

Supplementary Material

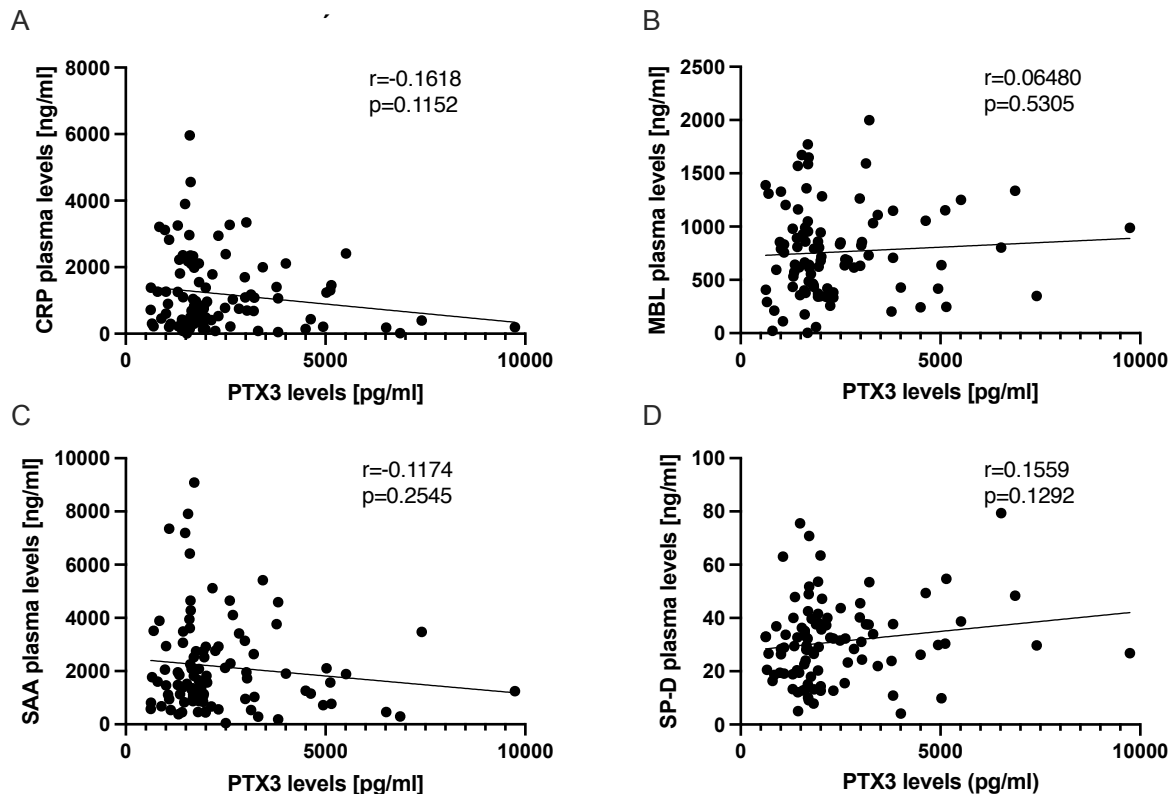


Figure S1: No correlation between PTX-3 plasma levels and the plasma levels of the four other soluble acute phase proteins in non-infected controls. Correlation analyses between the PTX-3 (x-axes) and the plasma levels of (A) CRP (B), MBL (C), SAA and (D) SP-D (y-axes) as determined in the sera of 98 non-infected controls. The Pearson's r and p-values are indicated in the respective plots.

