Supplementary Data

Genome-wide Mutational Diversity in an Evolving Population of *Escherichia coli*

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Tables S1-S7 | SNPs predicted in mixed-population samples

For all predicted SNPs in mixed-population samples, the negative base-10 logarithm of the E-value, maximum-likelihood prediction of the frequency of the derived allele in the population, 95% confidence limit on the frequency of the derived allele, nucleotide position, base change from ancestral sequence, gene (e.g., *araJ*) or intergenic region (e.g., *rspA/ynfA*) containing the SNP, and amino acid change caused by the SNP are shown. Stop codons are represented by asterisks in the amino acid change column, and some SNPs do not have an amino acid change annotated because they occur within pseudogenes. In the notes column, samples where the same mutation was fixed (within statistical resolution) in a mixed-population sample (M) or present in a sequenced clone (C) at a given generation are marked in the notes column, with a plus sign further indicating that the mutation was also found in all later samples, and asterisks marking a few SNPs that appeared (erroneously, owing to statistical uncertainty) to have been fixed in earlier population samples. Some other mutations in the 2-20K samples that are likely to be beneficial because they are in the same gene or promoter region as mutations that later swept to fixation in this population (new allele), probably affect cellular processes known to be targets of selection in this experiment (cell wall, respiration, ribosome, regulation), or possibly improve growth on metabolic byproducts (acetate, SCFA) are marked. SNPs in 2-20K samples not shown in Table 2 of the main text are highlighted with three asterisks (***).

Table S1 | SNPs predicted in 2K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
16.7	0.100	[0.045, 0.192]	648332	A→T	*mrdB*	V189E	cell wall
12.2	0.128	[0.054, 0.249]	3328657	G→A	*mreB*	P108S	cell wall
12.2	0.148	[0.062, 0.284]	2082685	G→A	*yegI*	A494V	M5K+ C5K+
6.4	0.069	[0.020, 0.178]	1734196	T→G	*pykF*	L411R	new allele
4.2	0.101	[0.026, 0.231]	4100655	C→T	*hslU*	M192I	M5K+ C5K+
0.6	0.044	[0.009, 0.122]	4201949	G→A	*iclR*	T204M	new allele
0.2	0.038	[0.008, 0.101]	4174746	T→C	*thiC*	Q322R	***

Table S2 | SNPs predicted in 5K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
5.1	0.944	[0.853, 0.984]	3248957	A→T	*infB*	D764E	M10K+ C5K+
3.9	0.929	[0.834, 0.982]	3483047	C→A	*malT*	R455S	M10K+ C5K+
2.5	0.068	[0.014, 0.191]	2268951	T→G	*atoC*	I129S	SCFA
1.7	0.949	[0.855, 0.990]	3762741	A→T	*spoT*	K662I	*M2K+ C2K+
1.2	0.045	[0.009, 0.130]	1485594	G→T	*ydcV*	L241L	***

Table S3 | SNPs predicted in 10K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
80.8	0.456	[0.324, 0.594]	3045069	G→T	*yghJ*	T312N	M20K+ C10K+
77.0	0.331	[0.232, 0.440]	4560632	T→C	*hsdM*	Y131C	C10K
72.8	0.616	[0.482, 0.739]	3370027	T→A	*rpsM*	K117M	M20K+ C10K+
69.9	0.432	[0.284, 0.590]	380188	A→C	*araJ*	F239L	M20K+ C10K+
65.2	0.538	[0.379, 0.684]	3339158	A→C	*yhdG/fis*	–	M20K+ C10K+
64.4	0.341	[0.215, 0.483]	4266356	G→C	*acs/nrfA*	–	acetate
60.1	0.573	[0.432, 0.714]	980180	A→G	*rpsA*	D365G	ribosome
49.0	0.390	[0.232, 0.556]	1976879	T→G	*yedW/yedX*	–	M20K+ C10K+
44.3	0.331	[0.209, 0.494]	2499315	G→A	*maeB/talA*	–	C10K
23.4	0.162	[0.085, 0.275]	2336064	T→G	*nuoM*	I168L	respiration
20.7	0.136	[0.060, 0.246]	2342867	T→G	*nuoG*	Q299P	respiration
20.3	0.230	[0.102, 0.394]	2329291	A→T	*elaD*	A22A	synonymous
4.9	0.098	[0.027, 0.232]	1004244	G→T	*ompF/asnS*	–	new allele
3.8	0.081	[0.022, 0.193]	4616396	G→A	*nadR*	G290S	M15K+ C15K+
3.8	0.103	[0.028, 0.237]	1004243	A→G	*ompF/asnS*	–	new allele
3.4	0.098	[0.027, 0.226]	4202659	T→C	*iclR/metH*	–	new allele
2.9	0.087	[0.025, 0.212]	88137	A→G	*leuO/ilvI*	–	regulation
2.3	0.055	[0.011, 0.147]	2267833	T→G	*atoS*	L364W	SCFA
1.2	0.069	[0.014, 0.180]	1708115	G→A	*lhr*	G612D	***
0.5	0.073	[0.009, 0.228]	1220098	G→C	*ycgH*	–	***

Table S4 | SNPs predicted in 15K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
31.3	0.828	[0.727, 0.903]	4201911	C→T	*iclR*	A217T	M20K+ C15K+
10.5	0.906	[0.811, 0.966]	3370027	T→A	*rpsM*	K117M	M20K+ C10K+
6.8	0.912	[0.799, 0.973]	161041	T→G	*pcnB*	N302H	M20K+ C15K+
5.2	0.903	[0.783, 0.967]	3288092	G→A	*arcB*	R57C	M20K+ C15K+
4.8	0.947	[0.868, 0.986]	3248957	A→T	*infB*	D764E	*M10K+ C5K+
4.6	0.919	[0.802, 0.979]	1248380	A→C	*dhaM*	D295E	M20K+ C15K+
4.0	0.945	[0.863, 0.986]	380188	A→C	*araJ*	F239L	M20K+ C10K+
3.9	0.913	[0.781, 0.978]	1286699	C→A	*narI/ychS*	–	M20K+ C15K+
2.3	0.041	[0.007, 0.128]	9972	T→G	*yaaH*	N174T	acetate
2.1	0.958	[0.872, 0.993]	3045069	G→T	*yghJ*	T312N	M20K+ C10K+
2.0	0.077	[0.016, 0.209]	1769363	G→T	*ydiV/nlpC*	–	regulation
1.8	0.912	[0.758, 0.984]	1004251	T→C	*ompF/asnS*	–	M20K+ C15K+
1.8	0.076	[0.021, 0.183]	1024698	G→A	*ycbX/ycbY*	–	ribosome
1.1	0.939	[0.842, 0.983]	3339158	A→C	*yhdG/fis*	–	M20K+ C10K+
1.0	0.959	[0.877, 0.992]	1976879	T→G	*yedW/yedX*	–	M20K+ C10K+
0.8	0.059	[0.013, 0.166]	3839556	T→C	*gyrB*	S309G	regulation
0.6	0.952	[0.859, 0.990]	2082685	G→A	*yegI*	A494V	*M5K+ C5K+
0.4	0.046	[0.010, 0.127]	1632389	T→C	*rspA/ynfA*	–	regulation
0.0	0.956	[0.868, 0.991]	3155168	G→A	*ebgR*	G296S	M20K+ C15K+

Table S5 | SNPs predicted in 20K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
40.0	0.353	[0.225, 0.507]	2732014	C→A	*hypF*	R91L	M30K+ C20K+
1.3	0.056	[0.010. 0.148]	1887465	G→T	*mgrB/yobH*	–	regulation
0.3	0.045	[0.010, 0.124]	3947797	A→G	*aslA*	S4P	***
0.2	0.111	[0.013, 0.309]	2193841	A→C	*yeiB*	V122G	***
0.1	0.099	[0.020, 0.264]	715754	A→T	*ybfC*	R121*	***
0.0	0.06	[0.014, 0.149]	1150654	T→C	*flgH*	G174G	***

Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
132.9	0.411	[0.322, 0.502]	2765159	T→G	ygbO	E336A	
117.7	0.353	[0.274, 0.447]	2754688	T→G	pphB	I23M	C40K
115.6	0.571	[0.466, 0.661]	2732014	C→A	hypF	R91L	C20K+
113.3	0.500	[0.388, 0.614]	3650528	A→C	cspA	I8L	C40K
106.2	0.513	[0.390, 0.638]	4139889	T→G	udhA	K255Q	C40K
104.4	0.315	[0.239, 0.401]	2740772	A→C	hycE	L187R	C40K
102.0	0.512	[0.396, 0.633]	3470129	T→G	feoB	L353R	C40K
98.3	0.512	[0.380, 0.635]	3724516	T→G	secB	N127H	C40K
95.0	0.509	[0.378, 0.623]	4029063	A→C	yihA/yihI	–	C40K
91.8	0.529	[0.394, 0.655]	3114886	T→G	ygiC	Y98*	C40K
88.0	0.499	[0.370, 0.631]	4064362	T→G	fdhD	L67R	C40K
87.4	0.555	[0.425, 0.682]	3507177	A→C	gntU	S446R	C40K
86.1	0.490	[0.366, 0.620]	1555678	T→G	ydeN	V266V	C40K
85.5	0.555	[0.426, 0.678]	3922213	A→C	yifN	–	C40K
85.2	0.510	[0.380, 0.637]	4353840	T→G	yjeK	W177G	C40K
78.8	0.529	[0.389, 0.662]	4570266	T→G	hpaB	C492G	C40K
78.0	0.557	[0.424, 0.689]	3575750	A→C	prlC	V41V	C40K
77.9	0.547	[0.415, 0.687]	2285933	T→G	gyrA	Y63S	C40K
77.7	0.539	[0.396, 0.674]	2333346	A→C	ECB_02200	K228Q	C40K
77.6	0.425	[0.306, 0.547]	3690416	T→G	aldB	I263M	
76.3	0.531	[0.386, 0.670]	2858322	A→C	ppdB	E5A	C40K
73.6	0.555	[0.404, 0.685]	4530188	A→C	fimH	N156T	C40K
72.5	0.573	[0.432, 0.703]	816306	A→C	ybhO	Y20S	C40K
72.3	0.509	[0.365, 0.656]	2489436	T→G	eutG	L302W	C40K
70.9	0.520	[0.375, 0.664]	424738	A→C	yajG	V45V	C40K
70.8	0.524	[0.374, 0.665]	931180	T→G	ybjE	L129V	C40K
70.4	0.524	[0.375, 0.665]	1477302	A→C	ydcP	I138L	C40K
69.8	0.523	[0.381, 0.679]	3716330	C→T	ECB_03460	K1114Q	C40K
68.2	0.562	[0.423, 0.702]	3911660	T→G	yifB	L47*	C40K
68.1	0.488	[0.345, 0.637]	3184072	A→C	yqjG	I5M	C40K
68.0	0.600	[0.458, 0.719]	181491	A→C	pfs	I169L	C40K
67.9	0.654	[0.530, 0.769]	1886192	A→C	yobF/yebO	–	C40K
66.8	0.583	[0.441, 0.706]	100218	T→G	murD	I110L	C40K
66.7	0.618	[0.483, 0.740]	728010	A→C	abrB	N182T	C40K
66.1	0.357	[0.250, 0.484]	2790674	T→G	ygcE	D93E	C40K
65.8	0.634	[0.495, 0.746]	1904444	T→G	yobB	F143L	C40K
65.4	0.559	[0.413, 0.696]	1642043	A→C	ynfI	I115L	C40K
65.4	0.629	[0.498, 0.750]	463771	T→G	apt	E98A	C40K
65.3	0.519	[0.359, 0.663]	4562591	G→T	hsdR	T716P	C40K
64.5	0.481	[0.340, 0.625]	3683249	A→C	ECB_03437	Y314D	C40K
64.4	0.567	[0.422, 0.703]	154388	A→C	yadK	L18R	C40K
63.7	0.555	[0.414, 0.692]	1902841	T→G	yebZ	L109L	C40K
63.4	0.600	[0.458, 0.715]	1966410	T→G	yecR	G65G	C40K
63.4	0.496	[0.353, 0.648]	2441230	T→G	ypdG	I297S	C40K
63.2	0.567	[0.423, 0.707]	1829798	A→C	pncA/ydjE	–	C40K
63.1	0.487	[0.344, 0.637]	4180045	T→G	hupA	K51N	C40K
62.7	0.406	[0.282, 0.536]	2413433	T→G	dsdA	E2A	
62.4	0.498	[0.348, 0.651]	4118298	A→C	gldA	Q282P	C40K
62.3	0.537	[0.379, 0.683]	1975162	T→G	yedV	K330N	C40K
61.8	0.517	[0.365, 0.681]	379334	T→G	yajF	N256K	C40K
61.8	0.597	[0.451, 0.731]	2920951	A→C	prfB	E362A	C40K
60.5	0.648	[0.509, 0.766]	1690600	T→G	ydgR	F213C	C40K
60.3	0.618	[0.478, 0.750]	1634870	T→G	ynfD	I37M	C40K
60.0	0.635	[0.496, 0.744]	3835234	A→C	dgoR	S96R	C40K
60.0	0.580	[0.423, 0.713]	2625494	T→G	rncS	E21A	C40K
60.0	0.479	[0.334, 0.629]	3187264	T→G	yhaJ/yhaK	–	C40K

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Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
59.8	0.591	[0.433, 0.724]	1496171	A→C	ansP/yncG	–	C40K
59.5	0.551	[0.413, 0.701]	3976831	A→C	metR	E138A	C40K
59.1	0.544	[0.403, 0.700]	243156	G→T	yhhI	H115P	C40K
58.3	0.664	[0.528, 0.782]	2897800	A→C	yqeA	I195M	C40K
57.5	0.609	[0.463, 0.749]	1759732	T→G	ydiS	V357G	C40K
57.2	0.476	[0.327, 0.631]	4078976	T→G	rhaR	*313Y	C40K
56.6	0.545	[0.387, 0.699]	1098758	A→C	ycdO	E77D	C40K
56.5	0.410	[0.276, 0.550]	2480430	A→C	amiA	Q187P	C40K
56.2	0.536	[0.376, 0.691]	3865067	T→G	bglF	F300C	C40K
54.5	0.560	[0.421, 0.704]	3303353	A→C	dcuD	Y196S	C40K
54.0	0.628	[0.472, 0.754]	1692302	A→C	pdxY	M261R	C40K
53.9	0.567	[0.398, 0.716]	2909993	A→C	xdhD/ygfO	–	C40K
53.5	0.680	[0.552, 0.798]	3500952	T→G	glgX	L608V	C40K
53.4	0.568	[0.396, 0.722]	640290	T→G	ccrB	L77L	C40K
53.3	0.627	[0.477, 0.747]	4545297	T→G	yjiL	K103Q	C40K
53.2	0.632	[0.481, 0.760]	1909010	T→G	yebF/yebG	–	C40K
53.0	0.519	[0.359, 0.691]	3521505	T→G	ugpA	F28C	C40K
52.8	0.277	[0.184, 0.400]	4589980	T→G	dnaC	E77A	
52.4	0.653	[0.506, 0.776]	2988792	A→C	mutY	L40W	C40K
52.4	0.394	[0.265, 0.540]	2390130	A→C	aroC	V312V	
51.2	0.489	[0.325, 0.653]	438423	T→G	ybaE	Q319H	
50.8	0.502	[0.336, 0.662]	4332868	A→C	lysU	I190M	C40K
50.5	0.501	[0.335, 0.667]	3605645	T→G	yhjE/yhjG	–	C40K
50.0	0.572	[0.410, 0.731]	970635	T→G	pflB	N5H	C40K
49.9	0.536	[0.374, 0.695]	714992	T→G	ybfO	K343N	C40K
49.7	0.525	[0.353, 0.702]	411430	A→C	thiI/thiJ	–	C40K
49.6	0.346	[0.230, 0.473]	125265	A→C	pdhR	K124Q	C40K
48.4	0.542	[0.368, 0.709]	1977296	T→G	yedX	N114K	C40K
48.2	0.511	[0.329, 0.673]	2594074	A→C	yphA	G34G	C40K
47.9	0.545	[0.387, 0.700]	4511435	T→G	sgcX	S119A	C40K
47.5	0.453	[0.303, 0.613]	2387080	A→C	yfcK	P575P	C40K
46.8	0.310	[0.200, 0.434]	3132740	T→G	ygiF	K354Q	
46.8	0.543	[0.370, 0.706]	1518024	A→C	narU	I63S	C40K
46.6	0.713	[0.573, 0.820]	3743455	T→G	waaO	T15P	C40K
46.3	0.358	[0.233, 0.496]	2914781	T→G	ygfT	D635E	
46.3	0.489	[0.308, 0.666]	940678	A→C	clpA	P189L	C40K
46.3	0.551	[0.381, 0.717]	2422436	A→C	yfdE	L320F	C40K
46.1	0.632	[0.476, 0.769]	4466019	A→C	valS	F284L	C40K
46.0	0.679	[0.534, 0.805]	3824042	A→C	glvBC	M1R	C40K
45.9	0.585	[0.422, 0.731]	1761548	A→C	ydiD	D435A	C40K
45.9	0.409	[0.265, 0.568]	4232744	T→G	ubiA	F266C	
45.3	0.660	[0.504, 0.784]	4613809	T→G	serB	K234T	C40K
44.4	0.542	[0.364, 0.721]	1016770	A→C	ycbS	I155S	C40K
44.2	0.395	[0.257, 0.540]	1470975	T→G	tehA	V98V	C40K
44.2	0.345	[0.222, 0.486]	2831467	T→G	fucI	Q422P	
44.0	0.430	[0.278, 0.604]	832307	T→G	ybiL	E617A	
43.9	0.607	[0.454, 0.750]	3722953	A→C	cysE	R126S	C40K
43.6	0.324	[0.211, 0.461]	946240	T→G	cydC	L5R	
43.1	0.345	[0.216, 0.483]	3468806	A→C	yhgF/feoA	–	
43.0	0.321	[0.206, 0.468]	1411992	T→G	recE	S855S	
42.7	0.637	[0.469, 0.780]	690209	A→C	glnS/ybfM	–	C40K
42.6	0.324	[0.205, 0.467]	2366414	A→C	yfcI	K240Q	
42.6	0.713	[0.581, 0.826]	10269	T→G	yaaH	F75C	C40K
42.2	0.626	[0.459, 0.774]	4248845	A→C	aphA	F167C	C40K
42.1	0.230	[0.143, 0.340]	2717011	A→C	recX	N163T	
42.1	0.362	[0.234, 0.511]	4590702	A→C	dnaT	V17G	

Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
42.1	0.266	[0.168, 0.385]	556481	A→C	ECB_00513	I589S	
41.2	0.308	[0.196, 0.455]	1709400	A→C	lhr	A1040A	
41.1	0.434	[0.280, 0.619]	383083	A→C	sbcC	L365R	C40K
40.7	0.514	[0.330, 0.699]	3917503	T→G	ilvA	F124C	C40K
40.6	0.265	[0.158, 0.381]	4237765	A→C	dinF	I364M	
40.4	0.627	[0.458, 0.775]	918143	A→C	artM	F33L	C40K
40.3	0.250	[0.155, 0.374]	1492341	T→G	yncD	T279P	
40.1	0.669	[0.510, 0.800]	331559	T→G	cynT	S69A	C40K
40.1	0.353	[0.217, 0.496]	3376110	T→G	rplN/rpsQ	–	
40.1	0.221	[0.139, 0.332]	2718856	A→C	ygaD	V117G	
40.1	0.495	[0.303, 0.672]	393379	T→G	yajB/queA	–	C40K
39.9	0.583	[0.393, 0.746]	1129502	T→G	yceE	F186L	C40K
39.7	0.396	[0.246, 0.568]	1866742	T→G	fadD	K528T	
39.1	0.354	[0.219, 0.512]	4276594	A→C	fdhF	D532A	
38.7	0.273	[0.163, 0.403]	70484	T→G	araA	S220A	
38.5	0.719	[0.577, 0.835]	1880102	A→C	yoaE	I21M	C40K
38.3	0.321	[0.200, 0.475]	3798789	A→C	yicL	Y204D	
38.2	0.292	[0.182, 0.420]	647336	T→G	rlpA	S147A	
38.0	0.271	[0.169, 0.400]	428805	A→C	clpX	Q225H	
38.0	0.281	[0.171, 0.408]	4600949	A→C	osmY	K107T	
37.9	0.273	[0.169, 0.403]	618019	T→G	ybdM	S19R	
37.6	0.395	[0.241, 0.568]	4393997	T→G	aidB	L523W	
37.5	0.273	[0.169, 0.403]	3103666	T→G	ygiW	V61V	
37.2	0.272	[0.162, 0.402]	3050848	T→G	glcG	L92F	
37.2	0.296	[0.180, 0.436]	3868034	A→C	pstB	S234R	
37.2	0.193	[0.116, 0.294]	2745079	T→G	hycA	N73H	C40K
37.1	0.290	[0.173, 0.422]	416393	T→G	ECB_00376	K297Q	
37.0	0.284	[0.173, 0.414]	1499599	A→C	ECB_01413	N506H	
36.9	0.302	[0.181, 0.444]	2151088	T→G	molR	Y1140D	
36.8	0.693	[0.552, 0.810]	1570553	T→G	ydeU	–	C40K
36.8	0.324	[0.191, 0.472]	4075309	T→G	rhaA	E54D	
36.8	0.311	[0.189, 0.459]	3599999	T→G	treF	S306A	
36.8	0.733	[0.590, 0.845]	3962760	T→G	ECB_03690	E60D	C40K
35.7	0.353	[0.210, 0.510]	2671929	A→C	grpE	I25M	
35.6	0.238	[0.141, 0.354]	722463	T→G	ybgH	L293L	
35.6	0.360	[0.220, 0.523]	77302	A→C	thiP	L8F	
35.5	0.657	[0.502, 0.796]	1756840	T→G	ydiP/ydiQ	–	C40K
35.4	0.364	[0.222, 0.532]	3617683	T→G	bcsC	K328T	C40K
35.4	0.383	[0.234, 0.554]	1565184	A→C	ECB_01465	F91V	
35.3	0.330	[0.199, 0.475]	1379205	A→C	ycjV	L6*	
35.1	0.270	[0.161, 0.397]	3384606	T→G	gspD	S109A	
34.8	0.261	[0.158, 0.392]	4327207	A→C	dcuB	N85H	
34.7	0.517	[0.312, 0.726]	1456048	T→G	hrpA	R1200R	C40K
34.6	0.324	[0.190, 0.472]	215533	T→G	tilS	C121G	
34.5	0.244	[0.148, 0.360]	3102587	T→G	ygiU	N44H	
34.3	0.213	[0.129, 0.318]	362643	A→C	yaiV	N179K	
34.1	0.253	[0.153, 0.379]	4007617	A→C	fadB	F576L	
34.0	0.510	[0.313, 0.724]	506450	T→G	gcl	A123A	C40K
33.5	0.304	[0.176, 0.446]	4461911	A→C	yjgD	K103Q	
33.3	0.376	[0.225, 0.554]	1794984	T→G	celF	Y261S	C40K
33.1	0.740	[0.597, 0.854]	582155	T→G	cusA	K847Q	C40K
33.1	0.272	[0.161, 0.411]	4210330	T→G	yjbD	F78C	
33.0	0.293	[0.174, 0.450]	1709960	A→C	lhr	V1227G	
32.8	0.266	[0.155, 0.386]	2347515	A→C	nuoC/nuoB	–	
32.6	0.291	[0.169, 0.441]	1878335	T→G	yoaD	T444P	
32.4	0.263	[0.159, 0.403]	1331374	T→G	topA	E652A	

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Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
32.1	0.240	[0.142, 0.367]	3411939	C→A	*yheT*	K278T	
32.1	0.304	[0.175, 0.452]	3535529	T→G	*yhhF*	D150A	
32.0	0.303	[0.176, 0.458]	3857041	A→C	*yieG/yieH*	–	
31.5	0.266	[0.158, 0.403]	1446984	A→C	*ynbA*	F10L	
31.3	0.247	[0.144, 0.373]	2317599	A→C	*arnT*	E60A	
31.1	0.242	[0.142, 0.368]	3823424	A→C	*glvBC*	F207C	
31.0	0.294	[0.172, 0.450]	2300176	A→C	*glpA*	D274E	
31.0	0.360	[0.206, 0.537]	516413	A→C	*allC*	Y349S	C40K
30.9	0.221	[0.122, 0.341]	2305044	T→G	*yfaU*	A105A	
30.7	0.265	[0.155, 0.402]	4228591	T→G	*malM*	S36R	
30.6	0.241	[0.138, 0.362]	4171476	A→C	*thiH*	K2Q	
30.5	0.684	[0.502, 0.826]	1171882	A→C	*ycfH*	I179M	C40K
30.5	0.243	[0.141, 0.378]	3285688	T→G	*yhbL*	K3Q	
30.3	0.310	[0.186, 0.464]	3588297	A→C	*yhiE*	L147F	
30.1	0.312	[0.182, 0.467]	3544287	T→G	*acpT/nikA*	–	
29.6	0.303	[0.178, 0.454]	313193	A→C	*yahI*	H127P	
29.6	0.250	[0.141, 0.378]	1351809	A→C	*sapD*	V63V	
29.6	0.255	[0.144, 0.389]	1563353	A→C	*ydeT*	G200G	
29.0	0.301	[0.178, 0.458]	1539798	T→G	*yddV*	G314G	
29.0	0.267	[0.148, 0.396]	2686373	A→C	*gabD*	I141L	
28.9	0.237	[0.133, 0.365]	2360207	A→C	*pta*	G623G	
28.9	0.257	[0.144, 0.397]	4075029	T→G	*rhaA*	T148P	C40K
28.6	0.282	[0.155, 0.448]	2245963	T→G	*ccmC*	K116T	
28.3	0.231	[0.130, 0.364]	4321344	A→C	*melA*	I240M	
28.1	0.377	[0.211, 0.564]	14120	T→G	*dnaK/dnaJ*	–	
27.9	0.271	[0.156, 0.410]	1064164	T→G	*ymcA*	A291A	
27.9	0.309	[0.173, 0.471]	17424	A→C	*mokC/nhaA*	–	
27.4	0.683	[0.504, 0.822]	4180803	A→C	*yjaH*	E209A	C40K
26.6	0.305	[0.166, 0.465]	3574148	T→G	*prlC*	E575D	
26.5	0.443	[0.255, 0.648]	3252768	T→G	*nusA/yhbC*	–	C40K
26.4	0.212	[0.120, 0.342]	3271498	A→C	*murA*	N78H	
26.3	0.693	[0.531, 0.842]	3859873	T→G	*yieL*	K367N	C40K
26.3	0.259	[0.142, 0.402]	3170823	A→C	*ygjR*	S238R	
26.0	0.559	[0.322, 0.756]	3561248	A→C	*yhiI*	L15V	C40K
25.7	0.274	[0.150, 0.428]	3290558	A→C	*gltB*	L231R	
25.6	0.187	[0.102, 0.297]	4498963	A→C	*fecB*	L126L	
25.5	0.196	[0.107, 0.308]	3982571	T→G	ECB_03712	I312L	
25.4	0.216	[0.115, 0.345]	3105335	T→G	*ygiY*	F227C	
25.4	0.410	[0.223, 0.613]	4339028	T→G	*cadB/cadC*	–	
25.4	0.313	[0.172, 0.471]	504190	A→C	*ybbS*	L66L	
25.1	0.242	[0.136, 0.382]	3174613	T→G	*ygjV*	S56R	
24.9	0.340	[0.185, 0.532]	1712380	A→C	*ydhO*	E251A	
24.8	0.323	[0.179, 0.520]	3739217	T→G	*waaW*	E250A	
24.5	0.378	[0.208, 0.578]	332980	T→G	*cynX*	W145G	C40K
24.4	0.233	[0.125, 0.369]	683151	T→G	*nagC*	E180A	
24.4	0.375	[0.210, 0.562]	635217	T→G	*citA*	E132A	C40K
24.3	0.195	[0.102, 0.313]	3816401	T→G	*yidI*	I19L	
24.3	0.194	[0.104, 0.314]	11293	T→G	*yaaW*	Q21P	
24.2	0.294	[0.154, 0.460]	2423302	T→G	*yfdE*	C32G	
23.8	0.297	[0.161, 0.455]	3256963	A→C	*yhbX/leuU*	–	
23.6	0.231	[0.124, 0.368]	1682683	T→G	*ydgK*	F80L	
23.4	0.301	[0.160, 0.480]	1087245	A→C	*ycdI/ycdJ*	–	
23.3	0.324	[0.174, 0.506]	1426046	T→G	*ynaE/ynaF*	–	
23.1	0.277	[0.146, 0.440]	1805515	A→C	*astB*	W4G	
22.9	0.174	[0.090, 0.290]	3668933	T→G	*malS*	Y327*	
22.7	0.290	[0.152, 0.460]	2235494	T→G	*yejL*	S60A	

Table S6 | SNPs predicted in 30K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
22.7	0.363	[0.183, 0.561]	2864911	T→G	mutH	G210G	C40K
22.6	0.339	[0.173, 0.529]	4081971	T→G	kdgT	V267G	
22.5	0.237	[0.121, 0.373]	4380214	A→C	hflK	N8H	
22.1	0.289	[0.151, 0.475]	1686279	A→C	rnfC	I723L	
21.5	0.174	[0.091, 0.292]	293270	A→C	ykgD	Q132P	
21.0	0.307	[0.164, 0.481]	460893	T→G	kefA	N764T	
20.7	0.244	[0.127, 0.412]	2122404	A→C	ECB_02012/ ECB_02013	–	
20.6	0.207	[0.111, 0.348]	3648741	A→C	tkrA	*325S	
20.6	0.244	[0.126, 0.388]	970292	T→G	pflB	I119S	
20.2	0.700	[0.520, 0.841]	4096930	A→C	glpF	W215G	C40K
19.9	0.296	[0.151, 0.475]	546221	A→C	ybcQ	S126A	
19.8	0.286	[0.142, 0.453]	787877	A→C	ybhC/ECB_00726	–	
19.5	0.203	[0.103, 0.344]	1280359	A→C	narG	K116Q	
19.3	0.237	[0.122, 0.380]	4054046	A→C	yihX	F116C	
19.1	0.217	[0.111, 0.371]	4506667	T→G	sgcR	V120V	
18.7	0.269	[0.133, 0.432]	1536376	A→C	yddS	V15G	
18.3	0.314	[0.153, 0.509]	3498552	T→G	glgA	E312D	
18.2	0.167	[0.086, 0.294]	763784	A→C	nadA/pnuC	–	
18.0	0.236	[0.121, 0.381]	3152187	T→G	aer/ygjG	–	
18.0	0.236	[0.117, 0.413]	1112671	A→C	ycdW	K73Q	
17.6	0.189	[0.104, 0.330]	3734087	T→G	gumD	F186C	
17.5	0.504	[0.260, 0.741]	3027011	T→G	ECB_02827	*220Y	C40K
17.5	0.290	[0.142, 0.481]	3495488	T→G	yzgL/glgP	–	
17.2	0.201	[0.094, 0.339]	456451	A→C	acrB	D7A	
16.6	0.185	[0.085, 0.315]	3768014	A→C	yicE	N10H	
16.5	0.215	[0.110, 0.369]	2901848	A→C	ygfK	E12A	
16.3	0.182	[0.091, 0.309]	1953919	A→C	cheA	F59C	
16.3	0.376	[0.183, 0.594]	4089472	A→C	cdh	I21L	C40K
16.2	0.211	[0.100, 0.361]	1072719	T→G	torT	S57A	
15.5	0.238	[0.108, 0.413]	117940	A→C	hofC	T197P	
15.1	0.216	[0.106, 0.358]	4426361	T→G	ytfM	Y75D	
14.8	0.877	[0.769, 0.945]	4225047	T→G	malE	L102W	M40K C40K
14.8	0.148	[0.070, 0.266]	2795703	T→G	eno	A389A	
14.6	0.394	[0.191, 0.641]	1107473	T→G	ycdS	Y368D	
13.9	0.202	[0.090, 0.357]	733780	T→G	ybgD/gltA	–	
13.8	0.886	[0.786, 0.952]	3857359	A→C	yieH	Y75D	M40K C40K
13.5	0.168	[0.079, 0.294]	4000813	A→C	tatB	L42R	
13.4	0.149	[0.064, 0.270]	3334254	A→C	accC	A149A	
13.4	0.156	[0.071, 0.290]	671725	T→G	lnt	K418Q	
12.7	0.212	[0.088, 0.399]	2852765	T→G	ptr	M247L	
12.6	0.247	[0.104, 0.436]	1234875	T→G	nhaB/fadR	–	
11.8	0.217	[0.099, 0.383]	3983415	A→C	ECB_03712	V30V	
11.7	0.212	[0.090, 0.390]	406765	A→C	dxs	E612A	
11.5	0.158	[0.069, 0.295]	1318784	A→C	trpD	G65G	
11.3	0.258	[0.105, 0.475]	825819	A→C	dinG	L42R	
11.1	0.181	[0.075, 0.335]	1992277	T→G	shiA	A212A	
11.0	0.182	[0.078, 0.343]	2240388	T→G	yejO/narP	–	
11.0	0.894	[0.779, 0.955]	2520902	A→C	gcvR	S57A	M40K C40K
10.3	0.128	[0.052, 0.245]	687583	T→G	nagE	V515V	
9.8	0.284	[0.113, 0.523]	3117354	A→C	ygiE	I211M	
9.1	0.126	[0.051, 0.240]	3832123	T→G	dgoT/dgoD	–	
9.0	0.169	[0.064, 0.336]	3624614	T→G	yhjO	F39V	
8.9	0.211	[0.083, 0.410]	1011700	A→C	ssuC	I75S	
8.5	0.164	[0.062, 0.321]	4071050	T→G	frvA/ECB_03786	–	
8.3	0.158	[0.065, 0.299]	1921636	T→G	znuC	R133R	
8.2	0.894	[0.775, 0.960]	2853864	A→C	recC	S1062A	M40K C40K

Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
8.1	0.283	[0.115, 0.495]	1379337	A→C	*ycjV*	I50S	
8.0	0.114	[0.043, 0.230]	3514291	T→G	*yhhZ*	K326Q	
8.0	0.128	[0.053, 0.249]	3012650	A→C	ECB_02814	M112L	
7.7	0.103	[0.040, 0.199]	2572876	A→C	*yfhM*	L77L	
7.7	0.567	[0.199, 0.880]	3397902	A→C	*chiA/tuf*	–	
7.7	0.113	[0.042, 0.230]	1886123	T→G	*yobF*	V16V	
7.6	0.177	[0.065, 0.337]	1590239	T→G	*ydeE*	L381*	
7.4	0.145	[0.057, 0.267]	542707	T→G	*ybcK/ybcL*	–	
7.2	0.062	[0.025, 0.128]	2737645	T→G	*hycI*	M87L	
7.2	0.909	[0.798, 0.971]	3006683	T→G	*yafZ*	G231G	M40K C40K
7.0	0.175	[0.056, 0.380]	1046680	A→C	*yccW*	Q98H	
6.9	0.136	[0.048, 0.271]	2397100	A→C	*yfcTU*	G522G	
6.0	0.904	[0.788, 0.970]	4163173	A→C	*rpoB*	L773R	M40K C40K
5.9	0.096	[0.033, 0.214]	2810544	A→C	*gudP*	A162A	
5.6	0.091	[0.031, 0.191]	1091376	G→A	*putA*	Q1264P	
5.0	0.211	[0.069, 0.422]	3922668	T→G	*rep*	K64Q	
4.9	0.073	[0.025, 0.168]	4215197	A→C	*yjbF*	K2Q	
4.6	0.095	[0.033, 0.215]	835404	T→G	*ybiN*	N150H	
4.5	0.077	[0.025, 0.168]	3199372	A→C	*tdcA*	L243*	
4.2	0.073	[0.025, 0.168]	2258388	A→C	*yojI*	L111*	
4.1	0.071	[0.023, 0.159]	3066786	T→G	*yghR*	M172L	
4.0	0.924	[0.813, 0.980]	156770	A→C	*htrE*	S501A	M40K C40K
4.0	0.075	[0.025, 0.168]	4227537	A→C	*lamB*	L212*	
4.0	0.936	[0.843, 0.983]	2870517	T→G	*aas*	I40L	M40K C40K
3.7	0.129	[0.036, 0.298]	3313333	T→G	*argR/yhcN*	–	
3.7	0.080	[0.027, 0.182]	1473854	A→C	*ydcM*	F30V	
3.5	0.104	[0.029, 0.248]	538077	T→G	*intD*	R6R	
3.4	0.105	[0.030, 0.254]	1700237	A→C	*ydhK*	Y308S	
3.3	0.178	[0.052, 0.404]	4268795	A→C	*nrfC*	S19R	
3.1	0.087	[0.024, 0.209]	517246	T→G	*allC*	Y71*	
2.9	0.072	[0.018, 0.180]	2022902	A→C	*hisC*	F168C	
2.8	0.069	[0.019, 0.168]	4126750	T→G	*pflC*	L129*	
2.7	0.076	[0.022, 0.186]	3966663	T→G	ECB_03695	L9L	
2.6	0.100	[0.028, 0.242]	3046358	T→G	*yghJ/yghK*	–	
2.6	0.065	[0.018, 0.149]	3422569	A→C	*nirB*	V218V	
2.6	0.071	[0.019, 0.179]	2478622	A→C	*yfeY/yfeZ*	–	
2.6	0.080	[0.019, 0.201]	1126492	A→C	*mdoH*	D354A	
2.5	0.060	[0.017, 0.139]	2391434	A→C	*yfcB*	Q200P	
2.5	0.060	[0.016, 0.144]	2147344	A→C	*metG*	I616M	
2.3	0.070	[0.018, 0.170]	3817133	T→G	*yidJ*	Y402D	
2.3	0.051	[0.014, 0.133]	3591837	A→C	*yhiV*	I645L	
2.3	0.071	[0.019, 0.165]	449976	A→C	*ylaB*	K237Q	
2.2	0.057	[0.018, 0.130]	3771357	A→C	*yicI*	V741V	
2.2	0.065	[0.018, 0.166]	2635904	A→C	*srmB/yfiE*	–	
2.1	0.079	[0.021, 0.180]	3796133	A→C	ECB_03540/ ECB_03541	–	
2.0	0.075	[0.021, 0.180]	4342200	T→G	*dsbD*	K522Q	
2.0	0.061	[0.018, 0.153]	3044208	T→G	*yghJ*	K599T	
2.0	0.893	[0.699, 0.977]	2201029	T→G	*yeiH*	V25V	M40K C40K
1.9	0.938	[0.822, 0.988]	2290343	A→C	*yfaL*	Y176S	M40K C40K
1.7	0.059	[0.016, 0.142]	4357807	A→C	*frdD*	K91Q	
1.7	0.053	[0.015, 0.137]	1822917	T→G	*topB*	V424V	
1.7	0.906	[0.750, 0.981]	2937857	T→G	*visC*	L71R	M40K C40K
1.6	0.077	[0.022, 0.188]	4281477	A→C	*yjcQ*	F142V	
1.5	0.931	[0.830, 0.982]	3822363	A→C	*glvG*	M22R	M40K C40K
1.1	0.066	[0.014, 0.183]	2954535	C→A	*yggA*	L9F	
1.0	0.929	[0.797, 0.985]	1525072	A→C	*fdnH*	D154E	M40K C40K

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Table S6 | SNPs predicted in 30K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
0.9	0.066	[0.017, 0.150]	1817611	A→C	*ynjE*	Q306P	
0.8	0.047	[0.008, 0.117]	18348	A→C	*nhaA*	I287M	
0.7	0.061	[0.017, 0.150]	4509167	A→C	*sgcC*	I405M	
0.7	0.939	[0.828, 0.988]	3781398	T→G	ECB_03521	L21L	M40K C40K
0.7	0.067	[0.014, 0.187]	1831257	T→G	*ydjE/ydjF*	–	
0.7	0.912	[0.758, 0.983]	1834004	T→G	*ydjH*	S52A	M40K C40K
0.5	0.077	[0.015, 0.218]	885973	T→G	ECB_00825	I28L	
0.5	0.067	[0.017, 0.173]	1650331	T→G	*ydgE*	E5A	
0.4	0.074	[0.019, 0.186]	2951405	T→G	*ygfH*	S285A	
0.4	0.071	[0.015, 0.196]	2163878	A→C	*yehT*	H94Q	
0.4	0.055	[0.011, 0.151]	1991993	T→G	*shiA*	S118A	
0.3	0.057	[0.011, 0.159]	2373344	A→C	*purF*	L163V	
0.3	0.059	[0.013, 0.175]	1172273	A→C	*ycfH/ptsG*	–	
0.3	0.064	[0.013, 0.169]	2207366	T→G	*yeiM*	E386A	
0.3	0.062	[0.016, 0.151]	96840	A→C	*murE*	S291R	
0.3	0.117	[0.026, 0.313]	4210659	T→G	*yjbD/lysC*	–	
0.2	0.055	[0.011, 0.154]	929203	T→G	*hcp*	K440T	
0.2	0.054	[0.012, 0.154]	4065369	A→C	*yiiG*	F74C	
0.2	0.059	[0.013, 0.166]	3201051	A→C	*yhaB*	E55A	
0.2	0.060	[0.012, 0.163]	4134580	A→C	*argE*	F43L	
0.2	0.050	[0.011, 0.146]	3684364	A→C	ECB_03438	Q215P	
0.1	0.074	[0.015, 0.191]	1212577	A→C	*ycgW/ycgX*	–	
0.1	0.050	[0.011, 0.139]	70783	A→C	*araA*	F120C	
0.1	0.054	[0.014, 0.138]	3933148	T→G	*wecC*	I30S	
0.1	0.065	[0.014, 0.184]	1224269	A→C	*ycgI/minE*	–	
0.1	0.048	[0.008, 0.132]	3364013	T→G	*rrmB*	Q301P	
0.1	0.050	[0.009, 0.132]	3039159	T→G	*yghF*	I232M	
0.1	0.049	[0.010, 0.133]	1575930	A→C	*uxaB*	V432V	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
148.2	0.543	[0.444, 0.641]	3766861	A→C	*gltS*	L283V	
142.4	0.439	[0.343, 0.531]	2732014	C→A	*hypF*	R91L	C20K+
141.3	0.550	[0.453, 0.651]	3848250	A→C	*trmE*	L354F	
125.6	0.543	[0.442, 0.653]	3643009	A→C	*yhjY*	T128T	
121.6	0.485	[0.381, 0.589]	4038134	T→G	*bipA*	S490S	C40K
117.5	0.485	[0.380, 0.590]	301762	A→C	*betI*	N74K	C40K
116.6	0.522	[0.403, 0.633]	1476673	A→C	*ydcN*	Q131P	
116.5	0.515	[0.399, 0.627]	1051540	A→C	*hyaB*	K399T	
115.5	0.551	[0.436, 0.657]	3635650	T→G	*dppB*	D200A	
115.1	0.579	[0.473, 0.676]	70484	A→C	*araA*	S220A	
114.7	0.520	[0.404, 0.634]	1470975	T→G	*tehA*	V98V	C40K
114.6	0.527	[0.410, 0.639]	2482625	T→G	*yfeG*	K26T	
114.5	0.649	[0.556, 0.740]	3985016	T→G	ECB_03714	N460H	
113.5	0.507	[0.395, 0.632]	1342163	A→C	*yciT*	D185E	C40K
111.8	0.528	[0.410, 0.641]	274893	T→G	*yagV*	T165T	
111.5	0.477	[0.370, 0.587]	2745079	T→G	*hycA*	N73H	C40K
110.7	0.548	[0.429, 0.657]	2717011	T→G	*recX*	N163T	
110.5	0.510	[0.387, 0.626]	4328586	A→C	*dcuR*	L55R	
110.2	0.436	[0.337, 0.538]	2391445	T→G	*yfcB*	L196F	
110.1	0.532	[0.417, 0.641]	3622487	A→C	*yhjO*	L748V	
109.9	0.574	[0.465, 0.680]	3559403	A→C	*yhiH*	I275S	
109.1	0.465	[0.363, 0.574]	2733684	A→C	*ascG*	L148L	
108.4	0.537	[0.415, 0.652]	3950156	T→G	*hemX*	Q247H	
108.2	0.501	[0.388, 0.613]	1570155	T→G	*ydeU*	–	
108.2	0.571	[0.459, 0.677]	150410	T→G	*yadD*	Y214D	
107.8	0.508	[0.386, 0.629]	608267	T→G	*entC*	D225E	
107.5	0.445	[0.346, 0.553]	2754688	T→G	*pphB*	I23M	C40K
107.3	0.527	[0.407, 0.645]	750766	T→G	*ybgG*	F636C	
107.2	0.518	[0.393, 0.634]	4178224	T→G	*hemE*	A299A	
106.7	0.542	[0.422, 0.655]	835063	T→G	*ybiN*	L36R	
106.7	0.512	[0.394, 0.633]	779376	T→G	*ybhE*	V54V	
106.7	0.476	[0.368, 0.588]	3413924	T→G	*yhfA/crp*	–	
105.7	0.483	[0.368, 0.588]	1202149	A→C	*pepT*	E312D	
105.6	0.457	[0.348, 0.571]	2657995	T→C	*yfiO*	S148P	C40K
105.1	0.487	[0.373, 0.603]	1925689	A→C	*ruvC*	V153G	
105.1	0.500	[0.386, 0.614]	1452976	T→G	*hrpA*	I176M	
104.8	0.533	[0.416, 0.649]	3683129	T→G	ECB_03437	L274V	
104.2	0.501	[0.390, 0.624]	4196615	A→C	*aceA*	E21A	
104.1	0.495	[0.376, 0.601]	3985191	A→C	ECB_03714	D401E	
103.9	0.499	[0.380, 0.610]	4353481	A→C	*yjeK*	F296L	
103.8	0.594	[0.475, 0.688]	2581846	T→G	*iscS*	N129H	
103.3	0.392	[0.288, 0.497]	2083757	G→T	*yegI*	H137N	C40K
103.2	0.514	[0.390, 0.639]	2667587	T→G	*rpsP*	V2V	
102.8	0.547	[0.429, 0.657]	4313364	T→G	*yjdB*	Q314P	
102.3	0.465	[0.359, 0.583]	3955552	T→G	*cyaA/cyaY*	–	C40K
102.0	0.579	[0.465, 0.690]	4178271	T→G	*hemE*	F315C	
101.9	0.512	[0.389, 0.640]	2637769	T→G	*yfiD*	P58P	
101.8	0.501	[0.380, 0.609]	2333346	A→C	ECB_02200	K228Q	C40K
101.0	0.466	[0.355, 0.592]	4448669	G→T	*treB*	P263P	C40K
101.0	0.513	[0.383, 0.632]	3382408	A→C	*gspA*	L299*	
100.7	0.547	[0.421, 0.658]	2151897	A→C	*yehI*	V141V	
100.2	0.587	[0.467, 0.693]	788462	T→G	ECB_00726	K187N	
100.1	0.508	[0.385, 0.631]	3184511	A→C	*yqjG*	I152L	
100.0	0.495	[0.383, 0.617]	1569491	T→G	*ydeU*	–	
99.7	0.497	[0.382, 0.620]	1879113	T→G	*yoaE*	K351T	
99.6	0.517	[0.392, 0.636]	4124667	A→C	*pflD*	Y189S	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
99.6	0.598	[0.484, 0.705]	311852	A→C	yahG	K293N	
99.1	0.573	[0.464, 0.683]	2341014	T→G	nuoH	E7A	
98.6	0.489	[0.372, 0.605]	3917503	T→G	ilvA	F124C	C40K
98.3	0.502	[0.383, 0.619]	1539153	A→C	dos	I173M	
98.2	0.522	[0.398, 0.647]	1987874	T→G	yeeJ	N1671K	C40K
98.1	0.551	[0.419, 0.666]	1866969	A→C	fadD	D452E	
97.5	0.561	[0.435, 0.673]	126070	T→G	aceE	S84A	
97.4	0.594	[0.478, 0.701]	1421493	T→G	ECB_01341	F258C	
97.2	0.481	[0.365, 0.599]	2861475	A→C	ptsP	I527S	
97.1	0.457	[0.349, 0.572]	4511435	A→C	sgcX	S119A	C40K
96.8	0.516	[0.391, 0.638]	1145382	T→G	flgA	L18F	
95.9	0.477	[0.361, 0.591]	771751	A→C	galE	W312G	
95.8	0.434	[0.322, 0.536]	466947	A→C	recR	E159A	
95.4	0.277	[0.205, 0.355]	2770060	T→G	cysN	E74A	
95.4	0.564	[0.447, 0.680]	274584	T→G	ykgJ/yagV	–	
94.7	0.639	[0.522, 0.734]	2506175	T→G	aegA	E60A	
94.4	0.531	[0.394, 0.652]	1544321	A→C	xasA	F40L	
94.3	0.454	[0.343, 0.572]	454759	A→C	acrB	V571G	
94.2	0.568	[0.454, 0.691]	2577786	A→C	hscA	*617E	
93.9	0.560	[0.441, 0.676]	4581674	A→C	tsr	G261G	
93.8	0.533	[0.396, 0.650]	4606447	A→C	yjjI/deoC	–	
93.5	0.514	[0.388, 0.642]	3724516	T→G	secB	N127H	C40K
93.2	0.467	[0.353, 0.585]	3482156	T→G	malT	L158V	
93.1	0.475	[0.360, 0.592]	14590	A→C	dnaJ	E142A	
92.5	0.472	[0.355, 0.585]	2831467	A→C	fucI	Q422P	
92.5	0.548	[0.419, 0.670]	3829499	T→G	yidR	I47L	
92.3	0.515	[0.384, 0.646]	2663688	T→G	yfiR	I136S	
92.0	0.521	[0.378, 0.638]	3092844	T→G	yqhH	L16V	
92.0	0.547	[0.411, 0.664]	411119	T→G	thiI	D383E	
91.9	0.536	[0.404, 0.652]	4119884	A→C	ptsA	V815V	
91.6	0.574	[0.454, 0.695]	2659676	T→G	pheA	H175Q	
91.4	0.478	[0.358, 0.592]	463771	A→C	apt	E98A	C40K
91.1	0.551	[0.420, 0.661]	3275625	T→G	yrbG	I39S	
91.0	0.589	[0.474, 0.704]	3288693	T→G	yhcC	Q198P	
91.0	0.510	[0.377, 0.640]	3478384	T→G	malQ	K96T	
90.7	0.485	[0.361, 0.600]	2387080	A→C	yfcK	P575P	C40K
90.5	0.475	[0.355, 0.593]	3932175	T→G	wecB	I81M	C40K
90.0	0.502	[0.378, 0.636]	4403583	A→C	rpsF	K104T	C40K
89.9	0.493	[0.370, 0.616]	214869	A→C	yaeR	N51H	
89.8	0.569	[0.440, 0.684]	3720948	T→G	lldD	T104T	
89.8	0.502	[0.378, 0.623]	3179466	A→C	exuT	L443F	
89.6	0.464	[0.351, 0.587]	1477302	A→C	ydcP	I138L	C40K
89.5	0.476	[0.360, 0.601]	90037	T→G	ilvI	V535G	
89.4	0.477	[0.361, 0.600]	471680	T→G	aes	I121L	C40K
89.4	0.541	[0.410, 0.664]	1715410	T→G	purR	N100K	
89.4	0.431	[0.321, 0.542]	1619782	T→G	hokD/ECB_01533	–	
89.0	0.447	[0.330, 0.561]	2739365	T→G	hycF	E83A	
88.6	0.512	[0.375, 0.642]	1726466	T→G	ydhT	S121R	
88.6	0.497	[0.376, 0.625]	1935892	C→A	torY	M337I	
88.5	0.583	[0.461, 0.696]	140021	A→C	cueO	N46H	
88.4	0.559	[0.433, 0.684]	1986212	T→G	yeeJ	F1117L	
88.0	0.516	[0.387, 0.645]	2644861	T→G	pssA	D214E	
87.9	0.546	[0.418, 0.673]	2892605	T→G	ygeW	Y197D	
87.8	0.485	[0.352, 0.616]	3938427	G→T	wzxE	G117V	
87.7	0.533	[0.403, 0.659]	116302	A→C	guaC	K19Q	
87.7	0.535	[0.411, 0.666]	3378700	T→G	rplB	A190A	

