

687 **SUPPLEMENTARY TEXT**

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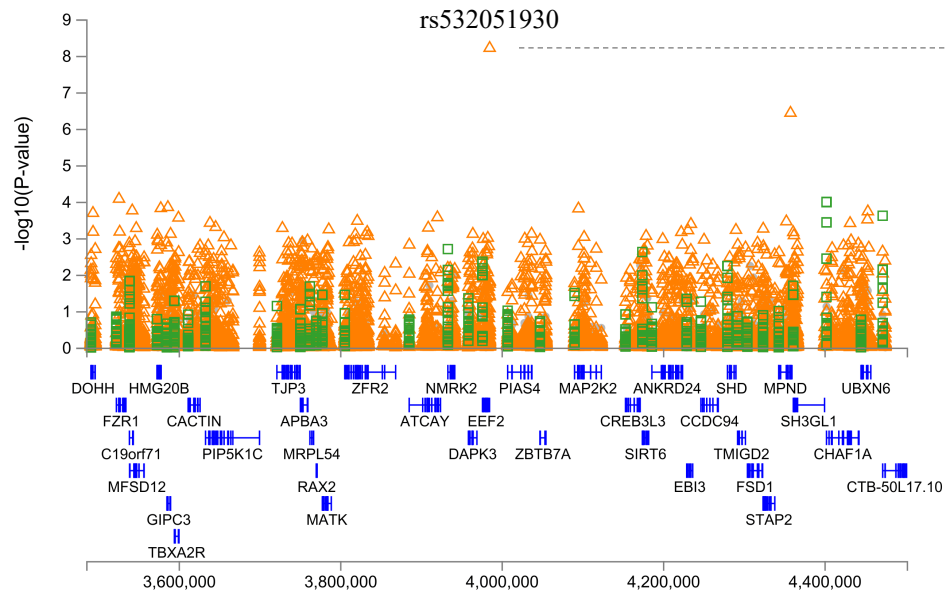
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848

SUPPLEMENTARY FIGURES

A.

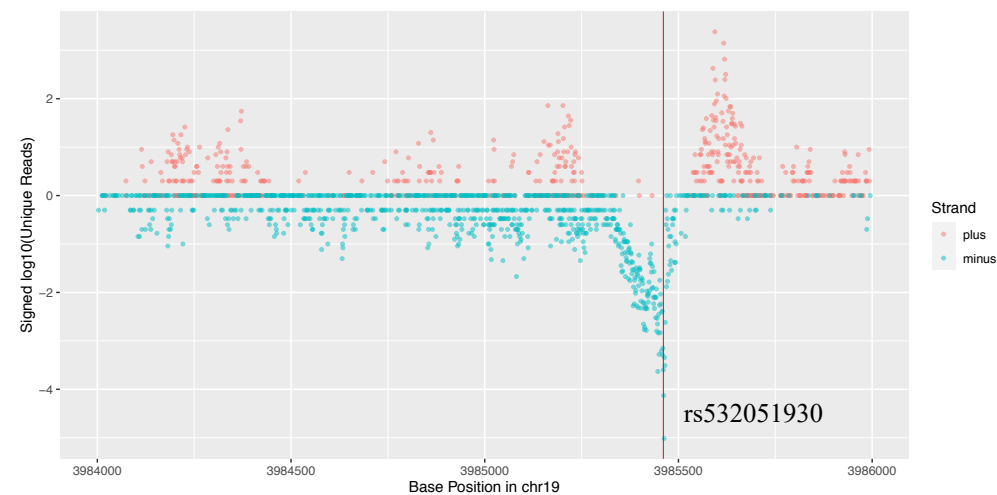


B.

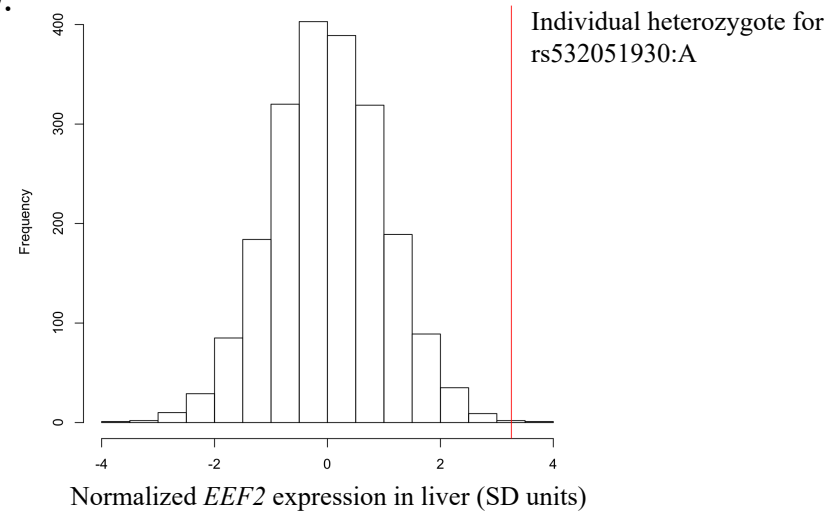
STUDY	N CASES	N CONTROLS	OR [95% CI]	PVALUE	AAF	
	RR RA AA	RR RA AA				
UKB_Freeze_450_EUR	1700 3 0	399228 12 0		80.95 [13.12,499.469]	2.2e-06	2e-05
GHS_Freeze_145_EUR	169 1 0	109282 10 0		134.763 [7.892,2301.292]	7.1e-04	5e-05
META	1869 4 0	508510 22 0		93.906 [20.295,434.505]	6.2e-09	3e-05

OR (95% CI) scale: 1, 125, 600

C.



D.



Supplementary Figure 1. Association between a rare promoter variant in *EEF2* (rs532051930:A) and the COVID-19 hospitalization phenotype. (A) Regional association plot centered on rs532051930. Orange triangles: individual rare variants (MAF<0.5%). Green squares: burden tests. Grey circles: individual common variants (MAF>0.5%). (B) Forest plot showing association in the two individual datasets included in the meta-analysis of this variant. (C) Results from a population-scale PROcap (Precision Run-On 5' cap sequencing) study [19], which profiles transcription start sites of nascent RNAs attached to RNA polymerase. The variant rs532051930 (vertical red line) is located 2 bp away from the peak of transcription initiation. (D) Distribution of *EEF2* expression among 1,918 individuals from the GHS study with available RNA-seq data from liver tissue. Vertical red line indicates expression levels for the only individual who was heterozygote for the rare promoter variant rs532051930.

SUPPLEMENTARY TABLES

Supplementary Table 1. Demographics and clinical characteristics of study participants.

Demographics	COVID-19 Positive		Covid-19 Negative or Unknown
	Hospitalized	Not Hospitalized	
UK Biobank			
Total N	1848	5400	416935
AFR ancestry, n (%)	80 (3.8)	134 (2.2)	8495 (1.8)
EUR ancestry, n (%)	1703 (81.9)	5030 (83.2)	399240 (85.7)
SAS ancestry, n (%)	65 (3.1)	236 (3.9)	9200 (1.9)
Average Age, y (% >60y)	59.7 (57)	52.6 (22)	56.2 (36)
Female, n (%)	737 (39.8)	2896 (53.6)	229572 (55.1)
Hypertension, n (%)	884 (47.8)	1214 (22.5)	96851 (23.2)
Cardiovascular Disease, n (%)	265 (14.3)	330 (6.1)	24859 (5.8)
Type 2 Diabetes, n (%)	342 (18.5)	378 (7)	25335 (6.1)
Chronic kidney disease, n (%)	134 (7.3)	112 (2.1)	8096 (1.9)
Asthma, n (%)	343 (18.5)	886 (16.4)	59229 (14.2)
COPD, n (%)	208 (11.2)	164 (3)	10117 (2.4)
GHS			
Total N	170	664	109292
EUR ancestry, n (%)	170 (100)	664 (100)	109292 (100)
Average Age, y (% >60y)	67.81 (76.47)	54.74 (39.0)	55.75 (44.14)
Female, n (%)	90 (52.94)	435 (65.51)	68226 (62.42)
Hypertension, n (%)	138 (81.17)	343 (51.65)	53658 (49.09)
Cardiovascular Disease, n (%)	77 (45.29)	108 (16.26)	17269 (15.80)
Type 2 Diabetes, n (%)	73 (42.94)	158 (23.79)	23290 (21.30)
Chronic kidney disease, n (%)	64 (37.64)	94 (14.15)	14246 (13.03)
Asthma, n (%)	15 (8.82)	47 (7.07)	6975 (6.38)
COPD, n (%)	47(27.64)	67 (10.09)	10822 (9.90)
PMBB			
Total N	67	99	959
AFR ancestry, n (%)	67 (100)	99 (100)	959 (100)
Average Age, y (% >60y)	62.58 (61.19)	47.64 (19.19)	56.24 (43.27)
Female, n (%)	38 (56.7)	72 (72.7)	641 (66.8)
Hypertension, n (%)	59 (88.1)	52 (52.5)	704 (73.4)
Cardiovascular Disease, n (%)	40 (59.7)	17 (17.2)	359 (37.4)
Type 2 Diabetes, n (%)	50 (74.6)	31 (31.3)	440 (45.9)
Chronic kidney disease, n (%)	42 (62.7)	13 (13.1)	300 (31.3)
Asthma, n (%)	18 (26.9)	23 (23.2)	294 (30.7)
COPD, n (%)	20 (29.9)	8 (8.1)	145 (15.1)

Supplementary Table 2. Breakdown of COVID-19 status across the four studies included in the analysis.

COVID-19 status	Positive qPCR or serology for SARS-CoV-2	ICD10 U07 diagnosis or hospitalization	Severe COVID-19 (ventilation or death)	Negative qPCR or serology test for SARS-CoV-2				
					UK Biobank	GHS	PMBB	Total
Positive	Yes	Yes	Yes	Yes or No or NA	382	49	27	458
	Yes	Yes	No or NA	Yes or No or NA	1119	121	40	1,280
	Yes	No or NA	Yes	Yes or No or NA	0	0	0	0
	Yes	No or NA	No or NA	Yes or No or NA	5400	664	99	6,163
	No or NA	Yes	Yes	No or NA	122	0	0	122
	No or NA	Yes	No or NA	No or NA	77	0	0	77
	No or NA	No or NA	Yes	No or NA	0	0	0	0
	No or NA	Yes	Yes	Yes	37	0	0	37
	No or NA	Yes	No or NA	Yes	111	0	0	111
	No or NA	No or NA	Yes	Yes	0	0	0	0
					Total = 7248	Total = 834	Total = 166	Total = 8248
Negative	No or NA	No or NA	No or NA	Yes	32,867	15,574	959	49,400
Unknown	NA	No or NA	No or NA	NA	384,068	93,718	7,779	485,565
Total					424,183	110,126	8,904	543,213

Supplementary Table 3. Definitions used for the seven COVID-19 phenotypes analyzed.

Broad phenotype category	Phenotype	Case/control group	Definition			Sample size with genetic data			
			COVID-19 status	Hospitalized	Severe disease	UK Biobank	GHS	PMBB	Total
Risk of infection	COVID-19 positive vs. COVID-19 negative or unknown	Cases	Positive	Yes, No or NA	Yes, No or NA	7,248	834	166	8,248
		Controls	Negative or unknown	No or NA	No or NA	416,935	109,292	8,738	534,965
	COVID-19 positive vs. COVID-19 negative	Cases	Positive	Yes, No or NA	Yes, No or NA	7,248	834	166	8,248
		Controls	Negative	No or NA	No or NA	32,867	15,574	959	49,400
	COVID-19 positive and not hospitalized vs. COVID-19 negative or unknown	Cases	Positive	No	No	5,400	664	99	6,163
		Controls	Negative or unknown	No or NA	No or NA	416,935	109,292	8,738	534,965
	COVID-19 positive and hospitalized vs. COVID-19 negative or unknown	Cases	Positive	Yes (or death)	Yes, No or NA	1,848	170	67	2,085
		Controls	Negative or unknown	No or NA	No or NA	416,935	109,292	8,738	534,965
COVID-19 positive and severe vs. COVID-19 negative or unknown	Cases	Positive	Yes, No or NA	Yes	541	49	NA	590	
	Controls	Negative or unknown	No or NA	No or NA	416,935	109,292	NA	526,227	
Risk of adverse outcomes amongst infected individuals	COVID-19 positive and hospitalized vs. COVID-19 positive and not hospitalized	Cases	Positive	Yes (or death)	Yes, No or NA	1,703	170	67	1,940
		Controls	Positive	No	No	5,030	664	99	5,793
	COVID-19 positive and severe vs. COVID-19 positive and not hospitalized	Cases	Positive	Yes, No or NA	Yes	523	49	NA	572
		Controls	Positive	No	No	5,164	664	NA	5,828

Supplementary Table 4. Genomic inflation factor (lambda GC) observed in the analysis of exome sequence variants for each of the seven phenotypes tested.

