Table S1. Numbers of genes associated to carbohydrates metabolism for each species identified during spontaneous fermentation of sauerkraut carried out at 15 ºC for 42 days. Samples were taken at the beginning of fermentation (D0), after 0.5 (D0.5), 1 (D1), 2 (D2), 3 (D3), 4 (D4), 5 (D5), 7 (D7), 14 (D14), 21 (D21), 28 (D28), 35 (D35), and 42 (D42) days of fermentation.

Carbohydrate metabolism	**D0**	**D0.5**	**D1**	**2D**	**3D**	**4D**	**5D**	**7D**	**14D**	**21D**	**28D**	**35D**	**42D**
Lactococcus lactis	253	253	253	253	253	253	16	16	44	16	16	33	0
Leuconostoc carnosum	194	170	150	194	194	194	32	27	27	27	27	25	27
Leuconostoc citreum	163	85	186	192	197	194	194	194	194	192	194	191	194
Weissella koreensis	137	137	61	137	137	137	6	0	6	6	6	6	6
Secundilactobacillus malefermentans	83	49	50	62	153	153	158	158	159	158	158	153	158
Pediococcus parvulus	40	44	33	25	52	45	54	53	53	54	54	54	54
Lactococcus piscium	34	34	11	189	238	238	0	0	0	0	0	0	0
Enterobacter sp. OV724	15	15	15	14	0	15	0	0	0	0	0	0	0
Latilactobacillus sakei	15	0	0	14	169	167	138	173	8	9	12	11	8
Spermatophyta	5	5	5	5	5	5	5	5	5	5	5	5	5
Rahnella sp. NFIX50	2	2	2	2	2	2	0	0	0	0	0	0	0
Weissella cibaria	2	2	2	2	2	28	1	0	1	1	1	1	1
Leclercia sp. W6	1	1	1	1	0	1	0	0	0	0	0	0	0
Pantoea agglomerans*	1	1	1	1	0	0	0	0	0	0	0	0	0
Rahnella sp. NRRL B-41462	1	1	1	1	1	1	0	0	0	0	0	0	0
Levilactobacillus brevis	0	0	0	0	2	2	2	2	2	2	2	2	2
Latilactobacillus curvatus	0	0	0	0	0	0	1	0	0	0	1	0	0
Companilactobacillus futsaii	0	0	0	0	0	0	1	0	1	0	1	1	0
Lentilactobacillus parafarraginis	0	0	0	0	0	0	0	0	2	0	0	0	0

Lactiplantibacillus plantarum	0	0	0	0	6	6	6	6	6	6	6	6	6
Secundilactobacillus silagei	0	0	0	0	19	1	27	18	18	27	26	27	23
Leuconostoc gelidum	0	1	0	1	65	2	0	1	0	0	0	0	0
Leuconostoc mesenteroides	0	0	0	4	9	4	1	1	1	1	1	1	1
Leuconostocaceae bacterium	0	0	3	0	3	3	3	3	3	0	3	3	3
Pediococcus cellicola	0	0	0	0	4	0	4	4	4	4	4	4	4
Pediococcus damnosus	0	0	0	0	3	0	3	3	3	3	3	3	3
Pediococcus ethanolidurans	0	0	0	0	10	0	10	10	12	12	12	12	10
unclassified Lactobacillus	0	0	0	0	3	0	3	4	4	4	4	3	4
Weissella confusa	0	0	0	0	1	0	0	0	0	0	1	0	0
Weissella kandleri	0	1	0	1	1	1	0	0	0	0	0	0	0
Weissella paramesenteroides	0	0	0	0	2	2	0	0	0	0	0	0	0
Total	946	801	774	1098	1531	1454	665	678	553	527	537	541	509

Table S2. Binning parameters of the 9 high quality genomes MAGs (Metagenome-Assembled-Genomes) after binning and *de-novo* reassembly of all the metagenome sequences from sauerkraut samples collected at the beginning of fermentation (D0), after 0.5 (D0.5), 1 (D1), 2 (D2), 3 (D3), 4 (D4), 5 (D5), 7 (D7), 14 (D14), 21 (D21), 28 (D28), 35 (D35), and 42 (D42) days of fermentation.

MAG ID	MAG name	Completeness	Contamination	Strain heterogeneity	MAG size (Mbp)	0D	0.5D	1D	2D	3D	4D	5D	7D	14D	21D	28D	35D	42D
MAG_22	*Pediococcus parvulus MAG_22*	97.22	0.87	60	1.933514	0.009938	0.011321	0.002125	0.001582	0.421514	0.01677	4.484935	38.06915	53.15972	84.53077	62.1168	91.87508	56.48383
MAG_23	*Lactococcus lactis MAG_23*	90.91	0.88	33.33	2.086278	0.40896	0.688253	0.20813	0.262873	0.340631	0.003504	0	0	7.13 E-06	0	0	2.44 E-05	1.04 E-05
MAG_43	*Weissella confusa MAG_43*	89.26	0.31	100	1.950252	0.005422	0.000823	0.000207	0.000206	15.08355	6.20135	0.001319	0.002259	0.003172	0.003893	0.003399	0.005441	0.002523
MAG_29	*Erwinia persicina MAG_29*	87.24	0.38	16.67	4.273701	0.002672	0.004671	0.003311	0.003628	0.506218	0.149372	0.509917	0.065694	0.008023	0.000782	0.000425	0.001737	0.000797
MAG_36	*Leuconostoc sp. MAG_36*	85.64	8.25	32.43	2.68753	0.001079	0.000295	6.53 E-05	5.39 E-05	0.523913	0.578245	0.000361	0.000257	0.000155	0	0.000222	0	1.61 E-05
MAG_27	*Lactococcus piscium_C MAG_27*	85.51	4.81	70	2.427631	0.000763	0.00022	5.06 E-05	0.01918	0.477859	0.542194	0	0	0	0	0	0	0
MAG_18	*Raoultella terrigena MAG_18*	75.16	5.26	100	4.990814	19.65899	19.23193	19.98495	20.71456	0.040932	0.230133	0.004003	0.002811	0.0021	1.85 E-05	5.2E -06	1.7E -05	4.33 E-06
MAG_9	*Leuconostoc mesenteroides MAG_9*	68.42	0	0	1.134091	0.000798	0.000302	0.000279	0.067051	2.561295	0.011401	1.41317	0.051756	0.333348	1.193912	6.962449	0.649091	8.712914

