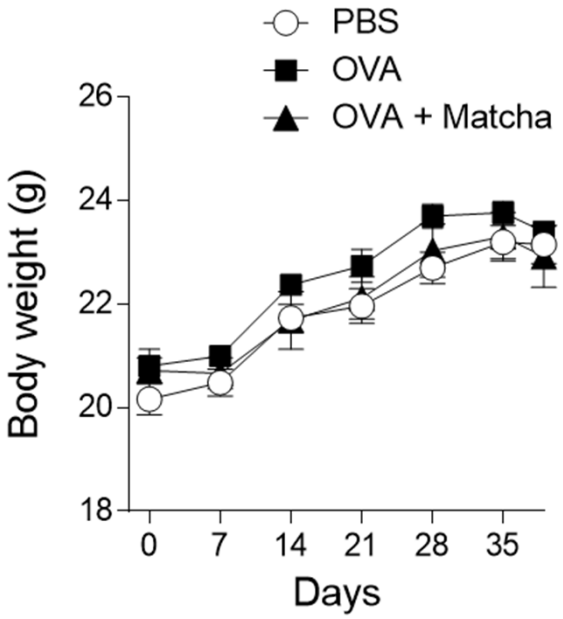
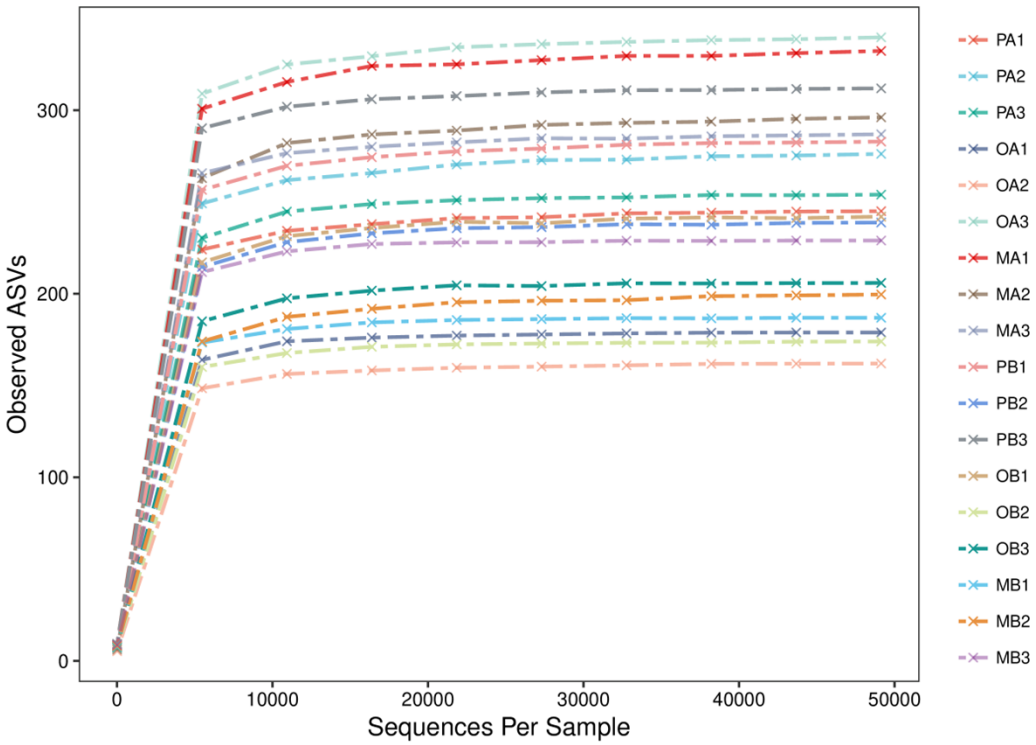