Phenotype	Study	Ancestry	N cases	N controls	Exome-sequencing variants with MAF<0.5% & MAC>=5			Exome-sequencing variants with MAF<0.5% & MAC>25			Exome-sequencing variants with MAF>0.5%		
					N variants	Proportion of variants with MAC=0 in cases	Lambda GC	N variants	Proportion of variants with MAC=0 in cases	Lambda GC	N variants	Proportion of variants with MAC=0 in cases	Lambda GC
COVID19_positive_hospitalized_vs_COVID19_negative_or_unknown_combined	UKB Freeze 450	SAS	65	9200	798145	0.873	0.202	222553	0.719	0.774	227664	0.193	1.254
	UPENN-PMBB Freeze One	AFR	67	8738	890983	0.857	0.215	279379	0.708	0.748	486699	0.132	1.099
	UKB Freeze 450	AFR	80	8495	812651	0.830	0.268	248412	0.653	0.803	380222	0.120	0.947
	GHS Freeze 145 Exome	EUR	170	109292	2899753	0.933	0.042	889226	0.815	0.23	172227	0.046	0.997
	UKB Freeze 450	EUR	1703	399240	6411484	0.849	0.126	2074846	0.622	0.555	166323	0.000	1.004
	Meta-analysis	ALL	2085	534965	8053662	0.832	0.126	2833904	0.599	0.554	352116	0.043	1.02
COVID19_positive_hospitalized_vs_COVID19_positive_not_hospitalized_combined	UPENN-PMBB Freeze One	AFR	67	99	NA	NA	NA	NA	NA	NA	330315	0.012	0.183
	GHS Freeze 145 Exome	EUR	170	664	209299	0.549	0.866	NA	NA	NA	173449	0.035	1.079
	UKB Freeze 450	EUR	1703	5030	424564	0.072	1.099	112045	0.000	1.043	166403	0.000	1.037
	Meta-analysis	ALL	1940	5793	462977	0.126	1.017	128932	0.000	1.021	398264	0.009	0.388
COVID19_positive_not_hospitalized_vs_COVID19_negative_or_unknown_combined	UPENN-PMBB Freeze One	AFR	99	8738	893407	0.796	0.338	280294	0.596	0.992	487296	0.076	0.961
	UKB Freeze 450	AFR	134	8495	816964	0.736	0.48	250786	0.492	1.218	379423	0.050	0.998
	UKB Freeze 450	SAS	236	9200	808557	0.652	0.622	226850	0.325	1.326	227147	0.016	1.016
	GHS Freeze 145 Exome	EUR	664	109292	2907752	0.824	0.167	892254	0.559	0.731	172221	0.001	1.016
	UKB Freeze 450	EUR	5030	399240	6440585	0.722	0.345	2086994	0.387	1.074	166350	0.000	1.019
	Meta-analysis	ALL	6163	534965	8091286	0.710	0.345	2849393	0.385	1.059	351738	0.020	0.982
COVID19_positive_severe_vs_COVID19_negative_or_unknown_combined	UKB Freeze 450	SAS	18	9200	796240	0.961	0.04	222161	0.910	0.163	226990	0.496	0.749
	UKB Freeze 450	AFR	33	8495	811241	0.919	0.132	248076	0.831	0.346	379346	0.302	0.821
	GHS Freeze 145 Exome	EUR	49	109292	2895469	0.976	0.013	888545	0.932	0.08	172229	0.246	0.785
	UKB Freeze 450	EUR	490	399240	6400400	0.931	0.034	2070233	0.812	0.176	166321	0.001	1.02
	Meta-analysis	ALL	590	526227	7876462	0.917	0.037	2721522	0.783	0.214	225588	0.090	0.889
	UKB Freeze 450	AFR	33	134	NA	NA	NA	NA	NA	NA	235941	0.109	0.234
COVID19_positive_severe_vs_COVID19_positive_not_hospitalized_combined	GHS Freeze 145 Exome	EUR	49	664	194798	0.818	0.273	NA	NA	NA	170209	0.228	1.141
	UKB Freeze 450	EUR	490	5030	373269	0.327	1.078	87177	0.043	1.013	166184	0.001	0.998
	Meta-analysis	ALL	572	5828	410271	0.365	0.912	101899	0.035	0.968	301689	0.056	0.593
	UPENN-PMBB Freeze One	AFR	166	959	195274	0.331	1.345	NA	NA	NA	484596	0.023	0.974
COVID19_positive_vs_COVID19_negative_combined	UKB Freeze 450	AFR	214	766	141313	0.206	1.071	NA	NA	NA	387132	0.013	0.938
	UKB Freeze 450	SAS	301	844	149617	0.129	1.111	NA	NA	NA	228543	0.004	1.07
	GHS Freeze 145 Exome	EUR	834	15574	896282	0.505	0.889	239671	0.091	1.024	172248	0.000	1.019
	UKB Freeze 450	EUR	6733	31257	1361423	0.143	1.15	417941	0.001	1.015	166646	0.000	1
	Meta-analysis	ALL	8248	49400	1745716	0.203	1.023	575968	0.005	1.025	471978	0.006	0.984
	UPENN-PMBB Freeze One	AFR	166	8738	897805	0.700	0.519	282679	0.434	1.219	486918	0.029	0.972
COVID19_positive_vs_COVID19_negative_or_unknown_combined	UKB Freeze 450	AFR	214	8495	821371	0.636	0.666	253263	0.335	1.356	379070	0.015	1.02
	UKB Freeze 450	SAS	301	9200	812263	0.595	0.735	228572	0.246	1.267	226861	0.007	1.012
	GHS Freeze 145 Exome	EUR	834	109292	2910461	0.799	0.205	893247	0.509	0.844	172192	0.001	1.026
	UKB Freeze 450	EUR	6733	399240	6455895	0.675	0.446	2093385	0.315	1.175	166339	0.000	1.017
	Meta-analysis	ALL	8248	534965	8111082	0.663	0.443	2857926	0.315	1.161	351576	0.009	0.996

Supplementary Table 5. Association between the COVID-19 hospitalization phenotype and 50 rare variants in the promoter of EEF2.

rs ID	hg38	Effect allele	Odds ratio	95% LCI	95% UCI	SE	P-value	Effect allele frequency	N cases with 0112 copies of effect allele	N controls with 0112 copies of effect allele	Studies analyzed
rs532051930	19:3985461:G:A	A	93.9065	20.2954	434.505	0.7816	6.18E-09	2.55E-05	1869/410	5085102220	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs374797871	19:3985414:A:G	G	24.2157	1.84809	317.299	1.3127	0.0152	0.000547	146/110	172151810	UKB Freeze 450 AFR UPENN-PMBB Freeze One AFR Meta
rs754033543	19:3985383:T:C	C	18.9215	1.73245	206.658	1.2198	0.0159	0.00027	1702/110	3992192110	UKB Freeze 450 EUR Meta
rs542049090	19:3985437:A:G	G	18.6529	1.72231	202.014	1.2155	0.0161	0.00026	1769/110	4079472000	UKB Freeze 450 EUR UPENN-PMBB Freeze One AFR Meta
rs897131413	19:3985457:G:C	C	17.7894	1.63807	193.191	1.2169	0.0180	0.00047	1872/110	5084777470	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs370100022	19:3985421:G:A	A	5.21063	1.10233	24.6302	0.7925	0.0373	0.000140	1936/210	5175851440	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR UKB Freeze 450 SAS Meta
rs546488032	19:3985433:G:A	A	6.19102	0.776398	49.3674	1.0593	0.0852	0.000057	1937/110	5176711561	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR UKB Freeze 450 SAS Meta
rs201347619	19:3985401:T:A	A	0.364401	0.0678296	1.95767	0.8578	0.2393	0.004028	147/010	1709411381	UKB Freeze 450 AFR UPENN-PMBB Freeze One AFR Meta
rs369523513	19:3985436:G:A	A	0.36233	0.0593301	2.21276	0.9232	0.2715	0.000116	2020/010	5255961201	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 AFR UKB Freeze 450 EUR UPENN-PMBB Freeze One AFR Meta
rs373888946	19:3985451:G:T	T	0.363709	0.0429819	3.07768	1.0896	0.3533	0.00204	1873/010	5083192080	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs907273439	19:3985443:G:C	C	2.35632	0.354027	15.6831	0.9671	0.3755	0.000234	1871/210	5082702370	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs190787427	19:3985426:G:C	C	0.361534	0.0260517	5.0172	1.342	0.4484	0.000117	1938/010	5175651220	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR UKB Freeze 450 SAS Meta
rs377104055	19:3985429:T:C	C	0.361136	0.0234969	5.55049	1.3941	0.4650	0.000087	1850/010	4164000730	UKB Freeze 450 AFR UKB Freeze 450 EUR UPENN-PMBB Freeze One AFR Meta
rs200921166	19:3985402:C:T	T	0.360523	0.00840259	15.4686	1.9179	0.5948	0.000064	1703/010	3991875110	UKB Freeze 450 EUR Meta
rs774095261	19:3985425:C:A	A	0.352361	0.00521284	23.8177	2.1498	0.6275	0.000020	1850/010	4164371710	UKB Freeze 450 AFR UKB Freeze 450 EUR UPENN-PMBB Freeze One AFR Meta
rs529755390	19:3985441:T:C	C	0.361172	0.00447913	29.123	2.2398	0.6493	0.000049	1873/010	5083685000	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs77439048	19:3985423:A:C	C	0.377494	0.00480048	29.6849	2.227	0.6618	0.000062	1873/010	5084576300	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs1196793724	19:3985434:C:G	G	0.364183	0.00328972	40.3162	2.4015	0.6740	0.000044	1703/010	3992023550	UKB Freeze 450 EUR Meta
rs529755390	19:3985441:T:A	A	0.364438	0.0027381	48.5061	2.4955	0.6859	0.000047	1703/010	3991191380	UKB Freeze 450 EUR Meta
NA	rs5441:T:TCGCCGGCCAGC	CGCCGAC	0.364656	0.00182461	72.878	2.7029	0.7090	0.000044	1873/010	5083684550	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs190787427	19:3985426:G:A	A	0.365569	0.00170724	78.2788	2.7381	0.7132	0.000042	1703/010	3991203400	UKB Freeze 450 EUR Meta
rs1280637004	19:3985463:G:A	A	0.364255	0.000412394	321.736	3.4611	0.7704	0.000024	1703/010	3992151190	UKB Freeze 450 EUR Meta
rs363082396	19:3985435:C:A	A	0.364183	0.000353722	374.953	3.5393	0.7753	0.000034	1873/010	5084683550	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
NA	19:3985425:C:G	G	0.364111	0.000282174	469.838	3.6545	0.7822	0.000021	1703/010	3992171710	UKB Freeze 450 EUR Meta
rs374912847	19:3985392:G:A	A	0.362584	0.000204629	642.464	3.8163	0.7904	0.000014	1703/010	3992291110	UKB Freeze 450 EUR Meta
NA	19:3985455:G:A	A	0.363455	0.000175147	754.222	3.8969	0.7951	0.000016	1703/010	3992271130	UKB Freeze 450 EUR Meta
rs750678552	19:3985430:C:G	G	0.359112	0.000113616	1135.11	4.1116	0.8033	0.000432	65/010	919280	UKB Freeze 450 SAS Meta
rs776567094	19:3985428:G:A	A	0.365423	6.02E-05	2218.87	4.4447	0.8208	0.000019	1703/010	3992181510	UKB Freeze 450 EUR Meta
rs369523513	19:3985436:G:C	C	0.366851	5.09E-05	2645.82	4.5325	0.8249	0.000018	1873/010	5084621180	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
NA	19:3985417:G:C	C	0.363855	2.93E-05	4571.18	4.8096	0.8335	0.000014	1703/010	3992241110	UKB Freeze 450 EUR Meta
rs1027642860	19:3985460:A:C	C	0.36092	1.49E-05	8736.83	5.1503	0.8431	0.000009	1703/010	3992297100	UKB Freeze 450 EUR Meta
rs779559837	19:3985438:G:A	A	0.391097	3.10E-05	4928.25	4.8172	0.8455	0.000110	170/010	1092512400	GHS Freeze 145 MegaFreeze EUR Meta
NA	19:3985444:C:T	T	0.382166	1.81E-05	8071.45	5.0807	0.8498	0.000022	1873/010	5084852220	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs776029459	19:3985405:C:G	G	0.374486	1.16E-05	12130.2	5.2989	0.8530	0.000017	1873/010	5085131170	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
NA	19:3985411:A:G	G	0.364948	5.36E-06	24871	5.6784	0.8591	0.000006	1703/010	3992315100	UKB Freeze 450 EUR Meta
rs995814367	19:3985458:G:A	A	0.365204	3.21E-06	41519	5.9395	0.8653	0.000012	1703/010	3992291000	UKB Freeze 450 EUR Meta
rs764194249	19:3985408:G:A	A	0.365204	2.04E-06	65358.2	6.171	0.8703	0.000006	1703/010	3992345100	UKB Freeze 450 EUR Meta
NA	19:3985442:G:A	A	0.366228	1.12E-06	119957	6.4794	0.8768	0.000009	1703/010	3992237100	UKB Freeze 450 EUR Meta
rs77439048	19:3985423:A:G	G	0.366667	6.02E-07	223245	6.7957	0.8826	0.000015	1703/010	3992231120	UKB Freeze 450 EUR Meta
rs886610889	19:3985452:A:ACGG	ACCG	0.383391	9.78E-07	150305	6.5711	0.8840	0.000046	170/010	1092731000	GHS Freeze 145 MegaFreeze EUR Meta
rs748898673	19:3985399:A:C	C	0.366228	4.01E-07	334091	7.002	0.8859	0.000009	1703/010	3992337100	UKB Freeze 450 EUR Meta
rs560636284	19:3985439:G:A	A	0.92441	0.310456	2.75251	0.5567	0.8877	0.000897	1870.310	5075939130	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta
rs776567094	19:3985428:G:C	C	0.365825	2.96E-07	451572	7.1563	0.8882	0.000009	1703/010	3992181710	UKB Freeze 450 EUR Meta
rs1019385884	19:3985467:G:A	A	0.366008	2.35E-07	569136	7.2741	0.8901	0.000007	1703/010	3992296600	UKB Freeze 450 EUR Meta
rs1037024876	19:3985452:A:G	G	0.34294	5.19E-08	2.24E+06	8.0119	0.8937	0.000023	1700/010	1092731510	GHS Freeze 145 MegaFreeze EUR Meta
rs754780163	19:3985431:G:A	A	0.366888	1.38E-07	973791	7.5469	0.8943	0.000012	1703/010	3992271000	UKB Freeze 450 EUR Meta
NA	19:3985432:C:G	G	0.367034	7.63E-10	1.77E+08	10.2002	0.9217	0.000006	1703/010	3992335100	UKB Freeze 450 EUR Meta
NA	19:3985449:A:G	G	0.375987	7.77E-10	1.82E+08	10.2028	0.9236	0.000027	1700/010	1092828600	GHS Freeze 145 MegaFreeze EUR Meta
NA	19:3985446:G:A	A	0.367402	2.56E-13	5.28E+11	14.2826	0.9441	0.000006	1703/010	3992325100	UKB Freeze 450 EUR Meta
rs373344045	19:3985424:G:A	A	1.06354	0.140046	8.07673	1.0344	0.9525	0.000243	1872/110	5082832470	GHS Freeze 145 MegaFreeze EUR UKB Freeze 450 EUR Meta

Supplementary Table 6. Evidence for association between the COVID-19 hospitalization phenotype and rs532051930 across different association tests.