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
87.4	0.504	[0.377, 0.625]	1550111	A→C	yddB	F487C	
86.6	0.482	[0.359, 0.602]	3711747	A→C	yibL/ECB_03459	–	C40K
86.2	0.470	[0.346, 0.588]	2500146	A→C	talA	E218A	
86.0	0.534	[0.4,00 0.664]	984510	T→G	msbA	V266V	
85.8	0.496	[0.375, 0.627]	1320730	A→C	trpL/yciV	–	
85.6	0.546	[0.410, 0.666]	3178270	A→C	exuT	K45Q	
85.6	0.491	[0.369, 0.619]	3998959	A→C	ubiB	D88A	C40K
85.5	0.528	[0.401, 0.664]	4280814	T→G	yjcQ	I363L	
85.4	0.510	[0.375, 0.643]	2084094	T→G	yegI	E24D	
85.1	0.581	[0.461, 0.689]	2826819	A→C	ECB_02650	S160A	
85.1	0.511	[0.371, 0.628]	2324823	T→G	menD	D317A	
84.5	0.618	[0.507, 0.725]	4318148	T→G	adiA	H364P	
84.4	0.567	[0.441, 0.689]	2192971	A→C	galS/yeiB	–	
84.3	0.543	[0.420, 0.671]	122775	T→G	ampE	S231A	
84.2	0.465	[0.348, 0.597]	3384665	A→C	gspD	R128R	
84.2	0.648	[0.530, 0.751]	1052737	T→G	hyaC	F194C	
83.7	0.576	[0.447, 0.698]	4179222	T→G	yjaG	F36C	
83.5	0.442	[0.325, 0.561]	1867570	A→C	fadD	L252R	
83.4	0.534	[0.400, 0.665]	1513007	T→G	narZ	K1245N	
83.4	0.583	[0.449, 0.701]	2948714	T→G	sbm	V705G	
83.2	0.476	[0.354, 0.604]	4033030	T→G	glnG	E169D	
83.0	0.503	[0.373, 0.644]	10269	A→C	yaaH	F75C	C40K
82.6	0.389	[0.284, 0.496]	808158	T→G	uvrB	F669L	C40K
82.3	0.509	[0.371, 0.647]	3614898	A→C	yhjK	A58A	
82.3	0.577	[0.441, 0.697]	161258	A→C	pcnB	D229E	
82.0	0.534	[0.389, 0.664]	1796383	A→C	celD	P110P	
81.9	0.397	[0.288, 0.502]	4238487	T→G	zur	E150A	
81.6	0.464	[0.338, 0.582]	1538251	A→C	dos	L474R	
81.6	0.585	[0.455, 0.703]	434661	T→G	ppiD	F231C	
81.5	0.362	[0.261, 0.466]	2759524	A→C	ygbM	E143A	C40K
81.2	0.472	[0.342, 0.588]	3375800	A→C	rplN	V85V	
81.2	0.534	[0.399, 0.668]	3500952	A→C	glgX	L608V	C40K
81.2	0.399	[0.285, 0.526]	3718728	G→T	lldP	G174C	C40K
81.1	0.458	[0.338, 0.581]	3106762	A→C	mdaB	N21H	
81.0	0.592	[0.464, 0.711]	2366449	A→C	yfcI	F228C	
80.9	0.516	[0.381, 0.654]	3888652	A→C	yieM	L438R	
79.6	0.437	[0.322, 0.560]	3281577	A→C	yhbH	N57T	C40K
79.6	0.536	[0.400, 0.663]	3540412	T→G	yhhQ	F170V	
79.4	0.457	[0.335, 0.582]	768010	T→G	gpmA	D72A	
79.3	0.482	[0.357, 0.613]	2146981	A→C	metG	V495V	
79.2	0.501	[0.370, 0.630]	1570553	A→C	ydeU	–	C40K
79.2	0.403	[0.289, 0.532]	3573398	C→A	yhiQ	W142L	
79.0	0.453	[0.335, 0.581]	3922213	A→C	yifN	–	C40K
79.0	0.579	[0.450, 0.706]	1087261	T→G	ycdJ	E263D	
78.9	0.591	[0.462, 0.703]	3030817	A→C	yghE	–	
78.9	0.557	[0.425, 0.685]	2229500	T→G	yejG/bcr	–	
78.8	0.468	[0.344, 0.599]	4268795	A→C	nrfC	S19R	
78.8	0.353	[0.256, 0.454]	125265	A→C	pdhR	K124Q	C40K
78.5	0.412	[0.307, 0.520]	1522293	A→C	fdnG	K248T	C40K
78.4	0.432	[0.315, 0.554]	3211263	T→G	agaR	I111L	C40K
78.4	0.509	[0.369, 0.650]	4413951	T→G	fklB	F6L	
78.4	0.521	[0.379, 0.657]	643694	T→G	ybeF	M90L	C40K
78.4	0.511	[0.371, 0.647]	1870303	A→C	yoaA	L504W	
78.2	0.411	[0.300, 0.534]	383083	A→C	sbcC	L365R	C40K
78.1	0.613	[0.496, 0.729]	613568	T→G	cstA	–	
78.1	0.449	[0.324, 0.568]	1690600	T→G	ydgR	F213C	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
77.8	0.543	[0.398, 0.667]	4158399	T→G	*rplK*	A114A	
77.8	0.503	[0.371, 0.647]	618019	T→G	*ybdM*	S19R	
77.7	0.573	[0.448, 0.697]	532283	T→G	*sfmD*	L160W	
77.6	0.625	[0.502, 0.732]	3679502	A→C	*sgbH*	K157T	
77.5	0.467	[0.343, 0.598]	2181152	T→G	*yohI*	Q158P	
77.4	0.475	[0.348, 0.607]	103062	T→G	*murG*	A205A	
77.4	0.481	[0.352, 0.605]	1634870	T→G	*ynfD*	I37M	C40K
77.3	0.533	[0.387, 0.668]	1801265	A→C	*ydjQ*	E162D	
77.3	0.456	[0.340, 0.589]	3270765	A→C	*murA*	F322C	
77.3	0.500	[0.369, 0.632]	4613809	A→C	*serB*	K234T	C40K
77.2	0.507	[0.366, 0.654]	685932	A→C	*nagB/nagE*	–	
77.0	0.525	[0.377, 0.660]	2398568	A→C	*yfcTU*	I33S	
76.9	0.424	[0.317, 0.546]	2790674	T→G	*ygcE*	D93E	C40K
76.7	0.550	[0.416, 0.683]	3620566	T→G	*yhjN*	I512L	
76.6	0.450	[0.325, 0.575]	4590702	A→C	*dnaT*	V17G	
76.6	0.492	[0.351, 0.632]	3722953	G→T	*cysE*	R126S	C40K
76.6	0.387	[0.284, 0.501]	2159082	A→C	*yehM*	H731P	C40K
76.4	0.544	[0.406, 0.676]	1007123	T→G	*pncB*	I109L	
76.4	0.526	[0.386, 0.668]	2189980	T→G	*mglA*	K183T	
76.4	0.414	[0.301, 0.534]	1161679	A→C	*yceD*	Y106S	
76.3	0.516	[0.379, 0.637]	2503021	G→T	*ypfG*	L195L	C40K
76.1	0.486	[0.353, 0.617]	3967850	A→C	*rarD*	L255R	
75.9	0.545	[0.406, 0.679]	3945354	T→G	*aslB*	I199M	
75.9	0.554	[0.415, 0.683]	4538522	A→C	*yjiE*	S228A	
75.8	0.447	[0.326, 0.575]	3624864	A→C	*yhjQ*	–	
75.8	0.531	[0.388, 0.666]	1909010	A→C	*yebF/yebG*	–	C40K
75.6	0.543	[0.407, 0.674]	818258	A→C	*ybhR*	L159R	
75.5	0.462	[0.336, 0.591]	3190478	A→C	*yhaO*	L168R	
75.4	0.568	[0.432, 0.694]	1538177	A→C	*dos*	Y499D	
75.3	0.516	[0.374, 0.664]	1741713	A→C	*sufA/ydiH*	–	
75.0	0.545	[0.416, 0.680]	3601216	A→C	*yhjB*	D57E	
74.8	0.512	[0.380, 0.654]	59693	A→C	*imp*	S538A	
74.8	0.623	[0.499, 0.738]	4308047	T→G	*yjdA*	I733M	
74.8	0.587	[0.457, 0.715]	2920951	T→G	*prfB*	E362A	C40K
74.5	0.442	[0.321, 0.567]	1278683	A→C	*narK*	I193L	C40K
74.5	0.508	[0.367, 0.653]	1976045	T→G	*yedV*	E36A	
74.3	0.474	[0.347, 0.607]	1105099	T→G	*ycdR*	I348I	
74.2	0.468	[0.339, 0.591]	2240529	A→C	*narP*	D14A	
74.2	0.427	[0.310, 0.554]	2898260	T→G	*yqeA/yqeB*	–	
73.6	0.480	[0.343, 0.609]	2939257	T→G	*ubiH*	I5L	
73.6	0.532	[0.384, 0.672]	839969	T→G	*glnH*	K221Q	
73.5	0.420	[0.303, 0.545]	3016033	T→G	ECB_02816	I485S	
73.5	0.584	[0.449, 0.705]	1413982	T→G	*recE*	K192T	
73.4	0.554	[0.405, 0.683]	3855776	A→C	*yieG*	S399A	
73.3	0.526	[0.387, 0.668]	2083327	T→G	*yegI*	E280A	
73.1	0.396	[0.288, 0.520]	3492316	T→G	*glpD/yzgL*	–	
73.0	0.340	[0.240, 0.446]	342446	A→C	*mhpA*	E427A	C40K
72.5	0.454	[0.325, 0.584]	4353840	A→C	*yjeK*	W177G	C40K
72.3	0.454	[0.325, 0.576]	931180	A→C	*ybjE*	L129V	C40K
72.2	0.501	[0.366, 0.637]	326195	T→G	*prpE*	A280A	
72.1	0.525	[0.386, 0.668]	3574318	A→C	*prlC*	S519A	
72.0	0.576	[0.441, 0.701]	4355818	T→G	*sugE*	L78R	
71.9	0.482	[0.349, 0.618]	1738400	A→C	*sufD*	F220C	C40K
71.9	0.592	[0.457, 0.720]	1364451	A→C	*goaG*	S178S	
71.9	0.534	[0.396, 0.675]	4307275	T→G	*yjdA*	I476S	
71.8	0.461	[0.330, 0.594]	4058150	A→C	*yiiF/fdhE*	–	

