

Supplemental

Table S1: Results of the mixed effect linear model conducted in SAS on the first 20 principle co-ordinates of a Bray-Curtis PCoA at the OTU level across time points (1 week, 2 weeks, 4 weeks, 8 weeks) and treatments (Acquired, Gavage).

effect	var	NumDF	DenDF	FValue	raw_p	fdr_p
time	axis1	3	82	682.9129881	7.09741E-58	4.25845E-56
treatment*time	axis3	3	82	172.4216722	2.60402E-35	7.81205E-34
treatment*time	axis2	3	82	112.4848104	5.66363E-29	1.13273E-27
time	axis2	3	82	59.86362647	1.34061E-20	2.01091E-19
time	axis5	3	82	48.40939824	4.16763E-18	5.00116E-17
treatment*time	axis4	3	82	24.26260202	2.46503E-11	2.46503E-10
treatment*time	axis1	3	82	22.96539982	6.90451E-11	5.61203E-10
time	axis4	3	82	22.86545872	7.4827E-11	5.61203E-10
treatment*time	axis5	3	82	21.13911693	3.07769E-10	2.05179E-09
treatment*time	axis13	3	82	17.31684963	8.44693E-09	5.06816E-08
treatment*time	axis17	3	82	15.85182828	3.2322E-08	1.76302E-07
treatment*time	axis16	3	82	13.59595333	2.78304E-07	1.39152E-06
treatment	axis2	1	6	404.6448767	9.80164E-07	4.52383E-06
time	axis7	3	82	11.52397253	2.22155E-06	9.52093E-06
time	axis13	3	82	11.44064581	2.42021E-06	9.68085E-06
treatment*time	axis20	3	82	9.378171164	2.12968E-05	7.9863E-05
time	axis12	3	82	7.822623495	0.000118024	0.000416555
time	axis10	3	82	7.66103361	0.000141518	0.000471725
treatment*time	axis10	3	82	7.25516366	0.000223958	0.000707236
treatment*time	axis8	3	82	5.790634834	0.001216962	0.003650885
treatment	axis1	1	6	17.86432295	0.005520709	0.015773455
treatment*time	axis6	3	82	4.120904566	0.008952815	0.024416769
treatment*time	axis11	3	82	3.80557318	0.013139734	0.034277568
time	axis11	3	82	3.665250944	0.01559473	0.038986826
treatment*time	axis14	3	82	3.586183528	0.017177293	0.041225503
treatment*time	axis9	3	82	3.498460478	0.019123776	0.04413179
time	axis16	3	82	3.371585938	0.022339802	0.049644004
time	axis20	3	82	2.747839568	0.048075487	0.1030189
time	axis14	3	82	2.63864346	0.054988026	0.11376833
time	axis17	3	82	2.565509106	0.060164345	0.120328691
time	axis18	3	82	2.500582356	0.065165447	0.126126671
time	axis19	3	82	2.18689593	0.095791218	0.179608533
time	axis3	3	82	1.903972952	0.135381602	0.246148367
treatment	axis3	1	6	2.617972507	0.156786721	0.276682449
time	axis8	3	82	1.645711058	0.185214142	0.317509957
time	axis9	3	82	0.969581848	0.411200067	0.683421733
treatment	axis4	1	6	0.744243587	0.421443402	0.683421733
treatment	axis16	1	6	0.586650311	0.472763091	0.746468038