Approach	Association test in individual studies	Approach used to combine results across studies	Association in UKB Europeans			Association in GHS Europeans			Association in UKB+GHS Europeans								
			OR (95% CI)	SE*	P-value	OR (95% CI)	SE*	P-value	OR (95% CI)	SE*	P-value						
1 (default)	REGENIE Firth exact test, with covariates and LOCO	Inverse-variance fixed-effects meta-analysis	80.9 (13.1 - 499.5)	0.93	2.20E-06	134.8 (7.9 - 2301.3)	1.45	7.07E-04	93.9 (20.3 - 434.5) 0.78 6.17E-09								
2		Sample size weighted meta-analysis							NA			3.14E-08					
3		Meta-analysis of log-likelihood curves							85.6 (17.2 - 425.8) 0.82 5.51E-08								
4		Firth exact test, no covariates							65.7 (16.9 - 195.3) 0.90 3.49E-06	92.1 (9.9 - 395.0) 1.4 0.00127	72.5 (16.4 - 321.0) 0.76 1.64E-08						
5		Fisher's exact test (no covariates)							58.7 (10.6 - 218.5) 0.98 3.35E-05	64.6 (1.48 - 456.8) 1.75 0.017	60.1 (11.2 - 321.6) 0.86 1.70E-06						
6		Logistic regression, with covariates							71.6 (15.6 - 241.7) 0.99 1.55E-05	106.5 (5.61 - 648.2) 1.74 0.00733	78.9 (14.6 - 425.0) 0.86 3.73E-07						
7		Logistic regression, no covariates							58.7 (13.4 - 185.0) 0.96 2.37E-05	64.7 (3.51 - 340.4) 1.67 0.0123	60.2 (11.7 - 308.4) 0.83 9.00E-07						
8		BinomiRare test, with covariates							Meta-analysis			NA			NA 2.96E-07		
9		Firth exact test, with covariates							Mega-analysis (UKB+GHS combined)			NA			85.8 (17.2 - 427.2) 0.82 5.48E-08		
10		Firth exact test, no covariates													54.4 (11.8 - 250.5) 0.78 2.91E-07		
11		Fisher's exact test (no covariates)													49.4 (9.7 - 251.0) 0.83 2.53E-06		
12		Logistic regression, with covariates													78.7 (14.6 - 424.9) 0.86 3.88E-07		
13		Logistic regression, no covariates													49.5 (9.9 - 246.2) 0.82 1.89E-06		

*Re-calculated from the OR and p-value

Supplementary Table 7. No carriers of the rare variant rs532051930 in the promoter of EEF2 were observed in an additional 4,341 individuals with COVID-19.

Study	Reference	N COVID-19 cases							Heterozygote for rs532051930:A	
		Total	Hospitalized	Severe	Of European	African	Asian	Hispanic/other ancestry		
GenOMICC	PMID 33307546	2969	2969	2969	2110	145	375	NA	339	0
Columbia University COVID-19 Biobank	https://www.medrxiv.org/content/10.1101/2020.12.18.20248226v2	1152	1082	479	67	463	33	506	83	0
Biobanque Québec Covid-19	https://www.medrxiv.org/content/10.1101/2020.12.18.20248226v2	220	128	62	154	30	29	7	0	0

Supplementary Table 8. Results from burden association tests for 167 genes located in eight loci described by Horowitz et al. (2021).

Trait	Gene	Burden test	MAF	Odds Ratio [95% CI]	P-value	N cases with RRR/AA genotype ^a	N controls with RRR/AA genotype ^a	AAF	GWAS SNP	Distance to GWAS SNP, bp	Distance to GWAS SNP, rank
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CHAF1A</i>	M1	<1%	25.2164.947.128.539	1.00E-04	1935/30	517687/450	0.00005	19:4719431:G:A	316669	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CHAF1A</i>	M3	<1%	25.2164.947.128.539	1.00E-04	1935/30	517687/450	0.00005	19:4719431:G:A	316669	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SLC22A31</i>	M1	<1%	5.5831.807.17.256	2.80E-03	1844/60	4160714020	0.00049	16:89117727	78271	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SLC22A31</i>	M3	<1%	5.5831.807.17.256	2.80E-03	1844/60	4160714020	0.00049	16:89117727	78271	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SARDH</i>	M1	<1%	2.3671.315.4.259	4.00E-03	20721/21	53347714871	0.0014	9:133270015:A:C	393873	25
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SHD</i>	M1	<1%	5.2831.619.17.242	5.80E-03	1869/40	5082902420	0.00024	19:4719431:G:A	439368	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CTB-SOL17.10</i>	M1	<1%	5.7261.598.20.518	7.40E-03	2017/30	5256251400	0.00014	19:4719431:G:A	247081	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CTB-SOL17.10</i>	M3	<1%	5.7261.598.20.518	7.40E-03	2017/30	5256251400	0.00014	19:4719431:G:A	247081	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DBH</i>	M1	<1%	0.3200.128.0.796	1.40E-02	2083/20	53276122040	0.00205	9:133270015:A:C	366356	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SIGLEC14</i>	M1	<1%	6.5441.434.29.868	1.50E-02	1936/20	5176259512	0.00012	19:51739497	96143	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OLIG2</i>	M1	<1%	12.0461.255.115.574	3.10E-02	1872/10	508456760	0.00008	21:33252612:A:G	225750	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OLIG2</i>	M3	<1%	12.0461.255.115.574	3.10E-02	1872/10	508456760	0.00008	21:33252612:A:G	225750	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PSORS1C2</i>	M1	<1%	5.1761.151.23.275	3.20E-02	1871/20	5083501820	0.00018	6:31153649:G:A	15699	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PPP2R1A</i>	M3	<1%	5.4291.129.26.105	3.50E-02	1871/20	5083771950	0.00019	19:51739497	450599	33
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SH3GL1</i>	M1	<1%	10.8041.173.99.499	3.60E-02	1872/10	508459730	0.00007	19:4719431:G:A	357832	17
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MCB</i>	M1	<1%	2.1061.007.4.401	4.80E-02	2077/80	53392110431	0.00098	6:31153649:G:A	344544	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MCB</i>	M3	<1%	2.1061.007.4.401	4.80E-02	2077/80	53392110431	0.00098	6:31153649:G:A	344544	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ATP6V1G2</i>	M1	<1%	8.5960.965.76.602	5.40E-02	1872/10	508475570	0.00006	6:31153649:G:A	391758	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ATP6V1G2</i>	M3	<1%	8.5960.965.76.602	5.40E-02	1872/10	508475570	0.00006	6:31153649:G:A	391758	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SRFBF6</i>	M1	<1%	5.0250.971.25.993	5.40E-02	2016/20	5259752520	0.00024	9:133270015:A:C	61853	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MYDGF</i>	M3	<1%	0.3430.115.1.024	5.50E-02	2085/00	5344694960	0.00046	19:4719431:G:A	61427	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>XCR1</i>	M1	<1%	3.0680.967.9.733	5.70E-02	2017/30	5254323330	0.00032	3:45859597:C:T	161348	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>C6orf15</i>	M3	<1%	3.0030.965.9.351	5.80E-02	2016/40	5254652991	0.00029	6:31153649:G:A	42269	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LARS2</i>	M3	<1%	1.3550.987.1.861	6.00E-02	2036/481	52945998238	0.00941	3:45859597:C:T	465144	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PRRC2A</i>	M3	<1%	0.7160.505.1.016	6.10E-02	2063/220	529433100257	0.00937	6:31153649:G:A	469140	34
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LIMD1</i>	M3	<1%	2.2020.962.5.038	6.20E-02	2079/60	5340539120	0.00085	3:45859597:C:T	264718	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FTFR1</i>	M1	<1%	9.5210.887.102.209	6.30E-02	2019/10	525731340	0.00003	19:51739497	6444	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SIGLEC14</i>	M3	<1%	3.5350.936.13.249	6.30E-02	2093/20	52627319818	0.00021	19:51739497	96143	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CTBA</i>	M3	<1%	2.8430.930.8.693	6.70E-02	2080/50	5344055600	0.00053	16:89117727	474375	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OLIG1</i>	M1	<1%	7.3540.856.63.204	6.90E-02	1872/10	508454780	0.00008	21:33252612:A:G	182366	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OLIG1</i>	M3	<1%	7.3540.856.63.204	6.90E-02	1872/10	508454780	0.00008	21:33252612:A:G	182366	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF615</i>	M1	<1%	0.3680.121.1.117	7.80E-02	2085/00	5341548101	0.00076	19:51739497	253382	17
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF615</i>	M3	<1%	0.3680.121.1.117	7.80E-02	2085/00	5341548101	0.00076	19:51739497	253382	17
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>KDM4B</i>	M3	<1%	2.1460.916.5.028	7.90E-02	2077/80	5318617781	0.00166	19:4719431:G:A	313459	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CPNE7</i>	M1	<1%	2.5090.871.7.222	8.80E-02	2079/60	5342237420	0.0007	16:89117727	458170	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DBH</i>	M3	<1%	0.8240.657.1.033	9.30E-02	2021/640	5140432088735	0.01957	9:133270015:A:C	366356	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF1</i>	M1	<1%	1.7340.905.3.321	9.70E-02	2075/100	53551145440	0.00136	9:133270015:A:C	81897	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CTSL</i>	M1	<1%	2.0460.869.4.823	1.00E-01	2076/90	53271612472	0.00017	16:89117727	41119	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FEM1A</i>	M1	<1%	3.7780.670.21.285	1.30E-01	2015/30	5259143130	0.0003	19:4719431:G:A	72423	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FEM1A</i>	M3	<1%	3.7780.670.21.285	1.30E-01	2015/30	5259143130	0.0003	19:4719431:G:A	72423	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LZTFL1</i>	M3	<1%	2.5780.756.8.800	1.30E-01	2082/30	5345044601	0.00043	3:45859597:C:T	33284	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF2</i>	M3	<1%	0.4710.176.1.262	1.30E-01	2084/10	5340389270	0.00086	9:133270015:A:C	86577	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ARRDC5</i>	M3	<1%	2.5130.744.8.487	1.40E-01	2080/50	5342637020	0.00066	19:4719431:G:A	171614	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FLOT1</i>	M3	<1%	1.9690.802.4.836	1.40E-01	2077/80	53372212421	0.00117	6:31153649:G:A	425534	26
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GLON3</i>	M1	<1%	19.0790.389.936.241	1.40E-01	1872/10	508458870	0.00009	19:51739497	427650	32
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SLC6A20</i>	M1	<1%	0.4620.161.1.328	1.50E-01	2085/00	5344619040	0.00084	3:45859597:C:T	101161	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MAF7B</i>	M3	<1%	0.4730.168.1.330	1.60E-01	2084/10	5340788870	0.00083	5:163300447	202947	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SARDH</i>	M3	<1%	1.2930.905.1.848	1.60E-01	2053/41	52807169913	0.00645	9:133270015:A:C	393873	25
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TSC1</i>	M3	<1%	0.7410.490.1.121	1.60E-01	2069/160	52819067687	0.00633	9:133270015:A:C	373781	23
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MUC2J</i>	M1	<1%	0.3670.086.1.555	1.70E-01	2020/00	5252635011	0.00048	6:31153649:G:A	169691	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MUC2J</i>	M3	<1%	0.3670.086.1.555	1.70E-01	2020/00	5252635011	0.00048	6:31153649:G:A	169691	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PLIN5</i>	M1	<1%	0.4860.172.1.374	1.70E-01	2084/10	5340329312	0.00087	19:4719431:G:A	195904	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PLIN5</i>	M3	<1%	0.4860.172.1.374	1.70E-01	2084/10	5340329312	0.00087	19:4719431:G:A	195904	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LIMD1</i>	M1	<1%	11.5390.303.439.203	1.90E-01	1872/10	5084311010	0.0001	3:45859597:C:T	264718	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MVD</i>	M1	<1%	0.3620.078.1.673	1.90E-01	1938/00	5173333990	0.00038	16:89117727	465203	19
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NCR3</i>	M3	<1%	0.3730.086.1.608	1.90E-01	2020/00	5253514140	0.00039	6:31153649:G:A	435417	30
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>RNF166</i>	M3	<1%	2.0520.696.6.046	1.90E-01	2016/10	5251575980	0.00057	16:89117727	420160	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SACML</i>	M1	<1%	3.2930.554.19.385	1.90E-01	1937/10	5175841480	0.00014	3:45859597:C:T	170132	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCDC94</i>	M1	<1%	3.7630.497.28.456	2.00E-01	2019/10	5256061590	0.00015	19:4719431:G:A	472285	23
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SACML</i>	M3	<1%	1.9820.690.5.692	2.00E-01	2080/50	534178861	0.00074	3:45859597:C:T	170132	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAPP2L</i>	M1	<1%	0.7590.498.1.158	2.00E-01	2069/160	528171678311	0.00635	16:89117727	260577	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF616</i>	M1	<1%	0.4930.166.1.465	2.00E-01	2004/10	5255309400	0.00089	19:51739497	375320	28
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF616</i>	M3	<1%	0.4930.166.1.465	2.00E-01	2004/10	5255309400	0.00089	19:51739497	375320	28
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF836</i>	M1	<1%	0.3630.076.1.725	2.00E-01	2085/00	5346153500	0.00033	19:51739497	415374	31
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF836</i>	M3	<1%	0.3630.076.1.725	2.00E-01	2085/00	5346153500	0.00033	19:51739497	415374	31
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CEACAM18</i>	M1	<1%	0.3650.075.1.733	2.10E-01	2005/00	5260424280	0.0004	19:51739497	260855	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CEACAM18</i>	M3	<1%	0.3650.075.1.733	2.10E-01	2005/00	5260424280	0.0004	19:51739497	260855	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DNAK28</i>	M1	<1%	0.5610.228.1.381	2.10E-01	2083/20	53383711280	0.00015	21:33252612:A:G	235614	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>APRT</i>	M3	<1%	0.5020.168.1.501	2.20E-01	2084/10	5341318340	0.00078	16:89117727	300830	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>BAG6</i>	M3	<1%	0.7130.416.1.224	2.20E-01	2076/90	5316253373	0.00312	6:31153649:G:A	485481	36
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>HMMR</i>	M3	<1%	0.6880.377.1.254	2.20E-01	2078/70	53222927306	0.00256	5:163300447	160245	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SLC6A20</i>	M3	<1%	0.7210.428.1.216	2.20E-01	2076/90	53123637272	0.00348	3:45859597:C:T	101161	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SPAC49</i>	M1	<1%	0.3680.075.1.806	2.20E-01	2085/00	5345234402	0.00041	9:133270015:A:C	386068	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>VARS2</i>	M1	<1%	0.7680.503.1.174	2.20E-01	2069/160	529226572910	0.00537	6:31153649:G:A	239238	24
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF841</i>	M1	<1%	0.5620.225.1.399	2.20E-01	2083/20	53369412710	0.00119	19:51739497	325609	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF841</i>	M3	<1%	0.5620.225.1.399	2.20E-01	2083/20	53369412710	0.00119	19:51739497	325609	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DNR1</i>	M1	<1%	0.3650.071.1.871	2.30E-01	1938/00	5173144180	0.0004	6:31153649:G:A	268430	17
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FKBP1</i>	M3	<1%								

COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF6</i>	M3	<-1%	1.442(0.785,2.651)	2.40E-01	2071140	53257323884	0.00224	9-133270015:A:C	61853	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>AC074141.1</i>	M1	<-1%	0.515(0.167,1.587)	2.50E-01	2084110	53424971511	0.00067	19-51739497	133034	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>AC074141.1</i>	M3	<-1%	0.515(0.167,1.587)	2.50E-01	2084110	53424971511	0.00067	19-51739497	133034	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MED22</i>	M1	<-1%	2.725(0.493,5.068)	2.50E-01	1872110	5083491930	0.00019	9-133270015:A:C	71489	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CXNGI</i>	M3	<-1%	2.100(0.575,7.670)	2.60E-01	2081410	5343705950	0.00056	5-163300447	138009	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MBXGF</i>	M3	<-1%	0.315(0.042,3.346)	2.60E-01	2081410	5344773146	0.00018	19-4719431:G:A	61427	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NCR3</i>	M1	<-1%	0.363(0.063,2.083)	2.60E-01	1873100	5082313010	0.00029	6-31153649:G:A	435417	30
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SON</i>	M3	<-1%	1.154(0.897,1.483)	2.60E-01	20147010	5183731657022	0.01553	21-33252612:A:G	290480	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	<-1%	1.968(0.598,6.469)	2.70E-01	2082310	5342587120	0.00067	21-33252612:A:G	10690	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SPG7</i>	M1	<-1%	1.418(0.762,2.638)	2.70E-01	2075100	53298619781	0.00185	16-8911727	390690	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GALNS</i>	M1	<-1%	0.370(0.061,2.257)	2.80E-01	1953100	5167243030	0.00029	16-8911727	303289	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>POU5F1</i>	M3	<-1%	0.363(0.057,2.295)	2.80E-01	1873100	5082352970	0.00029	6-31153649:G:A	10951	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SIGLEC8</i>	M1	<-1%	2.359(0.503,11.052)	2.80E-01	2017130	5253673980	0.00038	19-51739497	287119	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF432</i>	M1	<-1%	1.745(0.629,4.839)	2.80E-01	2078710	53554414210	0.00133	19-51739497	294222	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF432</i>	M3	<-1%	1.745(0.629,4.839)	2.80E-01	2078710	53554414210	0.00133	19-51739497	294222	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DNX30A</i>	M3	<-1%	1.265(0.809,1.979)	3.00E-01	2061240	53010348557	0.00456	21-33252612:A:G	325694	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF2</i>	M1	<-1%	0.532(0.161,1.757)	3.00E-01	2084110	5343116540	0.00061	9-133270015:A:C	86577	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF4</i>	M1	<-1%	5.574(0.219,142.075)	3.00E-01	1937110	517635961	0.0001	9-133270015:A:C	93448	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IGLON5</i>	M3	<-1%	1.781(0.591,5.367)	3.10E-01	2080510	5341278380	0.00078	19-51739497	427650	32
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SIGLEC8</i>	M3	<-1%	2.209(0.485,10.070)	3.10E-01	2082310	5345534120	0.00039	19-51739497	287119	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ADAMTSL2</i>	M3	<-1%	0.674(0.308,1.477)	3.20E-01	2081410	53353814200	0.00134	9-133270015:A:C	264725	19
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ARRDC5</i>	M1	<-1%	4.900(0.209,114.787)	3.20E-01	1872110	5084061260	0.00012	19-4719431:G:A	171614	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GFI1B</i>	M3	<-1%	0.761(0.444,1.304)	3.20E-01	2075100	5112532382	0.00303	9-133270015:A:C	283337	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LIM2</i>	M3	<-1%	1.580(0.643,3.881)	3.20E-01	2078710	53377511900	0.00111	19-51739497	359297	25
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OBP2B</i>	M1	<-1%	1.214(0.828,1.778)	3.20E-01	2053320	52819467710	0.00633	9-133270015:A:C	64687	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>OBP2B</i>	M3	<-1%	1.214(0.828,1.778)	3.20E-01	2053320	52819467710	0.00633	9-133270015:A:C	64687	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PBRCA2</i>	M1	<-1%	0.635(0.262,1.553)	3.20E-01	1870310	50556129710	0.00291	6-31153649:G:A	469140	34
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CDT1</i>	M1	<-1%	2.121(0.474,9.487)	3.30E-01	2015130	5257924350	0.00041	16-8911727	313896	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>RPL7A</i>	M3	<-1%	0.364(0.048,2.778)	3.30E-01	1953100	5168042230	0.00021	9-133270015:A:C	78228	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TCF19</i>	M1	<-1%	0.369(0.050,2.706)	3.30E-01	1938100	5174372941	0.00028	6-31153649:G:A	5820	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>XCR1</i>	M3	<-1%	1.753(0.566,5.428)	3.30E-01	2081410	5342906750	0.00063	3-45859597:C:T	161348	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CDSN</i>	M3	<-1%	0.680(0.310,1.494)	3.40E-01	2074110	53140135631	0.00333	6-31153649:G:A	37625	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CEL</i>	M1	<-1%	0.802(0.513,1.256)	3.40E-01	2070150	530001494420	0.00465	9-133270015:A:C	208022	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCR9</i>	M1	<-1%	0.354(0.041,3.080)	3.50E-01	1938100	5175451870	0.00018	3-45859597:C:T	35336	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CTU2</i>	M3	<-1%	1.180(0.834,1.670)	3.50E-01	2047380	52641585446	0.008	16-8911727	411197	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SPIC19</i>	M3	<-1%	0.689(0.317,1.498)	3.50E-01	2081410	53329516682	0.00156	9-133270015:A:C	386068	24
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CEL</i>	M3	<-1%	0.832(0.564,1.229)	3.60E-01	2064210	528589635521	0.00598	9-133270015:A:C	208022	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CRYZL1</i>	M1	<-1%	0.363(0.042,3.132)	3.60E-01	1938100	5175202120	0.0002	21-33252612:A:G	337178	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FAM163B</i>	M3	<-1%	1.436(0.647,3.191)	3.70E-01	2066190	53039645690	0.00427	9-133270015:A:C	309006	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MPND</i>	M1	<-1%	0.376(0.044,3.228)	3.70E-01	2020010	5255402241	0.00021	19-4719431:G:A	375838	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>C21orf62</i>	M1	<-1%	0.362(0.038,3.417)	3.80E-01	1938100	5175671650	0.00016	21-33252612:A:G	458851	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>C21orf62</i>	M3	<-1%	0.362(0.038,3.417)	3.80E-01	1938100	5175671650	0.00016	21-33252612:A:G	458851	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PIEZO1</i>	M1	<-1%	0.722(0.350,1.488)	3.80E-01	2080510	53324317220	0.00161	16-8911727	402123	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ACSF3</i>	M3	<-1%	0.874(0.642,1.189)	3.90E-01	2048370	5242131073517	0.01006	16-8911727	17046	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>HMMR</i>	M1	<-1%	0.722(0.342,1.522)	3.90E-01	2080510	53329917215	0.00162	5-163300447	160245	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SHD</i>	M3	<-1%	1.511(0.585,3.902)	3.90E-01	2083210	53391810452	0.00098	19-4719431:G:A	439368	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M1	<-1%	3.730(0.189,73.610)	3.90E-01	1872110	5083881640	0.00016	19-4719431:G:A	96807	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M3	<-1%	3.657(0.188,71.218)	3.90E-01	1872110	5083651670	0.00016	19-4719431:G:A	96807	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SURF1</i>	M3	<-1%	1.308(0.702,2.439)	4.00E-01	2072130	53262723380	0.00219	9-133270015:A:C	81897	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CXCR6</i>	M1	<-1%	0.364(0.034,3.941)	4.10E-01	1940010	5170721980	0.00019	3-45859597:C:T	86884	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DDX39B</i>	M3	<-1%	0.367(0.034,3.973)	4.10E-01	1873100	5082652670	0.00026	6-31153649:G:A	376784	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IL17C</i>	M3	<-1%	1.666(0.496,5.595)	4.10E-01	2081410	5342617040	0.00066	16-8911727	479086	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UBXN6</i>	M1	<-1%	0.368(0.034,3.984)	4.10E-01	2020010	5255831820	0.00017	19-4719431:G:A	273934	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PPF1R18</i>	M1	<-1%	0.365(0.031,4.278)	4.20E-01	1873100	5083561760	0.00017	6-31153649:G:A	476381	35
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF614</i>	M1	<-1%	2.130(0.339,13.393)	4.20E-01	2083210	5347092560	0.00024	19-51739497	273639	19
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF614</i>	M3	<-1%	2.130(0.339,13.393)	4.20E-01	2083210	5347092560	0.00024	19-51739497	273639	19
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ETFB</i>	M3	<-1%	1.329(0.655,2.696)	4.30E-01	2077810	53321317511	0.00164	19-51739497	394287	29
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ACSF3</i>	M1	<-1%	0.683(0.258,1.808)	4.40E-01	2082310	5340938720	0.00081	16-8911727	17046	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ANKRD11</i>	M3	<-1%	1.168(0.788,1.733)	4.40E-01	2056290	5283966233	0.00062	16-8911727	150750	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DNAJC28</i>	M3	<-1%	0.762(0.384,1.512)	4.40E-01	2079610	53303119340	0.00181	21-33252612:A:G	235614	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FYCO1</i>	M1	<-1%	1.425(0.575,3.534)	4.40E-01	2080510	53386510982	0.00103	3-45859597:C:T	62167	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GALNS</i>	M3	<-1%	0.747(0.357,1.563)	4.40E-01	2080510	53314118231	0.00017	16-8911727	303289	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>BNGR2</i>	M3	<-1%	3.072(0.176,53.618)	4.40E-01	1872110	5084061260	0.00012	21-33252612:A:G	150931	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PLIN3</i>	M3	<-1%	0.591(0.154,2.274)	4.40E-01	2084110	5345134511	0.00042	19-4719431:G:A	119760	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PLIN3</i>	M3	<-1%	1.205(0.756,1.912)	4.40E-01	2064210	530811413321	0.00391	19-4719431:G:A	214973	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF7L2</i>	M3	<-1%	0.856(0.578,1.273)	4.40E-01	2064210	527447780414	0.00703	16-8911727	260577	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ADAMTSL2</i>	M1	<-1%	0.727(0.317,1.669)	4.50E-01	2081410	53374412147	0.00115	9-133270015:A:C	264725	19
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GART</i>	M1	<-1%	1.393(0.591,3.285)	4.50E-01	2078710	53341715480	0.00145	21-33252612:A:G	251511	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IL10RB</i>	M1	<-1%	2.965(0.174,50.555)	4.50E-01	1937110	5175841480	0.00014	21-33252612:A:G	13853	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SLC2A6</i>	M1	<-1%	0.377(0.030,4.670)	4.50E-01	2085010	5348011631	0.00015	9-133270015:A:C	202005	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF649</i>	M1	<-1%	0.367(0.027,4.993)	4.50E-01	1873100	5083631690	0.00017	19-51739497	151120	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF649</i>	M3	<-1%	0.367(0.027,4.993)	4.50E-01	1873100	5083631690	0.00017	19-51739497	151120	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>AIF1</i>	M1	<-1%	0.364(0.025,5.368)	4.60E-01	1938100	5175871450	0.00014	6-31153649:G:A	461680	32
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SEMA6B</i>	M1	<-1%	0.359(0.023,5.521)	4.60E-01	1873100	5084071250	0.00012	19-4719431:G:A	176518	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SEMA6B</i>	M3	<-1%	0.359(0.023,5.521)	4.60E-01	1873100	5084071250	0.00012	19-4719431:G:A	176518	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>EBI3</i>	M1	<-1%	0.366(0.031,5.744)	4.70E-01	1873100	5083811610	0.00014	19-4719431:G:A	489881	24
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FLIT1</i>	M1	<-1%	0.365(0.023,5.722)	4.70E-01	1873100	5083971350	0.00013	6-31153649:G:A	425534	26
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MED22</i>	M3	<-1%	0.600(0.150,4.401)	4.70E-01	2084110	5344844810	0.00045	9-133270015:A:C	71489	4
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NKG7</i>	M3	<-1%	1.921(0.							

