Supplemental Materials

Incidence of Post Operative Pneumonia and Oral Microbiome for the Patients with Cancer Operation

FigureS1: Heatmap of the oral microbiome from 30samples obtained by 10 patients
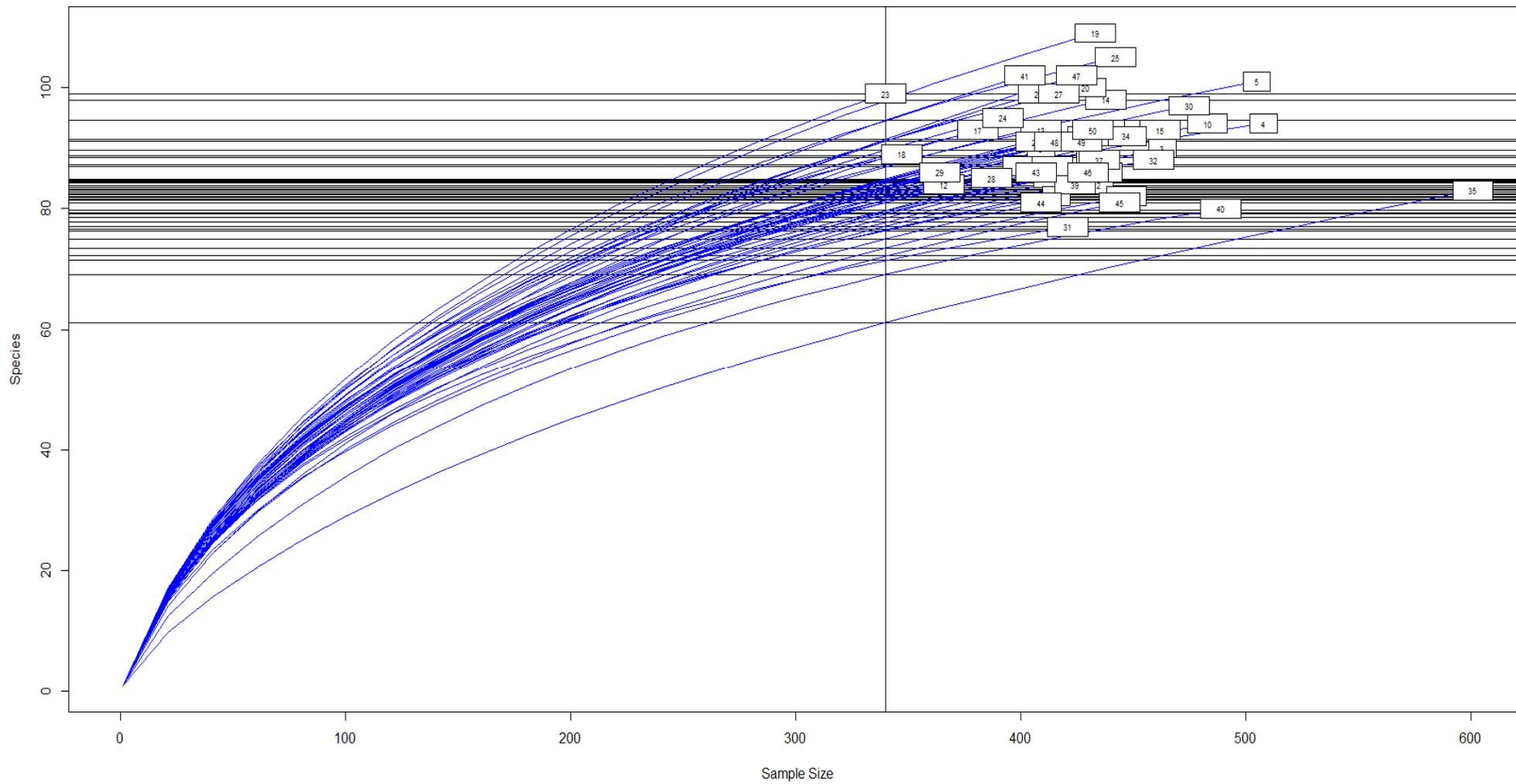
**FigureS2**: Rarefaction curve
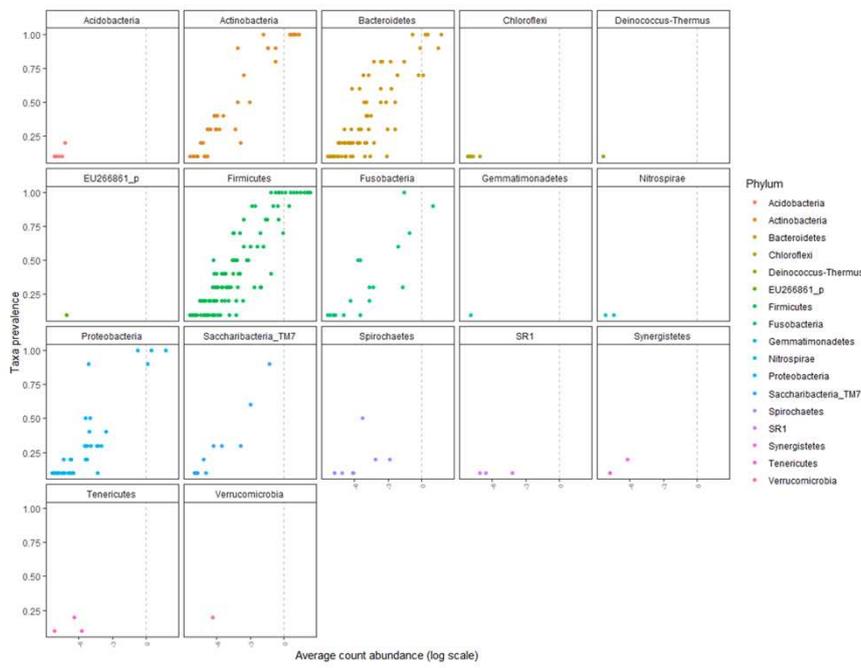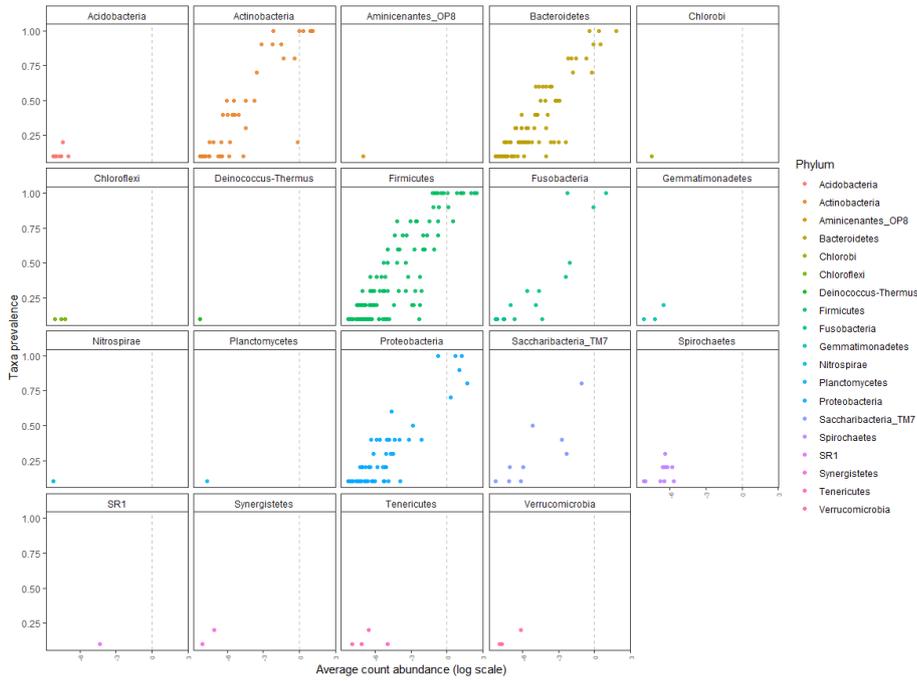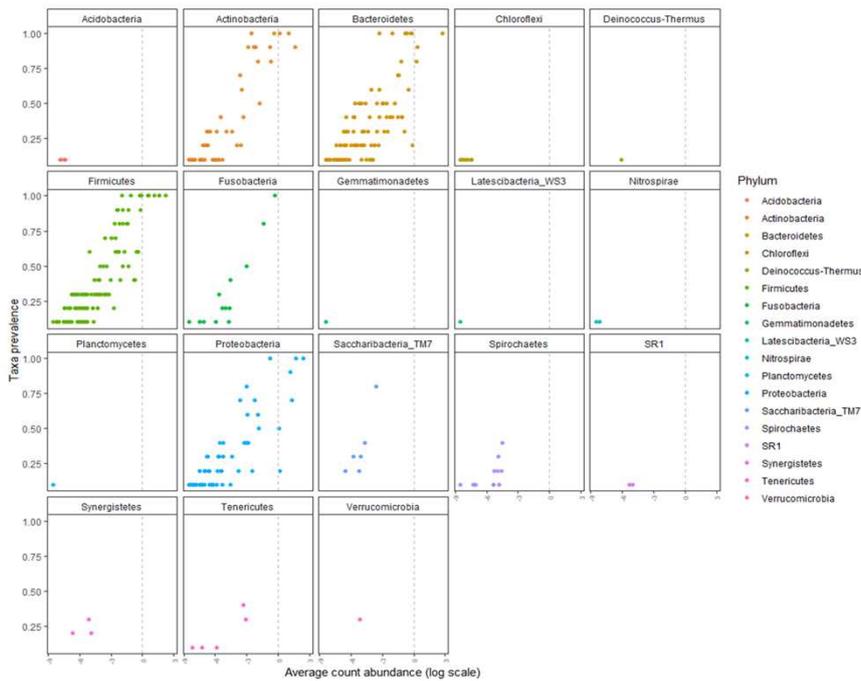