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Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
71.7	0.519	[0.378, 0.661]	3768014	A→C	*yicE*	N10H	
71.7	0.570	[0.433, 0.703]	3096581	A→C	*sufI*	V87V	
71.7	0.508	[0.374, 0.644]	1966410	C→A	*yecR*	G65G	C40K
71.6	0.523	[0.373, 0.664]	941033	T→G	*clpA*	V307V	
71.4	0.508	[0.369, 0.650]	2075227	A→C	*dcd*	L65L	C40K
71.3	0.488	[0.360, 0.626]	1555678	A→C	*ydeN*	V266V	C40K
71.3	0.400	[0.284, 0.515]	3856914	A→C	*yieG*	F19L	C40K
71.3	0.484	[0.341, 0.625]	3574505	C→A	*prlC*	P456P	C40K
71.2	0.394	[0.281, 0.507]	3650528	A→C	*cspA*	I8L	C40K
71.2	0.547	[0.406, 0.680]	2625494	T→G	*rncS*	E21A	C40K
71.1	0.514	[0.376, 0.662]	1808909	T→G	*astC*	L113L	
70.8	0.492	[0.357, 0.628]	1543641	A→C	*xasA*	L267R	
70.6	0.565	[0.423, 0.698]	898853	T→G	ECB_00842	I84M	
70.3	0.393	[0.281, 0.513]	4552312	T→G	*yjiV*	–	C40K
70.1	0.414	[0.303, 0.546]	1331374	A→C	*topA*	E652A	
70.0	0.341	[0.240, 0.445]	3459043	A→C	*hslO*	K196Q	C40K
69.9	0.301	[0.215, 0.404]	2740772	A→C	*hycE*	L187R	C40K
69.8	0.558	[0.425, 0.699]	4275557	T→G	*yjcO*	N131H	
69.6	0.404	[0.289, 0.532]	424738	T→G	*yajG*	V45V	C40K
69.6	0.571	[0.433, 0.699]	801303	A→C	*bioA*	F194C	
69.5	0.560	[0.423, 0.698]	2079706	T→G	*yegE*	Y1079D	
69.3	0.594	[0.458, 0.720]	1680600	A→C	*ydgJ*	A301A	
69.2	0.493	[0.354, 0.629]	575344	A→C	*cusS*	F110L	C40K
69.1	0.447	[0.316, 0.577]	1332725	A→C	*cysB*	N167H	
69.0	0.449	[0.315, 0.577]	1798721	A→C	*celA*	L55*	
68.9	0.614	[0.471, 0.721]	2396548	A→C	*yfcTU*	V706V	
68.5	0.369	[0.261, 0.483]	4545297	T→G	*yjiL*	K103Q	C40K
68.4	0.395	[0.277, 0.517]	1411992	T→G	*recE*	S855S	
68.4	0.606	[0.472, 0.726]	370685	A→C	*phoA*	S431S	
68.4	0.612	[0.473, 0.731]	2992993	A→C	*speC*	F608C	
68.4	0.583	[0.450, 0.720]	3471921	T→G	*yhgA*	F30L	
68.3	0.595	[0.457, 0.720]	3428587	A→C	*yhfM*	K258T	
68.3	0.403	[0.289, 0.521]	3835234	A→C	*dgoR*	S96R	C40K
68.3	0.623	[0.497, 0.750]	3410000	A→C	*yheS*	K269N	
68.2	0.606	[0.468, 0.732]	4526090	T→G	*fimD*	F27L	
68.1	0.560	[0.423, 0.702]	1891498	T→G	*prc*	K632N	
68.0	0.381	[0.272, 0.501]	100218	A→C	*murD*	I110L	C40K
68.0	0.390	[0.272, 0.521]	1464880	C→A	*ydcI*	D101Y	C40K
67.7	0.592	[0.457, 0.707]	383324	G→T	*sbcC*	L285M	
67.7	0.405	[0.290, 0.537]	2479320	A→C	*ypeA*	M113R	
67.5	0.586	[0.450, 0.720]	1578876	A→C	*yneF/yneG*	–	
67.4	0.516	[0.358, 0.664]	3187264	A→C	*yhaJ/yhaK*	–	C40K
67.4	0.528	[0.383, 0.676]	4048871	A→C	*yihS*	W345G	
67.2	0.549	[0.405, 0.685]	1017850	A→C	*ycbS*	Q515P	
67.0	0.467	[0.333, 0.602]	298983	T→G	*betA*	Q305P	C40K
67.0	0.355	[0.242, 0.475]	47721	C→A	*fixB*	T113T	C40K
66.9	0.515	[0.369, 0.650]	1706773	C→A	*lhr*	R165S	C40K
66.9	0.516	[0.358, 0.664]	2062763	T→G	*wcaE*	I32L	
66.8	0.399	[0.284, 0.524]	3680670	T→G	*sgbE*	P43P	
66.7	0.476	[0.337, 0.613]	3499025	T→G	*glgA*	K155Q	C40K
66.5	0.610	[0.483, 0.740]	1837790	T→G	*ydjL*	I258L	
66.5	0.599	[0.450, 0.720]	2387986	A→C	*yfcM*	C120G	
66.4	0.508	[0.349, 0.652]	1586990	G→A	*marR*	P35P	
66.3	0.467	[0.318, 0.607]	704406	G→T	*kdpD*	R703S	
66.1	0.641	[0.505, 0.754]	3559434	T→G	*yhiH*	I265L	
66.1	0.457	[0.327, 0.594]	1599820	A→C	*ydfJ*	V78G	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
66.0	0.483	[0.341, 0.624]	261741	A→C	*yafA*	T242P	
66.0	0.543	[0.404, 0.690]	2010682	T→G	*yeeA*	Y118S	
65.9	0.580	[0.441, 0.714]	3184072	T→G	*yqjG*	I5M	C40K
65.9	0.388	[0.276, 0.512]	2587662	A→C	*hcaT*	V295G	C40K
65.8	0.459	[0.333, 0.593]	1174059	T→G	*fhuE*	T688P	
65.8	0.437	[0.305, 0.569]	837928	T→G	*ybiO*	T60P	
65.8	0.564	[0.414, 0.695]	2560912	T→G	*hisS*	V161V	
65.7	0.534	[0.399, 0.667]	3097048	C→A	*plsC*	P202P	
65.7	0.589	[0.450, 0.720]	4369596	T→G	*yjeQ*	K23N	
65.6	0.416	[0.289, 0.546]	1936718	T→G	*torY*	K62T	C40K
65.6	0.405	[0.291, 0.544]	1993134	A→C	*amn*	V25V	C40K
65.5	0.481	[0.339, 0.611]	1042577	A→C	*helD*	E339A	
65.4	0.640	[0.516, 0.757]	3530992	A→C	*rpoH*	R159R	
65.3	0.467	[0.330, 0.604]	154388	A→C	*yadK*	L18R	C40K
65.3	0.447	[0.312, 0.576]	2886673	T→G	*xdhA*	W192G	
65.3	0.585	[0.442, 0.710]	2962850	T→G	*yggP*	I120L	
65.2	0.387	[0.271, 0.517]	2489436	A→C	*eutG*	L302W	C40K
65.1	0.444	[0.321, 0.585]	332612	T→G	*cynX*	L22R	C40K
65.1	0.432	[0.306, 0.568]	3605645	T→G	*yhjE/yhjG*	–	C40K
65.0	0.451	[0.317, 0.586]	3661307	T→G	*xylA/xylF*	–	
64.9	0.575	[0.442, 0.713]	3945610	T→G	*aslB*	S285A	C40K
64.8	0.505	[0.354, 0.648]	4344081	C→T	*cutA/dcuA*	–	
64.8	0.439	[0.306, 0.569]	2361786	A→C	*yfcC*	N372H	C40K
64.7	0.612	[0.477, 0.741]	4393997	T→G	*aidB*	L523W	
64.7	0.608	[0.474, 0.730]	3655740	T→G	*glyQ*	I13L	
64.5	0.536	[0.391, 0.692]	1446528	T→G	*ydbD*	F684C	
64.4	0.671	[0.555, 0.777]	3924548	T→G	*gppA*	*495S	
64.3	0.559	[0.413, 0.702]	1476493	A→C	*ydcN*	Q71P	
64.3	0.402	[0.285, 0.537]	2744019	T→G	*hycC*	K28T	
64.2	0.396	[0.275, 0.522]	331559	T→G	*cynT*	S69A	C40K
64.1	0.561	[0.414, 0.696]	31535	T→G	*rihC*	N57K	
64.1	0.490	[0.350, 0.632]	439367	T→G	*ybaE*	N5H	
64.1	0.445	[0.308, 0.576]	2342242	A→C	*nuoG*	G507G	
64.0	0.472	[0.334, 0.614]	3786228	T→G	ECB_03524	N14H	
63.9	0.454	[0.314, 0.586]	3290769	A→C	*gltB*	A301A	
63.9	0.489	[0.350, 0.633]	1300941	T→G	*oppB*	L150*	
63.8	0.590	[0.450, 0.726]	2010638	A→C	*yeeA*	S133A	
63.8	0.535	[0.395, 0.679]	179508	T→G	*yadR*	V19V	C40K
63.7	0.427	[0.299, 0.553]	1904444	T→G	*yobB*	F143L	C40K
63.6	0.386	[0.271, 0.515]	3114886	T→G	*ygiC*	Y98*	C40K
63.4	0.447	[0.318, 0.585]	2811069	T→G	*gudP/yqcA*	–	
63.4	0.414	[0.285, 0.536]	3617683	T→G	*bcsC*	K328T	C40K
63.3	0.587	[0.442, 0.719]	184644	A→C	*degP*	K307Q	
63.1	0.565	[0.422, 0.698]	4452279	A→C	*mgtA*	T460P	
63.0	0.595	[0.457, 0.717]	3968878	T→G	*yigI*	E85D	
62.8	0.578	[0.432, 0.714]	3479626	T→G	*malP*	Q483P	
62.8	0.452	[0.320, 0.595]	3562858	T→G	*yhiJ*	N141H	
62.7	0.373	[0.257, 0.496]	1036240	T→G	*ompA*	E302A	C40K
62.6	0.611	[0.459, 0.730]	3902663	T→G	*yieP*	M158L	
62.6	0.369	[0.256, 0.482]	4139889	T→G	*udhA*	K255Q	C40K
62.6	0.439	[0.312, 0.576]	1748131	T→G	*ydiL*	L84V	
62.5	0.486	[0.341, 0.625]	1948158	A→C	*tap*	S533A	
62.4	0.519	[0.372, 0.668]	2541919	A→C	*upp/purM*	–	
62.3	0.624	[0.492, 0.751]	3483277	A→C	*malT*	L531F	
62.3	0.499	[0.356, 0.644]	2897800	T→G	*yqeA*	I195M	C40K
62.0	0.385	[0.267, 0.513]	4118298	T→G	*gldA*	Q282P	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
62.0	0.498	[0.353, 0.648]	3343513	A→C	*acrF*	K197T	
62.0	0.574	[0.441, 0.710]	3517253	G→A	*ggt*	L83L	
61.9	0.485	[0.338, 0.627]	3189084	T→G	*yhaM*	I201L	
61.8	0.496	[0.341, 0.625]	4334857	A→C	*yjdL*	L92R	
61.7	0.527	[0.379, 0.685]	1062586	T→G	*yccZ*	L103L	
61.5	0.628	[0.483, 0.746]	1930515	T→G	*yecE*	F117L	
61.4	0.513	[0.358, 0.663]	2602523	T→G	*yphG*	N308H	
61.4	0.566	[0.422, 0.713]	146285	A→C	*yadG*	D235A	
61.3	0.557	[0.402, 0.699]	4574169	A→C	*hpaX*	F33C	
61.3	0.482	[0.344, 0.637]	2921752	T→G	*prfB*	N95T	
61.3	0.457	[0.320, 0.596]	635217	A→C	*citA*	E132A	C40K
61.1	0.529	[0.377, 0.685]	2508339	T→G	*narQ/acrD*	–	
61.1	0.492	[0.341, 0.640]	2165584	G→T	*yehU*	V86V	C40K
60.8	0.439	[0.309, 0.586]	3991051	A→C	ECB_03719	G196G	
60.5	0.465	[0.329, 0.616]	4227464	T→G	*lamB*	Y188D	C40K
60.3	0.423	[0.292, 0.552]	3325845	T→G	*maf*	E142A	C40K
60.2	0.391	[0.272, 0.516]	1395417	T→G	*ydaA*	I126L	
60.2	0.525	[0.367, 0.676]	2410532	A→C	*yfdC*	N264H	
60.2	0.537	[0.382, 0.681]	4288775	A→C	*alsA*	I343S	
59.9	0.394	[0.276, 0.530]	1759732	T→G	*ydiS*	V357G	C40K
59.8	0.546	[0.391, 0.693]	558583	T→G	ECB_00517/*appY*	–	
59.8	0.411	[0.286, 0.544]	1547418	T→G	*pqqL*	E579A	C40K
59.8	0.470	[0.329, 0.615]	4048043	T→G	*yihR*	H169P	
59.7	0.578	[0.423, 0.708]	3493684	A→C	ECB_03279	D82E	
59.7	0.309	[0.205, 0.432]	3495915	G→T	*glgP*	G707G	C40K
59.6	0.410	[0.274, 0.569]	426998	C→A	*tig*	F387L	C40K
59.5	0.382	[0.267, 0.504]	3564485	T→G	*yhiKL*	G221G	
59.5	0.496	[0.350, 0.633]	4563802	T→G	*hsdR*	E312A	
59.1	0.629	[0.486, 0.751]	3123205	T→G	*yqiH*	N163K	
58.9	0.470	[0.325, 0.617]	4180803	A→C	*yjaH*	E209A	C40K
58.8	0.479	[0.332, 0.630]	98071	T→G	*murF*	F206L	C40K
58.8	0.473	[0.329, 0.616]	1308543	T→G	*yciI/tonB*	–	
58.8	0.376	[0.262, 0.507]	902709	T→G	*tfaE*	A126A	C40K
58.7	0.520	[0.372, 0.669]	4099603	T→G	*menA*	D77A	
58.6	0.479	[0.332, 0.629]	2285933	T→G	*gyrA*	Y63S	C40K
58.6	0.368	[0.246, 0.501]	399655	C→A	*yajD/tsx*	–	C40K
58.5	0.606	[0.460, 0.736]	1701303	A→C	*ydhK*	P663P	
58.4	0.493	[0.344, 0.639]	333953	T→G	*lacA*	N155T	
58.4	0.633	[0.502, 0.761]	1745953	T→G	*ydiJ/ydiK*	–	
58.3	0.366	[0.258, 0.500]	648307	A→C	*mrdB*	I197M	C40K
58.3	0.460	[0.325, 0.618]	847206	T→G	*ybiR*	L312*	C40K
58.3	0.451	[0.312, 0.598]	2925198	A→C	*xerD*	L100R	
58.1	0.525	[0.367, 0.676]	4519579	A→C	*yjhA*	S21A	
58.0	0.448	[0.317, 0.586]	1053748	A→C	*hyaE*	N102H	
58.0	0.544	[0.393, 0.684]	2978466	A→C	*gshB*	T280P	
57.8	0.311	[0.214, 0.426]	477305	T→G	*ushA*	Y109D	
57.6	0.526	[0.365, 0.682]	1310805	T→G	*yciC*	G151G	
57.4	0.296	[0.206, 0.402]	44987	T→G	*caiT*	N380H	
57.4	0.503	[0.352, 0.648]	4557027	T→G	*mcrB*	N86H	
57.3	0.675	[0.546, 0.788]	937322	T→G	*macB*	F90L	
57.2	0.593	[0.443, 0.730]	200258	A→C	*yaeL*	S291R	
56.8	0.400	[0.276, 0.543]	312970	A→C	*yahI*	N53H	
56.8	0.434	[0.303, 0.578]	1129502	A→C	*yceE*	F186L	C40K
56.5	0.490	[0.351, 0.633]	4326389	A→C	*dcuB*	S357S	
56.4	0.512	[0.358, 0.665]	1209825	T→G	*ymfC*	S166R	
56.4	0.390	[0.261, 0.512]	3716330	A→C	ECB_03460	K1114Q	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
56.2	0.457	[0.312, 0.597]	2480606	A→C	amiA	I246L	
56.2	0.489	[0.337, 0.642]	4332868	A→C	lysU	I190M	C40K
56.2	0.426	[0.289, 0.589]	1230389	C→A	hlyE	–	C40K
56.1	0.381	[0.262, 0.507]	44865	A→C	caiT	V420V	C40K
56.1	0.391	[0.261, 0.518]	2492626	A→C	cchB	V85G	
56.1	0.493	[0.346, 0.654]	3842724	T→G	dnaA	E456A	C40K
56.1	0.550	[0.388, 0.702]	797545	T→G	ECB_00738	I264S	
56.0	0.504	[0.348, 0.677]	1227428	T→G	ycgK	E69A	
55.9	0.592	[0.443, 0.731]	683582	A→C	nagC	I36M	
55.8	0.399	[0.280, 0.524]	3806477	A→C	uhpT	I208S	C40K
55.8	0.631	[0.501, 0.761]	1854584	T→G	yoaF	N60H	
55.6	0.538	[0.378, 0.689]	243788	A→C	yhhI	R326R	
55.6	0.374	[0.256, 0.511]	3824042	A→C	glvBC	M1R	C40K
55.5	0.478	[0.329, 0.616]	2784895	T→G	ygcR	Q54P	
55.5	0.476	[0.325, 0.617]	1424186	A→C	ECB_01344	L6F	
55.3	0.625	[0.468, 0.743]	2308503	A→C	yfaX	G74G	
55.2	0.609	[0.453, 0.743]	767623	T→G	gpmA	E201A	
55.2	0.604	[0.452, 0.737]	77408	A→C	tbpA	F293V	
55.2	0.361	[0.244, 0.490]	4064362	T→G	fdhD	L67R	C40K
55.1	0.279	[0.188, 0.384]	3031898	A→C	ECB_02831	F91L	
54.9	0.571	[0.433, 0.710]	1380965	A→C	ompG	Y217S	
54.8	0.334	[0.227, 0.454]	627805	T→G	citT	E276A	C40K
54.8	0.577	[0.422, 0.724]	3189699	A→C	yhaM/yhaO	–	
54.7	0.388	[0.265, 0.526]	3683249	T→G	ECB_03437	Y314D	C40K
54.7	0.410	[0.271, 0.557]	3341864	C→A	acrE	P37Q	C40K
54.6	0.429	[0.287, 0.568]	3333231	T→G	yhdH/accB	–	C40K
54.5	0.538	[0.373, 0.700]	3739217	T→G	waaW	E250A	
54.3	0.407	[0.280, 0.536]	2002639	A→C	cobS	L195*	C40K
54.0	0.388	[0.258, 0.518]	4078976	A→C	rhaR	*313Y	C40K
53.9	0.406	[0.275, 0.550]	4466019	A→C	valS	F284L	C40K
53.7	0.561	[0.401, 0.705]	4340009	T→G	cadC	Q216P	
53.7	0.480	[0.316, 0.639]	4612969	C→A	smp	R12L	
53.7	0.355	[0.243, 0.490]	2544260	A→C	ppk	Q133P	
53.6	0.425	[0.287, 0.568]	1714815	A→C	ECB_01628	L10V	C40K
53.6	0.378	[0.251, 0.510]	4116720	T→G	yijE	I169S	C40K
53.6	0.529	[0.362, 0.687]	1270802	T→G	ldrC/chaA	–	
53.6	0.371	[0.252, 0.504]	2258360	A→C	yojI	I120M	C40K
53.6	0.616	[0.470, 0.748]	487930	A→C	ybbK	F4L	
53.4	0.396	[0.266, 0.533]	1575413	A→C	yneE	F52C	C40K
53.3	0.498	[0.346, 0.656]	2027918	T→G	wzzB	Q130P	
53.2	0.444	[0.299, 0.590]	3414905	T→G	yhfK	G70G	C40K
53.2	0.477	[0.325, 0.634]	3521505	A→C	ugpA	F28C	C40K
53.2	0.376	[0.251, 0.509]	2947175	A→C	sbm	E192A	C40K
53.1	0.509	[0.358, 0.665]	3152780	C→A	ygjG	A166E	
53.1	0.611	[0.461, 0.743]	1782154	A→C	arpB	–	
53.1	0.547	[0.386, 0.708]	2678812	A→C	ECB_02509/ ECB_02510	–	
53.0	0.435	[0.285, 0.569]	181491	T→G	pfs	I169L	C40K
53.0	0.450	[0.306, 0.598]	507691	A→C	gcl	Q537P	
53.0	0.421	[0.282, 0.559]	4300648	A→C	phnF	L199L	
52.8	0.583	[0.433, 0.731]	4207000	T→G	yjbB	F113L	
52.7	0.464	[0.317, 0.621]	2839145	A→C	csdA	E397A	
52.6	0.459	[0.312, 0.610]	1171882	T→G	ycfH	I179M	C40K
52.6	0.447	[0.300, 0.588]	2073796	A→C	asmA	A341A	
52.5	0.589	[0.421, 0.724]	697270	A→C	pgm	S540R	
52.5	0.363	[0.247, 0.496]	2018771	A→C	yeeZ	D267E	C40K
52.5	0.397	[0.270, 0.542]	4622949	A→C	rob	I174M	