MAG_32	*Secundilactobacillus G malefermentans MAG_32*	66.82	0.16	0	1.58296	0.00078	0.00023	9.98E-05	0.000102	0.018371	0.009059	0.3593	3.862364	3.593749	4.19656	2.645824	1.982934	1.344819

Table S3. Numbers of genes associated to lipid metabolism for each species identified during spontaneous fermentation of sauerkraut carried out at 15 ºC for 42 days. Samples were taken at the beginning of fermentation (D0), after 0.5 (D0.5), 1 (D1), 2 (D2), 3 (D3), 4 (D4), 5 (D5), 7 (D7), 14 (D14), 21 (D21), 28 (D28), 35 (D35), and 42 (D42) days of fermentation.

Lipid metabolism	**0D**	**0.5D**	**1D**	**2D**	**3D**	**4D**	**5D**	**7D**	**14D**	**21D**	**28D**	**35D**	**42D**
Lactococcus lactis	253	253	253	253	253	253	16	16	44	16	16	33	0
Leuconostoc carnosum	194	170	150	194	194	194	32	27	27	27	27	25	27
Leuconostoc citreum	163	85	186	192	197	194	194	194	194	192	194	191	194
Weissella koreensis	137	137	61	137	137	137	6	0	6	6	6	6	6
Secundilactobacillus malefermentans	83	49	50	62	153	153	158	158	159	158	158	153	158
Pediococcus parvulus	40	44	33	25	52	45	54	53	53	54	54	54	54
Lactococcus piscium	34	34	11	189	238	238	0	0	0	0	0	0	0
Enterobacter sp. OV724	15	15	15	14	0	15	0	0	0	0	0	0	0
Latilactobacillus sakei	15	0	0	14	169	167	138	173	8	9	12	11	8
Spermatophyta	5	5	5	5	5	5	5	5	5	5	5	5	5
Rahnella sp. NFIX50	2	2	2	2	2	2	0	0	0	0	0	0	0
Weissella cibaria	2	2	2	2	2	28	1	0	1	1	1	1	1
Leclercia sp. W6	1	1	1	1	0	1	0	0	0	0	0	0	0
Pantoea agglomerans	1	1	1	1	0	0	0	0	0	0	0	0	0
Rahnella sp. NRRL B-41462	1	1	1	1	1	1	0	0	0	0	0	0	0
Levilactobacillus brevis	0	0	0	0	2	2	2	2	2	2	2	2	2
Latilactobacillus curvatus	0	0	0	0	0	0	1	0	0	0	1	0	0
Companilactobacillus futsaii	0	0	0	0	0	0	1	0	1	0	1	1	0
Lentilactobacillus parafarraginis	0	0	0	0	0	0	0	0	2	0	0	0	0

Lactiplantibacillus plantarum	0	0	0	0	6	6	6	6	6	6	6	6	6
Secundilactobacillus silagei	0	0	0	0	19	1	27	18	18	27	26	27	23
Leuconostoc gelidum	0	1	0	1	65	2	0	1	0	0	0	0	0
Leuconostoc mesenteroides	0	0	0	4	9	4	1	1	1	1	1	1	1
Leuconostocaceae bacterium	0	0	3	0	3	3	3	3	3	0	3	3	3
Pediococcus cellicola	0	0	0	0	4	0	4	4	4	4	4	4	4
Pediococcus damnosus	0	0	0	0	3	0	3	3	3	3	3	3	3
Pediococcus ethanolidurans	0	0	0	0	10	0	10	10	12	12	12	12	10
unclassified Lactobacillus	0	0	0	0	3	0	3	4	4	4	4	3	4
Weissella confusa	0	0	0	0	1	0	0	0	0	0	1	0	0
Weissella kandleri	0	1	0	1	1	1	0	0	0	0	0	0	0
Weissella paramesenteroides	0	0	0	0	2	2	0	0	0	0	0	0	0
Total	946	801	774	1098	1531	1454	665	678	553	527	537	541	509

Table S4. P values corrected by False Discovery Rate (FDR) of the correlations between the top 15 bacterial species present at the beginning of fermentation (from D0 to D7) and time of fermentation (days), physico-chemical and biochemical composition, and phenolic compounds at the same interval of time.