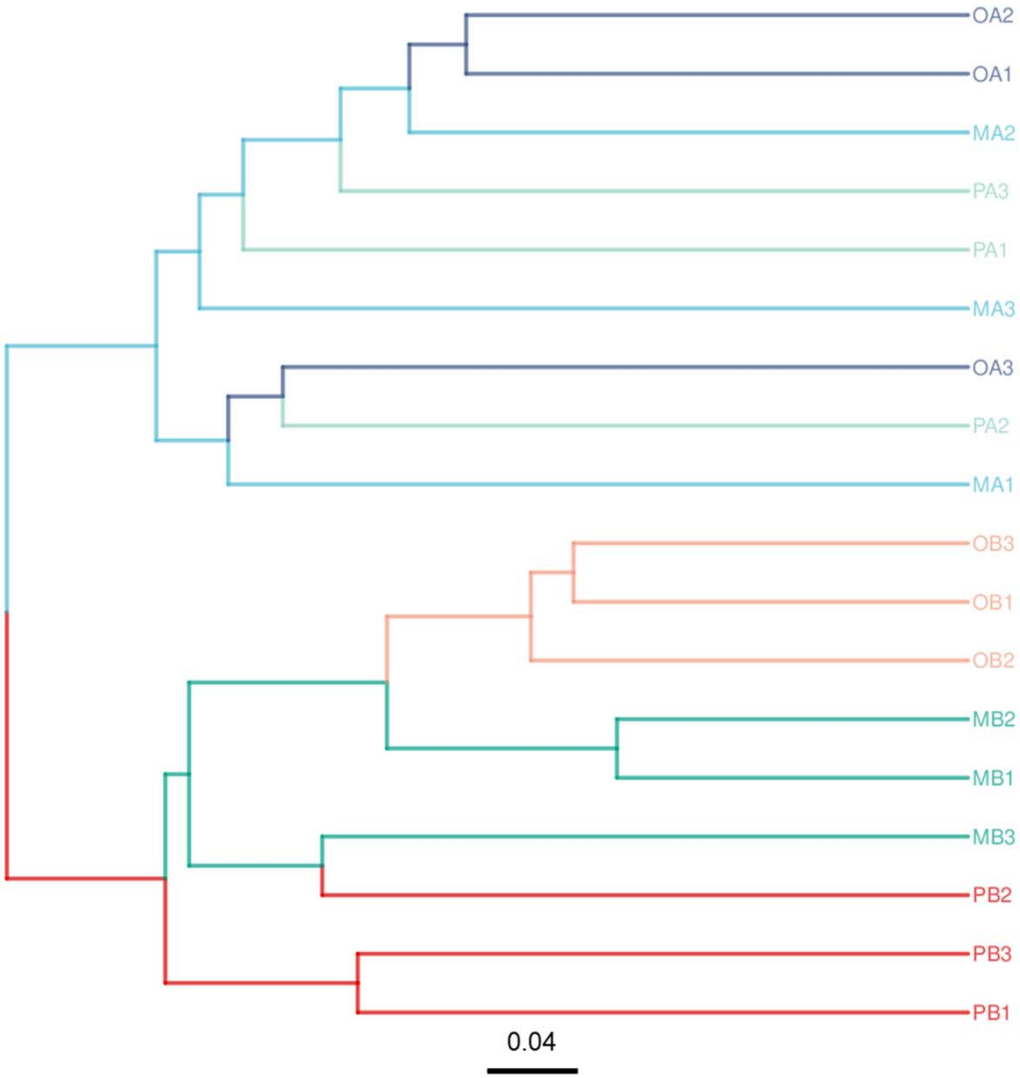


