SUPPLEMENTAL MATERIAL

Ohsaki et al., https://doi.org/10.1084/jem.20171163

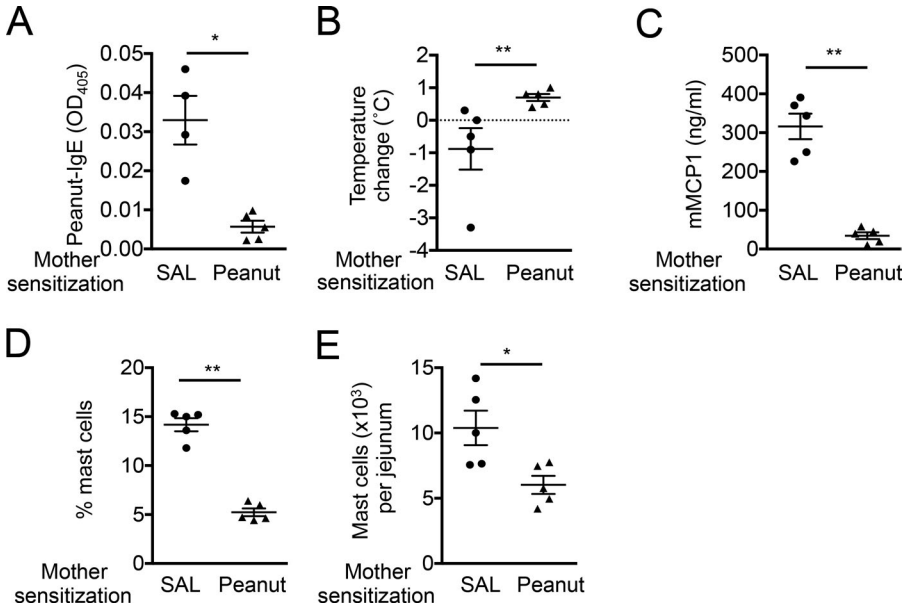

Figure S1. **Maternal sensitization with peanut protects offspring from food allergy.** Mothers were epicutaneously sensitized with 0.45 mg peanut butter (Skippy, Hormel Foods) or saline (SAL) as shown in Fig. 1 A. Offspring were epicutaneously sensitized (0.45 mg), then orally challenged with peanut butter (225 mg). (A–E) Serum peanut-IgE levels (A), core body temperature change (B), serum mMCP1 levels (C), jejunal mast cell frequencies (D) and numbers (E) in offspring. Groups of animals were compared using the Mann-Whitney *U* test. Data are representative of 2 independent experiments (A–E). Data are mean ± SEM. *, $P < 0.05$; **, $P < 0.01$.

