Full wwPDB EM Validation Report ⓘ

Oct 11, 2022 – 04:17 PM JST

PDB ID	:	7VHL
EMDB ID	:	EMD-31998
Title	:	Double deletion S-2P trimer(1 Up)
Authors	:	Wang, X.; Cui, Z.
Deposited on	:	2021-09-22
Resolution	:	3.90 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

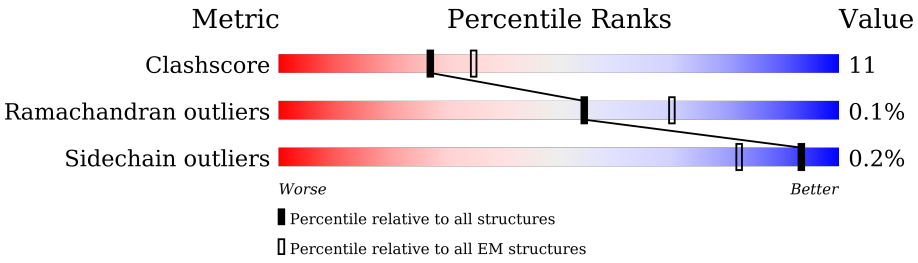
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1118	41% 74% 24% ·
1	B	1118	47% 71% 26% ·
1	C	1118	41% 71% 26% ·

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 25462 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	1092	Total	C	N	O	S	0	0
			8526	5444	1421	1622	39		
1	B	1083	Total	C	N	O	S	0	0
			8441	5387	1406	1609	39		
1	A	1088	Total	C	N	O	S	0	0
			8495	5421	1417	1618	39		

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	18	PHE	LEU	variant	UNP P0DTC2
C	?	-	ILE	deletion	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	SER	deletion	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	THR	deletion	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	THR	deletion	UNP P0DTC2
C	71	ALA	ASP	variant	UNP P0DTC2
C	206	GLY	ASP	variant	UNP P0DTC2
C	408	ASN	LYS	variant	UNP P0DTC2
C	475	LYS	GLU	variant	UNP P0DTC2
C	492	TYR	ASN	variant	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	?	-	SER	deletion	UNP P0DTC2
C	?	-	PRO	deletion	UNP P0DTC2
C	?	-	ARG	deletion	UNP P0DTC2
C	?	-	ARG	deletion	UNP P0DTC2
C	?	-	ALA	deletion	UNP P0DTC2
C	?	-	ARG	deletion	UNP P0DTC2
C	970	PRO	LYS	engineered mutation	UNP P0DTC2
C	971	PRO	VAL	engineered mutation	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	18	PHE	LEU	variant	UNP P0DTC2
B	?	-	ILE	deletion	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	?	-	SER	deletion	UNP P0DTC2
B	?	-	GLY	deletion	UNP P0DTC2
B	?	-	THR	deletion	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	?	-	GLY	deletion	UNP P0DTC2
B	?	-	THR	deletion	UNP P0DTC2
B	71	ALA	ASP	variant	UNP P0DTC2
B	206	GLY	ASP	variant	UNP P0DTC2
B	408	ASN	LYS	variant	UNP P0DTC2
B	475	LYS	GLU	variant	UNP P0DTC2
B	492	TYR	ASN	variant	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	?	-	SER	deletion	UNP P0DTC2
B	?	-	PRO	deletion	UNP P0DTC2
B	?	-	ARG	deletion	UNP P0DTC2
B	?	-	ARG	deletion	UNP P0DTC2
B	?	-	ALA	deletion	UNP P0DTC2
B	?	-	ARG	deletion	UNP P0DTC2
B	970	PRO	LYS	engineered mutation	UNP P0DTC2
B	971	PRO	VAL	engineered mutation	UNP P0DTC2
A	18	PHE	LEU	variant	UNP P0DTC2
A	?	-	ILE	deletion	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	?	-	SER	deletion	UNP P0DTC2
A	?	-	GLY	deletion	UNP P0DTC2
A	?	-	THR	deletion	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	?	-	GLY	deletion	UNP P0DTC2
A	?	-	THR	deletion	UNP P0DTC2
A	71	ALA	ASP	variant	UNP P0DTC2
A	206	GLY	ASP	variant	UNP P0DTC2
A	408	ASN	LYS	variant	UNP P0DTC2
A	475	LYS	GLU	variant	UNP P0DTC2
A	492	TYR	ASN	variant	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	?	-	SER	deletion	UNP P0DTC2
A	?	-	PRO	deletion	UNP P0DTC2