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
52.3	0.395	[0.270, 0.541]	3188952	A→C	*yhaM*	S245A	
52.3	0.472	[0.323, 0.636]	2245593	T→G	*ccmC*	I239I	
52.2	0.416	[0.276, 0.549]	3360344	A→C	*smg*	F9C	C40K
52.1	0.536	[0.377, 0.689]	866217	T→G	*yliE*	N145K	
52.1	0.444	[0.301, 0.588]	1101690	T→G	*phoH*	G138G	
52.0	0.316	[0.203, 0.441]	3384612	G→T	*gspD*	G111W	
51.9	0.639	[0.494, 0.771]	3312435	A→C	*mdh/argR*	–	
51.8	0.327	[0.221, 0.452]	4570266	A→C	*hpaB*	C492G	C40K
51.8	0.393	[0.258, 0.532]	3743455	T→G	*waaO*	T15P	C40K
51.6	0.286	[0.181, 0.402]	3103672	G→A	*ygiW*	T59T	C40K
51.6	0.602	[0.442, 0.739]	1567831	T→G	*hipA*	I305L	
51.6	0.392	[0.261, 0.525]	1642043	A→C	*ynfI*	I115L	C40K
51.5	0.360	[0.238, 0.487]	4577252	T→G	*hpaD*	Y17S	C40K
51.5	0.429	[0.288, 0.578]	3962760	T→G	ECB_03690	E60D	C40K
51.4	0.491	[0.329, 0.649]	3630897	A→C	*ldrD/yhjV*	–	
51.2	0.447	[0.302, 0.600]	178875	A→C	*yadQ*	A309A	
51.1	0.422	[0.287, 0.579]	1496171	A→C	*ansP/yncG*	–	C40K
51.1	0.622	[0.465, 0.756]	12527	A→C	*dnaK*	M123L	
50.7	0.499	[0.337, 0.664]	2233990	T→G	*rplY/yejK*	–	
50.7	0.325	[0.203, 0.450]	1107001	G→T	*ycdS*	S525*	C40K
50.6	0.271	[0.182, 0.382]	3766565	A→C	*gltS*	F381L	
50.5	0.592	[0.434, 0.744]	2784792	A→C	*ygcR*	A88A	
50.4	0.341	[0.218, 0.478]	1806589	C→A	*astD*	V137V	C40K
50.2	0.661	[0.526, 0.790]	4474802	T→G	*idnT*	V317V	
50.2	0.453	[0.304, 0.612]	1811352	T→G	*ydjX*	L229L	
50.2	0.647	[0.492, 0.771]	2558035	A→C	*yfgK*	I47M	
50.2	0.477	[0.320, 0.637]	1120708	T→G	*ymdB*	L107R	
50.1	0.365	[0.242, 0.494]	543845	T→G	*ybcM*	Y168D	
50.0	0.564	[0.411, 0.724]	4203274	A→C	*metH*	E172D	
50.0	0.521	[0.365, 0.679]	911501	G→T	*potF*	P337P	
50.0	0.475	[0.318, 0.622]	3123757	A→C	*yqiI*	Y97S	C40K
49.9	0.443	[0.302, 0.600]	3487874	A→C	*rtcR*	Q336P	
49.9	0.352	[0.230, 0.474]	1311136	A→C	*yciC*	F41C	
49.8	0.593	[0.422, 0.731]	1035674	A→C	*ycbG*	E33D	
49.8	0.453	[0.301, 0.599]	4564414	A→C	*hsdR*	L108R	
49.7	0.200	[0.135, 0.283]	2765159	T→G	*ygbO*	E336A	
49.7	0.415	[0.282, 0.567]	4089838	A→C	*cdh*	I143L	
49.6	0.509	[0.339, 0.686]	1378904	T→G	*ycjU*	L130R	
49.5	0.614	[0.456, 0.758]	1886192	A→C	*yobF/yebO*	–	C40K
49.4	0.423	[0.282, 0.579]	4512147	A→C	*sgcX/yjhP*	–	
49.4	0.580	[0.421, 0.722]	440160	A→C	*cof*	I228L	
49.4	0.439	[0.296, 0.600]	728010	T→G	*abrB*	N182T	C40K
49.3	0.464	[0.313, 0.624]	67987	T→G	*polB*	S200R	
49.2	0.438	[0.290, 0.590]	3911660	A→C	*yifB*	L47*	C40K
49.0	0.532	[0.359, 0.692]	2070174	A→C	*wza*	V92V	
48.9	0.664	[0.533, 0.795]	2268244	A→C	*atoS*	K501T	
48.9	0.666	[0.521, 0.793]	4506667	T→G	*sgcR*	V120V	
48.8	0.341	[0.217, 0.457]	4202793	T→G	*metH*	L12*	
48.8	0.439	[0.290, 0.590]	3272110	A→C	*yrbA/yrbB*	–	C40K
48.7	0.579	[0.410, 0.729]	4204308	A→C	*metH*	E517A	
48.7	0.637	[0.483, 0.766]	1360208	A→C	*ycjL*	I241L	
48.7	0.574	[0.410, 0.732]	1992661	A→C	*shiA*	Q340H	
48.5	0.438	[0.288, 0.589]	1791600	A→C	*katE*	N157H	
48.5	0.459	[0.312, 0.625]	1822771	A→C	*topB*	L473W	
48.5	0.425	[0.283, 0.579]	1847878	A→C	*yeaI*	N89H	
48.5	0.236	[0.153, 0.334]	4534381	T→G	*uxuB*	R189R	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
48.5	0.417	[0.276, 0.568]	2422436	T→G	yfdE	L320F	C40K
48.3	0.311	[0.200, 0.454]	289049	C→A	ykgA	G246W	C40K
48.2	0.390	[0.258, 0.540]	816306	T→G	ybhO	Y20S	C40K
48.0	0.617	[0.455, 0.757]	934017	T→G	ybjD	L280W	
47.9	0.564	[0.396, 0.730]	2794464	A→C	ygcF/ygcG	–	
47.9	0.430	[0.287, 0.568]	1812465	T→G	ydjZ	Y144D	
47.7	0.510	[0.344, 0.683]	1665858	A→C	manA	S30R	
47.7	0.276	[0.180, 0.390]	3470129	T→G	feoB	L353R	C40K
47.5	0.467	[0.307, 0.627]	731342	T→G	ybgQ	E540A	C40K
47.4	0.606	[0.455, 0.750]	3208531	A→C	garD	K107N	
47.3	0.360	[0.234, 0.496]	4562591	T→G	hsdR	T716P	C40K
47.2	0.524	[0.337, 0.693]	1754129	A→C	ydiF	T425T	
47.1	0.256	[0.166, 0.365]	3105742	A→C	ygiY	N363H	
47.0	0.477	[0.320, 0.635]	2230229	A→C	bcr	Y240*	
46.9	0.415	[0.270, 0.569]	1913540	A→C	zwf	S451A	C40K
46.9	0.340	[0.220, 0.464]	3243698	A→C	nlpI	L154R	C40K
46.8	0.604	[0.444, 0.751]	1555329	T→G	ydeN	K383Q	
46.7	0.410	[0.271, 0.569]	4070746	T→G	frvA	V75V	C40K
46.7	0.513	[0.335, 0.692]	3965377	A→C	ECB_03693	F65C	
46.7	0.520	[0.335, 0.692]	3696775	A→C	yibF/rhsA	–	
46.6	0.445	[0.296, 0.601]	2952759	T→G	ygfl	N56H	
46.5	0.187	[0.123, 0.264]	2761930	T→G	rpoS	Q161H	
46.3	0.514	[0.345, 0.682]	1392392	A→C	mppA	E266A	
46.3	0.472	[0.320, 0.636]	1394855	T→G	ydaA	E313A	
46.3	0.535	[0.351, 0.704]	970635	T→G	pflB	N5H	C40K
46.3	0.424	[0.282, 0.579]	92372	T→G	fruR/yabB	–	
46.1	0.268	[0.178, 0.386]	3992619	T→G	ECB_03721	K177T	C40K
46.1	0.387	[0.252, 0.537]	2858322	T→G	ppdB	E5A	C40K
46.0	0.582	[0.432, 0.727]	2864911	C→A	mutH	G210G	C40K
45.9	0.418	[0.277, 0.580]	576388	A→C	cusR/cusC	–	C40K
45.8	0.462	[0.306, 0.627]	1405097	T→G	ydaM/ydaN	–	
45.8	0.555	[0.381, 0.721]	2441578	A→C	ypdG	M181R	
45.7	0.254	[0.167, 0.361]	3333476	A→C	accB	A50A	
45.6	0.503	[0.330, 0.671]	2222411	T→G	rtn	N166K	C40K
45.6	0.346	[0.225, 0.482]	1661682	T→G	tus	L77V	C40K
45.6	0.382	[0.253, 0.530]	4367301	A→C	yjeP	N75K	
45.6	0.383	[0.246, 0.529]	4547935	T→G	yjiN	I76L	C40K
45.5	0.325	[0.216, 0.457]	1388180	T→G	ycjG	S294R	C40K
45.5	0.504	[0.329, 0.671]	3236743	A→C	yhbU	N9H	C40K
45.5	0.346	[0.220, 0.475]	731494	T→G	ybgQ	P489P	C40K
45.4	0.606	[0.446, 0.759]	1832346	T→G	ydjG	L285F	
45.3	0.682	[0.544, 0.805]	918143	A→C	artM	F33L	C40K
45.3	0.217	[0.134, 0.321]	3557298	C→A	yhhJ	R65L	C40K
45.2	0.369	[0.235, 0.512]	3859873	T→G	yieL	K367N	C40K
45.2	0.499	[0.331, 0.672]	788776	A→C	ECB_00726	Y83D	
45.1	0.444	[0.291, 0.601]	1687839	A→C	rnfG	K148Q	
45.0	0.301	[0.196, 0.422]	3658512	T→G	xylB	K440Q	
45.0	0.429	[0.289, 0.591]	2306072	A→C	yfaV	D198E	
45.0	0.329	[0.217, 0.466]	2441230	A→C	ypdG	I297S	C40K
44.9	0.352	[0.227, 0.494]	1692302	A→C	pdxY	M261R	C40K
44.6	0.365	[0.236, 0.510]	4446077	T→G	nrdD/treC	–	C40K
44.6	0.313	[0.203, 0.433]	3227037	T→G	yraK	Y155D	C40K
44.3	0.578	[0.410, 0.724]	4455831	C→A	pyrL/yjgH	–	
44.3	0.515	[0.330, 0.699]	3813583	A→C	ivbL/emrD	–	
44.3	0.580	[0.409, 0.730]	940678	C→T	clpA	P189L	C40K
44.2	0.489	[0.321, 0.657]	4493724	A→C	yis1	L84*	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
44.2	0.446	[0.285, 0.602]	1712380	A→C	*ydhO*	E251A	
44.2	0.288	[0.190, 0.417]	4526771	A→C	*fimD*	I254I	C40K
44.1	0.531	[0.352, 0.702]	1791045	A→C	*cedA/katE*	–	
44.0	0.650	[0.502, 0.778]	35850	A→C	*carB*	K321N	C40K
44.0	0.316	[0.203, 0.441]	3623554	A→C	*yhjO*	F392C	
43.9	0.356	[0.231, 0.502]	1176345	T→G	*fhuE/ycfF*	–	
43.8	0.290	[0.183, 0.406]	4601064	A→C	*osmY*	K145N	C40K
43.8	0.369	[0.240, 0.520]	1756840	A→C	*ydiP/ydiQ*	–	C40K
43.7	0.348	[0.223, 0.486]	2419950	T→G	*evgS*	D450E	
43.7	0.399	[0.256, 0.557]	4029063	A→C	*yihA/yihI*	–	C40K
43.4	0.357	[0.231, 0.502]	3081137	T→G	*yghXY*	Y218S	
43.2	0.379	[0.249, 0.515]	2320133	A→C	*pmrD/menE*	–	C40K
43.1	0.391	[0.254, 0.531]	2988792	T→G	*mutY*	L40W	C40K
42.9	0.379	[0.239, 0.527]	3404580	T→G	*fkpA*	K249Q	C40K
42.6	0.339	[0.221, 0.487]	2873513	T→G	*lysA*	H3P	
42.4	0.441	[0.285, 0.604]	2850878	A→C	*ptr*	L876V	
42.3	0.432	[0.282, 0.593]	1829798	A→C	*pncA/ydjE*	–	C40K
42.1	0.408	[0.263, 0.558]	1112671	A→C	*ycdW*	K73Q	
42.1	0.427	[0.269, 0.581]	2466526	A→C	*yfeS*	I18L	
42.0	0.452	[0.306, 0.627]	1724002	T→G	*ydhR*	N12K	
41.8	0.377	[0.246, 0.529]	3865067	A→C	*bglF*	F300C	C40K
41.8	0.270	[0.172, 0.391]	1649169	T→G	*ydgD*	I5M	C40K
41.7	0.440	[0.294, 0.603]	4404811	T→G	*rplI*/ECB_04071	–	C40K
41.5	0.332	[0.218, 0.479]	1880102	A→C	*yoaE*	I21M	C40K
41.5	0.431	[0.277, 0.592]	3121407	A→C	*yqiG*	D392A	C40K
41.5	0.423	[0.270, 0.579]	1794984	T→G	*celF*	Y261S	C40K
41.4	0.606	[0.446, 0.758]	598442	T→G	*entF*	V526V	
41.4	0.187	[0.115, 0.273]	2717916	A→C	*recA*	V238G	
41.2	0.355	[0.225, 0.500]	1902841	A→C	*yebZ*	L109L	C40K
41.2	0.351	[0.229, 0.509]	332980	T→G	*cynX*	W145G	C40K
41.2	0.600	[0.421, 0.762]	3252768	T→G	*nusA/yhbC*	–	C40K
41.1	0.295	[0.183, 0.420]	4237773	T→G	*dinF*	L367R	
41.0	0.498	[0.329, 0.671]	3956032	T→G	*yzcX/yifL*	–	
40.9	0.262	[0.167, 0.382]	3541981	A→C	*yhhS*	H147Q	C40K
40.9	0.390	[0.251, 0.547]	4530188	A→C	*fimH*	N156T	C40K
40.8	0.275	[0.176, 0.390]	4166668	A→C	*rpoC*	K570Q	C40K
40.7	0.434	[0.271, 0.593]	4143491	T→G	*trmA/btuB*	–	
40.7	0.313	[0.196, 0.445]	1633778	A→C	*speG*	I134L	C40K
40.6	0.414	[0.263, 0.569]	2414848	A→C	*dsdA/emrY*	–	
40.6	0.324	[0.210, 0.464]	1228779	T→G	*ycgM*	F180L	C40K
40.5	0.375	[0.239, 0.527]	597017	A→C	*entF*	G51G	C40K
40.3	0.644	[0.469, 0.779]	494082	A→C	*ybbP*	E500A	
40.2	0.479	[0.308, 0.665]	1761548	A→C	*ydiD*	D435A	C40K
40.1	0.267	[0.161, 0.411]	4046902	G→T	*yihQ*	P199Q	
40.1	0.464	[0.297, 0.652]	516413	T→G	*allC*	Y349S	C40K
40.0	0.579	[0.394, 0.738]	2239729	A→C	*yejO*	A120A	
40.0	0.585	[0.407, 0.748]	3023893	T→G	ECB_02822/ *insB-22*	–	C40K
40.0	0.683	[0.531, 0.810]	651095	T→G	*ybeA*	I69L	
40.0	0.431	[0.278, 0.604]	2511731	A→C	*acrD/yffB*	–	
39.9	0.457	[0.294, 0.632]	2155555	T→G	*yehK/yehL*	–	
39.7	0.600	[0.422, 0.754]	2858895	A→C	*ppdA/thyA*	–	
39.6	0.350	[0.216, 0.497]	679893	A→C	*asnB*	S460R	
39.6	0.329	[0.207, 0.467]	4180045	A→C	*hupA*	K51N	C40K
39.6	0.298	[0.187, 0.433]	1252845	T→G	*dhaR*	Y544D	C40K
39.4	0.380	[0.238, 0.535]	39986	T→G	*caiD*	N160T	
39.4	0.238	[0.147, 0.342]	3231794	A→C	*yraP*	E51A	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
39.3	0.427	[0.272, 0.592]	653483	A→C	holA	L236R	
39.3	0.658	[0.501, 0.795]	256579	T→G	yafN	I4M	
39.1	0.249	[0.143, 0.373]	3713828	G→T	ECB_03460	G280*	C40K
39.0	0.248	[0.155, 0.366]	4058501	T→G	fdhE	E292A	C40K
39.0	0.295	[0.175, 0.440]	3984539	G→T	ECB_03713	P117Q	C40K
38.7	0.466	[0.289, 0.634]	3776874	A→C	ECB_03516/ ECB_03517	–	
38.7	0.250	[0.149, 0.375]	2914384	G→T	ygfS	A76D	C40K
38.4	0.271	[0.171, 0.397]	510546	T→G	allP	F250V	
38.4	0.351	[0.216, 0.497]	1280272	A→C	narG	N87H	
38.0	0.264	[0.170, 0.380]	4466781	T→G	valS	E30D	C40K
37.9	0.275	[0.168, 0.391]	540028	A→C	renD	E26A	C40K
37.9	0.343	[0.219, 0.492]	4142501	T→G	trmA	K211Q	C40K
37.8	0.448	[0.277, 0.624]	2404817	A→C	yfcZ/fadL	–	
37.7	0.336	[0.218, 0.475]	2497928	T→G	maeB	K426N	C40K
37.7	0.443	[0.279, 0.619]	828820	T→G	ybiB	V316V	C40K
37.5	0.371	[0.232, 0.526]	3781098	T→G	ECB_03520	M377R	C40K
37.4	0.556	[0.359, 0.732]	3788555	A→C	ECB_03531	G105G	
37.4	0.395	[0.247, 0.559]	1419306	T→G	trkG	C215W	C40K
37.2	0.309	[0.191, 0.448]	3611119	A→C	yhjJ	I105S	
37.2	0.641	[0.472, 0.789]	313891	A→C	yahJ	N40H	
37.1	0.630	[0.477, 0.769]	2450699	C→A	yfeA	E4*	
37.1	0.309	[0.188, 0.441]	3976831	T→G	metR	E138A	C40K
37.0	0.331	[0.206, 0.467]	2966498	T→G	tktA	K297Q	
36.8	0.354	[0.217, 0.496]	212537	T→G	ldcC	I6S	C40K
36.8	0.325	[0.206, 0.457]	2817492	T→G	sdaC	I112S	C40K
36.5	0.251	[0.155, 0.365]	842160	A→C	ybiF	L188*	C40K
36.4	0.265	[0.157, 0.381]	2833119	T→G	fucK	L355V	
36.4	0.471	[0.291, 0.653]	3775466	T→G	selC/ECB_03516	–	
36.3	0.344	[0.212, 0.489]	3507177	A→C	gntU	S446R	C40K
36.3	0.619	[0.422, 0.772]	2699368	T→G	nrdF/proV	–	
36.2	0.415	[0.256, 0.579]	506450	T→G	gcl	A123A	C40K
36.1	0.358	[0.219, 0.513]	3303353	A→C	dcuD	Y196S	C40K
35.9	0.380	[0.231, 0.535]	379334	T→G	yajF	N256K	C40K
35.9	0.410	[0.256, 0.569]	152863	T→G	yadC	N334T	
35.9	0.388	[0.244, 0.546]	1767478	T→G	ydiU	L345L	C40K
35.7	0.696	[0.543, 0.824]	4396603	A→C	yjfQ	T2T	
35.5	0.708	[0.539, 0.828]	1693534	T→G	tyrS	K295Q	
35.4	0.454	[0.293, 0.631]	3051023	A→C	glcG	V34G	
35.3	0.395	[0.248, 0.568]	2705690	A→C	emrR	D21A	C40K
35.3	0.336	[0.197, 0.495]	2537679	G→T	yfgC	A256S	C40K
35.2	0.287	[0.178, 0.421]	172675	T→G	fhuC	F19C	
35.1	0.333	[0.213, 0.471]	4262744	A→C	actP	A364A	C40K
35.1	0.326	[0.200, 0.464]	3712483	A→C	ECB_03459	K74Q	C40K
34.9	0.576	[0.391, 0.755]	231930	T→G	aspU/dkgB	–	
34.7	0.274	[0.170, 0.397]	1693251	T→G	tyrS	E389A	
34.5	0.600	[0.422, 0.772]	875009	T→G	deoR	D93A	
34.4	0.171	[0.099, 0.277]	468017	G→T	htpG	L277L	
34.2	0.285	[0.165, 0.432]	2063933	C→A	wcaD	S51I	
34.1	0.258	[0.154, 0.385]	1557591	A→C	ydeO	A16A	
33.9	0.422	[0.264, 0.607]	1977296	T→G	yedX	N114K	C40K
33.5	0.317	[0.192, 0.472]	3822784	A→C	glvBC	D420E	C40K
33.3	0.233	[0.138, 0.349]	2981152	A→C	yggS	T102P	
33.2	0.398	[0.240, 0.566]	749853	A→C	ybgG	I332L	C40K
33.2	0.565	[0.353, 0.745]	1298145	T→G	ychE/oppA	–	
33.2	0.621	[0.437, 0.790]	2837245	T→G	gcvA/ygdI	–	
33.1	0.553	[0.352, 0.748]	971637	T→G	focA/ycaO	–	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
33.1	0.346	[0.209, 0.494]	2003886	A→C	*cobU/yoeA*	–	
33.0	0.190	[0.114, 0.279]	4500312	T→G	*fecA*	S466S	
33.0	0.255	[0.150, 0.375]	597391	A→C	*entF*	D176A	
33.0	0.599	[0.406, 0.774]	3095365	A→C	*ygiQ/sufI*	–	
32.9	0.325	[0.195, 0.480]	1016770	T→G	*ycbS*	I155S	C40K
32.7	0.303	[0.179, 0.447]	2480430	A→C	*amiA*	Q187P	C40K
32.5	0.294	[0.177, 0.447]	405910	C→A	*yajO*	R216R	C40K
32.5	0.241	[0.133, 0.372]	3003485	C→A	*yeeR*	R319S	
32.3	0.203	[0.121, 0.312]	3748382	T→G	*coaD*	V68G	C40K
32.2	0.354	[0.197, 0.535]	1004193	C→A	*ompF/asnS*	–	C40K
32.0	0.307	[0.183, 0.454]	1098758	A→C	*ycdO*	E77D	C40K
32.0	0.128	[0.078, 0.196]	2746883	T→G	*hypC*	F54V	
31.9	0.577	[0.373, 0.756]	2863851	A→C	*ygdP/mutH*	–	
31.7	0.331	[0.196, 0.481]	3561248	A→C	*yhiI*	L15V	C40K
31.6	0.364	[0.218, 0.541]	125630	T→G	*pdhR*	S245S	C40K
31.6	0.260	[0.155, 0.397]	4055073	A→C	*rbn*	I261L	
31.6	0.363	[0.211, 0.529]	2127664	A→C	*gatB*	I88S	C40K
31.5	0.302	[0.178, 0.436]	735533	T→G	*gltA/sdhC*	–	C40K
31.4	0.291	[0.171, 0.431]	2360181	A→C	*pta*	K615Q	C40K
31.4	0.345	[0.208, 0.517]	1975162	T→G	*yedV*	K330N	C40K
31.4	0.112	[0.068, 0.168]	2742589	A→C	*hycC*	L505V	
31.3	0.304	[0.187, 0.463]	3823644	T→G	*glvBC*	K134Q	
31.1	0.244	[0.146, 0.379]	909616	T→G	*rimK/ybjN*	–	C40K
31.0	0.375	[0.216, 0.541]	4089472	A→C	*cdh*	I21L	C40K
31.0	0.261	[0.155, 0.397]	2825941	A→C	ECB_02649	L93R	C40K
30.8	0.286	[0.168, 0.423]	4236967	A→C	*dinF*	K98N	
30.6	0.274	[0.152, 0.419]	1010683	C→A	*ssuB*	P151P	
30.5	0.250	[0.144, 0.373]	482985	T→G	*copA*	Q188P	
30.4	0.737	[0.589, 0.852]	3514291	A→C	*yhhZ*	K326Q	
30.4	0.311	[0.178, 0.457]	1785895	T→G	*yniA*	S279A	C40K
30.1	0.333	[0.194, 0.482]	4096930	A→C	*glpF*	W215G	C40K
30.0	0.412	[0.238, 0.594]	714992	A→C	*ybfO*	K343N	C40K
29.8	0.228	[0.128, 0.338]	4587518	A→C	*mdoB*	D386E	
29.6	0.406	[0.237, 0.595]	4628873	T→G	*yjjY/lasT*	–	C40K
29.5	0.418	[0.256, 0.594]	3612954	T→G	*dctA/yhjK*	–	C40K
29.4	0.379	[0.225, 0.553]	640290	T→G	*ccrB*	L77L	C40K
29.3	0.300	[0.174, 0.450]	2872152	T→G	*galR*	P311P	C40K
29.0	0.273	[0.156, 0.410]	1349424	T→G	*fabI/ycjD*	–	
29.0	0.341	[0.196, 0.514]	235495	T→G	*yafE/mltD*	–	C40K
29.0	0.375	[0.218, 0.540]	3089831	A→C	*yqhD*	K102T	C40K
28.8	0.713	[0.555, 0.843]	2168655	A→C	*yehY*	L367R	
28.8	0.305	[0.177, 0.458]	1707834	T→G	*lhr*	A518A	C40K
28.7	0.299	[0.165, 0.465]	475904	C→A	*fsr*	G287V	C40K
28.5	0.407	[0.237, 0.594]	1292879	A→C	*hns/tdk*	–	
28.5	0.333	[0.191, 0.503]	1059834	T→G	*yccC*	N490H	
28.5	0.258	[0.147, 0.390]	531409	A→C	*sfmC*	N110H	
28.4	0.685	[0.508, 0.832]	1097604	T→G	*putP/ycdN*	–	
28.3	0.233	[0.132, 0.355]	2813416	A→C	*yqcC/syd*	–	
28.1	0.300	[0.178, 0.459]	4414202	A→C	*fklB*	E90A	C40K
28.1	0.292	[0.165, 0.433]	2833343	A→C	*fucK*	V429V	
28.0	0.370	[0.215, 0.552]	1540242	A→C	*yddV*	I166M	
27.9	0.245	[0.142, 0.378]	2317986	T→G	*arnT*	L189*	
27.8	0.244	[0.141, 0.378]	447819	A→C	*ybaY*	N125T	
27.7	0.233	[0.134, 0.352]	2433065	T→G	*ypdA*	L57R	
27.7	0.161	[0.089, 0.263]	4465015	G→T	*valS*	A619E	
27.7	0.261	[0.143, 0.412]	492156	C→A	*ybbA*	R86S	C40K