Figure S3: Taxa prevalence
(a): Baseline; (b) Before operation; (C):After operation
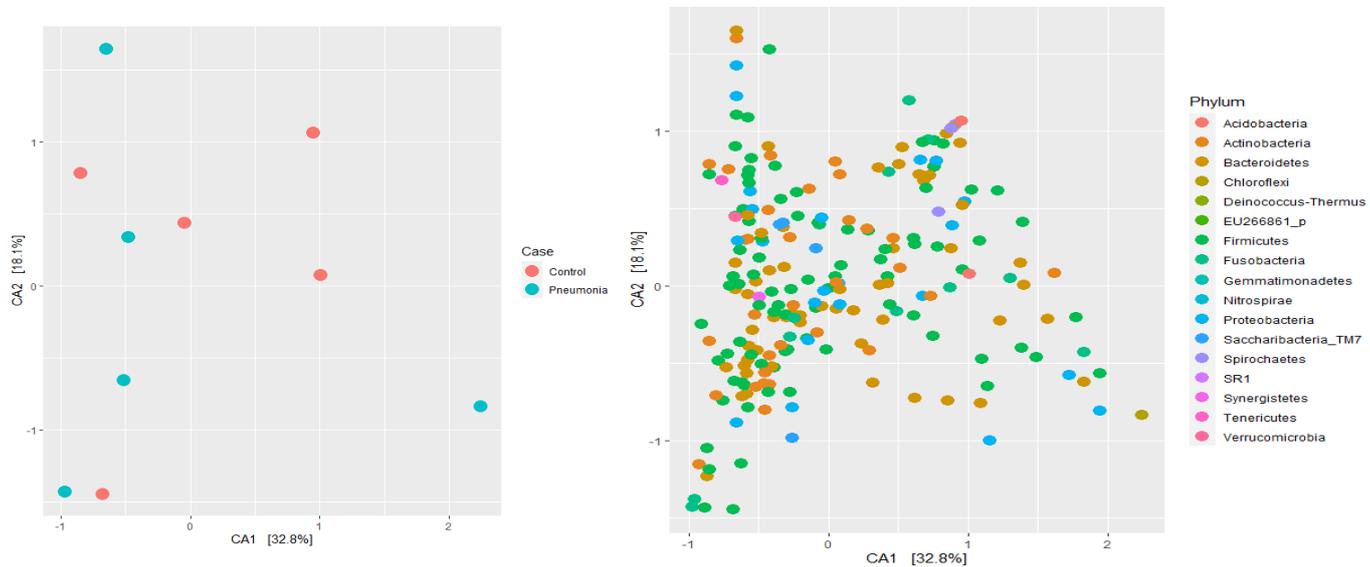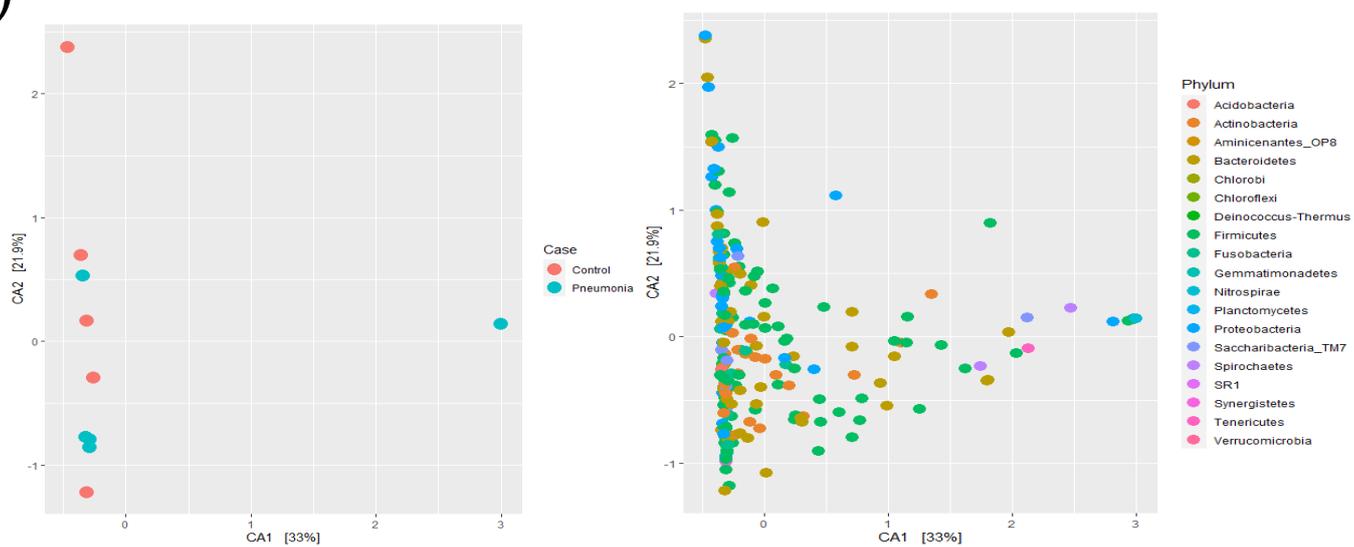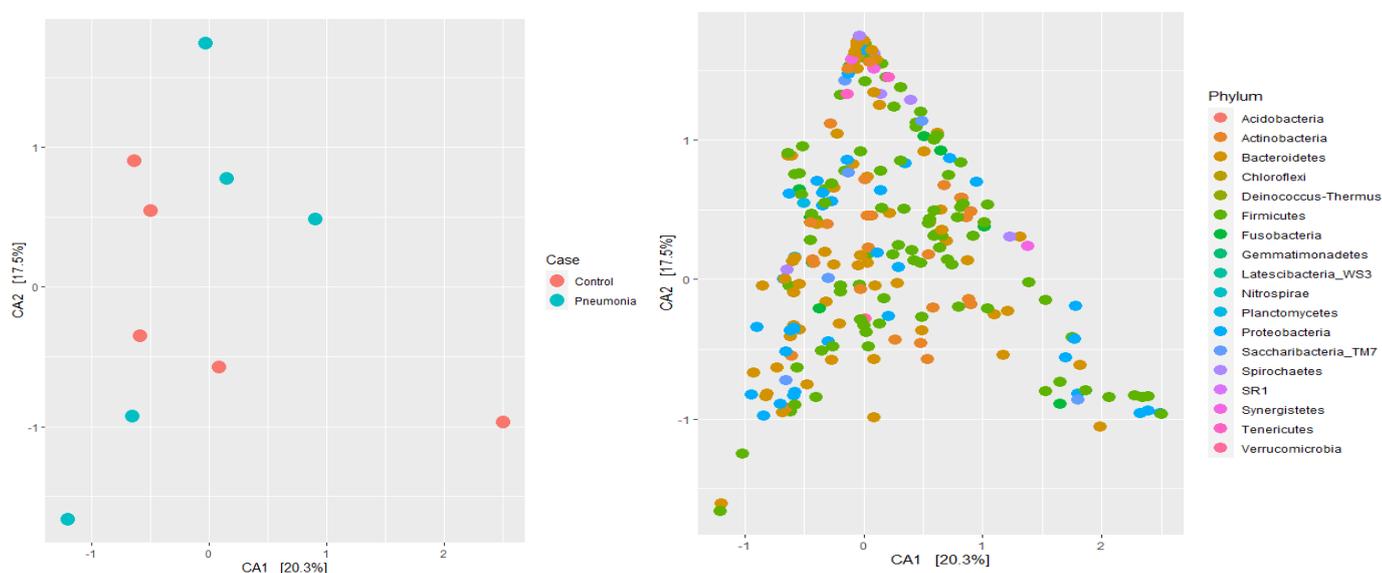
Figure S4: Canonical correspondence analysis (CCA)
(a): Baseline; (b) Before operation; (C):After operation
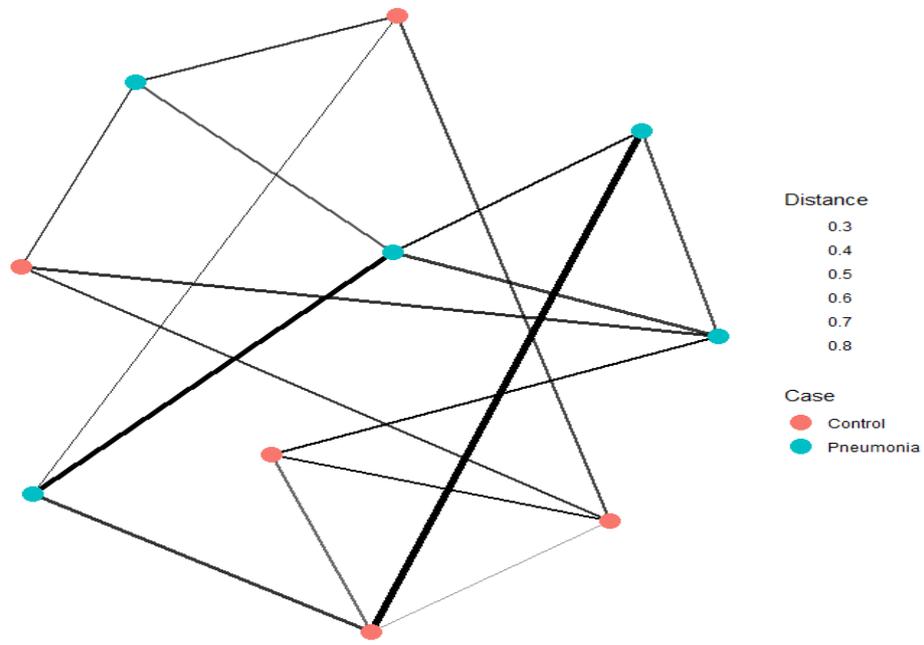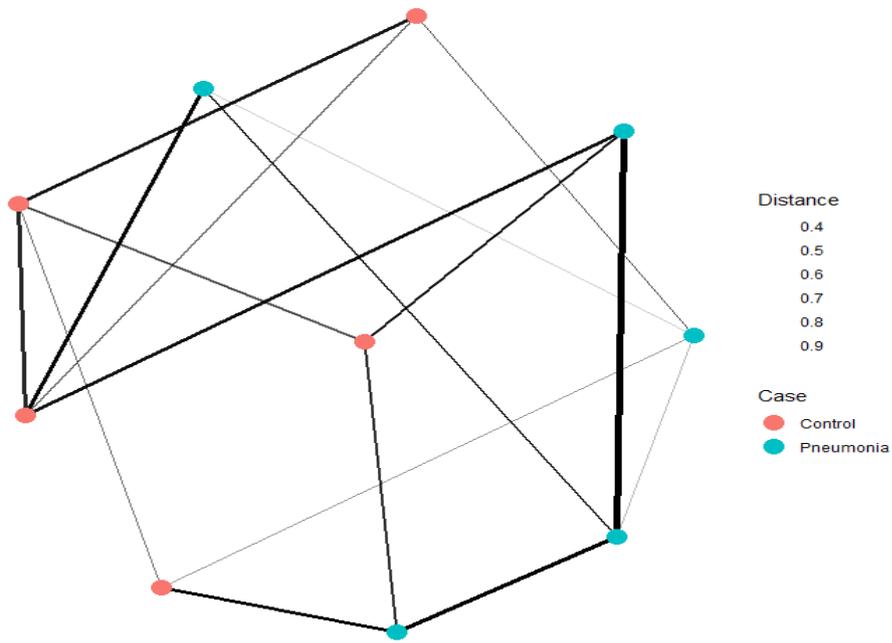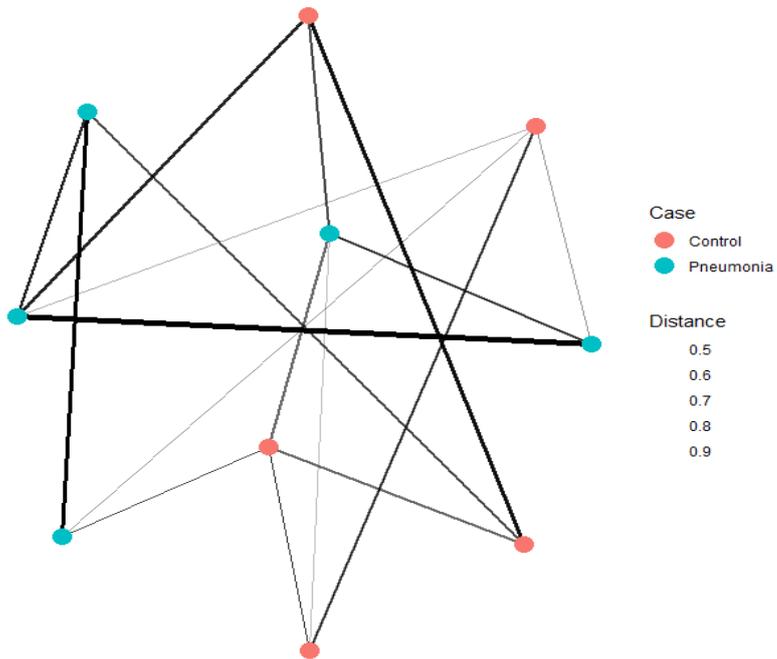