time	axis6	3	82	0.697780716	0.556054434	0.85546836
treatment*time	axis15	3	82	0.641053444	0.590772159	0.856444929
treatment	axis12	1	6	0.293454377	0.607529275	0.856444929
treatment	axis7	1	6	0.281679016	0.614663872	0.856444929
treatment	axis10	1	6	0.275957936	0.618201211	0.856444929
treatment	axis20	1	6	0.260414748	0.628059615	0.856444929
treatment*time	axis18	3	82	0.524016783	0.66698584	0.889314453
treatment*time	axis19	3	82	0.438314279	0.726187218	0.947200719
treatment	axis13	1	6	0.117646782	0.743298874	0.947689806
treatment	axis14	1	6	0.103884315	0.758151844	0.947689806
treatment	axis19	1	6	0.075035444	0.793327573	0.950735468
time	axis15	3	82	0.316198976	0.813621531	0.950735468
treatment*time	axis12	3	82	0.314123786	0.815118638	0.950735468
treatment	axis11	1	6	0.041960515	0.844467363	0.950735468
treatment	axis6	1	6	0.031047479	0.86593132	0.950735468
treatment	axis8	1	6	0.025231437	0.879003505	0.950735468
treatment	axis18	1	6	0.024420791	0.880944439	0.950735468
treatment	axis15	1	6	0.011518342	0.918031049	0.950735468
treatment	axis9	1	6	0.010939347	0.920108816	0.950735468
treatment*time	axis7	3	82	0.149353997	0.929826304	0.950735468
treatment	axis17	1	6	0.007255545	0.934889877	0.950735468
treatment	axis5	1	6	0.001287836	0.972537055	0.972537055

Table S2. Results of the mixed effect linear model conducted in SAS using RDP Phylum classification at a cutoff threshold of 80% across time points (1 week, 2 weeks, 4 weeks, 8 weeks) and treatments (Acquired, Gavage).

effect	var	NumDF	DenDF	FValue	raw_p	fdr_p
time	Proteobacteria	3	82	63.63	<.0001	4.30E-20
time	Bacteroidetes	3	82	39.07	<.0001	7.95E-15
time	Actinobacteria	3	82	21.71	<.0001	8.80E-10
treatment*time	Bacteroidetes	3	82	21.69	<.0001	8.80E-10
time	Verrucomicrobia	3	82	11.78	<.0001	6.15E-06
treatment*time	Tenericutes	3	82	9.42	<.0001	6.12957E-05
time	Tenericutes	3	82	8.87	<.0001	9.48165E-05
treatment*time	Actinobacteria	3	82	4.31	0.0071	0.016065531
treatment*time	Proteobacteria	3	82	4.12	0.009	0.017957009
treatment*time	Verrucomicrobia	3	82	3.58	0.0174	0.031277647
treatment	Bacteroidetes	1	6	6.31	0.0458	0.074999645
treatment	Firmicutes	1	6	5.09	0.065	0.09440549
treatment*time	Firmicutes	3	82	2.46	0.0682	0.09440549
time	Firmicutes	3	82	2.34	0.0792	0.101785458
treatment	Verrucomicrobia	1	6	2.46	0.168	0.201626077
treatment	Actinobacteria	1	6	1.81	0.2274	0.255840238
treatment	Proteobacteria	1	6	0.09	0.7709	0.816290897
treatment	Tenericutes	1	6	0.04	0.8451	0.845066159

Table S3: Results of the mixed effect linear model conducted in SAS using RDP genus classification at a cutoff threshold of 80% across time points (1 week, 2 weeks, 4 weeks, 8 weeks) and treatments (Acquired, Gavage).