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Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
27.6	0.370	[0.215, 0.551]	226275	A→C	gmhB/rrsH	–	C40K
27.5	0.280	[0.156, 0.427]	1599357	A→C	ydfJ	I232M	
27.4	0.292	[0.168, 0.453]	1221347	A→C	ycgH	–	
27.4	0.395	[0.229, 0.580]	1998939	T→G	cbl/nac	–	C40K
27.2	0.214	[0.123, 0.335]	4397695	T→G	yjfR	E29A	
27.1	0.433	[0.244, 0.629]	3046426	T→G	yghJ/yghK	–	
27.1	0.295	[0.173, 0.450]	582155	A→C	cusA	K847Q	C40K
26.9	0.195	[0.114, 0.306]	81102	A→C	setA	L226F	
26.8	0.247	[0.139, 0.391]	3083973	T→G	yghA	L47R	
26.5	0.162	[0.092, 0.249]	3377468	A→C	rpsC	R107R	
26.5	0.254	[0.142, 0.396]	4212457	A→C	lysC/pgi	–	
26.4	0.283	[0.160, 0.434]	2911292	A→C	ygfO	E396D	
26.3	0.373	[0.217, 0.580]	2582325	A→C	iscS/iscR	–	
26.3	0.246	[0.139, 0.389]	445446	T→G	amtB	V138V	
26.3	0.482	[0.278, 0.688]	3027011	T→G	ECB_02827	*220Y	C40K
26.1	0.612	[0.406, 0.799]	3792298	A→C	ECB_03532	H135P	C40K
26.0	0.185	[0.097, 0.310]	4493211	G→T	yis2	G142G	
26.0	0.386	[0.228, 0.581]	3313358	A→C	argR/yhcN	–	
25.9	0.199	[0.106, 0.319]	1509892	G→T	yddE	–	
25.7	0.235	[0.130, 0.365]	662133	T→G	hscC	E349D	
25.7	0.234	[0.130, 0.365]	876767	A→C	cmr	A181A	C40K
25.4	0.278	[0.158, 0.434]	2028307	T→G	wzzB/ugd	–	C40K
25.3	0.231	[0.130, 0.365]	2160319	A→C	yehQ	L8F	
25.0	0.268	[0.148, 0.428]	1541538	T→G	yddW	T413P	C40K
25.0	0.187	[0.106, 0.293]	4286188	A→C	alsK	F145C	
25.0	0.209	[0.115, 0.327]	4040455	T→G	yihM/yihN	–	
24.8	0.243	[0.139, 0.372]	2899609	A→C	yqeB	I129S	
24.8	0.418	[0.230, 0.634]	690209	T→G	glnS/ybfM	–	C40K
24.7	0.209	[0.115, 0.328]	2158593	T→G	yehM	F568C	
24.7	0.234	[0.128, 0.364]	3217222	A→C	agaS	Y5S	C40K
24.6	0.690	[0.508, 0.832]	2989164	T→G	mutY	L164*	
24.6	0.195	[0.111, 0.307]	814339	A→C	ybhN	V262G	
24.3	0.264	[0.143, 0.411]	1886806	T→G	yobF/yebO	–	C40K
24.3	0.312	[0.170, 0.476]	330492	T→G	cynR	K252T	C40K
24.2	0.403	[0.234, 0.612]	1520150	T→G	yddL	V10V	C40K
24.1	0.177	[0.097, 0.282]	320390	T→G	prpR	Y235S	
24.1	0.250	[0.147, 0.383]	3969200	T→G	yigI/pldA	–	C40K
24.1	0.294	[0.149, 0.450]	3089302	G→T	yqhC	A30E	
24.0	0.205	[0.114, 0.316]	4337791	T→G	cadB	K321Q	
23.9	0.189	[0.105, 0.293]	109022	A→C	ftsZ	E305A	
23.8	0.245	[0.131, 0.382]	3506469	A→C	asd/yhgN	–	C40K
23.7	0.729	[0.560, 0.863]	2070879	T→G	wza/yegH	–	
23.6	0.223	[0.123, 0.349]	128976	A→C	aceF	I160L	
23.6	0.430	[0.233, 0.631]	3528587	A→C	livK/yhhK	–	C40K
23.2	0.218	[0.118, 0.337]	3309945	A→C	degQ	K435N	
23.2	0.192	[0.103, 0.308]	1563306	T→G	ydeT	Q216P	
22.9	0.212	[0.110, 0.329]	1538945	T→G	dos	M243L	
22.8	0.202	[0.107, 0.323]	3993794	A→C	ECB_03722	F3L	
22.8	0.267	[0.150, 0.417]	4089879	A→C	cdh	K156N	C40K
22.6	0.197	[0.101, 0.342]	94003	G→T	ftsL	T56T	C40K
22.4	0.247	[0.130, 0.382]	2179354	A→C	yohGH	I191S	
22.4	0.303	[0.170, 0.477]	2511681	T→G	acrD/yffB	–	C40K
22.3	0.269	[0.151, 0.419]	3738290	T→G	waaV	Y189S	
22.0	0.381	[0.204, 0.579]	3253256	A→C	yhbC/metZ	–	C40K
22.0	0.645	[0.454, 0.809]	1836496	C→A	ydjK	L321L	
21.8	0.437	[0.233, 0.657]	541954	T→G	ybcK	I388S	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
21.8	0.350	[0.185, 0.532]	3397769	T→G	chiA/tuf	–	
21.6	0.236	[0.126, 0.389]	1243473	A→C	mltE	A48A	C40K
21.6	0.172	[0.095, 0.289]	39023	T→G	caiE	E181D	
21.5	0.205	[0.110, 0.328]	3043941	T→G	yghJ	D688A	C40K
21.5	0.165	[0.082, 0.281]	2629329	G→T	rseB	R307S	C40K
21.3	0.247	[0.129, 0.381]	3498495	A→C	glgA	D331E	C40K
21.3	0.272	[0.146, 0.439]	4248845	T→G	aphA	F167C	C40K
21.1	0.448	[0.244, 0.653]	2909993	T→G	xdhD/ygfO	–	C40K
21.0	0.223	[0.115, 0.360]	4249870	A→C	yjbR	Y94S	
21.0	0.232	[0.123, 0.380]	3188042	T→G	yhaK	L231V	C40K
20.9	0.219	[0.105, 0.378]	747520	G→T	hrsA	V219F	
20.9	0.269	[0.143, 0.429]	3178868	A→C	exuT	N244T	C40K
20.9	0.149	[0.074, 0.261]	83321	G→T	leuC	G116G	
20.8	0.585	[0.337, 0.800]	3583174	A→C	yhiS	L398F	
20.8	0.767	[0.623, 0.881]	3581085	T→G	arsC	I53M	
20.7	0.176	[0.094, 0.285]	4424221	T→G	ytfL	E251A	
20.5	0.199	[0.105, 0.318]	493795	T→G	ybbP	L404L	C40K
20.5	0.214	[0.112, 0.354]	2149904	T→G	molR	L745*	
20.4	0.253	[0.135, 0.412]	1532839	A→C	yddP	G39G	C40K
20.1	0.312	[0.173, 0.471]	411430	T→G	thiI/thiJ	–	C40K
19.9	0.167	[0.090, 0.277]	1922855	A→C	znuB/ruvB	–	
19.2	0.153	[0.079, 0.249]	604005	A→C	fepD	I298S	
19.2	0.218	[0.113, 0.355]	3461005	A→C	yhgE	I40S	
19.0	0.281	[0.151, 0.449]	1803438	A→C	astE	Y251D	C40K
18.7	0.207	[0.104, 0.331]	4292123	A→C	rpiR/rpiB	–	C40K
18.6	0.275	[0.137, 0.440]	910282	T→G	ybjN/potF	–	
18.5	0.247	[0.123, 0.403]	3303212	T→G	dcuD	L149R	C40K
18.5	0.227	[0.115, 0.380]	2702200	A→C	proX	E106A	
18.5	0.134	[0.069, 0.232]	2436881	A→C	ypdD	I610M	
18.3	0.161	[0.082, 0.267]	4205306	T→G	metH	Y850D	
18.3	0.187	[0.098, 0.314]	2323662	A→C	yfbB	Y148*	C40K
18.2	0.226	[0.115, 0.379]	1463096	A→C	trg	D173A	C40K
18.1	0.218	[0.107, 0.357]	1207988	A→C	ycfC	Y5D	
18.0	0.233	[0.115, 0.379]	2166019	T→G	yehU/yehV	–	
17.9	0.174	[0.089, 0.294]	122923	A→C	ampE	Y280S	
17.9	0.206	[0.104, 0.350]	4516225	A→C	yjhR/yjhS	–	
17.9	0.268	[0.138, 0.441]	835729	A→C	ybiN	E258A	
17.9	0.154	[0.078, 0.258]	1391019	A→C	ycjZ	E220D	
17.8	0.196	[0.100, 0.319]	1189161	A→C	ycfT	L200L	
17.8	0.227	[0.114, 0.379]	2175153	A→C	dld/pbpG	–	
17.7	0.188	[0.095, 0.321]	3717819	T→G	ECB_03460	L1610R	
17.4	0.261	[0.133, 0.431]	2594074	A→C	yphA	G34G	C40K
17.3	0.354	[0.186, 0.559]	3586500	T→G	hdeD	D5E	
17.3	0.293	[0.142, 0.480]	2183839	A→C	cdd	D253A	C40K
17.1	0.254	[0.135, 0.420]	3779580	A→C	ECB_03519	L70R	
17.0	0.145	[0.073, 0.241]	389819	A→C	proY	V137V	
17.0	0.222	[0.113, 0.379]	1022287	T→G	pyrD	N143K	
16.9	0.119	[0.062, 0.208]	3808788	T→G	uhpB	K427N	
16.8	0.180	[0.087, 0.300]	118051	T→G	hofC	K160Q	
16.7	0.150	[0.073, 0.253]	216747	A→C	rof	C10G	
16.7	0.419	[0.197, 0.670]	3291356	A→C	gltB	E497A	
16.7	0.242	[0.115, 0.403]	1402836	A→C	abgR/ydaL	–	C40K
16.5	0.182	[0.090, 0.314]	1055171	T→G	appC	F114C	
16.5	0.251	[0.122, 0.422]	4490502	T→G	ECB_04147	I44S	C40K
16.2	0.254	[0.121, 0.422]	1166321	T→G	acpP	A46A	C40K
16.1	0.243	[0.118, 0.413]	2795341	T→G	ygcG	F235V	C40K

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
16.0	0.127	[0.062, 0.218]	2762605	T→G	*nlpD*	Q337P	
16.0	0.563	[0.299, 0.804]	3192262	T→G	*tdcG*	K141T	
15.9	0.216	[0.103, 0.368]	2444520	T→G	*yfeO*	D222E	
15.5	0.140	[0.070, 0.247]	1276107	T→G	*narX*	I554I	
15.4	0.122	[0.060, 0.212]	4418434	A→C	*ytfG*	D197E	
15.2	0.158	[0.084, 0.263]	3173476	A→C	*ygjU*	N167H	
15.1	0.104	[0.052, 0.187]	2730429	A→C	*hypF*	A619A	
14.9	0.231	[0.111, 0.393]	3737701	T→G	*waaL*	G42G	C40K
14.9	0.298	[0.125, 0.512]	393379	G→T	*yajB/queA*	–	C40K
14.8	0.743	[0.536, 0.891]	4140780	T→G	*udhA/yijC*	–	
14.4	0.169	[0.083, 0.286]	2876390	A→C	*araE*	S138S	
14.4	0.260	[0.124, 0.433]	494275	T→G	*ybbP*	G564G	
14.4	0.156	[0.079, 0.279]	1952123	T→G	*cheW/cheA*	–	C40K
14.1	0.135	[0.064, 0.243]	3857126	A→C	*yieG/yieH*	–	
14.0	0.156	[0.073, 0.260]	4247198	A→C	*tyrB*	N385H	
14.0	0.191	[0.091, 0.333]	3312654	A→C	*argR*	K19Q	
13.6	0.296	[0.143, 0.495]	1518024	A→C	*narU*	I63S	C40K
13.5	0.192	[0.089, 0.326]	3365940	T→G	*mscL*	I4M	
13.4	0.123	[0.060, 0.215]	2315295	T→G	*yfbG*	H248Q	
13.4	0.701	[0.459, 0.883]	1798556	A→C	*celB/celA*	–	
13.4	0.192	[0.084, 0.341]	4136696	T→G	*argB/argH*	–	
13.3	0.195	[0.093, 0.364]	1758779	T→G	*ydiS*	S39R	
13.3	0.189	[0.088, 0.348]	1835977	A→C	*ydjJ*	V29G	
13.1	0.173	[0.079, 0.314]	3041599	A→C	*yghJ*	Y1469D	
13.1	0.281	[0.121, 0.494]	2131826	C→A	*fbaB*	G290C	
13.1	0.122	[0.054, 0.207]	4618009	T→G	*yjjK*	N243H	
12.9	0.106	[0.046, 0.197]	2873005	G→T	*lysA*	P172P	
12.9	0.439	[0.198, 0.702]	4557948	A→C	*yjiW/hsdS*	–	
12.7	0.164	[0.079, 0.297]	703655	A→C	*kdpE*	G58G	
12.6	0.212	[0.099, 0.382]	1364853	T→G	*goaG*	N312K	C40K
12.5	0.396	[0.174, 0.642]	1732027	A→C	*ydhY/ydhZ*	–	C40K
12.5	0.154	[0.070, 0.286]	4484606	A→C	*insG*	Y240D	
12.3	0.167	[0.072, 0.291]	405415	T→G	*pgpA*	D135E	
12.2	0.175	[0.079, 0.320]	801906	A→C	*bioA/bioB*	–	
12.1	0.282	[0.127, 0.473]	1456048	A→C	*hrpA*	R1200R	C40K
12.0	0.170	[0.075, 0.303]	3417998	T→G	*argD*	K30Q	
11.9	0.216	[0.097, 0.382]	2691643	A→C	*yqaE*	W47G	
11.9	0.172	[0.076, 0.308]	3999534	T→G	*ubiB*	F280V	
11.8	0.146	[0.066, 0.255]	673660	T→G	*ybeX*	I74L	
11.8	0.169	[0.072, 0.302]	4216920	T→G	*yjbH*	W119G	
11.7	0.120	[0.055, 0.214]	3617602	A→C	*bcsC*	I355S	
11.5	0.131	[0.059, 0.246]	2973709	A→C	*metK/galP*	–	
11.3	0.132	[0.058, 0.242]	4413097	T→G	*ytfB*	S207R	
11.2	0.105	[0.045, 0.201]	817450	T→G	*ybhQ*	W66G	
10.9	0.120	[0.052, 0.224]	2301878	A→C	*glpB*	L302L	
10.8	0.127	[0.046, 0.248]	1380364	G→T	*ompG*	A17S	
10.8	0.148	[0.065, 0.267]	4406742	T→G	ECB_04072	V505V	
10.7	0.185	[0.080, 0.352]	2808644	A→C	*gudX*	D344E	
10.5	0.179	[0.073, 0.327]	1246198	A→C	*treA*	S443R	
10.5	0.106	[0.047, 0.200]	4367937	A→C	*psd*	F193L	
10.4	0.150	[0.064, 0.289]	3692783	T→G	*selB*	D591A	
10.4	0.162	[0.069, 0.315]	1278238	T→G	*narK*	C44W	
10.4	0.137	[0.060, 0.249]	3578670	A→C	*gor/arsR*	–	
10.4	0.166	[0.068, 0.307]	2180706	T→G	*yohI*	I307L	
10.3	0.162	[0.068, 0.307]	2792123	A→C	*ygcE/ECB_02621*	–	
10.3	0.092	[0.040, 0.172]	2483050	A→C	*yffI*	R66R	

