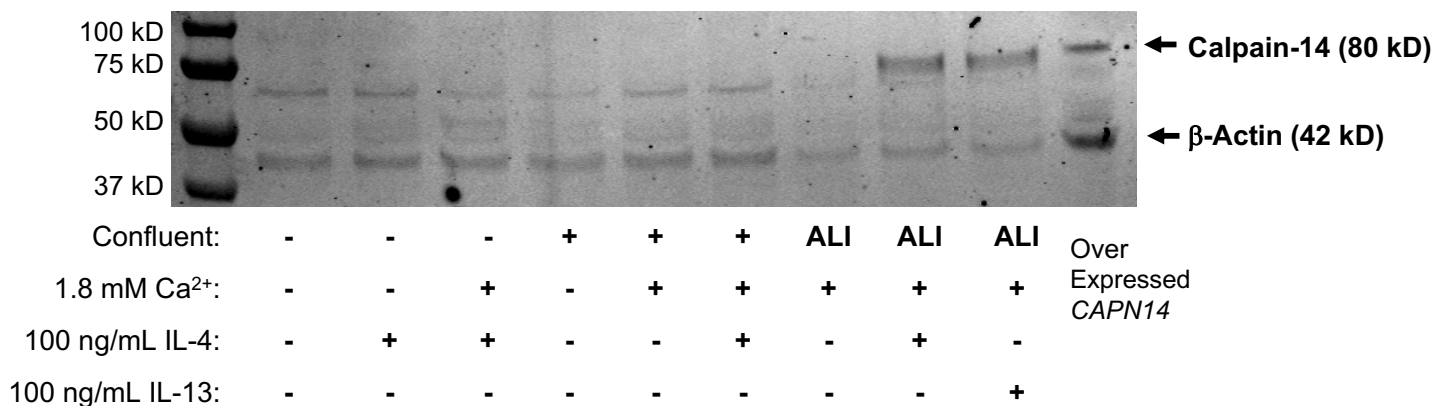← Calpain-14 (80 kD)
← β-Actin (42 kD)

Figure S3. The expression of *CAPN14* in esophageal epithelial cells is also regulated by IL-4. EPC2 esophageal epithelial cells were grown to various levels of confluence (80% or 100%, a + indicates 100% confluence) with relatively low (0.09 mM) or high (1.8 mM) Ca^{2+} and with or without 100 ng/mL IL-4 for 24 h. Cultures were grown either as a monolayer submerged culture or in an air-liquid interface (ALI) setup. *A,* RNA was isolated and *CAPN14* was measured relative to the expression of the housekeeping gene *GAPDH*. All RNA expression values are normalized to cells at 80% confluence without high calcium or IL-4. *B,* Calpain-14 protein expression levels were assessed by immunoblot. EPC2 cells that constitutively express *CAPN14* behind a CMV promoter were used as a positive control for calpain-14 protein expression. RNA and protein level expression: ***, t-test p-value<0.001, n=3-5 per group, data representative of 4 independent experiments.

Supplemental Table 1. Table of primers and probes

Luciferase Reporter Construct Primers	5' to 3'
CAPN14 PCR Primer Forward	CTActcgagGATTCTGCATGCAATGTGCT
CAPN14 PCR Primer Reverse	GGAagatctGGAAGATGTACCCAGGCTGA
rs76562819 to Non-Reference SDM Primer Forward	GCCTTAATGAGAGAGGGTTAGTCATCTTCTC
rs76562819 to Non-Reference SDM Primer Reverse	GAGAAGATGACTAACCCTCTCTCATTAAGGC
STAT6 Site 1 Scramble SDM Primer Forward	TTTCTCTGTATGGTGCTATGGCATCATAATTGGATTTGTG
STAT6 Site 1 Scramble SDM Primer Reverse	CACAAATCCAATTATGATGCCATAGCACCATACAGAGAAA
STAT6 Site 2 Scramble SDM Primer Forward	GGGTACTCCACTCCCTCCGAACTCACACACAGTGGGGAGG
STAT6 Site 2 Scramble SDM Primer Reverse	CCTCCCCACTGTGTGTGAGTTCGGAGGGAGTGGAGTACCC
STAT6 Site 3 Scramble SDM Primer Forward	ACTCTACCAAATGACACTCAGCATCACCAGAGCTGGAGGG
STAT6 Site 3 Scramble SDM Primer Reverse	CCCTCCAGCTCTGGTGATGCTGAGTGTCATTTGGTAGAGT