COVID19 positive hospitalized vs COVID19 negative or unknown	LTB	M3	<1%	0.359/0.018; 7.128	5.00E-01	1873/00	50844587/0	0.00009	6:31153649;G:A	427059	27
COVID19 positive hospitalized vs COVID19 negative or unknown	NUDCD2	M3	<1%	0.607/0.142; 2.598	5.00E-01	2084/10	534582383/0	0.00036	5:163300447	153519	2
COVID19 positive hospitalized vs COVID19 negative or unknown	SURF4	M3	<1%	0.612/0.149; 2.513	5.00E-01	2084/10	534492742/1	0.00044	9:133270015;A:C	93448	8
COVID19 positive hospitalized vs COVID19 negative or unknown	C6orf13	M1	<1%	0.370/0.019; 7.362	5.10E-01	1873/00	508407124/1	0.00012	6:31153649;G:A	42269	7
COVID19 positive hospitalized vs COVID19 negative or unknown	CDT1	M3	<1%	0.840/0.506; 1.412	5.10E-01	2073/20	5320382920/7	0.00274	16:8911727	313896	11
COVID19 positive hospitalized vs COVID19 negative or unknown	FPR3	M3	<1%	0.363/0.017; 12.326	5.10E-01	1873/00	51694780/0	0.00008	19:51739497	29161	3
COVID19 positive hospitalized vs COVID19 negative or unknown	FPR2	M3	<1%	0.365/0.019; 7.103	5.10E-01	1953/00	51694780/0	0.00008	19:51739497	29161	3
COVID19 positive hospitalized vs COVID19 negative or unknown	MPND	M3	<1%	1.146/0.765; 1.717	5.10E-01	2059/251	5287726178/15	0.0058	19:4719431;G:A	375838	18
COVID19 positive hospitalized vs COVID19 negative or unknown	GTF3C5	M3	<1%	1.236/0.644; 2.372	5.20E-01	2074/110	5354962469/0	0.00231	9:133270015;A:C	239004	17
COVID19 positive hospitalized vs COVID19 negative or unknown	MVD	M3	<1%	0.778/0.361; 1.676	5.20E-01	2080/50	533271687/1	0.00158	16:8911727	465203	19
COVID19 positive hospitalized vs COVID19 negative or unknown	CBFA2T3	M1	<1%	2.336/0.164; 33.240	5.30E-01	1872/10	508348183/1	0.00018	16:8911727	240752	6
COVID19 positive hospitalized vs COVID19 negative or unknown	CCNG1	M1	<1%	0.370/0.017; 7.948	5.30E-01	2020/00	525664101/0	0.0001	5:163300447	138809	1
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17C	M1	<1%	0.364/0.016; 8.237	5.30E-01	1873/00	508415117/0	0.00011	16:8911727	479086	21
COVID19 positive hospitalized vs COVID19 negative or unknown	AC018753.18	M3	<1%	1.134/0.757; 1.697	5.40E-01	2058/270	5288706077/18	0.00572	19:51739497	127267	7
COVID19 positive hospitalized vs COVID19 negative or unknown	HIST1	M3	<1%	1.169/0.709; 1.925	5.40E-01	2067/180	5308044459/2	0.00389	19:51739497	26071	2
COVID19 positive hospitalized vs COVID19 negative or unknown	PLIN3	M1	<1%	0.640/0.151; 2.712	5.40E-01	2084/10	534575389/1	0.00036	19:4719431;G:A	119760	6
COVID19 positive hospitalized vs COVID19 negative or unknown	APRT	M1	<1%	0.637/0.147; 2.755	5.50E-01	1939/10	516800470/0	0.00045	16:8911727	308030	10
COVID19 positive hospitalized vs COVID19 negative or unknown	FPR3	M3	<1%	0.379/0.016; 9.247	5.50E-01	1940/00	51720169/0	0.00007	19:51739497	84251	5
COVID19 positive hospitalized vs COVID19 negative or unknown	ZNF577	M1	<1%	0.710/0.232; 2.175	5.50E-01	2083/20	534235729/1	0.00068	19:51739497	133034	10
COVID19 positive hospitalized vs COVID19 negative or unknown	ZNF577	M3	<1%	0.710/0.232; 2.175	5.50E-01	2083/20	534235729/1	0.00068	19:51739497	133034	10
COVID19 positive hospitalized vs COVID19 negative or unknown	CCR3	M3	<1%	0.839/0.467; 1.509	5.60E-01	2076/90	5327052252/8	0.00212	3:45859597;C:T	404806	10
COVID19 positive hospitalized vs COVID19 negative or unknown	REXO4	M1	<1%	1.410/0.440; 4.521	5.60E-01	2081/40	534520442/3	0.00042	9:133270015;A:C	136937	11
COVID19 positive hospitalized vs COVID19 negative or unknown	ABO	M1	<1%	1.163/0.694; 1.949	5.70E-01	2068/170	5312053752/8	0.00352	9:133270015;A:C	14414	1
COVID19 positive hospitalized vs COVID19 negative or unknown	ABO	M3	<1%	1.163/0.694; 1.949	5.70E-01	2068/170	5312053752/8	0.00352	9:133270015;A:C	14414	1
COVID19 positive hospitalized vs COVID19 negative or unknown	CR2L1	M3	<1%	0.755/0.288; 1.982	5.70E-01	2082/30	5339231044/11	0.00097	21:33252612;A:G	337178	12
COVID19 positive hospitalized vs COVID19 negative or unknown	DPP9	M1	<1%	0.364/0.011; 12.326	5.70E-01	1938/00	517629103/0	0.0001	19:4719431;G:A	42868	1
COVID19 positive hospitalized vs COVID19 negative or unknown	GTE2H4	M1	<1%	0.648/0.147; 2.863	5.70E-01	1872/10	508061471/0	0.00046	6:31153649;G:A	244613	15
COVID19 positive hospitalized vs COVID19 negative or unknown	GTE2H4	M3	<1%	0.648/0.147; 2.863	5.70E-01	1872/10	508061471/0	0.00046	6:31153649;G:A	244613	15
COVID19 positive hospitalized vs COVID19 negative or unknown	NFKB1L1	M1	<1%	0.362/0.010; 12.546	5.70E-01	1938/00	517626106/0	0.0001	6:31153649;G:A	394045	22
COVID19 positive hospitalized vs COVID19 negative or unknown	STAP2	M1	<1%	0.647/0.146; 2.879	5.70E-01	2084/10	534556408/1	0.00038	19:4719431;G:A	395299	19
COVID19 positive hospitalized vs COVID19 negative or unknown	STAP2	M3	<1%	0.647/0.146; 2.879	5.70E-01	2084/10	534556408/1	0.00038	19:4719431;G:A	395299	19
COVID19 positive hospitalized vs COVID19 negative or unknown	AC018753.18	M1	<1%	1.121/0.745; 1.688	5.80E-01	2059/260	529095858/18	0.00551	19:51739497	127267	7
COVID19 positive hospitalized vs COVID19 negative or unknown	DDRI	M3	<1%	0.897/0.612; 1.314	5.80E-01	2061/240	5281776786/2	0.00634	6:31153649;G:A	268430	17
COVID19 positive hospitalized vs COVID19 negative or unknown	GTF3C3	M1	<1%	1.613/0.302; 8.614	5.80E-01	2018/20	525364401/0	0.00038	9:133270015;A:C	239004	17
COVID19 positive hospitalized vs COVID19 negative or unknown	IER3	M3	<1%	0.366/0.011; 12.404	5.80E-01	1873/00	51778929/0	0.00009	6:31153649;G:A	409714	23
COVID19 positive hospitalized vs COVID19 negative or unknown	RPL13	M1	<1%	0.386/0.014; 11.051	5.80E-01	2020/00	52571055/0	0.00005	16:8911727	443332	17
COVID19 positive hospitalized vs COVID19 negative or unknown	RPL13	M3	<1%	0.386/0.014; 11.051	5.80E-01	2020/00	52571055/0	0.00005	16:8911727	443332	17
COVID19 positive hospitalized vs COVID19 negative or unknown	CXCR6	M3	<1%	1.374/0.439; 4.303	5.90E-01	2082/30	5339611004/0	0.00094	3:45859597;C:T	86884	4
COVID19 positive hospitalized vs COVID19 negative or unknown	DDX39B	M1	<1%	0.369/0.010; 13.799	5.90E-01	1873/00	508388144/0	0.00014	6:31153649;G:A	376784	20
COVID19 positive hospitalized vs COVID19 negative or unknown	EBI3	M3	<1%	0.659/0.147; 2.957	5.90E-01	2084/10	53457387/1	0.00036	19:4719431;G:A	489881	24
COVID19 positive hospitalized vs COVID19 negative or unknown	HLA-C	M1	<1%	0.819/0.399; 1.682	5.90E-01	1932/60	5158691859/4	0.0018	6:31153649;G:A	115519	8
COVID19 positive hospitalized vs COVID19 negative or unknown	HLA-C	M3	<1%	0.819/0.399; 1.682	5.90E-01	1932/60	5158691859/4	0.0018	6:31153649;G:A	115519	8
COVID19 positive hospitalized vs COVID19 negative or unknown	SNAI3	M1	<1%	2.035/0.154; 26.820	5.90E-01	1937/10	517625104/3	0.00011	16:8911727	439280	16
COVID19 positive hospitalized vs COVID19 negative or unknown	CYBA	M1	<1%	0.365/0.009; 15.232	6.00E-01	1873/00	50843995/0	0.00009	16:8911727	474375	20
COVID19 positive hospitalized vs COVID19 negative or unknown	LTA	M3	<1%	0.370/0.009; 15.194	6.00E-01	1873/00	50845082/0	0.00008	6:31153649;G:A	419093	24
COVID19 positive hospitalized vs COVID19 negative or unknown	SLGLEC10	M1	<1%	1.257/0.533; 2.964	6.00E-01	2080/50	5326912274/0	0.00212	19:51739497	328399	23
COVID19 positive hospitalized vs COVID19 negative or unknown	ETFB	M1	<1%	0.382/0.010; 15.023	6.10E-01	2018/00	526137900/0	0.00009	19:51739497	394287	29
COVID19 positive hospitalized vs COVID19 negative or unknown	IER3	M1	<1%	0.365/0.008; 17.529	6.10E-01	1873/00	508462700/0	0.00007	6:31153649;G:A	409714	23
COVID19 positive hospitalized vs COVID19 negative or unknown	MAT2B	M1	<1%	0.365/0.008; 17.788	6.10E-01	1873/00	50846369/0	0.00007	5:163300447	202947	4
COVID19 positive hospitalized vs COVID19 negative or unknown	RPL7A	M1	<1%	0.364/0.007; 18.601	6.10E-01	1873/00	50846468/0	0.00007	9:133270015;A:C	78228	5
COVID19 positive hospitalized vs COVID19 negative or unknown	TMEM50B	M3	<1%	1.489/0.318; 6.964	6.10E-01	2004/10	526117353/0	0.00033	21:33252612;A:G	198205	6
COVID19 positive hospitalized vs COVID19 negative or unknown	CCR9	M3	<1%	0.845/0.435; 1.640	6.20E-01	2075/100	5317493216/0	0.003	3:45859597;C:T	35336	2
COVID19 positive hospitalized vs COVID19 negative or unknown	PIEZO1	M3	<1%	0.954/0.793; 1.149	6.20E-01	1973/1111	50460930275/81	0.02844	16:8911727	402123	13
COVID19 positive hospitalized vs COVID19 negative or unknown	SLGLEC11	M1	<1%	1.211/0.569; 2.576	6.20E-01	2010/80	524491772/6	0.0017	19:51739497	475425	34
COVID19 positive hospitalized vs COVID19 negative or unknown	TMEM8C	M1	<1%	0.366/0.007; 19.640	6.20E-01	1873/00	50845973/0	0.00007	9:133270015;A:C	244620	18
COVID19 positive hospitalized vs COVID19 negative or unknown	AVKRD11	M1	<1%	0.370/0.006; 21.174	6.30E-01	1873/00	508426106/0	0.0001	16:8911727	150750	5
COVID19 positive hospitalized vs COVID19 negative or unknown	HLA-B	M1	<1%	0.370/0.006; 21.195	6.30E-01	1873/00	50845082/0	0.00008	6:31153649;G:A	200833	11
COVID19 positive hospitalized vs COVID19 negative or unknown	HLA-B	M3	<1%	0.370/0.006; 21.195	6.30E-01	1873/00	50845082/0	0.00008	6:31153649;G:A	200833	11
COVID19 positive hospitalized vs COVID19 negative or unknown	LTB	M1	<1%	0.364/0.006; 22.319	6.30E-01	1873/00	50847557/0	0.00006	6:31153649;G:A	427059	27
COVID19 positive hospitalized vs COVID19 negative or unknown	SLGLEC11	M3	<1%	1.204/0.567; 2.557	6.30E-01	2077/80	5331801779/6	0.00167	19:51739497	475425	34
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNAR1	M3	<1%	0.756/0.234; 2.444	6.40E-01	2083/20	534219746/0	0.0007	21:33252612;A:G	72443	3
COVID19 positive hospitalized vs COVID19 negative or unknown	NRM	M1	<1%	1.796/0.152; 21.204	6.40E-01	1952/10	516825202/0	0.0002	6:31153649;G:A	464989	33
COVID19 positive hospitalized vs COVID19 negative or unknown	GFIIB	M1	<1%	0.367/0.004; 30.523	6.60E-01	1873/00	50846666/0	0.00006	9:133270015;A:C	283337	20
COVID19 positive hospitalized vs COVID19 negative or unknown	PLIN4	M1	<1%	1.140/0.639; 2.037	6.60E-01	2072/130	5320072949/9	0.00277	19:4719431;G:A	214973	12
COVID19 positive hospitalized vs COVID19 negative or unknown	SDN	M1	<1%	0.364/0.004; 34.635	6.60E-01	1940/00	51720763/0	0.00006	21:33252612;A:G	390480	10
COVID19 positive hospitalized vs COVID19 negative or unknown	HIST1	M1	<1%	1.189/0.533; 2.654	6.70E-01	2078/70	5332191745/1	0.00163	19:51739497	26071	2
COVID19 positive hospitalized vs COVID19 negative or unknown	LRG1	M3	<1%	1.270/0.427; 3.778	6.70E-01	2083/20	534605360/0	0.00034	19:4719431;G:A	181492	9
COVID19 positive hospitalized vs COVID19 negative or unknown	SIGLEC6	M1	<1%	0.708/0.143; 3.510	6.70E-01	1872/10	507687845/0	0.00083	19:51739497	219416	14
COVID19 positive hospitalized vs COVID19 negative or unknown	SIGLEC6	M3	<1%	0.708/0.143; 3.510	6.70E-01	1872/10	507687845/0	0.00083	19:51739497	219416	14
COVID19 positive hospitalized vs COVID19 negative or unknown	TNF	M3	<1%	1.319/0.364; 4.770	6.70E-01	1950/30	516388639/0	0.00062	6:31153649;G:A	422092	25
COVID19 positive hospitalized vs COVID19 negative or unknown	LST1	M1	<1%	0.366/0.003; 43.447	6.80E-01	1873/00	50848349/0	0.00005	6:31153649;G:A	433650	29
COVID19 positive hospitalized vs COVID19 negative or unknown	LST1	M3	<1%	0.366/0.003; 43.447	6.80E-01	1873/00	50848349/0	0.00005	6:31153649;G:A	433650	29
COVID19 positive hospitalized vs COVID19 negative or unknown	MC1D1	M1	<1%	1.676/0.149; 18.821	6.80E-01	1872/10	508364168/0	0.00017	6:31153649;G:A	375365	19
COVID19 positive hospitalized vs COVID19 negative or unknown	MC1D1	M3	<1%	1.676/0.149; 18.821	6.80E-01	1872/10	508364168/0	0.00017	6:31153649;G:A	375365	19
COVID19 positive hospitalized vs COVID19 negative or unknown	TNFAIP3L1	M1	<1%	0.367/0.003; 43.093	6.80E-01	1873/00	50848547/0	0.00005	19:4719431;G:A	67562	3
COVID19 positive hospitalized vs COVID19 negative or unknown	CCR1	M1	<1%	0.364/0.003; 36.469	6.90E-01	1940/00	50848349/0	0.00003	3:45859597;C:T	34368	9
COVID19 positive hospitalized vs COVID19 negative or unknown	LMZ	M1	<1%	0.370/0.003; 49.414	6.90E-01	1940/00	51721159/0	0.00006	19:51739497	359297	25
COVID19 positive hospitalized vs COVID19 negative or unknown	ZNF613	M3	<1%	1.380/0.280; 6.797	6.90E-01	2083/20	534542423/0	0.0004	19:51739497	196723	13
COVID19 positive hospitalized vs COVID19 negative or unknown	MCA4	M1	<1%	1.113/0.628; 1.974	7.10E-01	2072/130	5317573199/9	0.00301	6:31153649;G:A	249983	16
COVID19 positive hospitalized vs COVID19 negative or unknown	MCA4	M3	<1%	1.113/0.628; 1.974	7.10E-01</						

COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FSD1</i>	M1	<1%	0.3690 0.001 117.744	7.30E-01	1873 00	50849438 0	0.00004	19:4719431:G:A	414685	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GBGT1</i>	M3	<1%	1.0490 0.804 1.368	7.30E-01	202757 1	521986 12948 31	0.01217	9:133270015:A:C	116439	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SGLEC12</i>	M1	<1%	1.182 0.460 3.036	7.30E-01	2080 50	53398 1982 2	0.00092	19:51739497	247857	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SGLEC12</i>	M3	<1%	1.1790 0.459 3.029	7.30E-01	2080 50	53398 0983 2	0.00092	19:51739497	247857	16
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CDH15</i>	M1	<1%	1.3040 0.277 6.149	7.40E-01	2083 20	53454 431 0	0.00004	16:89117727	54104	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>POU3F1</i>	M1	<1%	0.3570 0.001 66.756	7.40E-01	1873 00	50850775 0	0.00002	6:31153649:G:A	10051	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FAM163B</i>	M1	<1%	0.3690 0.001 63.914	7.50E-01	1873 00	508499 33 0	0.00003	9:133270015:A:C	309006	21
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STKLD1</i>	M1	<1%	1.1660 0.455 2.987	7.50E-01	2080 50	533984980 1	0.00092	9:133270015:A:C	106458	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TMEM50B</i>	M1	<1%	0.3680 0.001 185.287	7.50E-01	1873 00	50849438 0	0.00004	21:33252612:A:G	198205	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF350</i>	M1	<1%	0.7610 0.144 4.027	7.50E-01	2084 10	534690274 1	0.00026	19:51739497	225356	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF350</i>	M3	<1%	0.7610 0.144 4.027	7.50E-01	2084 10	534690274 1	0.00026	19:51739497	225356	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCDC94</i>	M3	<1%	1.2030 0.364 3.973	7.60E-01	2083 20	534347617 1	0.00058	19:4719431:G:A	472285	23
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DPCR1</i>	M1	<1%	0.8230 0.237 2.860	7.60E-01	2083 20	534233 73 11	0.00068	6:31153649:G:A	219027	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DPCR1</i>	M3	<1%	0.8230 0.237 2.860	7.60E-01	2083 20	534233 73 11	0.00068	6:31153649:G:A	219027	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>DPP9</i>	M3	<1%	1.0640 0.709 1.598	7.60E-01	2060 25 0	528522630 13	0.00603	19:4719431:G:A	42868	1
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PPR3</i>	M1	<1%	0.3690 0.001 218.142	7.60E-01	1873 00	50851022 0	0.00002	19:51739497	84251	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PSORS1C1</i>	M1	<1%	0.8980 0.453 1.780	7.60E-01	2079 60	533000 1964 1	0.00184	6:31153649:G:A	24017	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PSORS1C1</i>	M3	<1%	0.8980 0.453 1.780	7.60E-01	2079 60	533000 1964 1	0.00184	6:31153649:G:A	24017	5
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>RNF166</i>	M1	<1%	1.2730 0.270 6.009	7.60E-01	2018 20	525472880 0	0.00027	16:89117727	420160	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCR3</i>	M1	<1%	0.8560 0.309 2.372	7.70E-01	2017 30	525195568 2	0.00054	3:45859597:C:T	404806	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF175</i>	M1	<1%	0.8880 0.400 1.975	7.70E-01	2081 40	533617 1345 3	0.00126	19:51739497	166168	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ZNF175</i>	M3	<1%	0.8880 0.400 1.975	7.70E-01	2081 40	533617 1345 3	0.00126	19:51739497	166168	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PABPN1L</i>	M1	<1%	0.8340 0.238 2.922	7.80E-01	2083 20	53469595 1	0.00056	16:89117727	253991	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>RALGDS</i>	M1	<1%	1.2520 0.274 5.532	7.90E-01	2083 20	534643431 0	0.00031	9:133270015:A:C	171429	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TMEM8C</i>	M3	<1%	0.8440 0.235 3.029	7.90E-01	2083 20	534301664 0	0.00062	9:133270015:A:C	244620	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CBX16</i>	M3	<1%	0.9240 0.509 1.677	7.90E-01	2076 81	53244525 17 3	0.00236	19:4719431:G:A	27393	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFAR1</i>	M1	<1%	0.8050 0.146 4.438	8.00E-01	2019 10	525406359 0	0.00034	21:33252612:A:G	72443	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NRM</i>	M3	<1%	0.8500 0.238 3.033	8.00E-01	2083 20	534283682 0	0.00064	6:31153649:G:A	464989	33
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>REXO4</i>	M3	<1%	1.0970 0.527 2.285	8.00E-01	2077 80	533569 1392 4	0.00131	9:133270015:A:C	136937	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CACFD1</i>	M3	<1%	0.9190 0.453 1.861	8.10E-01	2080 50	533381 1583 1	0.00148	9:133270015:A:C	190051	11
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LARS2</i>	M1	<1%	0.8080 0.140 4.671	8.10E-01	2004 10	526142328 0	0.00031	3:45859597:C:T	465144	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PPP1R18</i>	M3	<1%	0.9090 0.427 1.937	8.10E-01	2079 60	5340618968 8	0.00085	6:31153649:G:A	476381	35
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PPP2R1A</i>	M1	<1%	0.3660 0.000 1508.610	8.10E-01	1873 00	508508 24 0	0.00002	19:51739497	450599	33
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UHRF1</i>	M1	<1%	0.3680 0.000 1325.460	8.10E-01	1873 00	508517 15 0	0.00001	19:4719431:G:A	190042	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UHRF1</i>	M3	<1%	0.3680 0.000 1325.460	8.10E-01	1873 00	508517 15 0	0.00001	19:4719431:G:A	190042	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CDH15</i>	M3	<1%	1.0690 0.605 1.891	8.20E-01	2071 30	532726233 6	0.0021	16:89117727	54104	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MUC22</i>	M1	<1%	0.8710 0.247 3.070	8.30E-01	1913 20	425252412 9	0.00051	6:31153649:G:A	142943	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MUC22</i>	M3	<1%	0.8710 0.247 3.070	8.30E-01	1913 20	425252412 9	0.00051	6:31153649:G:A	142943	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SGLEC10</i>	M1	<1%	1.1190 0.395 3.165	8.30E-01	1934 40	51573220000 0	0.00193	19:51739497	328399	23
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CPNE7</i>	M3	<1%	1.0480 0.644 1.708	8.50E-01	2067 180	5309354030 0	0.00377	16:89117727	458170	18
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>LTA</i>	M1	<1%	0.3670 0.000 12959.200	8.50E-01	1873 00	50852210 0	0.00001	6:31153649:G:A	419093	24
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>RALGDS</i>	M3	<1%	0.9540 0.589 1.545	8.50E-01	2069 160	53076141986 6	0.00393	9:133270015:A:C	171429	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>AF1</i>	M3	<1%	0.8520 0.143 5.082	8.60E-01	2084 10	534686 1070 0	0.00026	6:31153649:G:A	461680	32
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>PABPN1L</i>	M3	<1%	0.9160 0.358 2.345	8.60E-01	2081 40	535859 11051 0	0.00103	16:89117727	253991	7
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SGLEC5</i>	M3	<1%	1.0360 0.692 1.549	8.60E-01	2060 25 0	52848461011 6	0.00573	19:51739497	127267	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TNF</i>	M1	<1%	0.3680 0.000 2777.100	8.60E-01	1873 00	508514 18 0	0.00002	6:31153649:G:A	423092	25
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CACFD1</i>	M1	<1%	1.1910 0.145 9.818	8.70E-01	2019 10	52559417 10	0.00016	9:133270015:A:C	190051	14
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CLDN22</i>	M3	<1%	0.8940 0.241 3.316	8.70E-01	2083 20	5346133502 0	0.00033	19:51739497	372356	27
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SH3GL1</i>	M3	<1%	0.8950 0.240 3.344	8.70E-01	2083 20	5343464190 0	0.00058	19:4719431:G:A	357832	17
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TNFAIP8L1</i>	M3	<1%	1.1900 0.143 9.890	8.70E-01	2019 10	5255562090 0	0.0002	19:4719431:G:A	67562	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TSC1</i>	M1	<1%	0.9120 0.307 2.703	8.70E-01	2082 30	5342227430 0	0.00069	9:133270015:A:C	373781	23
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SFT42</i>	M1	<1%	0.3730 0.000 129089.000	8.80E-01	1700 0	10927418 0	0.00008	6:31153649:G:A	222162	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SFT42</i>	M3	<1%	0.3730 0.000 129089.000	8.80E-01	1700 0	10927418 0	0.00008	6:31153649:G:A	222162	13
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MDC1</i>	M3	<1%	0.9140 0.244 3.430	8.90E-01	2083 20	5344035620 0	0.00053	6:31153649:G:A	453185	31
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>USG10L</i>	M1	<1%	0.9590 0.522 1.761	8.90E-01	2078 70	532727236 2	0.00209	19:51739497	406887	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCHCR1</i>	M3	<1%	0.9710 0.605 1.557	9.00E-01	2068 170	530623432 10	0.00407	6:31153649:G:A	11058	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>GBGT1</i>	M1	<1%	0.9680 0.588 1.596	9.00E-01	2071 30	531599 3355 11	0.00316	9:133270015:A:C	116439	10
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TUBB</i>	M1	<1%	0.3810 0.000 1930640.000	9.00E-01	1873 00	5085211 10	0.00001	6:31153649:G:A	433143	28
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TUBB</i>	M3	<1%	0.3810 0.000 1930640.000	9.00E-01	1873 00	5085211 10	0.00001	6:31153649:G:A	433143	28
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MDC1</i>	M1	<1%	0.9270 0.245 3.513	9.10E-01	2083 20	534414515 0	0.00051	6:31153649:G:A	453185	31
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NFKB1L1</i>	M3	<1%	1.1320 0.140 9.129	9.10E-01	2084 10	5346932720 0	0.00025	6:31153649:G:A	394045	22
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ADAMTS13</i>	M1	<1%	1.0760 0.256 4.523	9.20E-01	2083 20	5344405250 0	0.00049	9:133270015:A:C	152428	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>ADAMTS13</i>	M3	<1%	1.0760 0.256 4.523	9.20E-01	2083 20	5344405250 0	0.00049	9:133270015:A:C	152428	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CBF4T3</i>	M3	<1%	1.0280 0.613 1.725	9.20E-01	2070 50	53074142231 0	0.00395	16:89117727	240752	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>FSD1</i>	M3	<1%	0.3690 0.001 117.744	9.20E-01	2083 20	5341183430 0	0.00078	19:4719431:G:A	414685	20
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SGLEC5</i>	M1	<1%	1.0230 0.680 1.537	9.20E-01	2061 240	5290675882 16	0.00553	19:51739497	127267	8
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CLDN22</i>	M1	<1%	1.1050 0.137 8.938	9.30E-01	1937 10	5175818331 0	0.00018	19:51739497	372356	27
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IL1ORB</i>	M3	<1%	0.9230 0.141 6.047	9.30E-01	2017 10	5259013260 0	0.00031	21:33252612:A:G	13853	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>BAG6</i>	M3	<1%	1.0570 0.137 8.174	9.60E-01	2004 10	5261932743 0	0.00027	6:31153649:G:A	485481	36
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STKLD1</i>	M3	<1%	1.0160 0.526 1.960	9.60E-01	2076 90	5332501713 2	0.00161	9:133270015:A:C	106458	9
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CCHCR1</i>	M1	<1%	0.9910 0.597 1.647	9.70E-01	2070 50	5312083748 9	0.00352	6:31153649:G:A	11058	3
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>NUDC2</i>	M1	<1%	1.0390 0.135 8.008	9.70E-01	2084 10	5347492160 0	0.00002	5:163300447	153519	12
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SPG7</i>	M3	<1%	1.0040 0.786 1.283	9.70E-01	2025 600	51968515227 53	0.01433	16:89117727	390690	2
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>CDSN</i>	M1	<1%	0.9860 0.255 4.140	9.80E-01	2076 90	53268322820 0	0.00213	6:31153649:G:A	37625	6
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>KDM4B</i>	M1	<1%	0.9720 0.142 6.666	9.80E-01	1939 10	5166456250 0	0.0006	19:4719431:G:A	313459	15
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>MG7</i>	M1	<1%	0.9770 0.140 6.842	9.80E-01	1939 10	508762560 0	0.00025	19:51739497	36731	26
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>SNAB</i>	M3	<1%	1.0050 0.682 1.4							

Supplementary Table 9. Results from burden association tests for 14 genes related to interferon signaling.