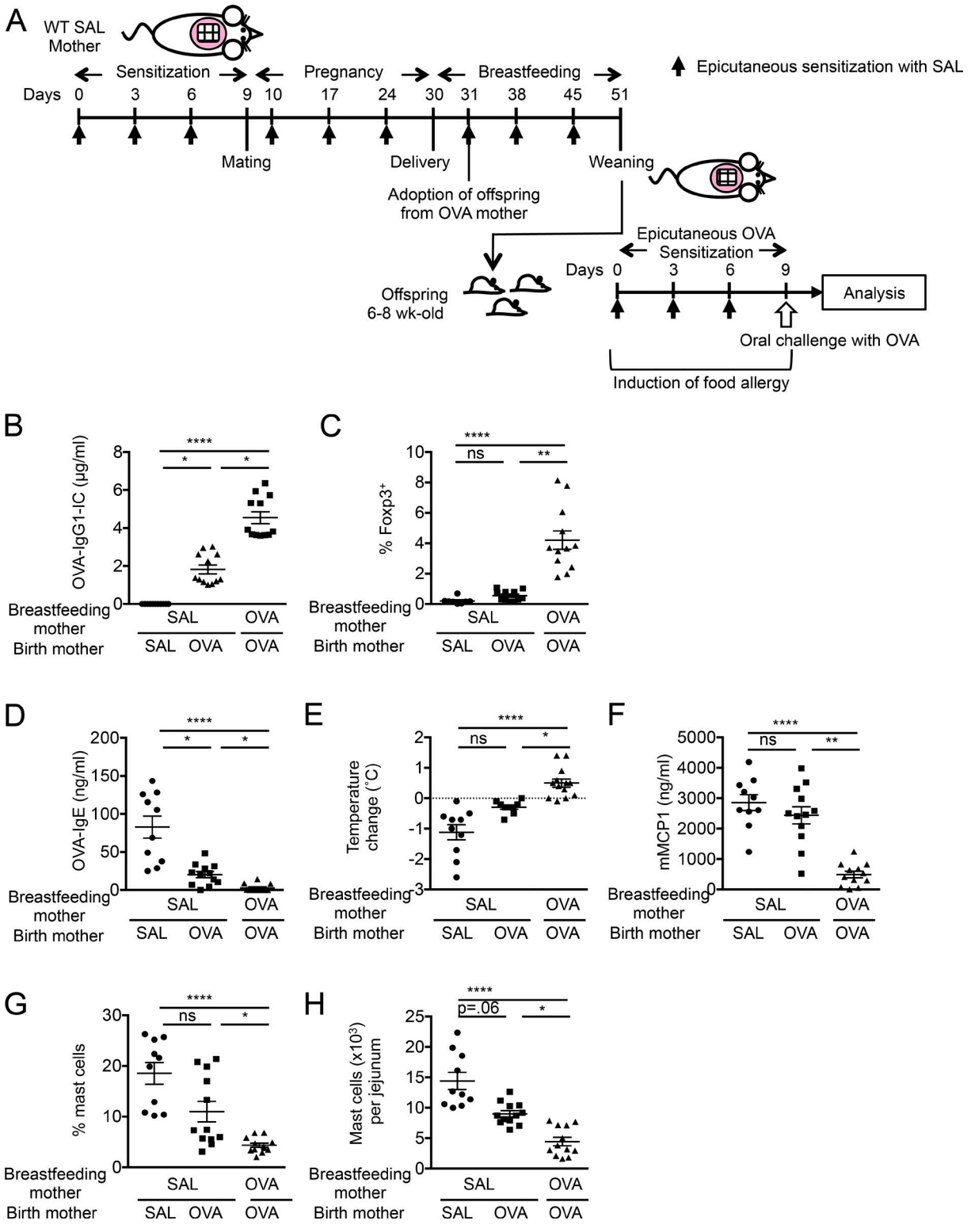

Figure S2. **In utero transfer of maternal IgG–IC contributes to protection of offspring from food allergy.** (A) Experimental protocol. (B) Serum OVA-IgG-ICs in weaned offspring. (C) Analysis of OVA-specific Foxp3$^+$ cells expanded from offspring MLN cells. (D) Serum OVA-IgE levels. (E) Core body temperature change. (F) Serum mMCP1 levels. (G and H) Flow cytometric analysis of jejunal mast cell frequencies (G) and numbers (H). Groups of animals were compared using a nonparametric one-way ANOVA. Data are mean ± SEM of two independent experiments (B–H). *, $P < 0.05$; **, $P < 0.01$; ****, $P < 0.0001$; ns, not significant. SAL, saline.

