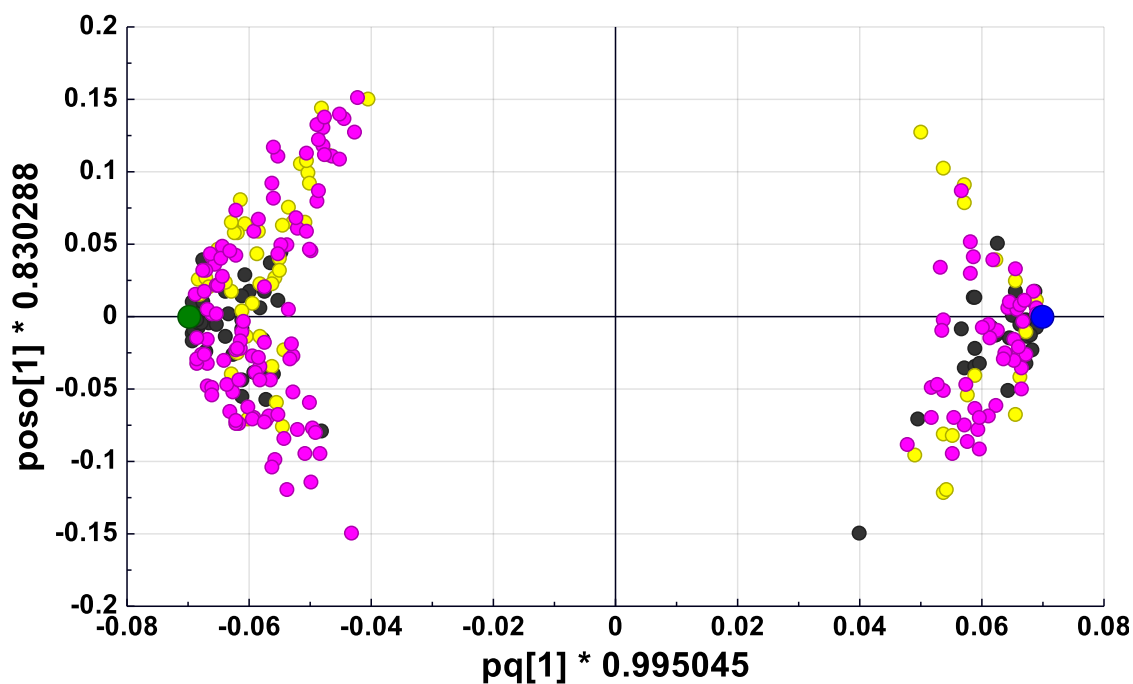


SUPPLEMENTARY DATA

Le Mao, I., Da Costa, G., Leleu, G., & Richard, T. (2024). Monitoring red wine maturation in oak barrels using ¹H NMR-based metabolomics. *OENO One*, 58(2). <https://doi.org/10.20870/oeno-one.2024.58.2.7465>

