Supporting Information

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Fig. S1. (A) Targeting strategy of AMCase-ED mice. (B) Genotyping PCR. WT allele gives a 120-bp fragment, whereas AMCase-ED allele gives a 150-bp fragment. The primer sequences are listed in Materials and Methods.



Fig. 52. Detection of chitin in HDM. (A) Dot blotting for chitin. A different dose of chitin is used as positive control (*Left*) and eight different batches of HDM are used (*Right*). A detail about chitin preparation is described in *Materials and Methods*. (*B*) The number of macrophages (*Top*), neutrophils (*Middle*), or lymphocytes (*Bottom*) in the BAL of WT or *AMCase-ED* mice after administration of PBS, HDM, or raw HDM with (+) or without (–) pretreatment at 95 °C for 10 min. (*C*) Expression of AMCase, normalized to HPRT, in the lung of WT or *AMCase-ED* mice after administration of PBS or HDM. (*D*) Chitinase activity in the BAL of WT or *AMCase-ED* mice after administration of PBS or HDM. (*D*) Chitinase activity in the BAL of WT or *AMCase-ED* mice after administration of PBS or HDM. (*E*) Expression of Brp39 (*Top*), Ym1 (*Middle*), and Ym2 (*Bottom*), normalized to HPRT, in the lung of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM-specific IgE in serum of WT or *AMCase-ED* mice after administration of PBS or HDM. (*F*) Levels of HDM set Court in the set of the set of the set.



Fig. S3. Expression of CLPs after administration of small-chitin or large-chitin fragments. (A) Expression of Brp39, Ym1, and Ym2, normalized to HPRT, in the lung of WT or *AMCase-ED* mice after administration of PBS, small-chitin, or large-chitin fragments. (B) The number of macrophages (*Left*), neutrophils (*Middle*), or lymphocytes (*Right*) in the BAL of WT mice after administration of small-chitin (*Top*) and large-chitin (*Bottom*) fragments. *P < 0.05, **P < 0.01, and ***P < 0.001, unpaired Student's *t* test. Data were combined from at least three independent experiments. Error bars indicate the SEM.



Fig. S4. Production of $IL-1\beta$ or $TNF\alpha$ after chitin treatment. (A) Production of $IL-1\beta$ or $TNF\alpha$ in the supernatants of LPS-primed peritoneal macrophages from WT mice after treatment with the mixture of chitin. (B) The limulus test was performed using small-, intermediate-, and large-chitin fragments and their supernatants. LPS and endotoxin-free water were used as controls. "s/n" indicates the supernatants. (C) Histograms of fluorescence distribution of the mixture of peritoneal macrophages from WT mice. Red represents WT cells with DMSO, orange represents the cells with FITC small chitin, and blue represents the cells with FITC small chitin, and blue represents the cells with FITC small chitin, and blue represents the cells with FITC small chitin.



Fig. S5. WT and $Casp 1^{-/-}$ mice after administration of HDM. (*A*) The number of macrophages (left), neutrophils (middle) or lymphocytes (right) in the BAL of WT or $Casp 1^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM specific IgE in serum of WT or $Casp 1^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM specific IgE in serum of WT or $Casp 1^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM specific IgE in serum of WT or $Casp 1^{-/-}$ mice after administration of PBS or HDM.



Fig. S6. WT and *ll1r^{-/-}* mice after administration of HDM. (*A*) The number of total cells (*Left*) or eosinophils (*Right*) in the BAL of WT or *ll1r^{-/-}* mice after administration of PBS or HDM. (*B*) The number of total cells in the BAL of WT or *AMCase-ED* mice after administration of OVA. (*C*) Production of IL-5 (*Left*) and IL-13 (*Right*). Unpaired Student's *t* test was performed. Error bars indicate the SEM.



Fig. 57. The number of macrophages, neutrophils, or lymphocytes in the BAL of WT \rightarrow WT (where WT bone marrow was injected into irradiated WT recipients), WT \rightarrow *AMCase-ED*, *AMCase-ED* \rightarrow WT, or *AMCase-ED* \rightarrow *AMCase-ED* mice after administration of HDM. Error bars indicate the SEM.



Fig. S8. IL-33 processing in the lung in WT or *AMCase-ED* mice after administration of HDM. Immunoblot analysis of IL-33 and β -actin in lung lysates from WT mice or *AMCase-ED* mice after administration of HDM. The number (immediately below the immunoblot analysis) indicates the individual mouse. The bolder numbers are the ratios, calculated by active IL-33 density divided by inactive IL-33 density. The density is measured using ImageJ (NIH). The ratio from each individual mouse was plotted (*Right*). Error bars indicate the SEM.



Fig. S9. WT and $Casp7^{-/-}$ mice after administration of HDM. (*A*) The number of macrophages (*Left*), neutrophils (*Middle*) or lymphocytes (*Right*) in the BAL of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. (*B*) Levels of HDM-specific IgE in serum of WT or $Casp7^{-/-}$ mice after administration of PBS or HDM. Data were combined from at least three independent experiments. Error bars indicate the SEM.



Fig. S10. Proposed model.