effect	var	NumDF	DenDF	FValue	raw_p	fdr_p
time	Enterobacter	3	82	69.3968422	1.9456E-22	3.21024E-20
time	Anaerospobacter	3	82	54.44195167	1.83615E-19	1.4945E-17
time	Robinsoniella	3	82	53.65927634	2.71727E-19	1.4945E-17
time	Enterococcus	3	82	52.0772511	6.07077E-19	2.50419E-17
treatment*time	Haemophilus	3	82	51.05317111	1.0302E-18	3.39968E-17
time	Barnesiella	3	82	48.44818065	4.08164E-18	1.027E-16
time	Klebsiella	3	82	48.32681285	4.35698E-18	1.027E-16
time	Butyricococcus	3	82	47.42262519	7.10928E-18	1.46629E-16
time	Haemophilus	3	82	41.8985784	1.61773E-16	2.96584E-15
time	Escherichia_Shigella	3	82	39.82443589	5.57533E-16	8.8303E-15
time	Trichococcus	3	82	39.73471097	5.88686E-16	8.8303E-15
time	Clostridium	3	82	38.56288878	1.20553E-15	1.57727E-14
treatment*time	Anaerospobacter	3	82	38.51369389	1.2427E-15	1.57727E-14
time	Blautia	3	82	37.78117344	1.95834E-15	2.30805E-14
time	Odoribacter	3	82	33.84762315	2.46315E-14	2.70946E-13
treatment*time	Trichococcus	3	82	32.87140073	4.73325E-14	4.88116E-13
time	Rikenella	3	82	30.48110808	2.45051E-13	2.37844E-12
treatment*time	Bacteroides	3	82	29.46054087	5.04676E-13	4.6262E-12
time	Faecalibacterium	3	82	28.13375933	1.31604E-12	1.14287E-11
time	Prevotella	3	82	27.88109285	1.58358E-12	1.30646E-11
time	Lactobacillus	3	82	27.52150899	2.0637E-12	1.62148E-11
treatment*time	Citrobacter	3	82	26.81602171	3.48689E-12	2.61517E-11
time	Citrobacter	3	82	26.69362237	3.82167E-12	2.74164E-11
time	Enterorhabdus	3	82	23.58796382	4.19831E-11	2.88634E-10
time	Anaerovorax	3	82	23.37236879	4.9843E-11	3.28964E-10
time	Parabacteroides	3	82	22.03816294	1.46482E-10	9.29595E-10
time	Acetivibrio	3	82	19.36586148	1.38512E-09	8.4646E-09
time	Alistipes	3	82	17.83101083	5.32687E-09	3.13905E-08
time	Ruminococcus	3	82	15.43451366	4.77469E-08	2.71663E-07
time	Bacteroides	3	82	14.94475871	7.58244E-08	4.17034E-07
treatment*time	Lactobacillus	3	82	14.2832667	1.42762E-07	7.59865E-07
time	Allobaculum	3	82	13.12202921	4.43686E-07	2.28776E-06
time	Syntrophococcus	3	82	13.0173465	4.9217E-07	2.46085E-06
time	Dorea	3	82	12.78067602	6.2279E-07	3.02236E-06
treatment*time	Parasutterella	3	82	12.00076591	1.36522E-06	6.43603E-06
time	Bacillus	3	82	11.90438657	1.50576E-06	6.8657E-06
time	Marvinbryantia	3	82	11.88256727	1.53958E-06	6.8657E-06
treatment*time	Syntrophococcus	3	82	11.10636989	3.41832E-06	1.48427E-05
treatment*time	Odoribacter	3	82	10.37803069	7.32282E-06	3.09812E-05
time	Akkermansia	3	82	9.799607981	1.35377E-05	5.58432E-05