Supplementary data

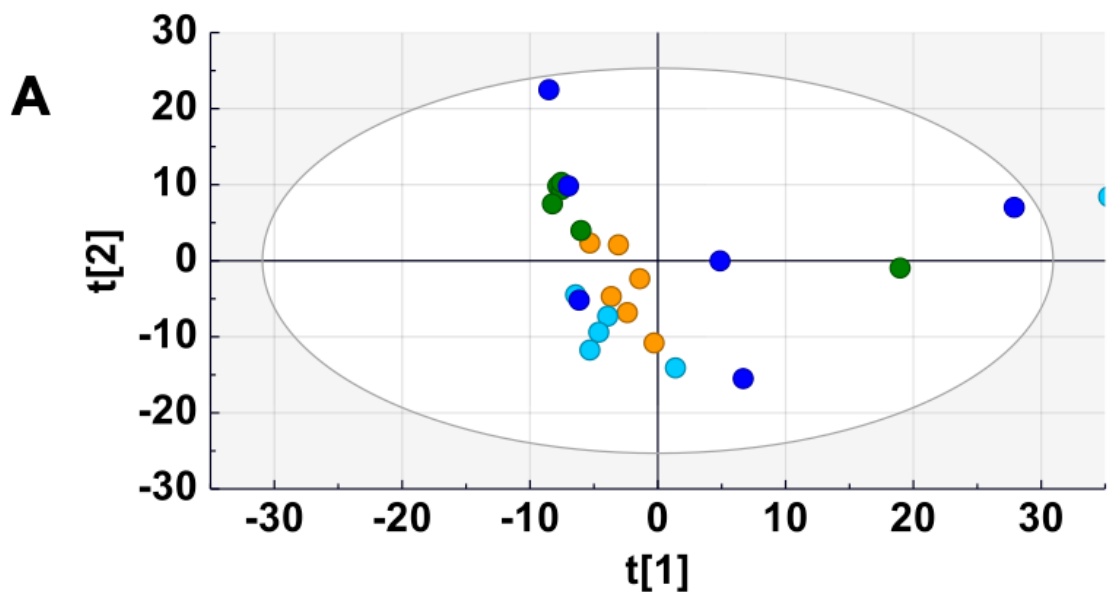


Supplementary Figure S1

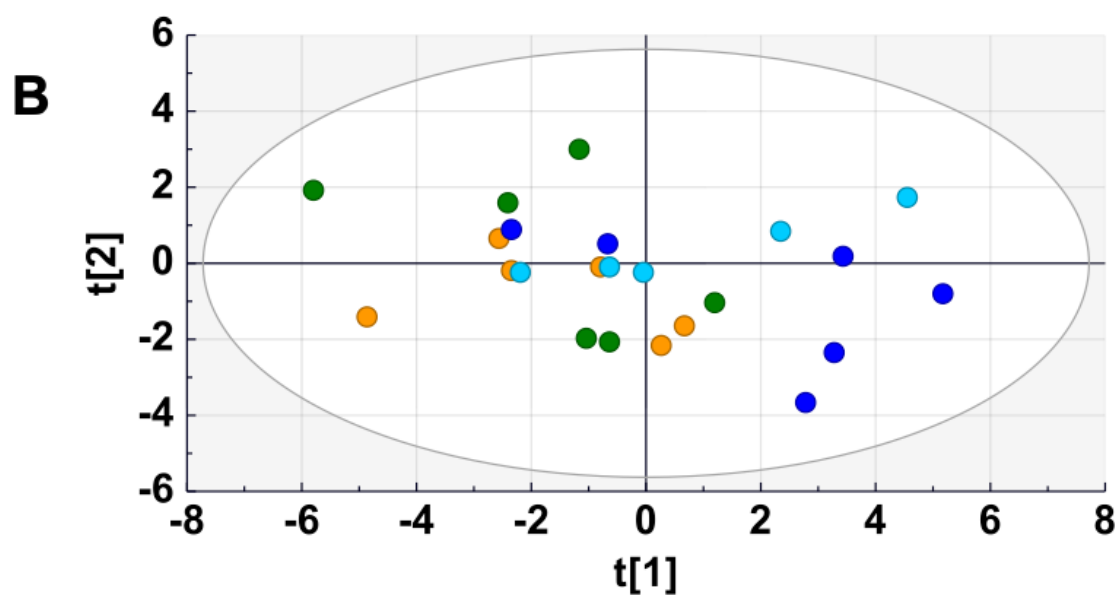
OPLS-DA loadings plot (VIP > 1.0) based on ¹H NMR data of wines after one and twelve months of maturation in oak barrels. Green circle: one months of maturation; blue circle: twelve months of maturation; black circles: signals from aromatic region (10.0 – 5.5 ppm); yellow circles: signals from carbohydrate region (5.5 – 3.7 ppm); purple circles: signals from aliphatic region (3.6 – 0.5 ppm).

SUPPLEMENTARY DATA

Le Mao, I., Da Costa, G., Leleu, G., & Richard, T. (2024). Monitoring red wine maturation in oak barrels using ¹H NMR-based metabolomics. *OENO One*, 58(2). <https://doi.org/10.20870/oeno-one.2024.58.2.7465>



R2X[1] = 0.248; R2X[2] = 0.166; Ellipse: Hotelling's T2 (95%)



R2X[1] = 0.259; R2X[2] = 0.137; Ellipse: Hotelling's T2 (95%)

Supplementary Figure S2

Multivariate analysis of fingerprinting and targeted data extracted from ¹H NMR spectra of wine samples after twelve months of aging in the four different oak barrel models (n = 6, each). A: PCA score plots from fingerprinting data; B: PCA score plots from targeted data. Yellow circles: manufacturer MA; green circles: manufacturer MB; sky and dark blue circles: MC1 and MC2 qualities of manufacturer MC, respectively.