	Lactococcus piscium	***Weissella oryzae***	***Weissella* sp. 8H-2**	***Enterobacter* sp. 638**	***Enterobacter* sp. OV724**	***Rahnella a* sp. NFIX50**	***Enterobacter cloacae complex***	***Enterobacter* sp. FS01**	***Weissella kandleri***	***Leuconostoc pseudomesenteroides***	***Carnobacterium divergens***	***Rahnella a* sp. ERMR 1:05**	***Vagococcus entomophilus***	***Leuconostoc* sp. C2**	***Campylobacter jejuni***
Time (Days)	0.023	0.216	0.667	0.014	0.033	0.002	0.002	0.023	0.249	0.481	0.163	0.002	0.475	0.667	0.001
pH	0.029	0.249	0.667	0.011	0.026	0.002	0.001	0.019	0.282	0.481	0.240	0.002	0.475	0.667	0.002
TTA	0.023	0.216	0.667	0.014	0.033	0.002	0.002	0.023	0.249	0.481	0.163	0.002	0.475	0.667	0.001
Citric acid	0.029	0.117	0.249	0.041	0.074	0.113	0.087	0.051	0.083	0.215	0.288	0.113	0.249	0.249	0.058
Lactic acid	0.024	0.249	0.667	0.015	0.035	0.002	0.002	0.022	0.214	0.481	0.174	0.002	0.475	0.667	0.001
Acetic acid	0.255	0.678	0.958	0.249	0.375	0.044	0.041	0.278	0.667	0.941	0.651	0.044	0.973	0.958	0.020
Fructose	0.022	0.214	0.678	0.009	0.018	0.002	0.002	0.012	0.249	0.475	0.237	0.002	0.481	0.678	0.001
Glucose	0.037	0.255	0.799	0.013	0.018	0.005	0.002	0.012	0.319	0.568	0.285	0.005	0.599	0.799	0.002
Mannitol	0.036	0.254	0.760	0.018	0.037	0.002	0.002	0.037	0.248	0.475	0.568	0.002	0.448	0.760	0.002
Chlorogenic acid	0.021	0.037	0.215	0.033	0.123	0.022	0.035	0.234	0.123	0.077	0.565	0.022	0.062	0.215	0.058
Caffeic acid	0.975	0.973	0.568	0.534	0.327	0.646	0.448	0.350	0.389	0.694	0.249	0.646	0.618	0.568	0.726
***p*-coumaric acid**	0.140	0.333	0.808	0.039	0.037	0.047	0.024	0.037	0.668	0.626	0.808	0.047	0.667	0.808	0.060
Vanillin	0.300	0.797	0.853	0.264	0.389	0.037	0.075	0.380	0.394	0.872	0.916	0.037	0.749	0.853	0.047
Ferulic acid	0.448	0.817	0.958	0.221	0.153	0.319	0.179	0.069	0.974	0.990	0.665	0.319	0.906	0.958	0.271
Sinapic acid	0.988	0.878	0.694	0.668	0.434	0.932	0.608	0.271	0.389	0.488	0.973	0.932	0.375	0.694	0.688
(E)-Cinnamic acid	0.033	0.225	0.373	0.021	0.062	0.012	0.021	0.072	0.074	0.170	0.375	0.012	0.153	0.373	0.037
Kampferol	0.123	0.275	0.288	0.245	0.375	0.278	0.429	0.427	0.018	0.111	0.713	0.278	0.105	0.288	0.323
Phloretic acid	0.031	0.094	0.249	0.039	0.072	0.109	0.066	0.047	0.194	0.255	0.181	0.109	0.288	0.249	0.051
Dihydrocaffeic acid	0.151	0.194	0.288	0.327	0.481	0.394	0.630	0.646	0.017	0.077	0.667	0.394	0.074	0.288	0.433
Dihydroferulic acid	0.066	0.123	0.393	0.041	0.073	0.066	0.037	0.080	0.493	0.356	0.240	0.066	0.375	0.393	0.072
4-ethyl catechol	0.777	0.538	0.215	0.929	0.973	0.694	0.791	0.973	0.749	0.394	0.565	0.694	0.429	0.215	0.630
Total phenol	0.009	0.083	0.357	0.014	0.060	0.002	0.010	0.084	0.037	0.131	0.069	0.002	0.105	0.357	0.006

Table S5. P values corrected by False Discovery Rate (FDR) of the correlations between the top 15 bacterial species identified from 7 to 14 days, and time of fermentation (days), physico-chemical and biochemical composition, and phenolic compounds at the same interval of time.