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Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
10.2	0.153	[0.065, 0.295]	3696572	A→C	*yibF*	F26C	
10.1	0.124	[0.055, 0.232]	1036813	T→G	*ompA*	D111A	
10.1	0.157	[0.065, 0.296]	938865	T→G	*macB*	W605G	
10.1	0.110	[0.046, 0.215]	1672433	G→T	*uidA*	G278G	
10.0	0.177	[0.073, 0.328]	641854	T→G	*lipA*	K316Q	
10.0	0.216	[0.090, 0.389]	2133834	T→G	*yegT*	D295E	
9.9	0.158	[0.068, 0.308]	2962321	T→G	*yggP*	K296T	
9.7	0.178	[0.075, 0.335]	1288327	T→G	*purU*	E31A	
9.6	0.149	[0.061, 0.283]	393663	A→C	*queA*	K77T	
9.5	0.127	[0.053, 0.245]	1079282	T→G	*cbpA*	K262Q	
9.4	0.110	[0.048, 0.209]	2729727	A→C	*ygbD*	E319A	
9.4	0.140	[0.058, 0.268]	2813426	T→G	*yqcC/syd*	–	
9.3	0.132	[0.055, 0.258]	4094737	T→G	*glpX*	K109Q	
9.2	0.174	[0.076, 0.336]	3657614	A→C	*yiaA*	I69R	C40K
9.0	0.120	[0.048, 0.228]	3666491	A→C	*xylR*	I353L	
9.0	0.069	[0.025, 0.143]	74122	G→T	*araC/yabI*	–	
9.0	0.083	[0.037, 0.158]	2168204	T→G	*yehX*	Q134P	
8.9	0.103	[0.041, 0.199]	451643	T→G	*maa*	I115L	
8.8	0.184	[0.076, 0.344]	218211	A→C	*cutF*	Q34P	
8.7	0.086	[0.032, 0.175]	2338134	C→T	*nuoL*	M168I	
8.5	0.139	[0.057, 0.268]	556439	T→G	ECB_00513	M575R	
8.4	0.088	[0.036, 0.178]	4433618	T→G	*ytfQ*	L136W	
8.3	0.112	[0.045, 0.211]	1162917	A→C	*plsX*	E243A	
8.3	0.094	[0.040, 0.190]	1699783	A→C	*ydhK*	I157L	
8.3	0.141	[0.060, 0.278]	1471239	T→G	*tehA*	R186R	
8.2	0.091	[0.036, 0.174]	3771517	A→C	*yicI*	F688C	
8.2	0.158	[0.063, 0.289]	2016160	T→G	*yeeF*	E449A	
8.1	0.097	[0.039, 0.185]	1681829	T→G	*blr*	Y29D	
8.1	0.082	[0.033, 0.162]	4030951	A→C	*hemN*	T204P	
7.9	0.145	[0.059, 0.272]	895571	A→C	ECB_00834	E227A	
7.8	0.088	[0.034, 0.171]	468423	A→C	*htpG*	T413P	
7.7	0.076	[0.031, 0.153]	3988708	G→T	*ysgA*	V127V	
7.6	0.108	[0.045, 0.215]	1804366	T→G	*astB*	N387H	
7.4	0.175	[0.058, 0.358]	2600080	G→T	*yphF/yphG*	–	
7.3	0.137	[0.052, 0.274]	3047185	A→C	*yghK*	F329L	
7.2	0.081	[0.033, 0.161]	1706209	A→C	*rnt/lhr*	–	
7.2	0.124	[0.045, 0.247]	672941	A→C	*lnt*	I12M	
7.1	0.178	[0.065, 0.337]	2575904	A→C	*pepB*	L425*	
7.1	0.089	[0.037, 0.176]	3650621	A→C	*cspA*	N39H	
6.9	0.120	[0.049, 0.223]	4046297	T→G	*yihQ*	T401P	
6.8	0.123	[0.047, 0.247]	2646159	T→G	*kgtP*	K361Q	
6.8	0.107	[0.039, 0.215]	1562913	A→C	*ydeT*	L347*	
6.7	0.114	[0.044, 0.234]	3670458	A→C	*avtA*	I100L	
6.7	0.135	[0.055, 0.258]	1778924	T→G	*thrS*	E305A	
6.5	0.134	[0.050, 0.262]	2755220	T→G	*pphB*	Y201D	
6.5	0.110	[0.041, 0.219]	1523598	A→C	*fdnG*	K683T	
6.4	0.093	[0.034, 0.190]	742964	A→C	*sucB*	K218Q	
6.4	0.082	[0.029, 0.177]	1319860	T→G	*trpE*	P227P	
6.4	0.137	[0.052, 0.273]	2293250	A→C	*nrdA*	Q562H	
6.3	0.138	[0.053, 0.279]	2959712	A→C	*epd/yggC*	–	
6.1	0.105	[0.038, 0.209]	4453550	A→C	*mgtA*	L883F	
6.0	0.072	[0.028, 0.139]	2719319	A→C	*ygaD/mltB*	–	
6.0	0.084	[0.032, 0.180]	4140162	A→C	*udhA*	Y164D	
5.9	0.105	[0.038, 0.209]	3383769	T→G	*gspC*	I96S	
5.8	0.097	[0.037, 0.203]	1988512	A→C	*yeeJ*	K1884T	
5.7	0.102	[0.037, 0.208]	1052834	T→G	*hyaC*	F226L	

Table S7 | SNPs predicted in 40K mixed-population sample

-log$_{10}$ E	fr new	95% CL	position	base	gene	aa	notes
5.7	0.089	[0.035, 0.176]	2016539	T→G	yeeF	K323Q	
5.7	0.092	[0.035, 0.193]	3191418	A→C	tdcG	D422E	
5.4	0.121	[0.050, 0.241]	250428	T→G	yafK/yafQ	–	
5.3	0.208	[0.067, 0.407]	2599497	A→C	yphF	V190V	
5.3	0.038	[0.013, 0.087]	2714813	C→A	alaS	S686S	
5.1	0.100	[0.037, 0.208]	3949700	T→G	hemX	Q399H	
5.1	0.136	[0.048, 0.272]	3554394	A→C	yhhH	Q103P	
5.0	0.073	[0.031, 0.135]	2731818	A→C	hypF	F156L	
4.9	0.131	[0.044, 0.282]	2499798	T→G	talA	F102C	
4.9	0.107	[0.035, 0.236]	308454	T→G	yahD	Y176D	
4.9	0.063	[0.020, 0.146]	3113151	C→A	tolC	R289S	
4.7	0.108	[0.036, 0.231]	4151984	A→C	murB	N106T	
4.7	0.093	[0.030, 0.201]	3845261	C→A	yidD	P29T	
4.6	0.102	[0.033, 0.214]	1869085	T→G	yeaY	K9T	
4.6	0.132	[0.043, 0.286]	4038587	G→T	bipA/yihL	–	
4.6	0.109	[0.038, 0.240]	466780	T→G	recR	G103G	
4.4	0.100	[0.033, 0.221]	3468712	A→C	yhgF/feoA	–	
4.3	0.107	[0.036, 0.233]	72188	A→C	araB	F222C	
4.3	0.111	[0.036, 0.236]	1020717	A→C	ycbV	N63T	
4.0	0.081	[0.029, 0.161]	1584279	T→G	sotB	L70*	
4.0	0.095	[0.030, 0.206]	4156793	T→G	tuf/secE	–	
3.9	0.109	[0.036, 0.236]	1055523	T→G	appC	I231M	
3.9	0.094	[0.030, 0.203]	922966	A→C	ybjS	I165M	
3.9	0.097	[0.032, 0.218]	3082322	T→G	yghZ	F85C	
3.9	0.071	[0.023, 0.169]	2686836	T→G	gabD	L295*	
3.8	0.074	[0.022, 0.158]	1579757	T→G	yneH	N180H	
3.8	0.314	[0.090, 0.613]	2793464	A→C	ECB_02621/ygcF	–	
3.8	0.140	[0.047, 0.297]	33522	T→G	dapB/carA	–	
3.7	0.085	[0.027, 0.181]	355626	T→G	tauB	L171R	
3.7	0.069	[0.022, 0.149]	654574	T→G	rlpB	E66A	
3.7	0.081	[0.026, 0.176]	3172721	A→C	ygjT/ygjU	–	
3.6	0.080	[0.025, 0.169]	1459135	A→C	gapC	L304*	
3.5	0.089	[0.029, 0.199]	3664231	T→G	xylH	F19C	
3.5	0.072	[0.022, 0.158]	1339936	A→C	yciM	E336A	
3.5	0.071	[0.020, 0.176]	1313641	C→A	yciG/trpA	–	
3.4	0.081	[0.025, 0.187]	3319800	A→C	tldD	F40L	
3.3	0.080	[0.027, 0.178]	2875812	A→C	araE	F331C	
3.3	0.334	[0.098, 0.654]	3397904	A→C	chiA/tuf	–	
3.3	0.109	[0.035, 0.231]	1090410	A→C	ycdM/ycdC	–	
3.2	0.040	[0.011, 0.101]	351184	G→T	frmA	L249M	
3.2	0.071	[0.023, 0.155]	2839535	T→G	ygdK	L125L	
3.1	0.107	[0.037, 0.240]	2134647	T→G	yegU	C142G	
3.1	0.074	[0.023, 0.166]	3556641	A→C	yhhJ	M284R	
3.0	0.154	[0.042, 0.338]	1142419	A→C	mviN	L3F	
3.0	0.144	[0.040, 0.326]	971773	A→C	focA/ycaO	–	
2.8	0.072	[0.020, 0.176]	1837688	C→A	ydjL	A292S	
2.6	0.117	[0.033, 0.275]	4320887	T→G	melA	I88S	
2.5	0.095	[0.026, 0.226]	3703283	T→G	yibG	L138R	
2.4	0.120	[0.034, 0.282]	2794265	A→C	ygcF	L28V	
2.3	0.094	[0.025, 0.230]	2989481	T→G	mutY	L270V	
2.2	0.086	[0.024, 0.204]	1005810	T→G	asnS	Q89H	
2.1	0.046	[0.011, 0.116]	1883142	G→T	manZ	T226T	
2.0	0.074	[0.021, 0.182]	4204758	T→G	metH	L667R	
2.0	0.778	[0.493, 0.954]	3942051	A→C	wecG	E99A	C40K
1.9	0.094	[0.025, 0.217]	3021700	T→G	ECB_02821	I329L	
1.9	0.075	[0.020, 0.175]	466436	A→C	ybaB	G98G	

Table S7 | SNPs predicted in 40K mixed-population sample

-log₁₀ E	fr new	95% CL	position	base	gene	aa	notes
1.9	0.090	[0.024, 0.208]	3590557	A→C	*yhiV*	Q218P	
1.9	0.145	[0.040, 0.326]	4419691	T→G	*cpdB*	K623N	
1.8	0.076	[0.020, 0.176]	1598388	A→C	*ydfI*	L98W	
1.8	0.052	[0.012, 0.152]	2877311	T→A	*kduD*	Y190F	
1.7	0.083	[0.024, 0.205]	4406285	T→G	ECB_04072	I658L	
1.7	0.103	[0.029, 0.248]	1517279	A→C	*narU*	D311E	
1.7	0.064	[0.017, 0.155]	2609986	A→C	*yfhG*	W74G	
1.6	0.087	[0.022, 0.200]	4155223	T→G	*tyrU/glyT*	–	
1.6	0.076	[0.021, 0.186]	449040	T→G	*ybaA*	F101C	
1.6	0.063	[0.018, 0.161]	1934678	A→C	*torZ*	M367R	
1.6	0.089	[0.021, 0.215]	3200806	A→C	*tdcR/yhaB*	–	
1.5	0.076	[0.016, 0.209]	3399298	C→A	*tuf/fusA*	–	
1.5	0.067	[0.020, 0.148]	2929893	T→G	*bglA*	F160C	
1.5	0.067	[0.019, 0.151]	3634666	A→C	*dppC*	L185R	
1.5	0.059	[0.016, 0.142]	1963803	T→G	*araF*	K107T	
1.5	0.086	[0.024, 0.203]	4209909	A→C	*yjbC*	M209L	
1.4	0.074	[0.021, 0.178]	814162	A→C	*ybhM/ybhN*	–	
1.4	0.063	[0.016, 0.148]	203759	A→C	*hlpA*	S146R	
1.3	0.067	[0.017, 0.150]	756377	T→G	*tolQ*	S115A	
1.3	0.058	[0.018, 0.139]	445257	A→C	*amtB*	A75A	
1.3	0.062	[0.016, 0.152]	4026617	T→G	*polA*	V452G	
1.3	0.042	[0.008, 0.117]	4336545	T→G	*cadA*	T265P	
1.2	0.064	[0.018, 0.147]	1051212	A→C	*hyaB*	S290R	
1.2	0.064	[0.017, 0.154]	3037779	C→A	ECB_02838	G406W	
1.2	0.060	[0.017, 0.151]	904280	A→C	ECB_00850	D118A	
1.2	0.052	[0.014, 0.124]	4423524	A→C	*ytfK*	E55A	
1.1	0.047	[0.010, 0.132]	181987	G→T	*pfs*	I3I	
1.1	0.072	[0.018, 0.172]	4172395	A→C	*thiS*	V18V	
1.1	0.054	[0.014, 0.130]	3797323	T→G	*yicK*	L147V	
1.1	0.057	[0.016, 0.139]	3658475	T→G	*xylB*	E452A	
1.1	0.048	[0.013, 0.121]	1861066	A→C	*yeaU*	N193H	
1.1	0.057	[0.016, 0.142]	1253910	A→C	*ycgV*	D731E	
1.0	0.060	[0.017, 0.145]	3700904	T→G	*rhsA*	L1343R	
1.0	0.045	[0.009, 0.122]	4508445	C→A	*sgcQ*	R204L	
0.9	0.065	[0.017, 0.146]	3806810	A→G	*uhpT*	F97S	
0.9	0.053	[0.015, 0.132]	2028096	T→G	*wzzB*	I71L	
0.9	0.084	[0.024, 0.203]	4495466	A→C	ECB_04152/*fecE*	–	
0.9	0.085	[0.022, 0.193]	3756427	A→C	*dinD*	A108A	
0.8	0.041	[0.010, 0.104]	2817899	T→G	*sdaC*	S248A	
0.8	0.069	[0.018, 0.165]	1680771	T→G	*ydgJ*	R244R	
0.7	0.063	[0.014, 0.180]	3675671	G→T	*yiaN*	G138W	
0.7	0.044	[0.009, 0.125]	163881	C→A	*sfsA*	V153F	
0.7	0.100	[0.020, 0.258]	2699214	G→T	*nrdF/proV*	–	
0.6	0.081	[0.023, 0.196]	4485694	T→G	*insG/yjhB*	–	
0.6	0.043	[0.009, 0.116]	2090101	G→A	*yegN*	P577P	
0.4	0.046	[0.013, 0.114]	2932829	A→C	*gcvP*	S655S	
0.4	0.104	[0.022, 0.273]	3570553	T→G	*yhiO/uspA*	–	
0.4	0.100	[0.019, 0.266]	498916	A→C	*rhsD*	G1163G	
0.2	0.073	[0.020, 0.176]	311428	A→C	*yahG*	D152A	
0.2	0.059	[0.016, 0.144]	3508874	T→G	*gntK*	N58H	
0.1	0.074	[0.017, 0.209]	33663	T→G	*dapB/carA*	–	
0.0	0.065	[0.008, 0.190]	1455359	C→A	*hrpA*	Q971K	
0.0	0.043	[0.008, 0.113]	3741971	T→A	*waaT*	–	
0.0	0.086	[0.022, 0.207]	719786	T→G	*ybfD/ybgA*	–	