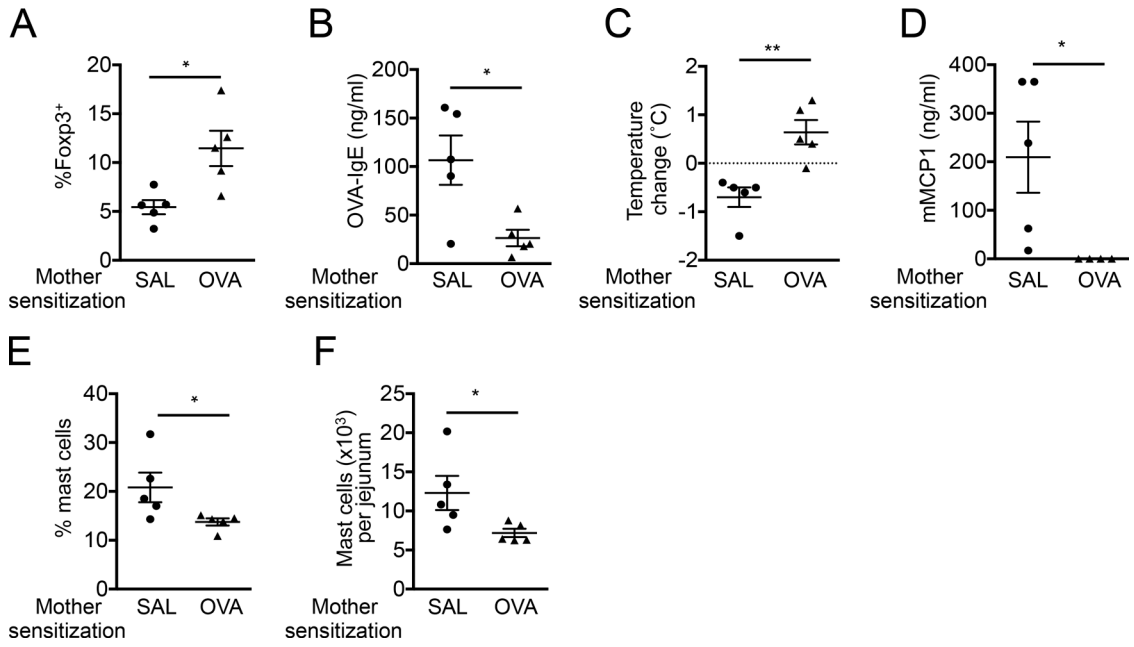

Figure S3. **Maternal allergen sensitization induces long-lasting protection in offspring.** (A–F) Analysis of OVA-specific Foxp3$^+$ cells expanded from offspring MLN cells (A), serum OVA-IgE levels (B), core body temperature change after challenge (C), serum mMCP1 levels (D), jejunal mast cell frequencies (E) and numbers (F) in 15-wk-old offspring of SAL- or OVA-sensitized mothers. Groups of animals were compared using the Mann-Whitney *U* test. Data are representative of two independent experiments (A–F). Data are mean ± SEM. *, $P < 0.05$; **, $P < 0.01$. SAL, saline.