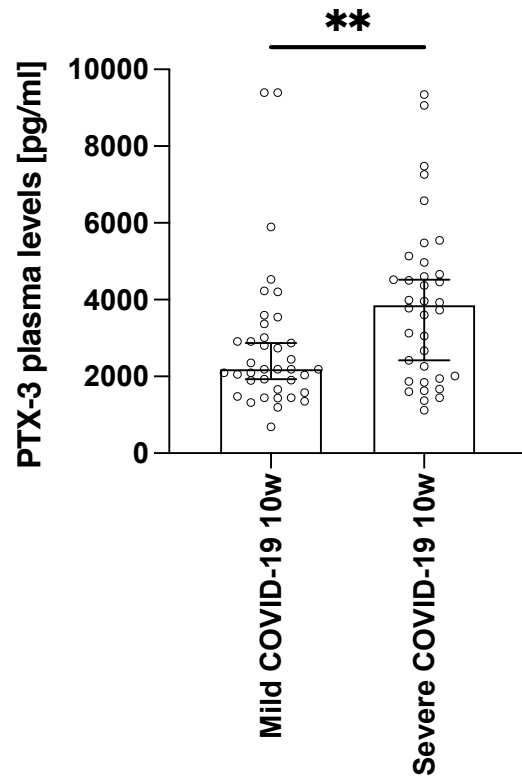


Figure S2: PTX-3 plasma levels of COVID-19 patients who underwent PTX-3 gene sequencing analyses. The PTX-3 plasma levels (median $\pm$ 95%CI; y-axes) of 38 mild and 36 severe COVID-19 cases at 10 weeks. P-value was determined using the Mann Whitney U-test and is indicated as follows: **, $p < 0.01$.

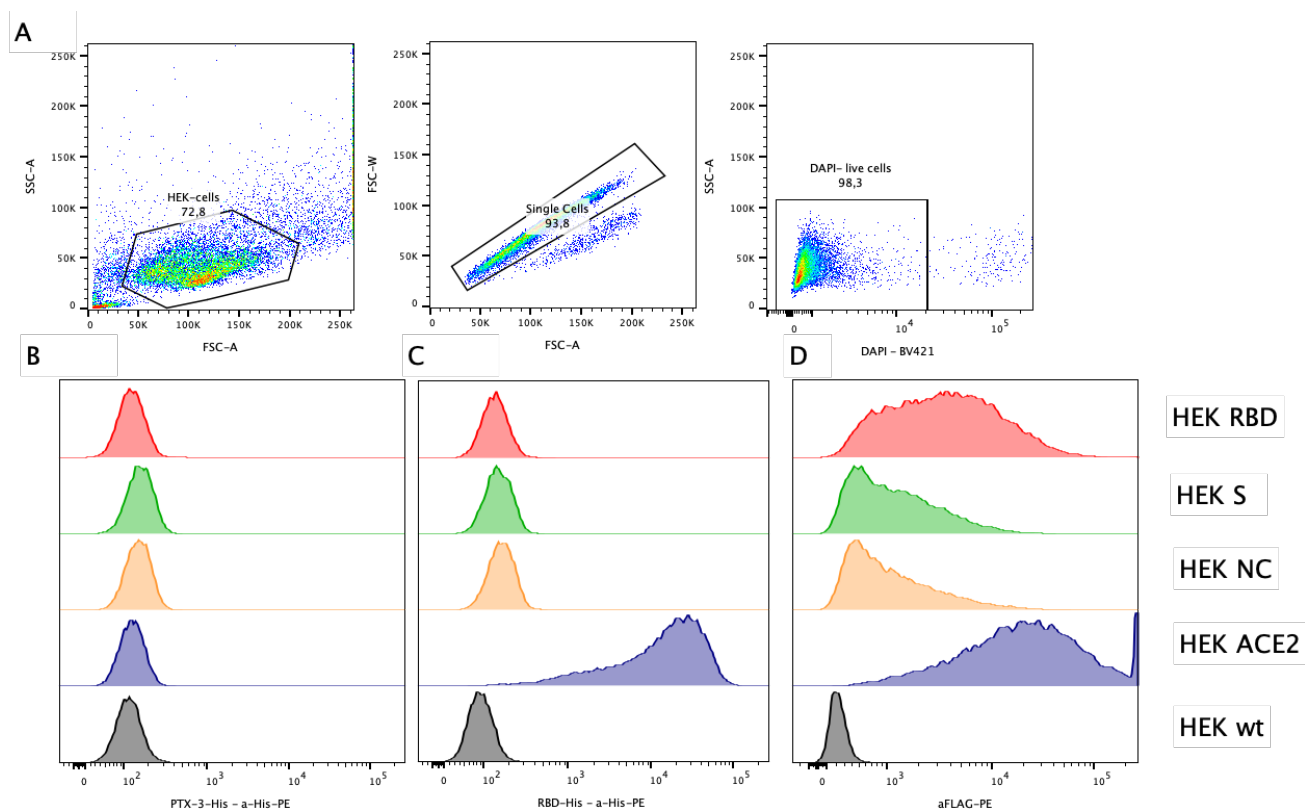


Figure S3: Flow cytometric analyses of PTX-3 binding to transfected HEK cells. (A) Shows the gating strategy for stably transduced HEK cells based on their FSC-SSC properties, selection of single cells (FSC-A vs. FSC-W) and DAPI negative live cells. B-D shows single parameter histogram analyses (x-axes fluorescence intensity, y-axes cell numbers) of indicated HEK transduced cells stained with PTX-3-His and anti-His-PE (B), RBD-His and anti-His-PE (C) as a positive control for anti-His staining and anti-FLAG-PE (D) to confirm expression of the indicated transgenes. Data are representative of three independent experiments.