Supplementary Table S1. List of compounds quantified, chemical shifts and coupling constants used for compound quantification.

Family	Compound	$\delta^1\text{H}$ (multiplicity, <i>J</i> in Hz, assignment)
Alcohols and polyols	ethanol	1.18 (<i>t</i> , 7.2, CH ₃)
	isopentanol	1.65 (<i>m</i> , CH)
	myo-inositol	3.27 (<i>t</i> , 9.4, CH)
	methanol	3.35 (<i>s</i> , CH ₃)
	isobutanol	3.37 (<i>d</i> , 6.7, CH ₂)
	phenethyl alcohol	7.33 (<i>m</i> , 5CH)
	2,3-butanediol	1.13 (<i>d</i> , 6.2, 2CH ₃)
	glycerol	3.55 (<i>dd</i> , 11.8, 6.5, CH ₂)
Amino acids	leucine	0.94 (<i>d</i> , 6.2, 2CH ₃)
	isoleucine	0.99 (<i>d</i> , 7.0, CH ₃)
	valine	1.04 (<i>d</i> , 7.3, CH ₃)
	threonine	1.33 (<i>d</i> , 6.7, CH ₃)
	alanine	1.50 (<i>d</i> , 7.2, CH ₃)
	proline	2.00 (<i>m</i> , CH ₂)
	tyrosine	6.88 (<i>m</i> , 8.4, 2CH)
Organic acids	acetic acid	2.08 (<i>s</i> , CH ₃)
	lactic acid	1.41 (<i>d</i> , 7.0, CH ₃)
	galacturonic acid	5.32 (<i>d</i> , 3.8, CH)
	succinic acid	2.66 (<i>s</i> , 2CH ₂)
	shikimic acid	6.81 (<i>dt</i> , CH)
Phenolics	tartaric acid	4.60 (<i>s</i> , 2CH)
	catechin	6.08 (<i>d</i> , 2.0, CH)
	caftaric acid	6.41 (<i>d</i> , 16.0, CH)
	epicatechin	6.09 (<i>d</i> , 2.0, CH)
	gallic acid	7.16 (<i>s</i> , 2CH)
	tyrosol	6.85 (<i>m</i> , 8.4, 2CH)
Sugars	fructose	4.02 (<i>dd</i> , 12.8, 1.0 CH ₂)
	arabinose	4.50 (<i>d</i> , 7.7, CH)
	glucose	5.22 (<i>d</i> , 3.6, CH)
Others	acetoin	1.37 (<i>d</i> , 7.0, CH ₃)
	ethyl lactate	4.21 (<i>q</i> , 7.06, CH)
	ethyl acetate	2.07 (<i>s</i> , CH ₃)
	choline	3.19 (<i>s</i> , 3CH ₃)
	trigonelline	9.15 (<i>s</i> , CH)

SUPPLEMENTARY DATA

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Supplementary Table S2. List of bins applied during ¹H NMR data pre-processing using NMRProcFlow for untargeted analysis.