treatment*time	Dorea	3	82	9.350239758	2.19495E-05	8.83335E-05
treatment*time	Acholeplasma	3	82	9.262346272	2.41402E-05	9.48364E-05
treatment*time	Robinsoniella	3	82	9.063728335	2.99517E-05	0.000114931
time	Coprococcus	3	82	8.89157956	3.61392E-05	0.000135522
treatment*time	Rikenella	3	82	8.30898407	6.86259E-05	0.000251628
treatment*time	Coprococcus	3	82	7.918550412	0.000106001	0.000380221
time	Acholeplasma	3	82	7.631944627	0.00014623	0.000513359
treatment*time	Pantoea	3	82	7.077789225	0.000274087	0.000942173
time	Weissella	3	82	6.849648915	0.000355836	0.001198222
treatment	Odoribacter	1	6	51.04179796	0.000379007	0.001232999
treatment	Trichococcus	1	6	50.93821908	0.000381109	0.001232999
time	Papillibacter	3	82	6.744403027	0.000401558	0.001274174
treatment*time	Marvinbryantia	3	82	6.65512351	0.000445023	0.001385448
time	Pantoea	3	82	6.508526065	0.000527073	0.001610499
time	Lactococcus	3	82	6.486077747	0.000540935	0.001622806
treatment*time	Anaerotruncus	3	82	6.135544114	0.000812739	0.002394677
treatment	Haemophilus	1	6	34.24934536	0.001098857	0.003180901
treatment	Lactobacillus	1	6	33.89645949	0.001128911	0.003211557
treatment*time	Parabacteroides	3	82	5.748559947	0.001278662	0.003575918
treatment*time	Prevotella	3	82	5.596108501	0.001530188	0.004208016
time	Oscillibacter	3	82	5.537900305	0.00163904	0.004433468
time	Eubacterium	3	82	5.474112909	0.001767411	0.004703593
treatment	Rikenella	1	6	23.40436995	0.002887223	0.007561776
treatment*time	Helicobacter	3	82	4.870195275	0.003626921	0.009350655
treatment*time	Klebsiella	3	82	4.839780721	0.003761503	0.009548432
treatment*time	Blautia	3	82	4.545715404	0.005355808	0.013389519
treatment*time	Acetivibrio	3	82	4.222934524	0.0079108	0.019481821
treatment	Citrobacter	1	6	13.61496127	0.010210601	0.024472583
time	Adlercreutzia	3	82	4.01081051	0.010233989	0.024472583
treatment	Parabacteroides	1	6	13.2823767	0.010776829	0.025402525
time	Carnobacterium	3	82	3.930115039	0.011289699	0.026236625
treatment	Bacteroides	1	6	12.75904312	0.011756095	0.02694105
treatment	Syntrophococcus	1	6	12.53162051	0.012218858	0.027617966
time	Sporacetigenium	3	82	3.833424853	0.012701003	0.028319805
treatment	Prevotella	1	6	11.80588279	0.013869291	0.03051244
treatment*time	Allobaculum	3	82	3.736005153	0.014303765	0.031054226
time	Coprobacillus	3	82	3.696959307	0.015002226	0.032147627
time	Parasutterella	3	82	3.679293126	0.015329474	0.032427733
treatment*time	Coprobacillus	3	82	3.615713721	0.016568086	0.03460423
treatment	Lawsonia	1	6	10.68766418	0.017051303	0.0351667
treatment	Anaerosporeobacter	1	6	10.62312145	0.017263653	0.0351667
time	Helicobacter	3	82	3.528245738	0.018439088	0.036915814
time	Lawsonia	3	82	3.522475403	0.018569773	0.036915814
treatment	Alistipes	1	6	9.758390257	0.020484471	0.040237354