Table S1. Demographics, clinical presentation and preexisting health conditions of COVID-19 convalescent patients and non-infected subjects.

Characteristics of COVID-19 convalescent patients and non-infected control subjects, p values <0.05 are indicated in red

Characteristics no. (%)	Non-infected control subjects n=98	COVID-19 convalescent patients n=141	Mild COVID-19 convalescent patients n=105	Severe COVID-19 convalescent patients n=36	p-values healthy controls vs COVID-19 convalescent patients	p-values mild vs. severe COVID- 19 convalescent patients
Male sex	44 (44.9)	80 (56.7)	59 (56.2)	21 (58.3)	0.0871	0.8481
Female sex	54 (55.1)	61 (43.3)	46 (43.8)	15 (41.6)	0.0871	0.8481
Age Median (Range) (Mean±SD)	51 (14-77) (50.1±14.2)	54 (16-78) (52.2±14.2)	53 (16-78) (50.8±14.5)	57.5 (30-78) (56.3±12.5)	0.27561	0.0641
Height in cm (Mean±SD)	172.2±8.9	175.0±9.3	175.5±9.0	173.4±10.4	0.0941	0.4391
Weight in kg (Mean±SD)	73.7±16.4	78.9±16.6	78.3±16.9	80.6±15.6	0.1028	0.2555
Positive SARS-CoV-2 test (rtPCR or serology)	0 (0)	141 (100)	105 (100)	36 (100)	<0.0001	>0.9999
Sneeze	0 (0)	41 (29.1)	27 (25.7)	14 (38.9)	<0.0001	0.1423
Runny nose	0 (0)	47 (33.3)	31 (29.5)	16 (30)	<0.0001	0.1071
Blocked nose	0 (0)	57 (40.4)	43 (41)	14 (38.9)	<0.0001	0.8470
Conjunctivitis	0 (0)	15 (10.6)	14 (13.3)	1 (2.8)	0.005	0.1153
Arthralgia	0 (0)	72 (51.1)	55 (52.4)	17 (47.2)	<0.0001	0.6998
Myalgia	0 (0)	74 (52.5)	57 (54.3)	17 (47.2)	<0.0001	0.5625
Nausea	0 (0)	37 (26.2)	23 (21.9)	14 (38.9)	<0.0001	0.0516
Headache	0 (0)	93 (66.0)	71 (67.6)	22 (61.1)	<0.0001	0.5424
Chills or rigor	0 (0)	73 (51.8)	52 (49.5)	21 (58.3)	<0.0001	0.4405
Fever	0 (0)	112 (79.4)	82 (78.1)	30 (83.3)	<0.0001	0.6350
Max. temperature in °C Median (Range) Mean ± SD	n.a.	38.5 (37.0-42.0) 38.7±0.8	38.5 (37-42) 38.5±0.8	(37.8-41) 39.1±0.8	n.a.	0.0007
< 37.5°C	n.a.	2 (1.4)	2 (1.9)	0	0.506	>0.9999
37.5 - 38.0°C	n.a.	27 (19.1)	23 (21.9)	4 (11.1)	<0.0001	0.2201
38.1 - 39.0°C	n.a.	51 (36.2)	41 (39.0)	10 (27.8)	<0.0001	0.3149
> 39.0°C	n.a.	33 (23.4)	17 (16.2)	16 (44.4)	<0.0001	0.0011
Fever duration in days (Mean±SD)	n.a.	6.5±5.6	5.6±4.8	9.3±7.0	n.a.	0.0023
Diarrhea	0 (0)	44 (31.2)	28 (26.7)	16 (44.4)	<0.0001	0.0608