No	Name	Region	No	Name	Region	No	Name	Region
1	B9_1465	9.081-9.212	180	B4_3377	4.331-4.344	359	B2_5632	2.558-2.568
2	B8_8791	8.847-8.911	181	B4_3212	4.311-4.331	360	B2_5558	2.554-2.558
3	B8_8397	8.833-8.847	182	B4_2969	4.282-4.311	361	B2_5519	2.550-2.554
4	B8_8101	8.788-8.833	183	B4_2774	4.273-4.282	362	B2_5445	2.539-2.550
5	B8_6590	8.653-8.665	184	B4_2669	4.261-4.273	363	B2_5327	2.527-2.539
6	B8_6463	8.640-8.653	185	B4_2565	4.252-4.261	364	B2_5199	2.513-2.527
7	B8_6317	8.624-8.640	186	B4_2454	4.239-4.252	365	B2_5113	2.510-2.513
8	B8_6051	8.587-8.624	187	B4_2361	4.233-4.239	366	B2_5042	2.499-2.510
9	B8_4573	8.450-8.465	188	B4_2306	4.228-4.233	367	B2_4962	2.493-2.499
10	B7_9929	7.972-8.014	189	B4_2250	4.222-4.228	368	B2_4912	2.489-2.493
11	B7_9399	7.934-7.945	190	B4_2188	4.216-4.222	369	B2_4830	2.477-2.489
12	B7_9226	7.915-7.930	191	B4_2131	4.211-4.216	370	B2_4709	2.465-2.477
13	B7_8848	7.875-7.894	192	B4_2076	4.205-4.211	371	B2_4573	2.453-2.462
14	B7_8698	7.864-7.875	193	B4_2012	4.198-4.205	372	B2_4493	2.445-2.453
15	B7_7564	7.746-7.767	194	B4_1955	4.193-4.198	373	B2_4435	2.442-2.445
16	B7_7392	7.733-7.746	195	B4_1902	4.187-4.193	374	B2_4387	2.436-2.442
17	B7_7258	7.719-7.733	196	B4_1854	4.184-4.187	375	B2_4343	2.433-2.436
18	B7_7127	7.706-7.719	197	B4_1812	4.179-4.184	376	B2_4304	2.428-2.433
19	B7_6998	7.693-7.706	198	B4_1765	4.174-4.179	377	B2_4260	2.424-2.428
20	B7_6858	7.678-7.693	199	B4_1679	4.162-4.174	378	B2_4221	2.420-2.424
21	B7_6734	7.669-7.678	200	B4_1544	4.147-4.162	379	B2_4182	2.416-2.420
22	B7_6577	7.652-7.664	201	B4_1447	4.142-4.147	380	B2_4141	2.412-2.416
23	B7_6463	7.641-7.652	202	B4_1387	4.135-4.142	381	B2_4099	2.408-2.412
24	B7_5792	7.575-7.583	203	B4_1316	4.128-4.135	382	B2_4048	2.402-2.408
25	B7_5609	7.552-7.569	204	B4_1218	4.116-4.128	383	B2_3990	2.396-2.402
26	B7_5319	7.525-7.539	205	B4_1135	4.111-4.116	384	B2_3862	2.379-2.393
27	B7_5230	7.521-7.525	206	B4_1084	4.105-4.111	385	B2_3729	2.367-2.379
28	B7_5196	7.518-7.521	207	B4_1003	4.096-4.105	386	B2_3632	2.360-2.367
29	B7_5149	7.512-7.518	208	B4_0937	4.092-4.096	387	B2_3572	2.355-2.360
30	B7_5098	7.507-7.512	209	B4_0855	4.079-4.092	388	B2_3520	2.349-2.355
31	B7_5052	7.503-7.507	210	B4_0743	4.069-4.079	389	B2_3461	2.343-2.349
32	B7_5008	7.499-7.503	211	B4_0671	4.065-4.069	390	B2_3406	2.338-2.343
33	B7_4964	7.494-7.499	212	B4_0629	4.061-4.065	391	B2_3345	2.331-2.338
34	B7_4866	7.480-7.494	213	B4_0576	4.054-4.061	392	B2_3220	2.313-2.331
35	B7_4734	7.467-7.480	214	B4_0515	4.049-4.054	393	B2_3057	2.302-2.309
36	B7_4508	7.441-7.460	215	B4_0457	4.043-4.049	394	B2_2943	2.293-2.296
37	B7_4360	7.430-7.441	216	B4_0406	4.038-4.043	395	B2_2893	2.286-2.293
38	B7_4251	7.420-7.430	217	B4_0359	4.033-4.038	396	B2_2815	2.277-2.286
39	B7_4142	7.409-7.420	218	B4_0271	4.021-4.033	397	B2_2745	2.272-2.277
40	B7_4047	7.401-7.409	219	B4_0178	4.015-4.021	398	B2_2670	2.262-2.272