Supplementary Fig. 1. Effect of Matcha extract on body weight change in mouse model of allergic rhinitis. Body weights of ovalbumin (OVA)-immunized and phosphate-buffered saline (PBS)- or OVA-challenged mice were monitored throughout the immunization and challenge periods. In OVA + Matcha group, Matcha extract (250 mg/kg) was administered to mice by intragastric injection 3 times/week during the immunization period and daily during the challenge period. Data are expressed as the mean ± standard error of the mean for 6 animals from four separate experiments.

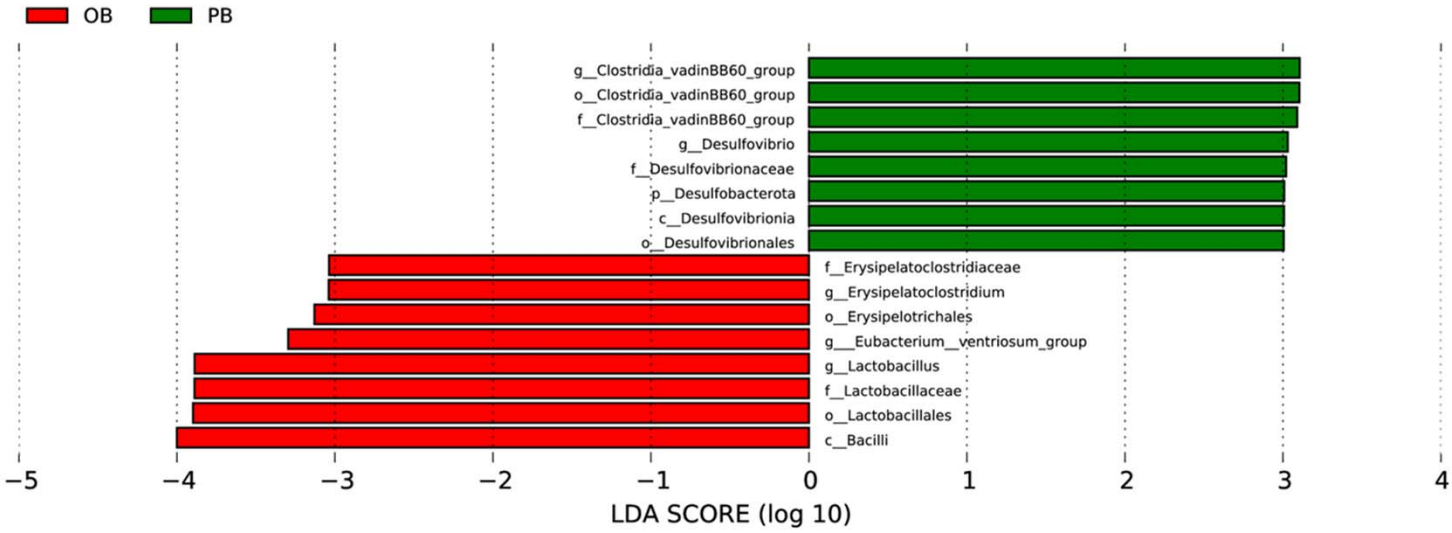


Supplementary Fig. 2. Effect of Matcha extract on intestinal microbiota in murine model of allergic rhinitis. High-throughput 16S rDNA sequencing was performed on fecal samples from phosphate-buffered saline-challenged mice (PA and PB), ovalbumin (OVA)-challenged mice (OA and OB), and Matcha extract-administered and OVA-challenged mice (MA and MB) at the beginning (PA, OA, and MA) and end (PB, OB, and MB) of the experiments (n = 3, respectively). The available sample size and the amount of sequencing data are expressed as rarefaction curves based on amplicon sequence variants (ASVs).

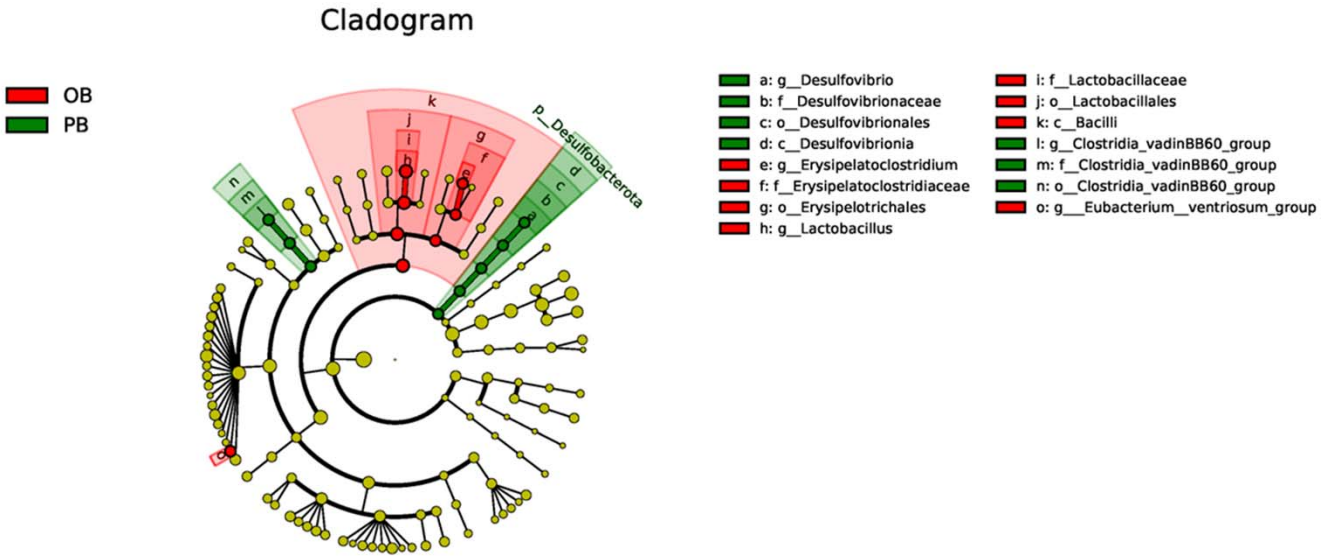
Supplementary Fig. 3. Effect of Matcha extract on intestinal microbiota in murine model of allergic rhinitis. High-throughput 16S rDNA sequencing was performed on fecal samples from phosphate-buffered saline-challenged mice (PA and PB), ovalbumin (OVA)-challenged mice (OA and OB), and Matcha extract-administered and OVA-challenged mice (MA and MB) at the beginning (PA, OA, and MA) and end (PB, OB, and MB) of the experiments. The difference in intestinal microbiota diversity among groups were compared by principal coordinates analysis plot (n = 3).