Trait	Gene	Burden test	MAF	Odds Ratio [95% CI]	P-value	N cases with		N controls with		AAF
						RR RA AA genotype*	RR RA AA genotype*			
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	<0.1%	0.8 (0.15, 4.44)	0.8033	2019 1 0	525406 359 0	3.41E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	<0.1%	2.08 (0.62, 6.96)	0.2361	2082 3 0	534277 688 0	6.43E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKG</i>	M1	<0.1%	0.49 (0.0, 50.22)	0.7634	1873 0 0	508491 31 10	5.00E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M1	<0.1%	0.96 (0.25, 3.64)	0.9476	2083 2 0	534559 406 0	3.80E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M1	<0.1%	1.16 (0.43, 3.18)	0.766	2082 3 0	534124 84 10	7.86E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M1	<0.1%	0.37 (0.0, 53.77)	0.696	1873 0 0	508479 53 0	5.19E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M1	<0.1%	0.37 (0.0, 126.71)	0.7357	1873 0 0	508490 42 0	4.11E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M1	<0.1%	0.35 (0.03, 4.44)	0.4215	1873 0 0	508405 127 0	1.24E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M1	<0.1%	0.37 (0.01, 11.96)	0.5714	1873 0 0	508445 87 0	8.52E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M1	<0.1%	3.73 (0.19, 73.61)	0.387	1872 1 0	508368 164 0	1.62E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M1	<0.1%	1.13 (0.14, 8.83)	0.909	2084 1 0	534674 29 10	2.72E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M1	<0.1%	7.63 (1.87, 31.08)	0.004584	1872 0 1	508503 25 4	3.43E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M1	<0.1%	0.37 (0.0, 733.64)	0.7966	1873 0 0	508504 28 0	2.74E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	<0.1%	1.3 (0.27, 6.24)	0.741	1938 2 0	516861 409 0	3.96E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	<1%	0.8 (0.15, 4.44)	0.8033	2019 1 0	525406 359 0	3.41E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	<1%	2.08 (0.62, 6.96)	0.2361	2082 3 0	534277 688 0	6.43E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKG</i>	M1	<1%	0.49 (0.0, 50.22)	0.7634	1873 0 0	508491 31 10	5.00E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M1	<1%	1.82 (0.54, 6.13)	0.3334	2082 2 1	534509 455 1	4.29E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M1	<1%	1.16 (0.43, 3.18)	0.766	2082 3 0	534124 84 10	7.86E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M1	<1%	0.37 (0.0, 53.77)	0.696	1873 0 0	508479 53 0	5.19E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M1	<1%	0.37 (0.0, 126.71)	0.7357	1873 0 0	508490 42 0	4.11E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M1	<1%	0.35 (0.03, 4.44)	0.4215	1873 0 0	508405 127 0	1.24E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M1	<1%	0.37 (0.01, 11.96)	0.5714	1873 0 0	508445 87 0	8.52E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M1	<1%	3.73 (0.19, 73.61)	0.387	1872 1 0	508368 164 0	1.62E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M1	<1%	1.13 (0.14, 8.83)	0.909	2084 1 0	534674 29 10	2.72E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M1	<1%	7.63 (1.87, 31.08)	0.004584	1872 0 1	508503 25 4	3.43E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M1	<1%	0.37 (0.0, 733.64)	0.7966	1873 0 0	508504 28 0	2.74E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	<1%	1.3 (0.27, 6.24)	0.741	1938 2 0	516861 409 0	3.96E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	singleton	0.37 (0.0, 44.0)	0.6857	1873 0 0	508477 55 0	5.39E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	singleton	0.36 (0.0, 179.42)	0.7463	1873 0 0	508500 32 0	3.13E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKG</i>	M1	singleton	0.55 (0.0, 2706.13)	0.8906	1873 0 0	508523 7 2	1.08E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M1	singleton	0.37 (0.0, 113.18)	0.7313	1873 0 0	508495 37 0	3.62E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M1	singleton	0.37 (0.0, 64.55)	0.7071	1873 0 0	508481 51 0	5.00E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M1	singleton	0.37 (0.0, 249.69)	0.7666	1873 0 0	508505 27 0	2.64E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M1	singleton	0.37 (0.0, 301.54)	0.7688	1873 0 0	508502 30 0	2.94E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M1	singleton	0.37 (0.0, 37.61)	0.6705	1873 0 0	508487 45 0	4.41E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M1	singleton	0.36 (0.0, 86.69)	0.7179	1873 0 0	508501 31 0	3.04E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M1	singleton	18.3 (1.71, 196.34)	0.01636	1872 1 0	508489 43 0	4.31E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M1	singleton	15.34 (1.46, 161.33)	0.02294	1939 1 0	517242 28 0	2.79E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M1	singleton	12.49 (2.71, 57.56)	0.001198	1872 0 1	508520 10 2	1.57E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M1	singleton	0.37 (0.0, 8930.06)	0.8463	1873 0 0	508514 18 0	1.76E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	singleton	0.37 (0.0, 186.54)	0.7539	1873 0 0	508489 43 0	4.21E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	<0.1%	0.76 (0.23, 2.44)	0.64	2083 2 0	534219 746 0	6.96E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	<0.1%	1.97 (0.6, 6.47)	0.2651	2082 3 0	534253 712 0	6.66E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKG</i>	M3	<0.1%	0.45 (0.01, 19.74)	0.6761	1873 0 0	508452 70 10	8.82E-05		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M3	<0.1%	0.79 (0.24, 2.59)	0.692	2083 2 0	534413 552 0	5.16E-04		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M3	<0.1%	1.14 (0.52, 2.49)	0.7481	2080 5 0	533486 1479 0	1.38E-03		
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M3	<0.1%	0.37 (0.0, 53.77)	0.696	1873 0 0	508479 53 0	5.19E-05		

COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M3	<0.1%	0.37 (0.04, 3.49)	0.3816	2018 0 0	526009 218 0	2.06E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M3	<0.1%	2.6 (1.27, 5.31)	0.008795	2073 12 0	533405 1559 1	1.46E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M3	<0.1%	1.11 (0.45, 2.79)	0.8171	2081 4 0	533861 1103 1	1.03E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M3	<0.1%	3.66 (0.19, 71.22)	0.392	1872 1 0	508365 167 0	1.65E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M3	<0.1%	0.81 (0.43, 1.49)	0.4921	2077 8 0	532355 2609 1	2.44E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M3	<0.1%	1.58 (0.63, 3.98)	0.3321	2001 3 1	525830 477 163	7.64E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M3	<0.1%	3.01 (0.53, 17.22)	0.2148	2019 1 0	525523 242 0	2.30E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	<0.1%	1.66 (0.77, 3.58)	0.1922	2075 10 0	533331 1634 0	1.53E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	<1%	0.76 (0.23, 2.44)	0.64	2083 2 0	534219 746 0	6.96E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	<1%	1.97 (0.6, 6.47)	0.2651	2082 3 0	534253 712 0	6.66E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKKG</i>	M3	<1%	1.04 (0.54, 2.01)	0.9101	1935 0 3	516444 949 339	1.57E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M3	<1%	1.38 (0.46, 4.15)	0.5704	2082 2 1	534363 601 1	5.65E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M3	<1%	1.14 (0.52, 2.49)	0.7481	2080 5 0	533486 1479 0	1.38E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M3	<1%	0.37 (0.0, 53.77)	0.696	1873 0 0	508479 53 0	5.19E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M3	<1%	0.37 (0.04, 3.49)	0.3816	2018 0 0	526009 218 0	2.06E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M3	<1%	2.6 (1.27, 5.31)	0.008795	2073 12 0	533405 1559 1	1.46E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M3	<1%	1.11 (0.45, 2.79)	0.8171	2081 4 0	533861 1103 1	1.03E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M3	<1%	3.66 (0.19, 71.22)	0.392	1872 1 0	508365 167 0	1.65E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M3	<1%	0.83 (0.42, 1.32)	0.4285	2070 15 0	530068 4895 2	4.57E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M3	<1%	1.58 (0.63, 3.98)	0.3321	2001 3 1	525830 477 163	7.64E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M3	<1%	0.89 (0.48, 1.65)	0.711	2076 9 0	532255 2706 4	2.54E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	<1%	1.66 (0.77, 3.58)	0.1922	2075 10 0	533331 1634 0	1.53E-03
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	singleton	0.37 (0.01, 20.63)	0.6273	1873 0 0	508465 67 0	6.56E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	singleton	0.36 (0.0, 138.92)	0.7352	1873 0 0	508498 34 0	3.33E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IKBKKG</i>	M3	singleton	0.55 (0.0, 2553.85)	0.889	1873 0 0	508522 8 2	1.18E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF3</i>	M3	singleton	0.37 (0.0, 46.47)	0.687	1940 0 0	517212 58 0	5.59E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF7</i>	M3	singleton	2.94 (0.17, 51.0)	0.4591	2004 1 0	526371 99 0	9.46E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>IRF9</i>	M3	singleton	0.37 (0.0, 249.69)	0.7666	1873 0 0	508505 27 0	2.64E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT1</i>	M3	singleton	0.37 (0.01, 19.67)	0.6207	1873 0 0	508458 74 0	7.25E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>STAT2</i>	M3	singleton	35.11 (4.02, 306.33)	0.001283	2018 2 0	525651 114 0	1.10E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TBK1</i>	M3	singleton	0.37 (0.02, 8.91)	0.5401	2005 0 0	526361 109 0	1.03E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TICAM1</i>	M3	singleton	17.91 (1.68, 190.85)	0.01686	1872 1 0	508486 46 0	4.60E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR3</i>	M3	singleton	0.93 (0.14, 6.19)	0.943	2084 1 0	534786 178 1	1.69E-04
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TLR7</i>	M3	singleton	4.02 (1.16, 13.91)	0.02818	1939 0 1	517197 55 18	8.96E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>TRAF3</i>	M3	singleton	0.37 (0.01, 21.93)	0.6308	1873 0 0	508461 71 0	6.96E-05
COVID19 positive hospitalized vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	singleton	0.38 (0.01, 12.45)	0.5832	1953 0 0	516939 88 0	8.48E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	<0.1%	2.62 (0.18, 38.8)	0.4837	571 1 0	516685 342 0	3.31E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	<0.1%	1.97 (0.17, 22.68)	0.5855	589 1 0	525553 674 0	6.41E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBKKG</i>	M1	<0.1%	14.74 (1.12, 193.22)	0.04042	539 0 0	508491 31 10	5.01E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M1	<0.1%	3.02 (0.6, 15.18)	0.1793	589 1 0	525854 373 0	3.55E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M1	<0.1%	2.68 (0.39, 18.58)	0.3189	588 2 0	525395 832 0	7.92E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M1	<0.1%	0.42 (0.0, 5297.95)	0.8575	539 0 0	508479 53 0	5.21E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M1	<0.1%	0.38 (0.0, 3004.31)	0.8315	539 0 0	508490 42 0	4.13E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M1	<0.1%	0.37 (0.0, 38.82)	0.6778	539 0 0	508405 127 0	1.25E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M1	<0.1%	0.38 (0.0, 211.44)	0.7619	539 0 0	508445 87 0	8.54E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M1	<0.1%	0.89 (0.05, 15.25)	0.9349	539 0 0	508368 164 0	1.61E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M1	<0.1%	0.41 (0.01, 21.61)	0.6594	590 0 0	525950 277 0	2.63E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M1	<0.1%	42.12 (0.51, 3486.63)	0.0969	539 0 0	508503 25 4	3.24E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M1	<0.1%	0.43 (0.0, 281622.0)	0.9011	539 0 0	508504 28 0	2.75E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	<0.1%	3.35 (0.18, 61.63)	0.4157	538 1 0	508128 404 0	3.98E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	<1%	2.62 (0.18, 38.8)	0.4837	571 1 0	516685 342 0	3.31E-04

COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	<1%	1.97 (0.17, 22.68)	0.5855	589 1 0	525553 674 0	6.41E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBKKG</i>	M1	<1%	14.74 (1.12, 193.22)	0.04042	539 0 0	508491 31 10	5.01E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M1	<1%	3.02 (0.6, 15.18)	0.1793	589 1 0	525854 373 0	3.55E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M1	<1%	2.68 (0.39, 18.58)	0.3189	588 2 0	525395 832 0	7.92E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M1	<1%	0.42 (0.0, 5297.95)	0.8575	539 0 0	508479 53 0	5.21E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M1	<1%	0.38 (0.0, 3004.31)	0.8315	539 0 0	508490 42 0	4.13E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M1	<1%	0.37 (0.0, 38.82)	0.6778	539 0 0	508405 127 0	1.25E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M1	<1%	0.38 (0.0, 211.44)	0.7619	539 0 0	508445 87 0	8.54E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M1	<1%	0.89 (0.05, 15.25)	0.9349	539 0 0	508368 164 0	1.61E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M1	<1%	0.41 (0.01, 21.61)	0.6594	590 0 0	525950 277 0	2.63E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M1	<1%	42.12 (0.51, 3486.63)	0.0969	539 0 0	508503 25 4	3.24E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M1	<1%	0.43 (0.0, 281622.0)	0.9011	539 0 0	508504 28 0	2.75E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	<1%	3.35 (0.18, 61.63)	0.4157	538 1 0	508128 404 0	3.98E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M1	singleton	0.37 (0.0, 165.53)	0.7518	539 0 0	508477 55 0	5.40E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M1	singleton	0.48 (0.0, 901579.0)	0.9216	539 0 0	508500 32 0	3.14E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBKKG</i>	M1	singleton	0.58 (0.0, 711727.0)	0.939	490 0 0	399233 6 1	1.00E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M1	singleton	24.01 (0.35, 1669.95)	0.1419	539 0 0	508495 37 0	3.63E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M1	singleton	0.45 (0.0, 19828.4)	0.8843	539 0 0	508481 51 0	5.01E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M1	singleton	0.45 (0.0, 564343.0)	0.9115	539 0 0	508505 27 0	2.65E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M1	singleton	0.38 (0.0, 9818.87)	0.8505	539 0 0	508502 30 0	2.95E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M1	singleton	0.39 (0.0, 13826.4)	0.861	539 0 0	508487 45 0	4.42E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M1	singleton	0.38 (0.0, 28255.6)	0.8649	539 0 0	508501 31 0	3.04E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M1	singleton	15.49 (0.28, 860.18)	0.1812	539 0 0	508489 43 0	4.22E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M1	singleton	0.38 (0.0, 18335.2)	0.8602	539 0 0	508509 23 0	2.26E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M1	singleton	0.4 (0.0, 3891300000.0)	0.9371	490 0 0	399229 9 2	1.63E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M1	singleton	0.42 (0.0, 1871470.0)	0.9114	539 0 0	508514 18 0	1.77E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M1	singleton	0.42 (0.0, 20393.0)	0.8758	539 0 0	508489 43 0	4.22E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	<0.1%	1.07 (0.15, 7.68)	0.9458	589 1 0	525500 727 0	6.91E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	<0.1%	1.88 (0.17, 20.82)	0.6068	589 1 0	525529 698 0	6.63E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBKKG</i>	M3	<0.1%	12.55 (0.99, 159.28)	0.051	539 0 0	508452 70 10	8.84E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M3	<0.1%	2.53 (0.54, 11.8)	0.2388	589 1 0	525713 514 0	4.89E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M3	<0.1%	3.07 (0.81, 11.64)	0.09817	587 3 0	524764 1463 0	1.39E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M3	<0.1%	0.42 (0.0, 5297.95)	0.8575	539 0 0	508479 53 0	5.21E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M3	<0.1%	0.38 (0.01, 14.6)	0.6027	590 0 0	526009 218 0	2.07E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M3	<0.1%	1.64 (0.36, 7.55)	0.5246	587 3 0	524718 1508 1	1.44E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M3	<0.1%	1.96 (0.33, 11.47)	0.456	588 2 0	525137 1089 1	1.04E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M3	<0.1%	0.89 (0.05, 15.22)	0.9349	539 0 0	508365 167 0	1.64E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M3	<0.1%	0.74 (0.24, 2.26)	0.5951	588 2 0	523680 2546 1	2.42E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M3	<0.1%	1.22 (0.29, 5.15)	0.7855	557 0 0	517105 467 160	7.59E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M3	<0.1%	14.61 (1.54, 138.27)	0.01935	571 1 0	516792 235 0	2.28E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	<0.1%	3.13 (1.26, 7.77)	0.01414	584 6 0	524612 1615 0	1.54E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	<1%	1.07 (0.15, 7.68)	0.9458	589 1 0	525500 727 0	6.91E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	<1%	1.88 (0.17, 20.82)	0.6068	589 1 0	525529 698 0	6.63E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBKKG</i>	M3	<1%	1.41 (0.48, 4.17)	0.5303	556 0 1	516444 949 339	1.57E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M3	<1%	2.53 (0.54, 11.8)	0.2388	589 1 0	525713 514 0	4.89E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M3	<1%	3.07 (0.81, 11.64)	0.09817	587 3 0	524764 1463 0	1.39E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M3	<1%	0.42 (0.0, 5297.95)	0.8575	539 0 0	508479 53 0	5.21E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M3	<1%	0.38 (0.01, 14.6)	0.6027	590 0 0	526009 218 0	2.07E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M3	<1%	1.64 (0.36, 7.55)	0.5246	587 3 0	524718 1508 1	1.44E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M3	<1%	1.96 (0.33, 11.47)	0.456	588 2 0	525137 1089 1	1.04E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M3	<1%	0.89 (0.05, 15.22)	0.9349	539 0 0	508365 167 0	1.64E-04

COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M3	<1%	0.97 (0.41, 2.26)	0.9396	585 5 0	521403 4822 2	4.59E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M3	<1%	1.22 (0.29, 5.15)	0.7855	557 0 0	517105 467 160	7.59E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M3	<1%	1.27 (0.49, 3.25)	0.6217	587 3 0	523530 2693 4	2.57E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	<1%	3.13 (1.26, 7.77)	0.01414	584 6 0	524612 1615 0	1.54E-03
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR1</i>	M3	singleton	0.37 (0.0, 119.72)	0.738	539 0 0	508465 67 0	6.58E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IFNAR2</i>	M3	singleton	0.47 (0.0, 448932.0)	0.9144	539 0 0	508498 34 0	3.34E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IKBK1</i>	M3	singleton	0.57 (0.0, 614503.0)	0.9374	490 0 0	399232 7 1	1.13E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF3</i>	M3	singleton	20.95 (0.32, 1352.58)	0.1525	539 0 0	508480 52 0	5.11E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF7</i>	M3	singleton	0.42 (0.0, 600.62)	0.8166	557 0 0	517640 92 0	8.88E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>IRF9</i>	M3	singleton	0.45 (0.0, 564343.0)	0.9115	539 0 0	508505 27 0	2.65E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT1</i>	M3	singleton	0.38 (0.0, 269.14)	0.7735	539 0 0	508458 74 0	7.27E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>STAT2</i>	M3	singleton	0.4 (0.0, 128.93)	0.7543	572 0 0	516919 108 0	1.04E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TBK1</i>	M3	singleton	0.38 (0.0, 184.6)	0.7614	557 0 0	517628 104 0	1.00E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TICAM1</i>	M3	singleton	15.0 (0.27, 819.65)	0.1846	539 0 0	508486 46 0	4.52E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR3</i>	M3	singleton	0.41 (0.01, 15.67)	0.6287	590 0 0	526065 161 1	1.55E-04
COVID19 positive severe vs COVID19 negative or unknown	<i>TLR7</i>	M3	singleton	11.63 (0.84, 161.65)	0.06761	539 0 0	508468 49 15	7.76E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>TRAF3</i>	M3	singleton	0.4 (0.0, 689.93)	0.8098	539 0 0	508461 71 0	6.97E-05
COVID19 positive severe vs COVID19 negative or unknown	<i>UNC93B1</i>	M3	singleton	0.42 (0.0, 250.75)	0.7916	572 0 0	516939 88 0	8.50E-05

* RR: individuals who have genotype Reference/Reference for all variants included in burden test. RA: individuals who have genotype Reference/Alternate for at least one variant. AA: individuals who have genotype Alternate/Alternate for at least one variant.

Supplementary Table 10. Results from burden association tests for 32 additional genes of biological or therapeutic interest.

Trait	Gene	Burden test	MAF	Odds Ratio [95% CI]	P-value	N cases with RR RA AA genotype*	N controls with RR RA AA genotype*	AAF
COVID19 positive hospitalized vs COVID19 negative or unknown	IL23R	M1	<1%	3.849[0.853;17.373]	8.00E-02	1871 2 0	508324 208 0	0.00021
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1A	M3	<1%	2.350[0.835;6.611]	1.10E-01	2016 4 0	525349 415 1	0.0004
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL3	M1	<1%	14.959[0.345;647.891]	1.60E-01	1872 1 0	508438 940	0.00009
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1A	M1	<1%	4.218[0.574;31.008]	1.60E-01	2019 1 0	525641 124 0	0.00012
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL1	M3	<1%	0.369[0.086;1.585]	1.80E-01	2085 0 0	534569 395 1	0.00037
COVID19 positive hospitalized vs COVID19 negative or unknown	TMPRSS2	M1	<1%	2.526[0.646;9.876]	1.80E-01	1936 4 0	516764 506 0	0.00049
COVID19 positive hospitalized vs COVID19 negative or unknown	C5	M1	<1%	2.077[0.702;6.144]	1.90E-01	2081 4 0	534324 640 1	0.0006
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL1	M1	<1%	0.369[0.081;1.687]	2.00E-01	2085 0 0	534607 357 1	0.00033
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17RC	M3	<1%	1.643[0.749;3.604]	2.20E-01	2080 5 0	533824 1140 1	0.00107
COVID19 positive hospitalized vs COVID19 negative or unknown	VEGFA	M3	<1%	0.558[0.219;1.418]	2.20E-01	2083 2 0	533873 1091 1	0.00102
COVID19 positive hospitalized vs COVID19 negative or unknown	IL7R	M1	<1%	1.668[0.692;4.019]	2.50E-01	2079 6 0	533848 1117 0	0.00105
COVID19 positive hospitalized vs COVID19 negative or unknown	IL12B	M3	<1%	2.200[0.438;11.048]	3.40E-01	2017 1 0	526033 194 0	0.00018
COVID19 positive hospitalized vs COVID19 negative or unknown	IL23A	M3	<1%	0.366[0.046;2.919]	3.40E-01	1938 0 0	517449 282 1	0.00027
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17RA	M1	<1%	0.359[0.040;3.220]	3.60E-01	2020 0 0	525537 228 0	0.00022
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNLR1	M3	<1%	0.366[0.040;3.321]	3.70E-01	1938 0 0	517531 201 0	0.00019
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1B	M3	<1%	0.369[0.039;3.491]	3.80E-01	2005 0 0	526208 262 0	0.00025
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL3	M3	<1%	3.464[0.185;64.982]	4.10E-01	1939 1 0	517141 129 0	0.00013
COVID19 positive hospitalized vs COVID19 negative or unknown	JAK1	M1	<1%	1.942[0.398;9.474]	4.10E-01	1937 1 0	517541 189 2	0.00019
COVID19 positive hospitalized vs COVID19 negative or unknown	JAK1	M3	<1%	1.942[0.398;9.474]	4.10E-01	1937 1 0	517541 189 2	0.00019
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNLR1	M1	<1%	0.365[0.030;4.527]	4.30E-01	1938 0 0	517571 161 0	0.00015
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1B	M1	<1%	0.368[0.030;4.481]	4.30E-01	1873 0 0	508320 212 0	0.00021
COVID19 positive hospitalized vs COVID19 negative or unknown	JAK2	M1	<1%	0.366[0.029;4.555]	4.30E-01	1938 0 0	517530 202 0	0.00019
COVID19 positive hospitalized vs COVID19 negative or unknown	IL23R	M3	<1%	0.847[0.054;1.296]	4.40E-01	2067 18 0	529085 586 119	0.00551
COVID19 positive hospitalized vs COVID19 negative or unknown	VEGFA	M1	<1%	0.661[0.218;2.002]	4.60E-01	2083 2 0	534217 747 1	0.0007
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1R1	M1	<1%	0.666[0.222;1.995]	4.70E-01	1936 2 0	517281 444 7	0.00044
COVID19 positive hospitalized vs COVID19 negative or unknown	IL7R	M3	<1%	1.269[0.666;2.419]	4.70E-01	2075 10 0	532768 2197 0	0.00205
COVID19 positive hospitalized vs COVID19 negative or unknown	TMPRSS2	M3	<1%	1.341[0.606;2.967]	4.70E-01	2077 8 0	533498 1467 0	0.00137
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNG	M3	<1%	0.366[0.020;6.537]	4.90E-01	1873 0 0	508402 130 0	0.00013
COVID19 positive hospitalized vs COVID19 negative or unknown	BTK	M3	<1%	0.497[0.061;4.077]	5.10E-01	2020 0 0	525622 114 29	0.00016
COVID19 positive hospitalized vs COVID19 negative or unknown	IL6	M3	<1%	0.369[0.019;7.067]	5.10E-01	1953 0 0	516905 122 0	0.00012
COVID19 positive hospitalized vs COVID19 negative or unknown	IL6R	M1	<1%	0.377[0.020;7.210]	5.20E-01	1940 0 0	517152 118 0	0.00011
COVID19 positive hospitalized vs COVID19 negative or unknown	IL12B	M1	<1%	0.365[0.016;8.562]	5.30E-01	1873 0 0	508442 90 0	0.00009
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1R1	M3	<1%	0.739[0.283;1.931]	5.40E-01	2082 3 0	534274 684 7	0.00065
COVID19 positive hospitalized vs COVID19 negative or unknown	IL6	M1	<1%	0.367[0.014;9.615]	5.50E-01	1873 0 0	508423 109 0	0.00011
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNGR1	M3	<1%	0.651[0.149;2.841]	5.70E-01	2084 1 0	534532 433 0	0.0004
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL2	M3	<1%	1.481[0.380;5.766]	5.70E-01	2082 3 0	534408 557 0	0.00052
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNB1	M3	<1%	0.828[0.423;1.623]	5.80E-01	2011 7 0	524038 2186 3	0.00208
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNG	M1	<1%	0.364[0.011;12.464]	5.80E-01	1873 0 0	508453 79 0	0.00008
COVID19 positive hospitalized vs COVID19 negative or unknown	JAK2	M3	<1%	0.850[0.481;1.503]	5.80E-01	2075 10 0	532245 2171 46	0.00255
COVID19 positive hospitalized vs COVID19 negative or unknown	IL4R	M1	<1%	1.931[0.154;24.219]	6.10E-01	1937 1 0	517553 179 0	0.00017
COVID19 positive hospitalized vs COVID19 negative or unknown	PDCD1	M3	<1%	0.367[0.005;29.373]	6.50E-01	1873 0 0	508473 59 0	0.00006
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17A	M1	<1%	0.364[0.004;35.613]	6.70E-01	1873 0 0	508492 40 0	0.00004
COVID19 positive hospitalized vs COVID19 negative or unknown	IL23A	M1	<1%	0.365[0.002;57.511]	7.00E-01	1873 0 0	508494 38 0	0.00004
COVID19 positive hospitalized vs COVID19 negative or unknown	ACE2	M1	<1%	0.392[0.002;61.868]	7.20E-01	1873 0 0	508485 44 3	0.00005
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1RAP	M3	<1%	1.272[0.349;4.641]	7.20E-01	2083 2 0	534386 579 0	0.00054
COVID19 positive hospitalized vs COVID19 negative or unknown	IL4R	M3	<1%	1.534[0.147;16.057]	7.20E-01	2017 1 0	526039 188 0	0.00018
COVID19 positive hospitalized vs COVID19 negative or unknown	PDCD1	M1	<1%	0.367[0.002;83.673]	7.20E-01	1873 0 0	508492 40 0	0.00004
COVID19 positive hospitalized vs COVID19 negative or unknown	CSF2	M3	<1%	0.368[0.001;136.635]	7.40E-01	1873 0 0	508491 41 0	0.00004
COVID19 positive hospitalized vs COVID19 negative or unknown	BTK	M1	<1%	0.363[0.001;230.098]	7.60E-01	1873 0 0	508505 27 0	0.00003
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNGR1	M1	<1%	0.807[0.145;4.481]	8.10E-01	2084 1 0	534629 336 0	0.00031

COVID19 positive hospitalized vs COVID19 negative or unknown	ACE2	M3	<1%	0.944[0.582;1.533]	8.20E-01	2079 2 4	532861 1626 478	0.00241
COVID19 positive hospitalized vs COVID19 negative or unknown	CCR5	M1	<1%	0.939[0.521;1.690]	8.30E-01	2077 8 0	532508 2453 4	0.0023
COVID19 positive hospitalized vs COVID19 negative or unknown	CCR5	M3	<1%	0.939[0.521;1.690]	8.30E-01	2077 8 0	532508 2453 4	0.0023
COVID19 positive hospitalized vs COVID19 negative or unknown	IL1RAP	M1	<1%	1.281[0.142;11.540]	8.30E-01	1872 1 0	508333 199 0	0.0002
COVID19 positive hospitalized vs COVID19 negative or unknown	CSF2	M1	<1%	0.370[0.000;6631.170]	8.40E-01	1873 0 0	508515 17 0	0.00002
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17RC	M1	<1%	1.113[0.317;3.899]	8.70E-01	2083 2 0	534378 587 0	0.00055
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17A	M3	<1%	0.885[0.140;5.608]	9.00E-01	1872 1 0	508249 283 0	0.00028
COVID19 positive hospitalized vs COVID19 negative or unknown	C5	M3	<1%	0.984[0.670;1.445]	9.30E-01	2059 26 0	529016 5928 21	0.00558
COVID19 positive hospitalized vs COVID19 negative or unknown	IL6R	M3	<1%	1.089[0.143;8.291]	9.30E-01	2084 1 0	534746 219 0	0.0002
COVID19 positive hospitalized vs COVID19 negative or unknown	IL17RA	M3	<1%	1.009[0.713;1.429]	9.60E-01	2052 33 0	527528 7417 20	0.00697
COVID19 positive hospitalized vs COVID19 negative or unknown	IL33	M3	<1%	0.988[0.649;1.505]	9.60E-01	2063 22 0	529239 5720 6	0.00536
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNB1	M1	<1%	0.987[0.470;2.070]	9.70E-01	1946 7 0	515284 174 2	0.00169
COVID19 positive hospitalized vs COVID19 negative or unknown	IL33	M1	<1%	0.993[0.652;1.513]	9.70E-01	2063 22 0	529265 5694 6	0.00533
COVID19 positive hospitalized vs COVID19 negative or unknown	IFNL2	M1	<1%	0.992[0.240;4.100]	9.90E-01	2083 2 0	534469 496 0	0.00046

* RR: individuals who have genotype Reference/Reference for all variants included in burden test. RA: individuals who have genotype Reference/Alternate for at least one variant. AA: individuals who have genotype Alternate/Alternate for at least one variant.