SUPPLEMENTARY DATA

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41	B7_3980	7.395-7.401	220	B4_0125	4.010-4.015	399	B2_2596	2.257-2.262
42	B7_3919	7.388-7.395	221	B3_9976	3.985-4.010	400	B2_2551	2.253-2.257
43	B7_3795	7.374-7.385	222	B3_9809	3.977-3.985	401	B2_2497	2.246-2.253
44	B7_3677	7.361-7.374	223	B3_9740	3.971-3.977	402	B2_2441	2.242-2.246
45	B7_3544	7.347-7.361	224	B3_9685	3.966-3.971	403	B2_2390	2.236-2.242
46	B7_3438	7.340-7.347	225	B3_9622	3.959-3.966	404	B2_2335	2.231-2.236
47	B7_3229	7.318-7.328	226	B3_9565	3.954-3.959	405	B2_2282	2.225-2.231
48	B7_3099	7.302-7.318	227	B3_9510	3.948-3.954	406	B2_2112	2.200-2.223
49	B7_2942	7.286-7.302	228	B3_9459	3.944-3.948	407	B2_1905	2.186-2.195
50	B7_2802	7.274-7.286	229	B3_9416	3.939-3.944	408	B2_1836	2.181-2.186
51	B7_2686	7.263-7.274	230	B3_9362	3.933-3.939	409	B2_1759	2.173-2.178
52	B7_2598	7.256-7.263	231	B3_9288	3.927-3.930	410	B2_1711	2.169-2.173
53	B7_2506	7.245-7.256	232	B3_9245	3.922-3.927	411	B2_1650	2.161-2.169
54	B7_2308	7.223-7.239	233	B3_9164	3.911-3.922	412	B2_1588	2.156-2.161
55	B7_2175	7.212-7.223	234	B3_9082	3.905-3.911	413	B2_1520	2.148-2.156
56	B7_2064	7.201-7.212	235	B3_9032	3.901-3.905	414	B2_1430	2.138-2.148
57	B7_1903	7.186-7.195	236	B3_8970	3.893-3.901	415	B2_1364	2.135-2.138
58	B7_1825	7.179-7.186	237	B3_8905	3.888-3.893	416	B2_1328	2.131-2.135
59	B7_1738	7.168-7.179	238	B3_8861	3.884-3.888	417	B2_1282	2.125-2.131
60	B7_1631	7.158-7.168	239	B3_8818	3.879-3.884	418	B2_1237	2.122-2.125
61	B7_1564	7.155-7.158	240	B3_8768	3.874-3.879	419	B2_1203	2.118-2.122
62	B7_1506	7.146-7.155	241	B3_8705	3.867-3.874	420	B2_1162	2.114-2.118
63	B7_1426	7.139-7.146	242	B3_8643	3.862-3.867	421	B2_1075	2.101-2.114
64	B7_1335	7.128-7.139	243	B3_8582	3.855-3.862	422	B2_0953	2.090-2.101
65	B7_1215	7.115-7.128	244	B3_8527	3.851-3.855	423	B2_0830	2.076-2.090
66	B7_1071	7.100-7.115	245	B3_8481	3.845-3.851	424	B2_0714	2.066-2.076
67	B7_0938	7.088-7.100	246	B3_8395	3.837-3.842	425	B2_0616	2.057-2.066
68	B7_0837	7.079-7.088	247	B3_8344	3.832-3.837	426	B2_0552	2.054-2.057
69	B7_0702	7.061-7.079	248	B3_8305	3.829-3.832	427	B2_0504	2.047-2.054
70	B7_0234	7.015-7.032	249	B3_8262	3.824-3.829	428	B2_0446	2.042-2.047
71	B6_9775	6.969-6.986	250	B3_8201	3.817-3.824	429	B2_0361	2.030-2.042
72	B6_9663	6.964-6.969	251	B3_8145	3.812-3.817	430	B2_0237	2.017-2.030
73	B6_9606	6.958-6.964	252	B3_8103	3.808-3.812	431	B2_0116	2.006-2.017
74	B6_9526	6.948-6.958	253	B3_8027	3.797-3.808	432	B1_9994	1.993-2.006
75	B6_9451	6.942-6.948	254	B3_5071	3.505-3.509	433	B1_9870	1.981-1.993
76	B6_9299	6.926-6.934	255	B3_5024	3.500-3.505	434	B1_9765	1.972-1.981
77	B6_9222	6.918-6.926	256	B3_4977	3.496-3.500	435	B1_9697	1.967-1.972
78	B6_9152	6.912-6.918	257	B3_4939	3.492-3.496	436	B1_9616	1.956-1.967
79	B6_9080	6.904-6.912	258	B3_4896	3.487-3.492	437	B1_9532	1.951-1.956
80	B6_8990	6.894-6.904	259	B3_4846	3.482-3.487	438	B1_9478	1.945-1.951
81	B6_8882	6.882-6.894	260	B3_4779	3.474-3.482	439	B1_9434	1.942-1.945