Figure S5: Network plot
(a): Baseline; (b) Before operation; (C):After operation

(a)

(b)
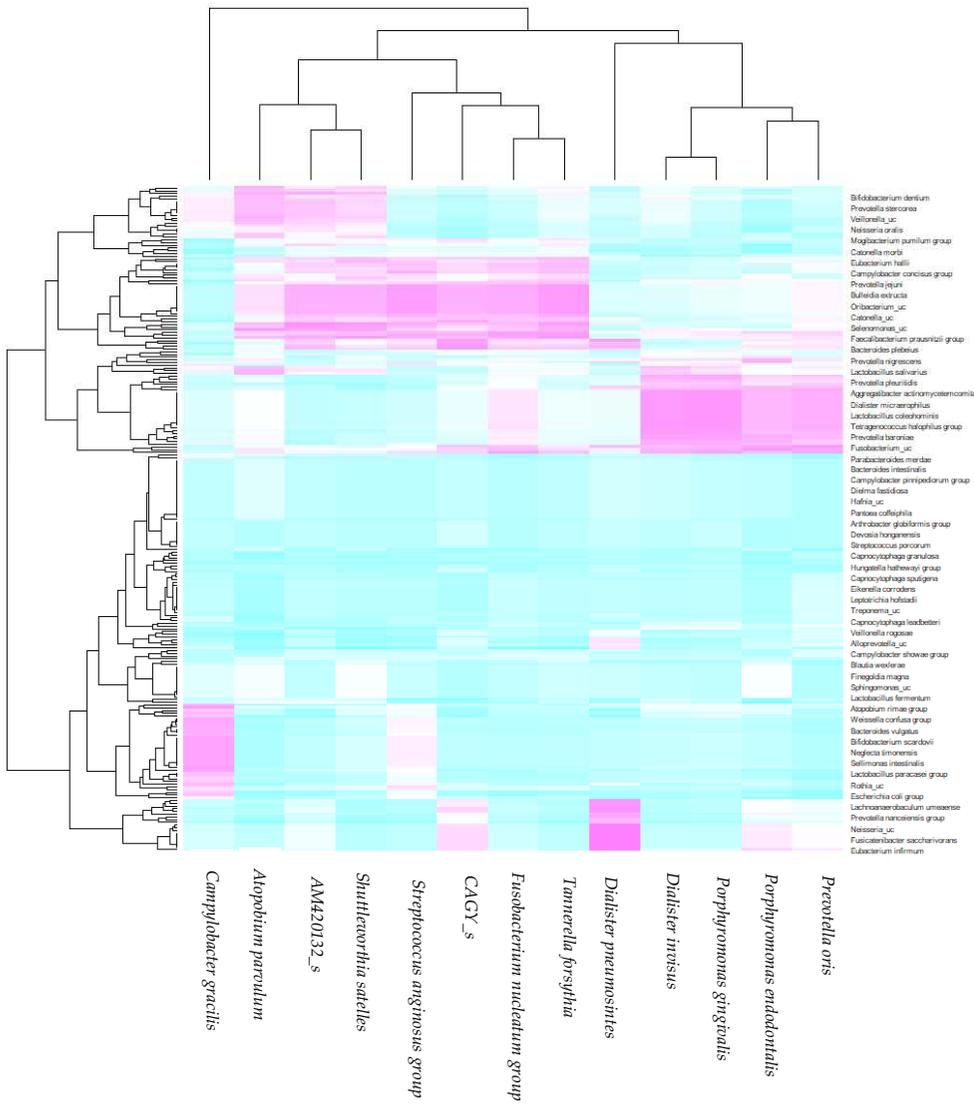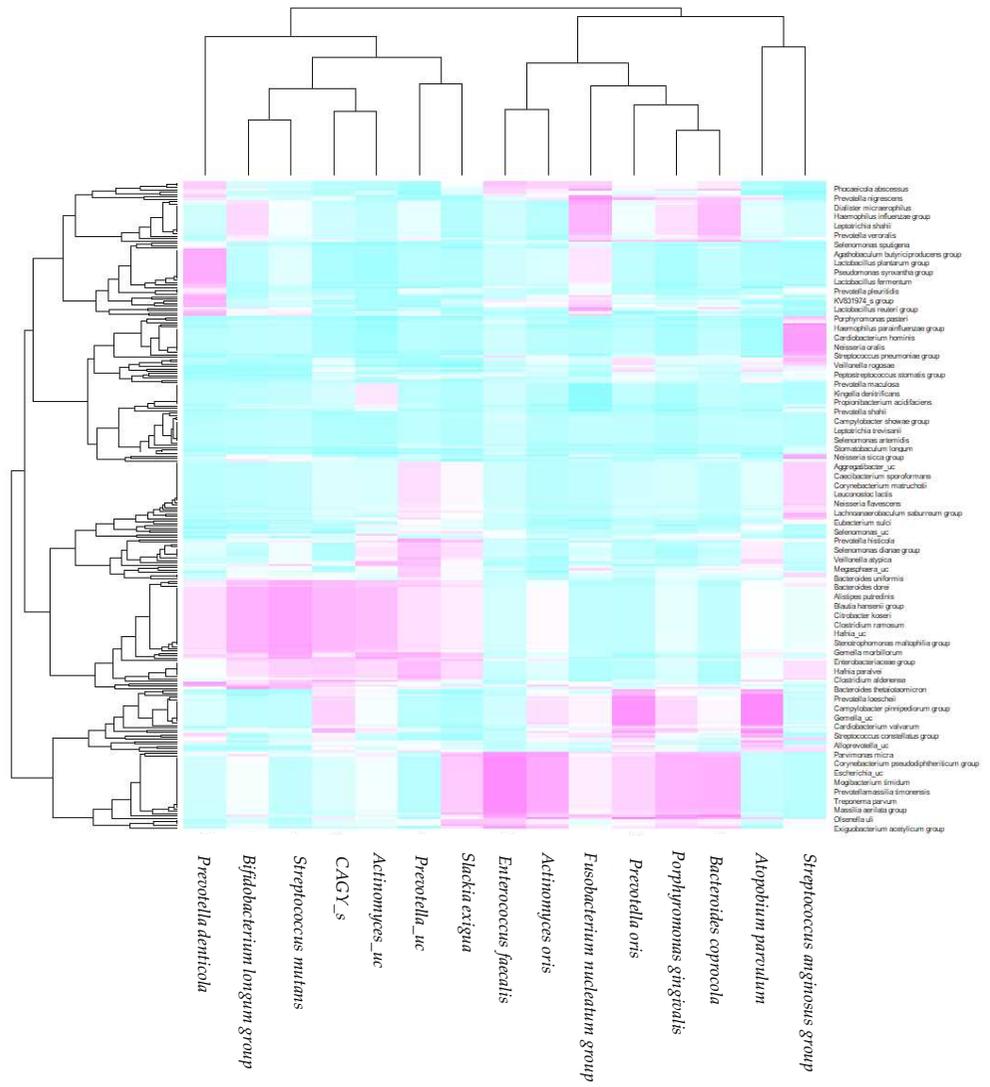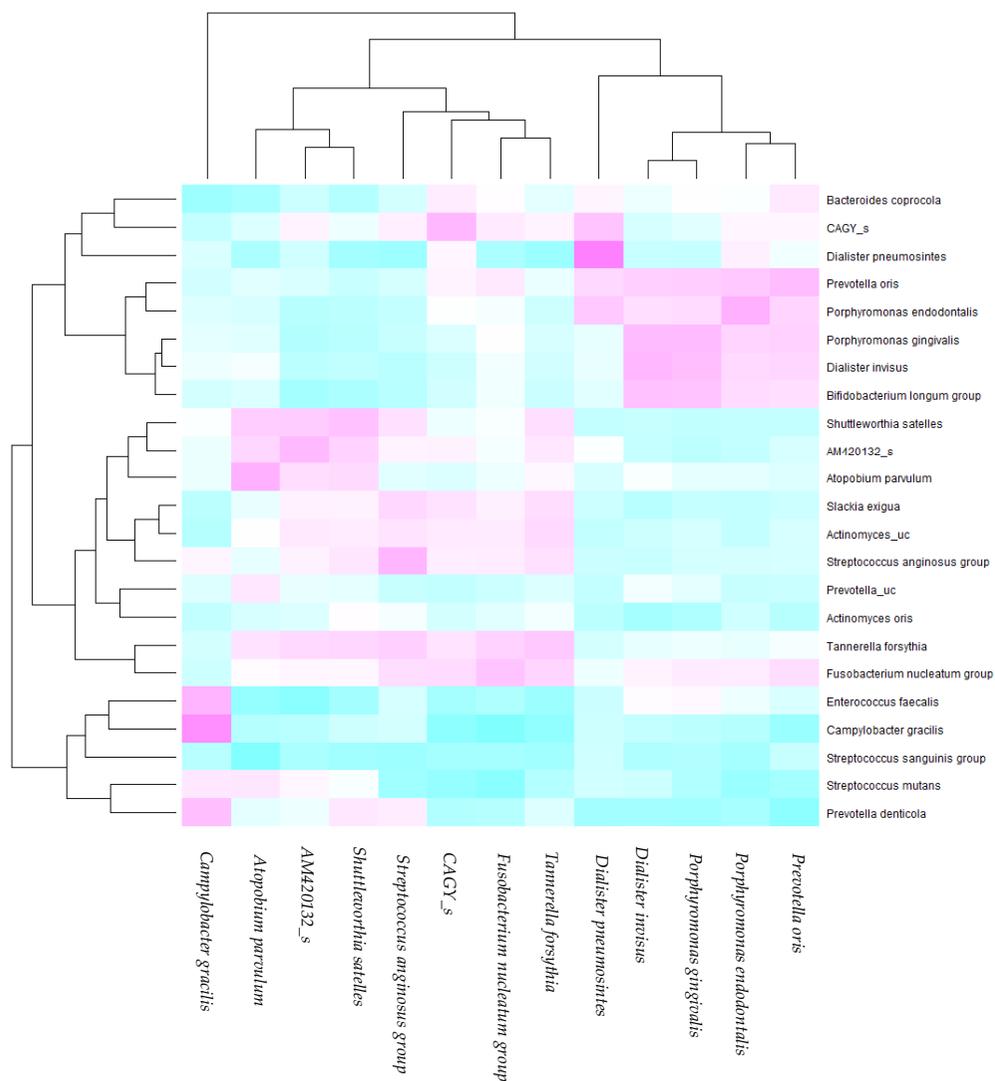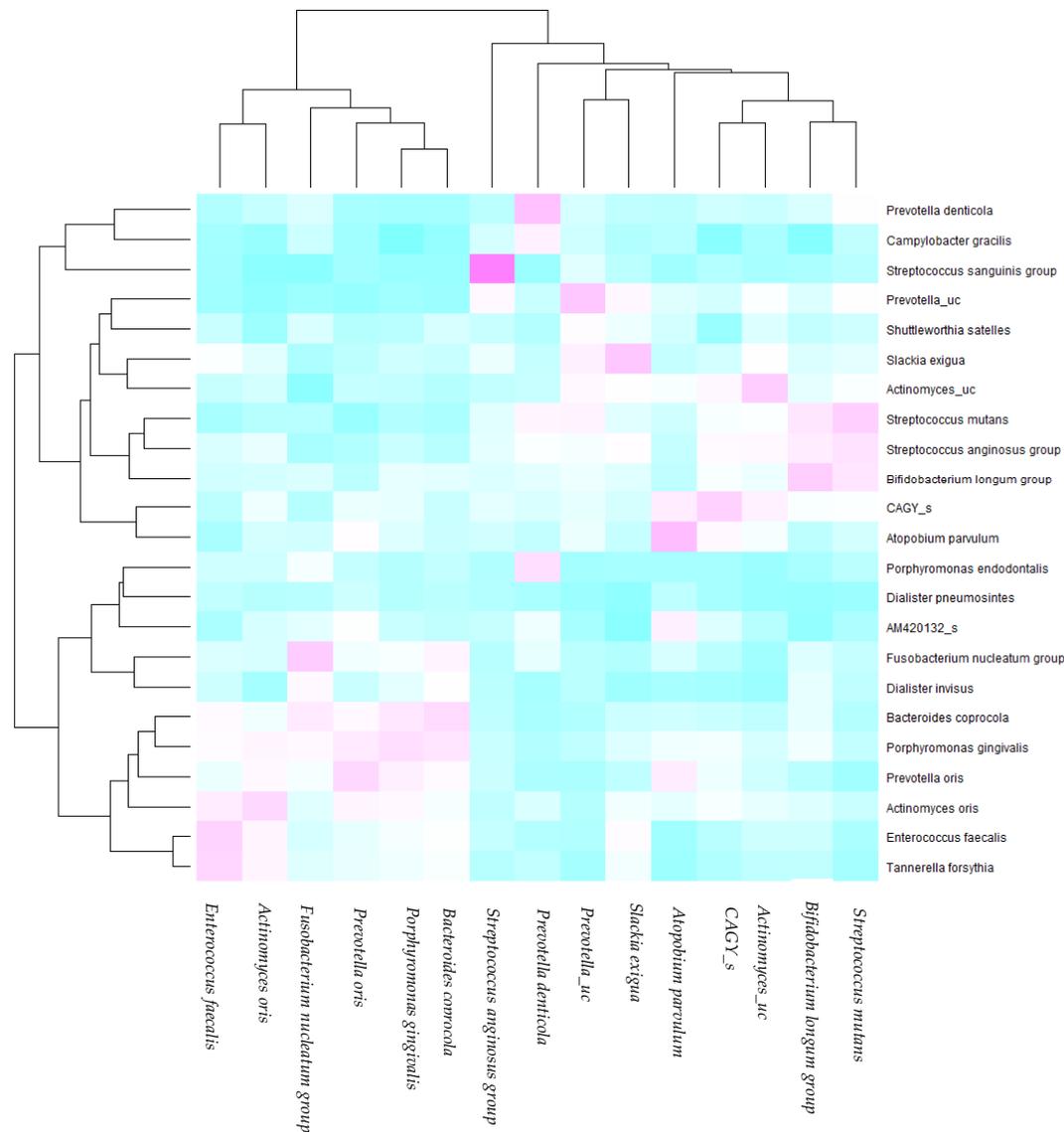
Figure S6: Correlation heatmap of the pathogen for pneumonia