<i>Loss of taste/smell</i>	0 (0)	90 (63.8)	68 (64.8)	22 (61.1)	<0.0001	0.6929
<i>Fatigue</i>	0 (0)	119 (84.4)	88 (83.8)	31 (86.1)	<0.0001	>0.9999
<i>Vomiting</i>	0 (0)	16 (11.3)	7 (6.7)	9 (25)	0.0003	0.0054
<i>Other GI problems</i>	0 (0)	10 (7.1)	8 (7.6)	2 (5.6)	0.0059	>0.9999
<i>Sore throat</i>	0 (0)	57 (40.4)	42 (40)	15 (41.7)	<0.0001	>0.9999
<i>Cough</i>	0 (0)	99 (70.2)	73 (69.5)	26 (72.2)	<0.0001	0.8350
<i>Wheezing</i>	0 (0)	43 (30.5)	23 (21.9)	20 (55.6)	<0.0001	0.0003
<i>Shortness of breath</i>	0 (0)	71 (50.4)	44 (41.9)	27 (75)	<0.0001	0.0009
<i>Pneumonia</i>	0 (0)	27 (19.1)	3 (2.9)	24 (66.7)	<0.0001	<0.0001
<i>Days of illness (symptoms)</i>	n.a.	19.4±18.6	15.4±13.1	32.3±26.4	n.a.	<0.0001
<i>Symptom-free days till venipuncture</i>	≥ 70	62.5±34.2	56.5±23.9	81.6±51.7	n.a.	0.0158
<i>Days between start of disease and venipuncture</i>	n.a.	84.6 ±39.8	72.8±22.4	119.6±56.6	n.a.	<0.0001
<i>Hospitalized</i>	0 (0)	36 (25.5)	0 (0)	36 (25.5)	<0.0001	<0.0001
<i>Days of hospitalization</i>	n.a.	22.3±20.7	0 (0)	22.3±20.7	n.a.	n.a.
<i>ICU or IMCU admission</i>	0 (0)	16 (11.3)	0 (0)	16 (11.3)	0.0003	<0.0001
<i>Days spent in ICU</i>	n.a.	21.4±11.6	0 (0)	21.4±11.6	n.a.	n.a.
<i>O₂ therapy required</i>	0 (0)	25 (17.7)	1 (1)	24 (17.7)	<0.0001.	<0.0001
<i>Days of O₂ therapy</i>	n.a.	23.7±35.6	28±0	23.4±36.9	n.a.	n.a.
<i>Invasive ventilation</i>	0 (0)	10 (7.1)	0 (0)	10 (7.1)	0.0059	<0.0001
<i>Days of invasive ventilation</i>	n.a.	23.1±5.4	0 (0)	23.1±5.4	n.a.	n.a.
<i>Asymptomatic</i>	98 (100)	5 (3.5)	5 (3.5)	0 (0)	<0.0001	0.3287
<i>Pre-existing health conditions</i>	64 (65.3)	88 (62.4)	65 (61.9)	23 (63.9)	0.6833	>0.9999
<i>Cardiovascular diseases</i>	19 (19.4)	27 (19.1)	20 (19)	7 (19.4)	>0.9999	>0.9999
<i>Chronic lung diseases</i>	11 (11.2)	18 (12.8)	12 (11.4)	6 (16.7)	0.8411	0.4001
<i>Allergy/Asthma</i>	43 (43.9)	45 (31.9)	34 (32.4)	11 (30.6)	0.0761	>0.9999
<i>Diabetes mellitus</i>	4 (4.1)	9 (6.4)	4 (3.8)	5 (13.9)	0.5672	0.0474
<i>Hematopoietic diseases</i>	0 (0)	3 (2.1)	3 (2.9)	0 (0)	0.2712	0.5702
<i>Immunosuppressive conditions</i>	2 (2.0)	8 (5.7)	3 (2.9)	5 (13.9)	0.2048	0.0260
<i>Liver diseases</i>	3 (3.1)	3 (2.1)	3 (2.9)	0 (0)	0.6914	0.5702
<i>Metabolic diseases</i>	17 (17.3)	24 (17.0)	19 (18.1)	5 (13.9)	>0.9999	0.7975
<i>Neurological disorders</i>	8 (8.1)	9 (6.4)	8 (7.6)	1 (2.8)	0.6171	0.4478
<i>Renal diseases</i>	3 (3.1)	5 (3.5)	4 (3.8)	1 (2.8)	>0.9999	>0.9999
<i>Other medical problems</i>	17 (17.3)	32 (22.7)	17 (16.2)	15 (41.1)	0.3335	0.0027
<i>Pregnancy</i>	0 (0)	0 (0)	0 (0)	0 (0)	>0.9999	>0.9999
<i>Smoking</i>	19 (19.4)	9 (6.4)	7 (6.7)	2 (5.6)	0.0036	>0.9999

<i>Regular alcohol consumption</i>	36 (36.7)	55 (39.0)	39 (37.1)	16 (44.4)	0.7869	0.4375
<i>Regular medications</i>	48 (49.0)	72 (51.1)	43 (41)	29 (80.6)	0.7932	<0.0001

Table S2: Result of principal component analyses of the relationship of acute phase proteins.