SUPPLEMENTARY DATA

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82	B6_8743	6.866-6.882	261	B3_4708	3.468-3.474	440	B1_9399	1.938-1.942
83	B6_8566	6.855-6.858	262	B3_4624	3.457-3.468	441	B1_9350	1.932-1.938
84	B6_8521	6.849-6.855	263	B3_4544	3.452-3.457	442	B1_9290	1.926-1.932
85	B6_8463	6.843-6.849	264	B3_4488	3.446-3.452	443	B1_9240	1.922-1.926
86	B6_8416	6.840-6.843	265	B3_4436	3.441-3.446	444	B1_9174	1.913-1.922
87	B6_8369	6.834-6.840	266	B3_4386	3.436-3.441	445	B1_9082	1.904-1.913
88	B6_8293	6.825-6.834	267	B3_4339	3.432-3.436	446	B1_8966	1.890-1.904
89	B6_8202	6.816-6.825	268	B3_4291	3.426-3.432	447	B1_8855	1.881-1.890
90	B6_8141	6.812-6.816	269	B3_4235	3.421-3.426	448	B1_8712	1.864-1.878
91	B6_8078	6.803-6.812	270	B3_4178	3.415-3.421	449	B1_8433	1.838-1.849
92	B6_7879	6.783-6.793	271	B3_4081	3.402-3.415	450	B1_8329	1.828-1.838
93	B6_7807	6.778-6.783	272	B3_3999	3.398-3.402	451	B1_8267	1.825-1.828
94	B6_6222	6.613-6.632	273	B3_3958	3.393-3.398	452	B1_8203	1.816-1.825
95	B6_5504	6.543-6.558	274	B3_3903	3.387-3.393	453	B1_8128	1.810-1.816
96	B6_5277	6.521-6.534	275	B3_3830	3.379-3.387	454	B1_8075	1.805-1.810
97	B6_4640	6.452-6.476	276	B3_3745	3.370-3.379	455	B1_8026	1.800-1.805
98	B6_4445	6.437-6.452	277	B3_3678	3.365-3.370	456	B1_7975	1.795-1.800
99	B6_4293	6.422-6.437	278	B3_3625	3.360-3.365	457	B1_7902	1.786-1.795
100	B6_4071	6.402-6.412	279	B3_3536	3.347-3.360	458	B1_7836	1.782-1.786
101	B6_3998	6.397-6.402	280	B3_3243	3.301-3.347	459	B1_7773	1.773-1.782
102	B6_3664	6.361-6.372	281	B3_2990	3.297-3.301	460	B1_7701	1.767-1.773
103	B6_3482	6.345-6.351	282	B3_2884	3.280-3.297	461	B1_7603	1.753-1.767
104	B6_3399	6.335-6.345	283	B3_2721	3.264-3.280	462	B1_7469	1.740-1.753
105	B6_3088	6.300-6.317	284	B3_2616	3.259-3.264	463	B1_7352	1.730-1.740
106	B6_2750	6.267-6.283	285	B3_2573	3.256-3.259	464	B1_7256	1.721-1.730
107	B6_1410	6.122-6.160	286	B3_2523	3.249-3.256	465	B1_7189	1.717-1.721
108	B6_0984	6.093-6.104	287	B3_2458	3.243-3.249	466	B1_7137	1.711-1.717
109	B6_0901	6.088-6.093	288	B3_2390	3.235-3.243	467	B1_7074	1.704-1.711
110	B6_0851	6.082-6.088	289	B3_2330	3.231-3.235	468	B1_7023	1.700-1.704
111	B6_0778	6.073-6.082	290	B3_2281	3.225-3.231	469	B1_6950	1.689-1.700
112	B6_0666	6.060-6.073	291	B3_2236	3.222-3.225	470	B1_6851	1.681-1.689
113	B6_0556	6.051-6.060	292	B3_2143	3.207-3.222	471	B1_6721	1.667-1.677
114	B6_0391	6.027-6.051	293	B3_1917	3.179-3.204	472	B1_6611	1.655-1.667
115	B6_0202	6.013-6.027	294	B3_1604	3.158-3.163	473	B1_6500	1.644-1.655
116	B6_0112	6.009-6.013	295	B3_1520	3.146-3.158	474	B1_6386	1.633-1.644
117	B5_9978	5.992-6.003	296	B3_1405	3.135-3.146	475	B1_6275	1.622-1.633
118	B5_9823	5.978-5.986	297	B3_1288	3.123-3.135	476	B1_6164	1.611-1.622
119	B5_9751	5.972-5.978	298	B3_1192	3.116-3.123	477	B1_5835	1.576-1.591
120	B5_9671	5.962-5.972	299	B3_1093	3.106-3.113	478	B1_5692	1.567-1.572
121	B5_9604	5.958-5.962	300	B3_0971	3.093-3.101	479	B1_5636	1.560-1.567
122	B5_9253	5.921-5.930	301	B3_0865	3.083-3.090	480	B1_5578	1.555-1.560