(**a**): Baseline; (**b**) Before operation; (**C**):Within the pathogen at baseline;(**d**): Within the pathogen before operation

Table S1: Clinical parameters of the patients participated in this study

(**a**): Categorical variables

		Postoperative Pneumonia		P-value
		+	-	
		n	n	
Sex	Men/Women	3/2	3/2	-
Diagnosis	Stomach cancer	3	3	-
	Esophageal cancer	1	1	
	Pancreatic cancer	1	1	
Medical history	Diabetes mellitus	0	3	0.444
	Renal failure	1	0	
	Hypertension	2	0	
Chemotherapy	+	2	1	0.500
Smoking	No	2	2	0.721
	Past smoker	3	3	
Hugh-Jones Classification at initial visit	0	3	5	0.444
	I-IV	2	0	

P-values were calculated by Fisher's exact tests.

(**b**): Contentious variables

		Postoperative pneumonia		P-value
		+	-	
Cancer Operation				
Days of hospitalization		23+/-10.27	14.2+/-4.44	0.117
Surgery Time (hours)		6+/-1.87	7.1+/-1.24	0.306
Pulmonary function				
Forced expiratory volume% in 1 second		0.73385+/-0.11	0.70402+/-0.1	0.685
Vital capacity		1.04175+/-0.16	1.1016+/-0.13	0.555
Brickman Index		390+/-321.04	428+/-414.63	0.885
Oral and tooth conditions				
Number of remaining teeth		16.2+/-9.78	23.6+/-5.9	0.186
O'Leary plaque control record	At initial visit	71.6+/-19.78	23.2+/-16.87	0.003
	The day before cancer operation	62.2+/-31.52	16.8+/-9.78	0.029
Other clinical parameter				
BMI		19.22+/-2.73	20.58+/-2.46	0.432

All the variables were normally distributed by Kolmogorov-Smirnov test. P-values were calculated by t tests.

Oral hygiene status evaluated by O'Leary plaque control record were significantly different between the groups with or without postoperative pneumonia.

