



Supplement B. Polymicrobial interactions within lung microbiome in the wild type mice and the IL-13 TG mice

		Wild type mice		IL-13 TG mice	
		Correlation coefficient	P-value	Correlation coefficient	P-value
<i>Halomonas</i>	<i>Bradyrhizobium</i>	-0.742	<0.001	-0.793	0.001
<i>Halomonas</i>	<i>Hydrotalea</i>	0.736	<0.001	0.651	0.026
<i>Acidovorax</i>	<i>Variovorax</i>	0.979	<0.001	0.976	<0.001
<i>Delftia</i>	<i>Acidovorax</i>	0.741	<0.001	0.674	0.019
<i>Halomonas</i>	<i>Mesorhizobium</i>	-	-	0.677	0.019
<i>Halomonas</i>	<i>Nitrobacter</i>	-	-	-0.770	0.002
<i>Cupriavidus</i>	<i>Acidovorax</i>	-	-	-0.839	<0.001
<i>Cupriavidus</i>	<i>Variovorax</i>	-	-	-0.863	<0.001
<i>Bradyrhizobium</i>	<i>Mesorhizobium</i>	-	-	-0.618	0.038
<i>Bradyrhizobium</i>	<i>Nitrobacter</i>	-	-	0.815	0.001
<i>Delftia</i>	<i>Burkholderia</i>	-	-	-0.626	0.036
<i>Delftia</i>	<i>Salinispora</i>	-	-	-0.647	0.026
<i>Burkholderia</i>	<i>Salinispora</i>	-	-	0.941	<0.001
<i>Halomonas</i>	<i>Delftia</i>	-0.481	0.045	-	-
<i>Halomonas</i>	<i>Cupriavidus</i>	0.649	0.003	-	-
<i>Halomonas</i>	<i>Hydrogenophaga</i>	-0.604	0.008	-	-
<i>Hydrogenophaga</i>	<i>Delftia</i>	0.773	<0.001	-	-
<i>Hydrogenophaga</i>	<i>Acidovorax</i>	0.520	0.028	-	-
<i>Acidovorax</i>	<i>Bradyrhizobium</i>	0.485	0.045	-	-
<i>Hydrotalea</i>	<i>Cupriavidus</i>	0.715	<0.001	-	-
<i>Hydrotalea</i>	<i>Bradyrhizobium</i>	-0.584	0.009	-	-
<i>Variovorax</i>	<i>Delftia</i>	0.825	<0.001	-	-
<i>Variovorax</i>	<i>Hydrogenophaga</i>	0.583	0.009	-	-
<i>Cupriavidus</i>	<i>Aeromicrobium</i>	0.496	0.040	-	-
<i>Hydrogenophaga</i>	<i>Bradyrhizobium</i>	0.587	0.009	-	-

<i>Mesorhizobium</i>	<i>Lactobacillus</i>	0.537	0.022	-	-
<i>Mesorhizobium</i>	<i>Aeromicrobium</i>	0.641	0.003	-	-

Supplement C. Polymicrobial interactions of gut genus pairs between IL-13 TG mice and control mice group

		Wild type group		IL-13 TG group	
		Correlation coefficient	<i>P</i> -value	Correlation coefficient	<i>P</i> -value
<i>Oscillospira</i>	<i>Ruminococcus</i>	0.717	0.007	0.744	0.021
<i>Clostridium</i>	<i>Adlercreutzia</i>	0.651	0.029	-	-
<i>Bacteroides</i>	<i>Lactobacillus</i>	-	-	0.796	0.008

Supplement D. Lung-gut microbial interactions in IL-13 TG mice

Lung	Gut	IL-13 TG group	
		Correlation coefficient	P-value
<i>Mesorhizobium</i>	<i>Agathobaculum</i>	0.826	0.007
	<i>Bifidobacterium</i>	0.788	0.013
	<i>Parabacteroides</i>	0.752	0.025
	<i>AJ518873</i>	0.910	<0.001
	<i>EU475449</i>	0.802	0.013
	<i>EU475512</i>	0.776	0.014
	<i>PAC000683</i>	0.789	0.013
<i>Hydrogenophaga</i>	<i>Oscillospira</i>	-0.780	0.014