SUPPLEMENTARY DATA

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123	B5_8970	5.894-5.900	302	B3_0568	3.035-3.079	481	B1_5526	1.550-1.555
124	B5_8899	5.886-5.894	303	B3_0294	3.024-3.035	482	B1_5466	1.543-1.550
125	B5_8779	5.870-5.886	304	B3_0162	3.008-3.024	483	B1_5404	1.537-1.543
126	B5_7919	5.786-5.798	305	B3_0045	3.001-3.008	484	B1_5317	1.526-1.537
127	B5_7804	5.775-5.786	306	B2_9943	2.991-2.998	485	B1_5195	1.513-1.526
128	B5_7302	5.723-5.738	307	B2_9831	2.980-2.986	486	B1_5061	1.499-1.513
129	B5_4576	5.446-5.469	308	B2_9754	2.971-2.980	487	B1_4905	1.485-1.496
130	B5_4426	5.439-5.446	309	B2_9690	2.967-2.971	488	B1_4788	1.473-1.485
131	B5_4311	5.423-5.439	310	B2_9629	2.959-2.967	489	B1_4695	1.466-1.473
132	B5_4141	5.405-5.423	311	B2_9546	2.951-2.959	490	B1_4645	1.463-1.466
133	B5_3515	5.345-5.358	312	B2_9463	2.942-2.951	491	B1_4591	1.455-1.463
134	B5_3238	5.319-5.328	313	B2_9363	2.931-2.942	492	B1_4531	1.451-1.455
135	B5_3141	5.309-5.319	314	B2_9273	2.924-2.931	493	B1_4461	1.441-1.451
136	B5_2987	5.297-5.301	315	B2_9212	2.918-2.924	494	B1_4353	1.429-1.441
137	B5_2932	5.290-5.297	316	B2_9157	2.913-2.918	495	B1_4247	1.420-1.429
138	B5_2865	5.283-5.290	317	B2_9101	2.907-2.913	496	B1_4142	1.408-1.420
139	B5_2688	5.265-5.272	318	B2_9033	2.899-2.907	497	B1_4065	1.405-1.408
140	B5_2627	5.260-5.265	319	B2_8943	2.889-2.899	498	B1_4003	1.396-1.405
141	B5_2568	5.253-5.260	320	B2_8838	2.878-2.889	499	B1_3911	1.387-1.396
142	B5_2477	5.242-5.253	321	B2_8742	2.870-2.878	500	B1_3830	1.379-1.387
143	B5_2390	5.236-5.242	322	B2_8643	2.859-2.870	501	B1_3734	1.368-1.379
144	B5_2315	5.227-5.236	323	B2_8526	2.847-2.859	502	B1_3368	1.306-1.368
145	B5_2238	5.221-5.227	324	B2_8386	2.831-2.847	503	B1_1011	1.095-1.107
146	B5_2170	5.213-5.221	325	B2_8273	2.824-2.831	504	B1_0850	1.078-1.092
147	B5_2097	5.206-5.213	326	B2_8202	2.816-2.824	505	B1_0713	1.065-1.078
148	B5_2013	5.197-5.206	327	B2_8090	2.805-2.813	506	B1_0584	1.052-1.065
149	B5_1869	5.183-5.191	328	B2_8004	2.795-2.805	507	B1_0476	1.043-1.052
150	B5_1784	5.174-5.183	329	B2_7822	2.777-2.787	508	B1_0394	1.036-1.043
151	B4_5385	4.537-4.540	330	B2_7745	2.772-2.777	509	B1_0311	1.027-1.036
152	B4_5324	4.528-4.537	331	B2_7688	2.766-2.772	510	B1_0230	1.019-1.027
153	B4_5251	4.522-4.528	332	B2_7636	2.762-2.766	511	B1_0144	1.009-1.019
154	B4_5171	4.512-4.522	333	B2_7577	2.754-2.762	512	B1_0032	0.997-1.009
155	B4_5079	4.504-4.512	334	B2_7511	2.748-2.754	513	B0_9918	0.986-0.997
156	B4_5014	4.499-4.504	335	B2_7460	2.744-2.748	514	B0_9805	0.975-0.986
157	B4_4950	4.491-4.499	336	B2_7385	2.733-2.744	515	B0_9693	0.964-0.975
158	B4_4846	4.478-4.491	337	B2_7273	2.721-2.733	516	B0_9594	0.955-0.964
159	B4_4761	4.474-4.478	338	B2_7191	2.717-2.721	517	B0_9491	0.943-0.955
160	B4_4706	4.467-4.474	339	B2_7135	2.710-2.717	518	B0_9366	0.930-0.943
161	B4_4643	4.461-4.467	340	B2_7069	2.704-2.710	519	B0_9271	0.924-0.930
162	B4_4584	4.455-4.461	341	B2_6991	2.694-2.704	520	B0_9196	0.915-0.924
163	B4_4538	4.452-4.455	342	B2_6896	2.685-2.694	521	B0_9106	0.906-0.915