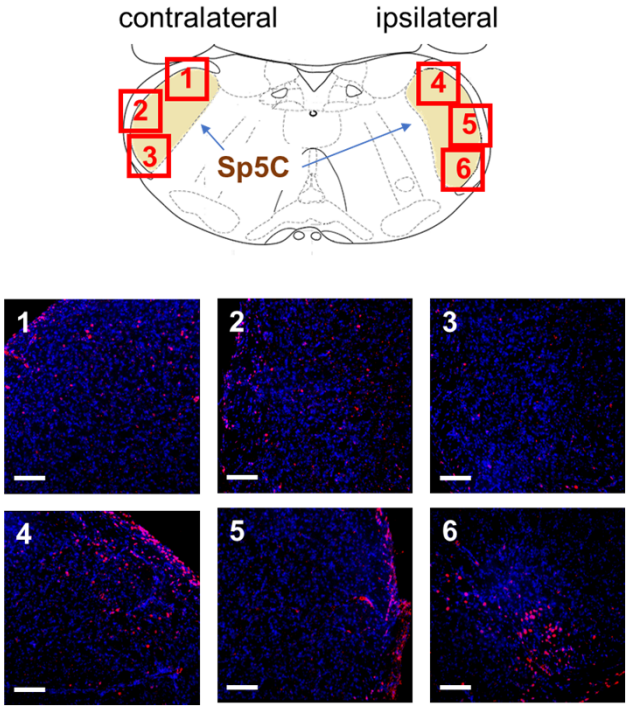
Supplementary Fig. 4. Effect of Matcha extract on intestinal microbiota in murine model of allergic rhinitis. High-throughput 16S rDNA sequencing was performed on fecal samples from phosphate-buffered saline-challenged mice (PA and PB), ovalbumin (OVA)-challenged mice (OA and OB), and Matcha extract-administered and OVA-challenged mice (MA and MB) at the beginning (PA, OA, and MA) and end (PB, OB, and MB) of the experiments. The difference in intestinal microbiota diversity among groups were compared by arithmetic mean tree plot calculated with an unweighted pair group method (n = 3). The bar means the Bray-Curtis distance.



Supplementary Fig. 5. Effect of Matcha extract on intestinal microbiota in murine model of allergic rhinitis. High-throughput 16S rDNA sequencing was performed on fecal samples from phosphate-buffered saline-challenged mice (PB) and ovalbumin-challenged mice (OB) at end of the experiments. The difference in intestinal bacterial strains were compared by Linear Discriminant Analysis (LDA) Effect Size (Lefse) analysis (n = 3).



Supplementary Fig. 6. Effect of Matcha extract on intestinal microbiota in murine model of allergic rhinitis. High-throughput 16S rDNA sequencing was performed on fecal samples from phosphate-buffered saline-challenged mice (PB) and ovalbumin-challenged mice (OB) at end of the experiments. The difference in intestinal bacterial strains were compared by generating cladograms (n = 3).



Supplementary Fig. 7. c-Fos expression in the spinal trigeminal nucleus caudalis (Sp5C) following capsaicin stimulation.
Brainstem sections containing the area postrema (~7.8 mm caudal to bregma) were prepared as described in the Methods. Images were captured from three regions on each side of the Sp5C (schematic, top). Capsaicin was administered unilaterally to the nasal cavity; areas 1–3 correspond to the contralateral side, and areas 4–6 to the ipsilateral side. Robust, clustered c-Fos immunoreactivity (red) was observed in area 6, indicating that the ventral Sp5C receives projections from nasal trigeminal afferents and validating this region for nasal stimulation analysis. Nuclei were counterstained with DAPI (blue). Atlas reference adapted from reference 12.