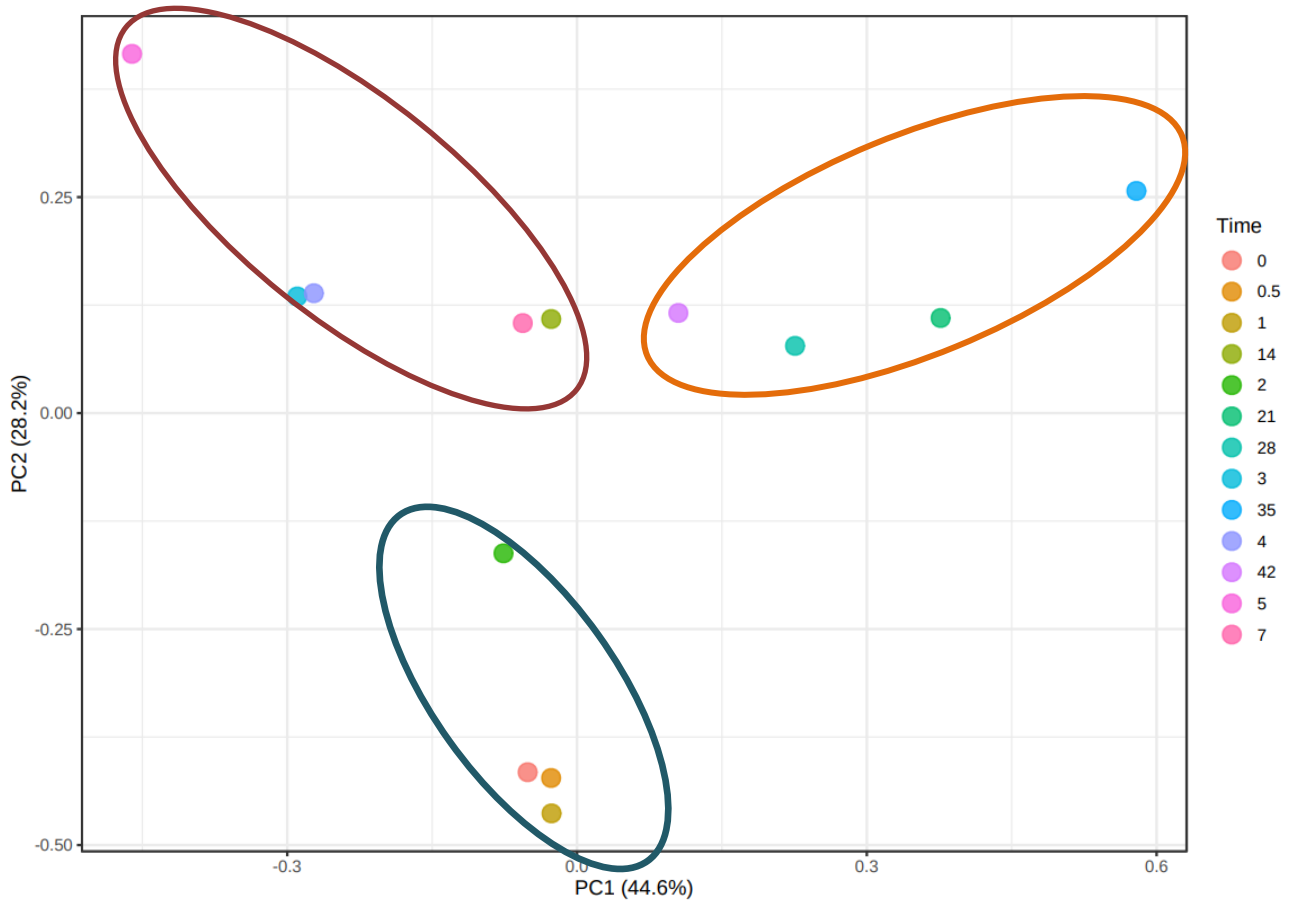
	Weissella soli	***Pediococcus inopinatus***	***Pediococcus cellicola***	***Pediococcus ethanolidurans***	***Pediococcus damnosus***	***Lactiplantibacillus plantarum***	***Companilactobacillus futsaii***	***Secundilactobacillus silagei***	***Lacticaseibacillus casei group***	***Fructilactobacillus sanfranciscensis***	***Lactobacillus helveticus***	***Weissella paramesenteroides***	***Ligilactobacillus acidipiscis***	***Levilactobacillus hammesii***	***Lentilactobacillus parabuchneri***
Time (Days)	0.2315	0.0005	0.0003	0.0003	0.0003	0.0011	0.0003	0.0006	0.0001	0.0020	0.0008	0.1398	0.0008	0.0039	0.0001
pH	0.2215	0.0004	0.0002	0.0003	0.0002	0.0011	0.0003	0.0006	0.0001	0.0020	0.0008	0.1398	0.0008	0.0039	0.0001
TTA	0.2315	0.0005	0.0003	0.0003	0.0003	0.0011	0.0003	0.0006	0.0001	0.0020	0.0008	0.1398	0.0008	0.0039	0.0001
Citric acid	0.6047	0.0258	0.0374	0.0146	0.0258	0.0397	0.0364	0.1297	0.0325	0.0559	0.0204	0.6284	0.0101	0.0130	0.0078
Lactic acid	0.2291	0.0006	0.0003	0.0002	0.0004	0.0006	0.0005	0.0005	0.0001	0.0015	0.0007	0.1356	0.0007	0.0027	0.0002
Acetic acid	0.0101	0.0118	0.1957	0.1568	0.1142	0.1962	0.0101	0.2062	0.1060	0.0213	0.1398	0.0559	0.0577	0.0353	0.0964
Fructose	0.1611	0.0006	0.0007	0.0007	0.0008	0.0025	0.0003	0.0025	0.0003	0.0028	0.0011	0.1750	0.0014	0.0020	0.0002
Glucose	0.2792	0.0003	0.0005	0.0002	0.0003	0.0010	0.0003	0.0004	0.0001	0.0025	0.0003	0.0712	0.0005	0.0070	0.0001
Mannitol	0.0056	0.0030	0.0263	0.0268	0.0125	0.0676	0.0025	0.0648	0.0204	0.0101	0.0255	0.1406	0.0066	0.0008	0.0095