treatment	Adlercreutzia	1	6	8.381598427	0.027509828	0.053401431
treatment	Desulfovibrio	1	6	8.205679869	0.028630375	0.054930371
treatment*time	Lactonifactor	3	82	3.071207465	0.032300964	0.061260449
time	Anaerotruncus	3	82	3.003561657	0.035101518	0.065815346
treatment	Allobaculum	1	6	6.934796676	0.038882252	0.071136461
treatment*time	Bifidobacterium	3	82	2.914719539	0.039153417	0.071136461
treatment	Bifidobacterium	1	6	6.857834592	0.039652764	0.071136461
treatment	Anaerotruncus	1	6	6.856730577	0.039663966	0.071136461
treatment	Helicobacter	1	6	6.274395422	0.046222471	0.08200761
treatment*time	Anaerostipes	3	82	2.742749904	0.048377472	0.084917903
treatment*time	Anaerovorax	3	82	2.622596773	0.056084319	0.097409607
treatment*time	Escherichia_Shigella	3	82	2.569702478	0.059854824	0.102875479
treatment	Anaerovorax	1	6	5.236518179	0.062084909	0.10560835
time	Bifidobacterium	3	82	2.442833515	0.069960399	0.117790468
treatment*time	Ruminococcus	3	82	2.371100449	0.07640773	0.127346217
treatment	Pantoea	1	6	4.395506969	0.080862903	0.13342379
treatment*time	Bacillus	3	82	2.316399796	0.0817177	0.133499213
treatment	Enterorhabdus	1	6	4.177714294	0.086967953	0.140683453
treatment*time	Adlercreutzia	3	82	2.200346564	0.094224456	0.15094209
time	Weeksella	3	82	2.114590985	0.104664664	0.166054516
treatment*time	Weeksella	3	82	2.054930651	0.112592469	0.176931022
treatment*time	Carnobacterium	3	82	2.039487203	0.114739098	0.178347354
treatment*time	Butyricococcus	3	82	2.032980271	0.115655557	0.178347354
treatment	Coprococcus	1	6	3.294803122	0.119418482	0.182225447
treatment	Bacillus	1	6	3.27383635	0.120379235	0.182225447
treatment*time	Akkermansia	3	82	1.964370505	0.125767016	0.188650524
treatment	Anaerostipes	1	6	3.008826356	0.133503908	0.198451755
treatment	Blautia	1	6	2.913493488	0.138712616	0.204353407
treatment*time	Enterococcus	3	82	1.832524287	0.147685127	0.215646424
time	Lactonifactor	3	82	1.816799096	0.150535883	0.217430216
treatment*time	Enterobacter	3	82	1.811316846	0.151542272	0.217430216
treatment*time	Desulfovibrio	3	82	1.758605423	0.161558381	0.22980287
treatment	Papillibacter	1	6	2.51690635	0.163727243	0.230897394
treatment*time	Faecalibacterium	3	82	1.703622969	0.172689413	0.241472484
time	Moryella	3	82	1.681562534	0.177360954	0.24592065
treatment*time	Eubacterium	3	82	1.56896291	0.203165676	0.277475512
treatment	Escherichia_Shigella	1	6	2.0363441	0.203482042	0.277475512
treatment	Coprobacillus	1	6	1.87753749	0.219670254	0.294826962
treatment	Acetivibrio	1	6	1.876518061	0.219780099	0.294826962
treatment	Akkermansia	1	6	1.620485613	0.250121428	0.332822868
treatment*time	Barnesiella	3	82	1.334417651	0.268876827	0.354917411
treatment*time	Weissella	3	82	1.31389027	0.275493783	0.360765668
treatment	Weissella	1	6	1.415032397	0.279156557	0.362683716
treatment	Klebsiella	1	6	1.259801679	0.304585854	0.392630203