Variable	Loading on Factor 1 (PC1)	Loading on Factor 2 (PC 2)
MBL	0.466821	-0.539976
SP-D	0.234044	0.707217
CRP	0.845570	0.053085
SAA	0.800148	0.129381
PTX3	0.030947	0.703239
Proportion of total variance explained:	0.325776	0.261167

Table S3. Demographics, clinical presentation and preexisting health conditions of mild and severe COVID-19 patients for sequencing analyses

Characteristics of COVID-19 convalescent patients, p values <0.05 are indicated in red

Characteristics no. (%)	Mild COVID-19 convalescent patients n=38	Severe COVID-19 convalescent patients n=36	p-values
Male sex	21 (55.2)	21 (58.3)	0.8148
Female sex	17 (44.7)	15 (41.6)	0.8148
Age Median (Range) (Mean±SD)	56 (30-76) (55.2±11.0)	57.5 (30-78) (56.3±12.5)	0.960
Height in cm (Mean±SD)	175.6±9.5	173.4±10.4	0.4686
Weight in kg (Mean±SD)	79.5±14.3	80.6±15.6	0.6140
Positive SARS-CoV-2 test (rtPCR or serology)	38 (100)	36 (100)	>0.999
Sneeze	8 (21.1)	14 (38.9)	0.1279
Runny nose	10 (26.3)	16 (30)	0.1442
Blocked nose	15 (39.4)	14 (38.9)	>0.999
Conjunctivitis	4 (10.5)	1 (2.8)	0.3585
Arthralgia	23 (60.5)	17 (47.2)	0.3508
Myalgia	25 (65.8)	17 (47.2)	0.1588
Nausea	10 (26.3)	14 (38.9)	0.3222
Headache	28 (73.7)	22 (61.1)	0.3222
Chills or rigor	23 (60.5)	21 (58.3)	>0.999
Fever	35 (92.1)	30 (83.3)	0.3024
Max. temperature in °C Median (Range) Mean ± SD	38.5 (37-42) 38.5±0.7	(37.8-41) 39.1±0.8	0.0526
< 37.5°C	5 (13.2)	0	0.0546
37.5 - 38.0°C	6 (15.8)	4 (11.1)	0.7366
38.1 - 39.0°C	18 (47.4)	10 (27.8)	0.0979
> 39.0°C	9 (23.7)	16 (44.4)	0.0852
Fever duration in days (Mean±SD)	6.9±5.6	9.3±7.0	0.0410
Diarrhea	9 (23.7)	16 (44.4)	0.0852
Loss of taste/smell	26 (68.4)	22 (61.1)	0.6274
Fatigue	35 (92.1)	31 (86.1)	0.4737
Vomiting	4 (10.5)	9 (25)	0.1319
Other GI problems	4 (10.5)	2 (5.6)	0.6749
Sore throat	17 (44.7)	15 (41.7)	0.8184
Cough	32 (84.2)	26 (72.2)	0.2641
Wheezing	12 (31.6)	20 (55.6)	0.0598
Shortness of breath	19 (50.0)	27 (75)	0.0328
Pneumonia	3 (7.9)	24 (66.7)	<0.0001
Days of illness (symptoms)	15.6±11.0	32.3±26.4	<0.0001
Symptom-free days till venipuncture	57.5±32.7	81.6±51.7	0.0989
Days between start of disease and venipuncture	73.4±29.2	119.6±56.6	0.0002
Hospitalized	0 (0)	36 (25.5)	<0.0001
Days of hospitalization	0 (0)	22.3±20.7	n.a
ICU or IMCU admission	0 (0)	16 (11.3)	<0.0001
Days spent in ICU	0 (0)	21.4±11.6	n.a.
O ₂ therapy required	1 (2.6)	24 (17.7)	<0.0001
Days of O ₂ therapy		23.4±36.9	n.a.
Invasive ventilation	0 (0)	10 (7.1)	0.0004
Days of invasive ventilation	0 (0)	23.1±5.4	n.a.
Asymptomatic	0 (0)	0 (0)	>0.9999