SUPPLEMENTARY DATA

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164	B4_4499	4.448-4.452	343	B2_6833	2.682-2.685	522	B0_9027	0.899-0.906
165	B4_4435	4.439-4.448	344	B2_6789	2.676-2.682	523	B0_8968	0.894-0.899
166	B4_4359	4.432-4.439	345	B2_6741	2.672-2.676	524	B0_8895	0.885-0.894
167	B4_4265	4.421-4.432	346	B2_6705	2.669-2.672	525	B0_8830	0.881-0.885
168	B4_4182	4.416-4.421	347	B2_6654	2.662-2.669	526	B0_8783	0.875-0.881
169	B4_4130	4.410-4.416	348	B2_6520	2.642-2.662	527	B0_8737	0.872-0.875
170	B4_4067	4.403-4.410	349	B2_6368	2.632-2.642	528	B0_8705	0.869-0.872
171	B4_4007	4.398-4.403	350	B2_6289	2.626-2.632	529	B0_8668	0.865-0.869
172	B4_3944	4.391-4.398	351	B2_6223	2.619-2.626	530	B0_8623	0.860-0.865
173	B4_3877	4.385-4.391	352	B2_6141	2.610-2.619	531	B0_8521	0.844-0.860
174	B4_3819	4.379-4.385	353	B2_6079	2.606-2.610	532	B0_8323	0.820-0.844
175	B4_3757	4.372-4.379	354	B2_6037	2.601-2.606	533	B0_7873	0.778-0.796
176	B4_3692	4.366-4.372	355	B2_5986	2.596-2.601	534	B0_7726	0.770-0.776
177	B4_3617	4.357-4.366	356	B2_5932	2.591-2.596	535	B0_7680	0.766-0.770
178	B4_3509	4.344-4.357	357	B2_5887	2.587-2.591	536	B0_7610	0.759-0.763
179	B4_3377	4.331-4.344	358	B2_5830	2.579-2.587			