treatment	Moryella	1	6	1.193022458	0.316625539	0.404986154
treatment	Dorea	1	6	1.179609607	0.319132097	0.405052277
time	Anaerostipes	3	82	1.114035549	0.348255281	0.438642147
treatment	Enterobacter	1	6	1.014541633	0.352696245	0.439591064
treatment*time	Lawsonia	3	82	1.099107096	0.35433704	0.439591064
treatment	Clostridium	1	6	0.885587153	0.383002504	0.471250163
treatment	Barnesiella	1	6	0.875428538	0.385568315	0.471250163
treatment*time	Shewanella	3	82	1.003512189	0.395577926	0.476510183
time	Shewanella	3	82	1.003357736	0.395647849	0.476510183
treatment	Weeksella	1	6	0.799628909	0.405643292	0.485008283
treatment	Moritella	1	6	0.770246343	0.413898372	0.491318211
treatment	Sporacetigenium	1	6	0.724446502	0.427346225	0.503658051
time	Desulfovibrio	3	82	0.913064962	0.43840535	0.513027537
treatment	Enterococcus	1	6	0.661602789	0.447062497	0.519474028
treatment	Lactococcus	1	6	0.590709276	0.471303916	0.541641483
treatment	Carnobacterium	1	6	0.580277513	0.475070688	0.541641483
treatment*time	Oscillibacter	3	82	0.83508568	0.478428891	0.541641483
treatment*time	Papillibacter	3	82	0.833504632	0.479270645	0.541641483
treatment	Ruminococcus	1	6	0.535675011	0.491816892	0.552039368
treatment*time	Lactococcus	3	82	0.801312652	0.496673419	0.553723744
time	Moritella	3	82	0.761876547	0.518678896	0.574375959
treatment*time	Moryella	3	82	0.598014841	0.618106776	0.679917454
treatment	Robinsoniella	1	6	0.235206028	0.6448879	0.704678831
treatment	Butyricicoccus	1	6	0.211514226	0.661777354	0.718376733
treatment	Marvinbryantia	1	6	0.147688859	0.714005072	0.768642519
treatment*time	Sporacetigenium	3	82	0.450821552	0.717399685	0.768642519
treatment*time	Enterorhabdus	3	82	0.39504908	0.756893658	0.805725507
treatment*time	Alistipes	3	82	0.338878535	0.797257464	0.843253087
treatment*time	Clostridium	3	82	0.308967098	0.818838034	0.860562265
treatment*time	Moritella	3	82	0.290745955	0.831964522	0.86882371
treatment	Oscillibacter	1	6	0.031076622	0.865869167	0.898543476
treatment	Acholeplasma	1	6	0.025788567	0.877688115	0.905115868
treatment	Eubacterium	1	6	0.022736028	0.885087165	0.907076909
treatment	Lactonifactor	1	6	0.01463053	0.907674326	0.924483109
treatment	Shewanella	1	6	0.006518551	0.938276411	0.949789005
treatment	Faecalibacterium	1	6	7.01496E-05	0.993588905	0.999647374
treatment	Parasutterella	1	6	9.81594E-08	0.999760177	0.999760177

Table S4: Results of the mixed effect linear model conducted in SAS for Richness rarified to 2,192 sequences across time points (1 week, 2 weeks, 4 weeks, 8 weeks) and treatments (Acquired, Gavage).

effect	var	NumDF	DenDF	FValue	raw_p	fdr_p
time	richness2192	3	81	19.11	<.0001	5.49E-09
treatment	richness2192	1	6	0.72	0.4277	0.641483116
treatment*time	richness2192	3	81	0.06	0.9819	0.981853984

Table S5. The number of mice used in this study. The Donor used for gavage is an amalgamation of male and female WT mice ranging in age from 2 – 3 months. Mice were housed in 4 Gavage cages and 4 Acquired cages. Nine acquired and nine gavage were exposed to DSS after materials were acquired for sequencing at week 8 (see Fig. 6)

Time Point (week)	Acquired	Gavage	Total
1	12	12	24
2	12	12	24
4	12	12	24
8	12	12	24
			96

Table S6: SAS code used to run mixed linear model for each taxon in order. Other ranks were analyzed using the same method.

```
%MACRO ord (  
Var1,  
Var2,  
Var3,  
.   
.   
.   
Var57);  
%DO i=1 %TO 57;  
  
    proc mixed data=ord covtest;  
  
        class treatment time cage sampleID;  
  
        model &&var&i= treatment time treatment*time / residual outp=r1_&i outpm=r2;  
  
        random cage(treatment) ;  
  
        repeated time / subject=mouse type=cs;  
  
        lsmeans    treatment time treatment*time;  
  
        ods output Tests3 = overall&i;  
  
        ods output diffs = comparison&i;  
  
        ods output LSMeans = means&i;  
  
        ods output covParms = cage&i;  
  
    run;  
  
    .  
    .  
    .  
%END;  
%MEND ord;  
%ord (  
Acetivibrio,  
Acholeplasma,  
Akkermansia,  
.   
.   
.   
Weissella);
```