Chlorogenic acid	0.1406	0.0755	0.1005	0.1445	0.0712	0.6190	0.0422	0.3657	0.1452	0.1142	0.1047	0.8450	0.0708	0.0334	0.0964
Caffeic acid	0.6248	0.4146	0.4111	0.4502	0.3199	0.3132	0.5180	0.5939	0.4582	0.3978	0.3815	0.1063	0.3933	0.3978	0.5160
***p*-coumaric acid**	0.4582	0.0054	0.0066	0.0066	0.0089	0.0130	0.0069	0.0382	0.0075	0.0039	0.0022	0.0748	0.0066	0.0100	0.0228
Vanillin	0.1026	0.0254	0.0884	0.0677	0.0768	0.0964	0.0213	0.0712	0.0317	0.0066	0.0519	0.0203	0.0550	0.0353	0.1306
Ferulic acid	0.7290	0.0142	0.0701	0.0324	0.0626	0.0172	0.0519	0.0790	0.0760	0.0687	0.0341	0.0964	0.0146	0.1347	0.0760
Sinapic acid	0.8990	0.3991	0.4320	0.3853	0.4146	0.0846	0.5831	0.4725	0.5066	0.4223	0.4104	0.3222	0.3579	0.4146	0.4582
(E)-Cinnamic acid	0.4146	0.0066	0.0045	0.0109	0.0095	0.0744	0.0037	0.0410	0.0081	0.0334	0.0137	0.5514	0.0118	0.0237	0.0027
Kampferol	0.4687	0.3195	0.4276	0.3853	0.4877	0.7160	0.2658	0.7630	0.3871	0.3222	0.3136	0.7613	0.3205	0.0964	0.2774
Phloretic acid	0.7685	0.0114	0.0229	0.0101	0.0146	0.0476	0.0130	0.0790	0.0207	0.0658	0.0137	0.6076	0.0070	0.0435	0.0027
Dihydrocaffeic acid	0.8688	0.4146	0.4276	0.2952	0.4110	0.7932	0.3301	0.5427	0.2732	0.4502	0.2446	0.8941	0.3275	0.3699	0.2529
Dihydroferulic acid	0.9929	0.0245	0.0017	0.0030	0.0008	0.0109	0.0258	0.0146	0.0070	0.0505	0.0095	0.4146	0.0066	0.0712	0.0043
4-ethyl catechol	0.5831	0.7613	0.7145	0.6441	0.7579	0.3978	0.7365	0.1737	0.5180	0.7160	0.7637	0.2693	0.8142	0.9452	0.8528
Total phenol	0.4643	0.0063	0.0007	0.0012	0.0023	0.0296	0.0016	0.0023	0.0006	0.0128	0.0027	0.5180	0.0055	0.0178	0.0012