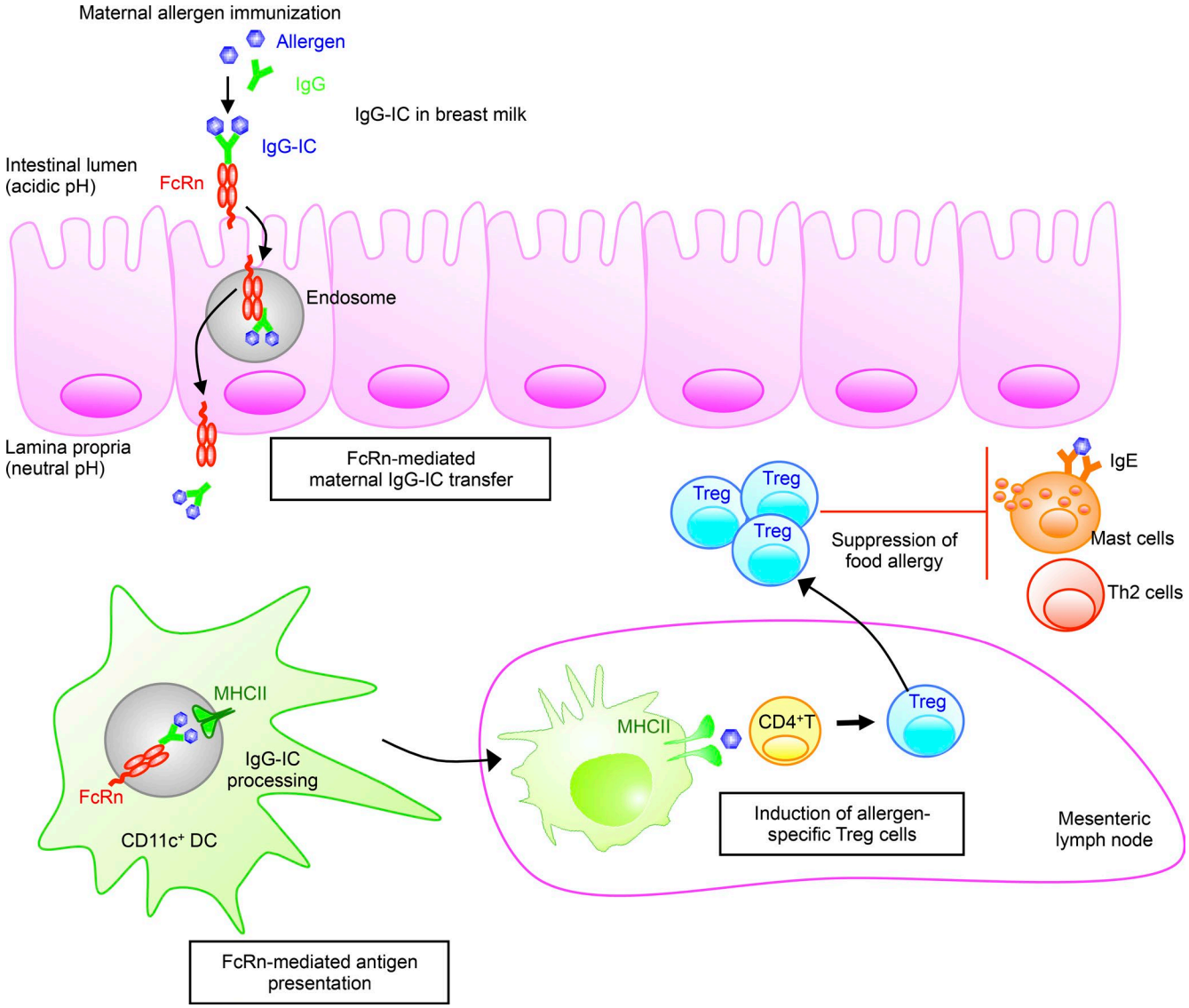

Figure S4. **Maternal IgG immune complexes induce food allergen–specific tolerance in offspring.** Maternal allergen sensitization results in a formation of maternal immune complexes consisting of IgG and OVA (IgG-IC). Neonates receive IgG-IC in utero and via breast milk, which binds to FcRn in intestinal epithelial cells in an acidic environment of lumen. Upon binding, FcRn transcytoses IgG-IC and releases it at neutral pH on lamina propria (FcRn-mediated maternal IgG-IC transfer). After internalization of IgG-IC into $CD11c^+$ DCs, FcRn binds to IgG-IC in the acidic endosomes and controls the routing of IgG-IC to late endosomes, where antigen is processed into peptide compatible with loading onto MHC molecules, facilitating antigen presentation to induce allergen-specific T reg cells (FcRn-mediated antigen presentation), which suppress food allergy in offspring.

Table S1. **Characteristics of human breast milk**

Parameter	Value
N	16
Donor age (*yr*), median (range)	32 (18–42)
OVA-IgG4	
Positive samples	10 (62.5%)
Levels (*ng/ml*), median (range)	95.8 (14.3–745.3)
OVA-IgG4-IC	
Positive samples	8 (50%)
Levels, ng/ml, median (range)	19.3 (0–339.0)
OVA-IgE	
Positive samples	0 (0%)