<i>Pre-existing health conditions</i>	25 (65.8)	23 (63.9)	>0.9999
<i>Cardiovascular diseases</i>	8 (21.1)	7 (19.4)	>0.9999
<i>Chronic lung diseases</i>	3 (7.9)	6 (16.7)	0.3024
<i>Allergy/Asthma</i>	14 (36.8)	11 (30.6)	0.6282
<i>Diabetes mellitus</i>	2 (5.2)	5 (13.9)	0.2553
<i>Hematopoietic diseases</i>	2 (5.2)	0 (0)	0.4935
<i>Immunosuppressive conditions</i>	1 (2.6)	5 (13.9)	0.1027
<i>Liver diseases</i>	1 (2.6)	0 (0)	>0.9999
<i>Metabolic diseases</i>	6 (15.8)	5 (13.9)	>0.9999
<i>Neurological disorders</i>	2 (5.2)	1 (2.8)	>0.9999
<i>Renal diseases</i>	1 (2.6)	1 (2.8)	>0.9999
<i>Other medical problems</i>	9 (23.7)	15 (41.1)	0.1368
<i>Pregnancy</i>	0 (0)	0 (0)	>0.9999
<i>Smoking</i>	1 (2.6)	2 (5.6)	0.6096
<i>Regular alcohol consumption</i>	10 (26.3)	16 (44.4)	0.1442
<i>Regular medications</i>	19 (50)	29 (80.6)	0.0076

Table S4. SNPs detected in the sequenced study cohort*Number of sequenced patients positive for the indicated SNP, p values <0.05 are indicated in red:*

Reference SNP ID	Position in the reference genome	COVID-19 convalescent patients (n) n=74	Mild COVID-19 convalescent patients (n) n=38	Severe COVID-19 convalescent patients (n) n=36	p-values (not adjusted) between mild and severe convalescent patients	p-values (corrected for multiple testing) between mild and severe convalescent patients
rs1191991761	157431846	1	1	0	>0.9999	>0.9999
rs899938734	157431848	4	2	2	>0.9999	>0.9999
rs1264552796	157431871	6	2	4	0.4238	>0.9999
rs4680363	157432293	53	26	27	0.6105	>0.9999
rs2316710	157432391	55	27	28	0.5987	>0.9999
rs2316709	157432458	55	27	28	0.5987	>0.9999
rs1577641602	157432485	1	1	0	>0.9999	>0.9999
rs2316708	157432510	55	27	28	0.5987	>0.9999
rs2316707	157432543	2	1	1	>0.9999	>0.9999
rs1055497867	157432850	60	29	31	0.3769	>0.9999
rs80027448	157432968	1	1	0	>0.9999	>0.9999
rs549344673	157433258	2	1	1	>0.9999	>0.9999
rs971145291	157434327	58	37	21	<0.0001	<0.0001
rs968734277	157434514	60	29	31	0.3769	>0.9999
rs7615621	157434811	55	27	28	0.5987	>0.9999
rs1267892655	157435080	5	5	0	0.0546	>0.9999
rs1219400881	157436137	53	26	27	0.6105	>0.9999
rs35948036	157436979	1	1	0	>0.9999	>0.9999
rs2305619	157437072	55	27	28	0.5987	>0.9999
rs1733679197	157437338	1	0	1	0.4865	>0.9999
rs3816527	157437525	60	29	31	0.3769	>0.9999
rs148943471	157437630	1	0	1	0.4865	>0.9999
rs774167944	157437696	2	0	2	0.2332	>0.9999
rs1372487918	157437816	1	1	0	>0.9999	>0.9999
rs781700719	157438037	3	2	1	>0.9999	>0.9999
s1200916094	157438054	3	1	2	0.6069	>0.9999
rs56025932	157438069	2	1	1	>0.9999	>0.9999
rs1840680	157438240	55	27	28	0.5987	>0.9999
rs1733831197	157438261	2	2	0	0.4935	>0.9999
rs1280296909	157438623	3	2	1	>0.9999	>0.9999
rs1044752871	157441356	61	29	32	0.2236	>0.9999
rs2109234988	157441821	0	0	0	>0.9999	>0.9999
rs2109235022	157441823	2	1	1	>0.9999	>0.9999
rs3845978	157441905	2	1	1	>0.9999	>0.9999