Table S2: α indexes

ID	Diversity						Evenness					Dominance							Ratify		
	Chao1	Inverse Simpson	Gini Simpson	Shannon	Fisher	Coverage	Camargo	Pielou	Simpson	Evar	Bulla	Dbp	Dmn	Absolute	Relative	Simpson	Core abundance	Gini	Log modulo skewness	Low abundance	Rare abundance
Sample 1	176.031	15.088	0.934	3.188	19.890	6	0.751	0.643	0.106	0.117	0.258	0.142	0.263	3547	0.142	0.066	0.819	0.973	2.058	0.027	0.058
Sample 2	224.722	8.566	0.883	2.778	17.336	3	0.727	0.578	0.070	0.115	0.249	0.232	0.436	4581	0.232	0.117	0.865	0.980	2.059	0.019	0.052
Sample 3	114.154	4.544	0.780	2.057	14.821	2	0.995	0.464	0.054	0.218	0.163	0.392	0.586	1675	0.392	0.220	0.762	0.989	2.060	0.041	0.030
Sample 4	163.000	12.915	0.923	3.041	16.928	5	0.795	0.622	0.097	0.097	0.233	0.172	0.303	7520	0.172	0.077	0.807	0.976	2.055	0.022	0.018
Sample 5	183.042	11.306	0.912	2.927	17.129	4	0.768	0.600	0.086	0.100	0.232	0.182	0.335	6914	0.182	0.088	0.821	0.979	2.057	0.025	0.014
Sample 6	150.556	6.925	0.856	2.420	13.179	3	0.984	0.518	0.065	0.101	0.188	0.266	0.457	11761	0.266	0.144	0.883	0.987	2.058	0.025	0.013
Sample 7	172.750	22.910	0.956	3.496	21.117	9	0.761	0.700	0.155	0.112	0.293	0.090	0.180	2108	0.090	0.044	0.715	0.964	2.056	0.023	0.069
Sample 8	206.065	3.089	0.676	2.072	23.594	1	0.938	0.402	0.018	0.146	0.179	0.547	0.687	19726	0.547	0.324	0.186	0.984	2.060	0.040	0.772
Sample 9	230.000	6.042	0.835	2.800	27.874	3	0.868	0.532	0.031	0.137	0.211	0.378	0.480	11098	0.378	0.165	0.352	0.975	2.059	0.040	0.564
Sample 10	150.105	8.031	0.875	2.538	15.860	3	0.929	0.534	0.069	0.118	0.180	0.234	0.433	5560	0.234	0.125	0.938	0.986	2.059	0.019	0.029
Sample 11	174.205	3.681	0.728	1.750	18.167	2	0.607	0.356	0.027	0.155	0.114	0.367	0.703	11888	0.367	0.272	0.966	0.992	2.061	0.023	0.027
Sample 12	246.111	7.181	0.861	3.023	28.753	4	0.886	0.567	0.035	0.141	0.246	0.343	0.417	12751	0.343	0.139	0.558	0.967	2.060	0.059	0.421
Sample 13	181.000	8.929	0.888	2.751	14.008	4	0.897	0.590	0.084	0.103	0.233	0.261	0.391	7080	0.261	0.112	0.850	0.982	2.056	0.019	0.053
Sample 14	102.633	9.400	0.894	2.710	12.471	4	0.935	0.598	0.101	0.109	0.251	0.203	0.350	4378	0.203	0.106	0.897	0.983	2.057	0.024	0.027
Sample 15	111.182	5.748	0.826	2.161	10.561	2	0.992	0.486	0.068	0.101	0.165	0.300	0.522	9898	0.300	0.174	0.977	0.990	2.056	0.012	0.007
Sample 16	194.114	16.988	0.941	3.244	22.110	6	0.889	0.637	0.104	0.115	0.233	0.115	0.203	4026	0.115	0.059	0.744	0.971	2.059	0.046	0.091
Sample 17	146.000	8.296	0.879	2.555	16.223	3	0.984	0.533	0.069	0.123	0.165	0.226	0.415	6354	0.226	0.121	0.576	0.985	2.059	0.031	0.252
Sample 18	131.571	7.619	0.869	2.614	15.489	3	0.938	0.546	0.063	0.120	0.214	0.250	0.449	8961	0.250	0.131	0.504	0.983	2.059	0.031	0.335
Sample 19	134.321	5.827	0.828	2.486	14.466	3	0.967	0.527	0.052	0.109	0.207	0.370	0.483	12309	0.370	0.172	0.463	0.985	2.055	0.026	0.018
Sample 20	167.385	15.897	0.937	3.079	16.578	6	0.887	0.635	0.124	0.100	0.228	0.104	0.200	3882	0.104	0.063	0.697	0.976	2.058	0.024	0.025
Sample 21	188.761	3.581	0.721	2.005	20.386	2	0.967	0.395	0.023	0.132	0.145	0.486	0.647	24151	0.486	0.279	0.815	0.989	2.058	0.029	0.020
Sample 22	175.722	22.589	0.956	3.514	17.105	8	0.846	0.723	0.175	0.098	0.342	0.096	0.180	3094	0.096	0.044	0.548	0.963	2.054	0.025	0.087
Sample 23	117.500	13.552	0.926	3.040	13.391	5	0.972	0.655	0.130	0.100	0.270	0.152	0.276	4793	0.152	0.074	0.663	0.977	2.052	0.018	0.016
Sample 24	206.790	3.011	0.668	1.671	19.124	1	0.893	0.338	0.021	0.156	0.117	0.510	0.760	15520	0.510	0.332	0.347	0.992	2.061	0.033	0.131
Sample 25	147.227	10.885	0.908	2.821	15.695	4	0.953	0.601	0.100	0.128	0.213	0.181	0.340	2940	0.181	0.092	0.833	0.981	2.054	0.032	0.143
Sample 26	181.182	5.814	0.828	2.341	15.818	2	0.971	0.507	0.058	0.148	0.194	0.304	0.550	2849	0.304	0.172	0.963	0.987	2.060	0.024	0.020
Sample 27	215.321	10.008	0.900	2.799	19.998	4	0.809	0.564	0.070	0.122	0.201	0.189	0.343	4825	0.189	0.100	0.842	0.981	2.060	0.029	0.126
Sample 28	190.000	15.457	0.935	3.104	19.996	6	0.862	0.623	0.106	0.107	0.221	0.110	0.220	3267	0.110	0.065	0.649	0.975	2.059	0.026	0.102
Sample 29	224.633	17.114	0.942	3.295	20.914	7	0.859	0.657	0.113	0.106	0.249	0.149	0.244	4250	0.149	0.058	0.648	0.970	2.051	0.032	0.076
Sample 30	201.441	11.473	0.913	3.012	20.518	5	0.738	0.599	0.075	0.111	0.219	0.213	0.333	7214	0.213	0.087	0.359	0.976	2.057	0.029	0.313