Table S6. P values corrected by False Discovery Rate (FDR) of the correlations between all the dominat bacterial species identified throughout the fermentation (from D0 to D42), and time of fermentation (days), physico-chemical and biochemical composition, and phenolic compounds at the same interval of time.

	Levilactobacillus brevis	***Secundilactobacillus malefermentans***	***Latilactobacillus sakei***	***Lactococcus lactis***	***Leuconostoc carnosum***	***Leuconostoc citreum***	***Leuconostoc gelidum***	***Leuconostoc lactis***	***Leuconostoc mesenteroides***	***Pediococcus parvulus***	***Weissella cibaria***	***Weissella confusa***	***Weissella koreensis***
Time (Days)	0.1319	0.0235	0.5686	0.0015	0.7402	0.3407	0.1756	0.8153	0.0749	0.0012	0.1925	0.2381	0.1304
pH	0.1281	0.0208	0.5466	0.0032	0.7898	0.3407	0.1578	0.8595	0.0739	0.0012	0.1649	0.2105	0.1330
TTA	0.1319	0.0235	0.5686	0.0015	0.7402	0.3407	0.1756	0.8153	0.0749	0.0012	0.1925	0.2381	0.1304
Citric acid	0.5686	0.0739	0.8508	0.1330	0.5156	0.7104	0.9627	0.9627	0.5657	0.1048	0.7043	0.9627	0.0594
Lactic acid	0.1304	0.0203	0.5341	0.0012	0.7402	0.3377	0.1831	0.8608	0.0763	0.0012	0.2086	0.2381	0.1281
Acetic acid	0.0263	0.1048	0.2749	0.1460	0.5002	0.0350	0.2425	0.7835	0.1924	0.2425	0.2360	0.3143	0.3407
Fructose	0.1909	0.0263	0.5786	0.0160	0.8468	0.2749	0.2005	0.9057	0.0822	0.0032	0.1702	0.2749	0.1048
Glucose	0.1084	0.0208	0.4582	0.0203	0.7402	0.4058	0.1509	0.8803	0.0749	0.0015	0.1319	0.2381	0.1330
Mannitol	0.0776	0.0036	0.3377	0.1319	0.7092	0.0235	0.2749	0.9627	0.1319	0.0594	0.2979	0.4331	0.0749
Chlorogenic acid	0.4582	0.0739	0.8142	0.3835	0.8608	0.2749	0.9927	0.2979	0.7835	0.2105	0.9927	0.8414	0.0263
Caffeic acid	0.3143	0.3499	0.4601	0.7835	0.7811	0.7881	0.7143	0.7413	0.8091	0.5813	0.4582	0.8811	0.7479
***p*-coumaric acid**	0.1319	0.0235	0.4859	0.2749	0.7306	0.6187	0.5847	0.9627	0.5147	0.0350	0.2810	0.7402	0.1122
Vanillin	0.0032	0.0235	0.0724	0.1048	0.9627	0.1925	0.3091	0.9669	0.4143	0.1048	0.2822	0.4551	0.2749
Ferulic acid	0.2105	0.1460	0.7898	0.5341	0.9101	0.8414	0.5686	0.6399	0.3377	0.1509	0.2918	0.5156	0.5248
Sinapic acid	0.7440	0.7306	0.9964	0.9854	0.8414	0.9627	0.7402	0.5002	0.5786	0.6188	0.5466	0.6948	0.9300
(E)-Cinnamic acid	0.3348	0.0512	0.9057	0.0495	0.6283	0.5684	0.5125	0.9300	0.2749	0.0235	0.2749	0.5684	0.1319
Kampferol	0.8899	0.2515	0.9627	0.4582	0.7104	0.5686	0.7440	1.0000	0.9669	0.5403	0.9533	0.6094	0.1122
Phloretic acid	0.5813	0.1319	0.7402	0.1161	0.4551	0.8468	0.8360	0.8811	0.4331	0.0965	0.5466	0.8899	0.1161
Dihydrocaffeic acid	0.8556	0.3143	0.9854	0.4058	0.2295	0.9627	0.7306	0.5769	0.8468	0.5156	0.9627	0.5248	0.1702
Dihydroferulic acid	0.4143	0.1084	0.9339	0.1018	0.3377	0.9669	0.6283	0.5376	0.3780	0.0173	0.5970	0.7043	0.2105
4-ethyl catechol	0.5403	0.9778	0.2749	0.5847	0.7835	0.6892	0.1330	0.9214	0.2425	0.6845	0.5722	0.1048	0.5847
Total phenol	0.3348	0.0512	0.7765	0.0012	0.3751	0.5847	0.4230	0.4230	0.2314	0.0022	0.5002	0.4941	0.0965

Figure S1. Principal component analysis (PCA) (A) of microbial communities based on Euclidean distance, and Principal coordinate analysis (PCoA) (B) based on Bray-Curtis distance matrix during spontaneous fermentation of sauerkraut at 15 ºC carried out at 15 ºC for 42 days. Samples were taken at the beginning of fermentation (D0), after 0.5 (D0.5), 1 (D1), 2 (D2), 3 (D3), 4 (D4), 5 (D5), 7 (D7), 14 (D14), 21 (D21), 28 (D28), 35 (D35), and 42 (D42) days of fermentation.

A



B

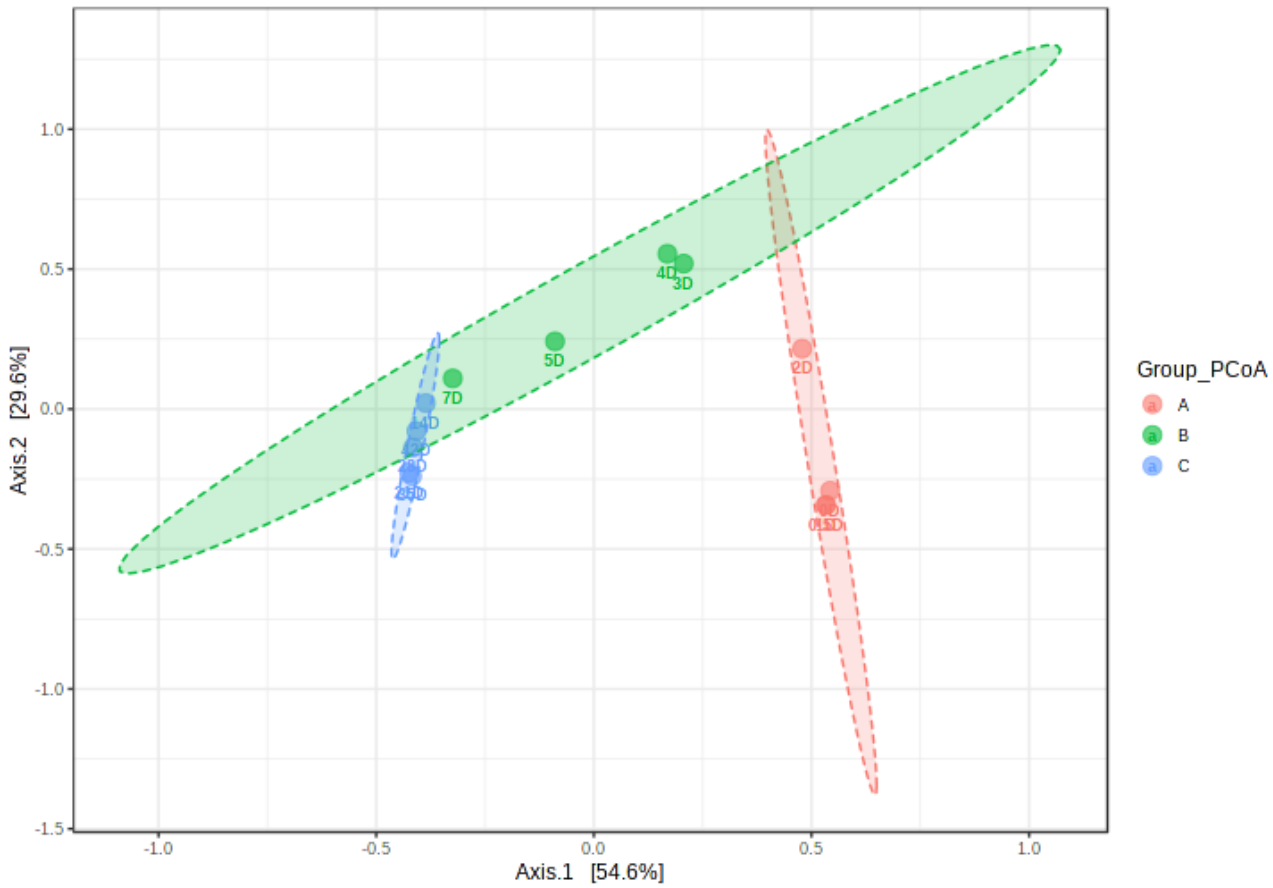

Axis.2 [29.6%]
Axis.1 [54.6%]
1.0
0.5
0.0
-0.5
-1.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
4D
3D
5D
2D
7D
Group_PCoA
A
B
C

Figure S2. Profile of microbial diversity at species level during spontaneous fermentation of sauerkraut carried out at 15 ºC for 42 days. Samples were taken at the beginning of fermentation (D0), after 0.5 (D0.5), 1 (D1), 2 (D2), 3 (D3), 4 (D4), 5 (D5), 7 (D7), 14 (D14), 21 (D21), 28 (D28), 35 (D35), and 42 (D42) days of fermentation. The colour shows the presence (Blue) or absence (Red) of species.

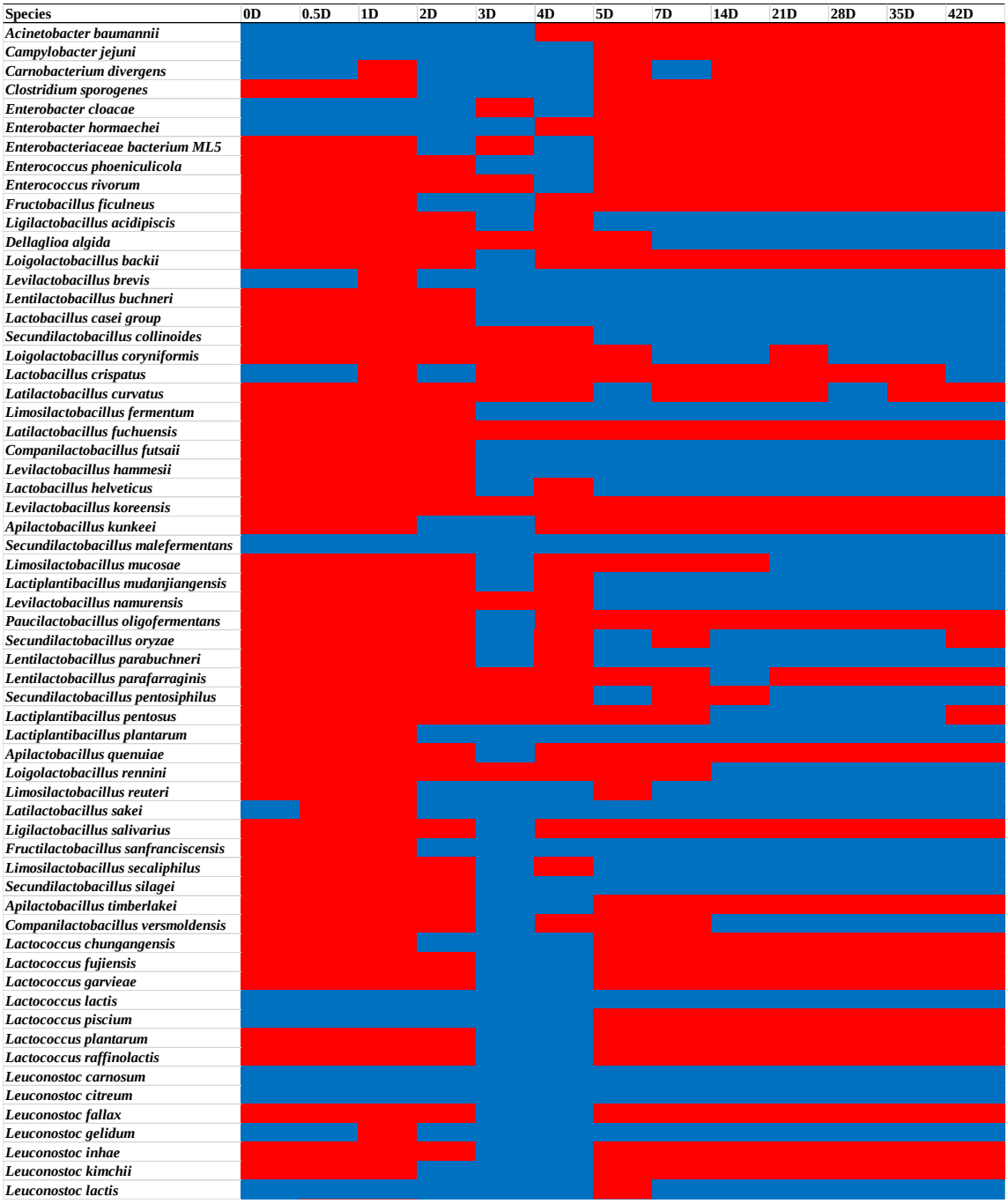


Figure S2. Continued.

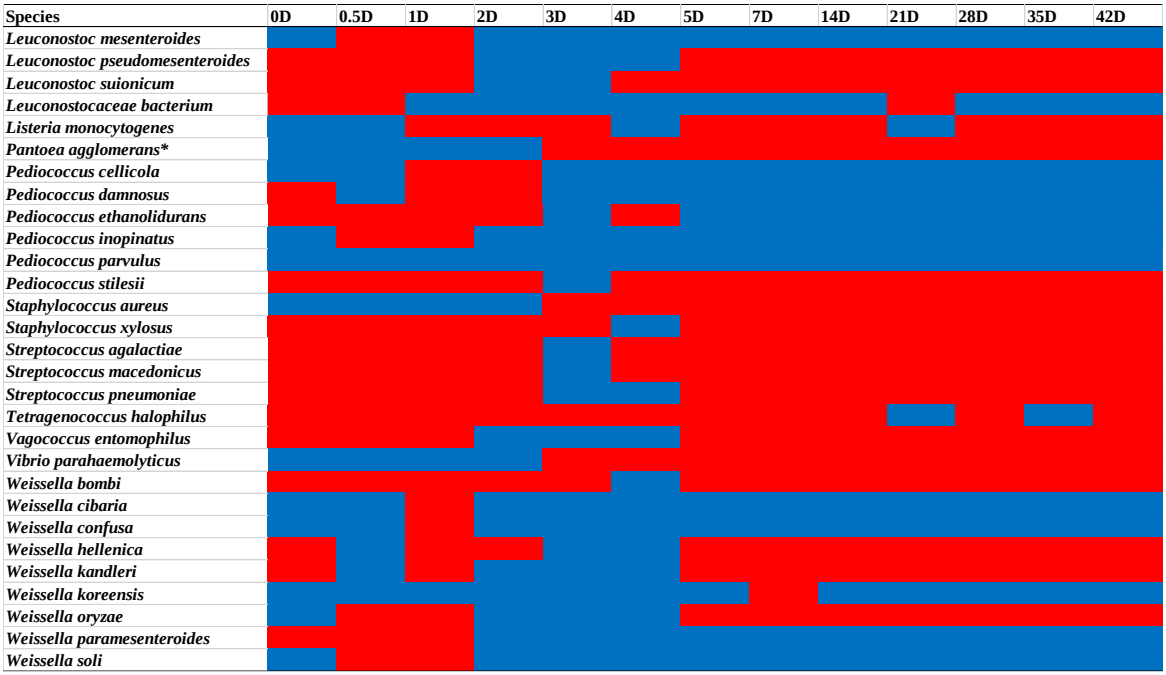
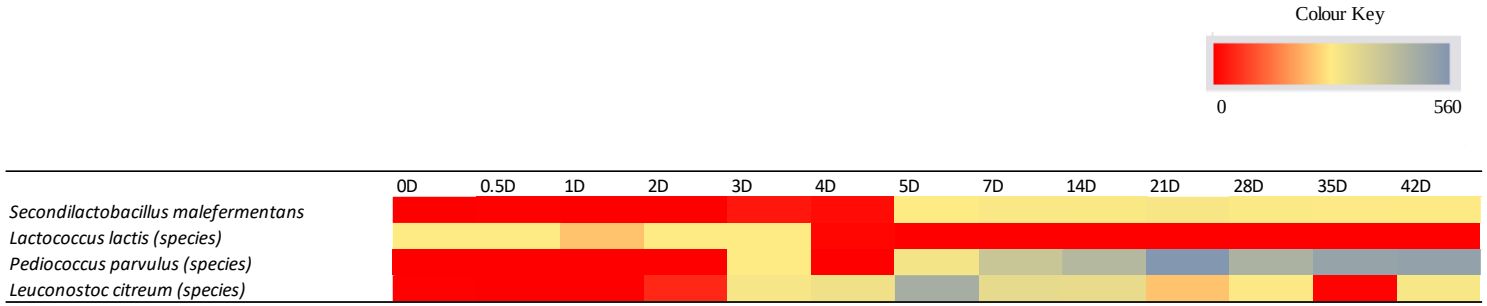


Figure S3. Lactic acid bacteria species profile of *vprA* (A) and *padR* (B) genes annotated correlated with phenolic compounds during spontaneous fermentation of sauerkraut at 15 ºC at different time points. The colour shows the numbers of coverage genes per species.

A



B

Starins	0D	0.5D	1D	2D	3D	4D	5D	7D	14D	21D	28D	35D	42D
Secondilactobacillus malefermentans													
Lactobacillus sakei													
Lactococcus lactis													
Lactococcus piscium													
Leuconostoc carnosum													
Leuconostoc citreum													
Leuconostoc gelidum													
Pediococcus parvulus													
Weissella koreensis													