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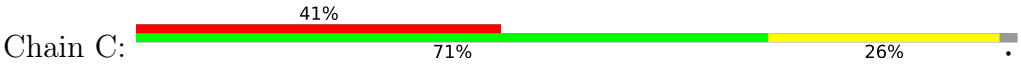
Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	ARG	deletion	UNP P0DTC2
A	?	-	ARG	deletion	UNP P0DTC2
A	?	-	ALA	deletion	UNP P0DTC2
A	?	-	ARG	deletion	UNP P0DTC2
A	970	PRO	LYS	engineered mutation	UNP P0DTC2
A	971	PRO	VAL	engineered mutation	UNP P0DTC2

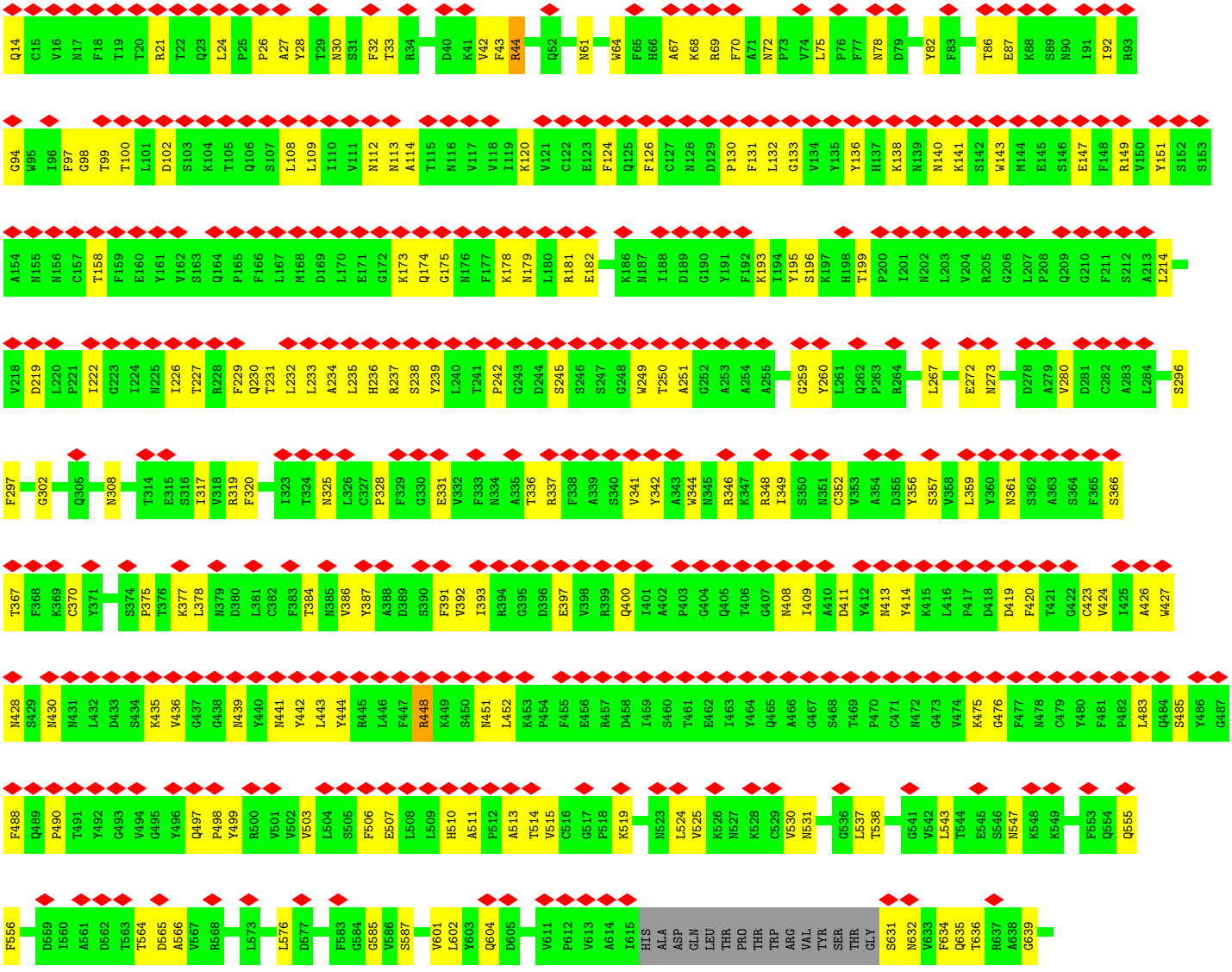
3 Residue-property plots (i)

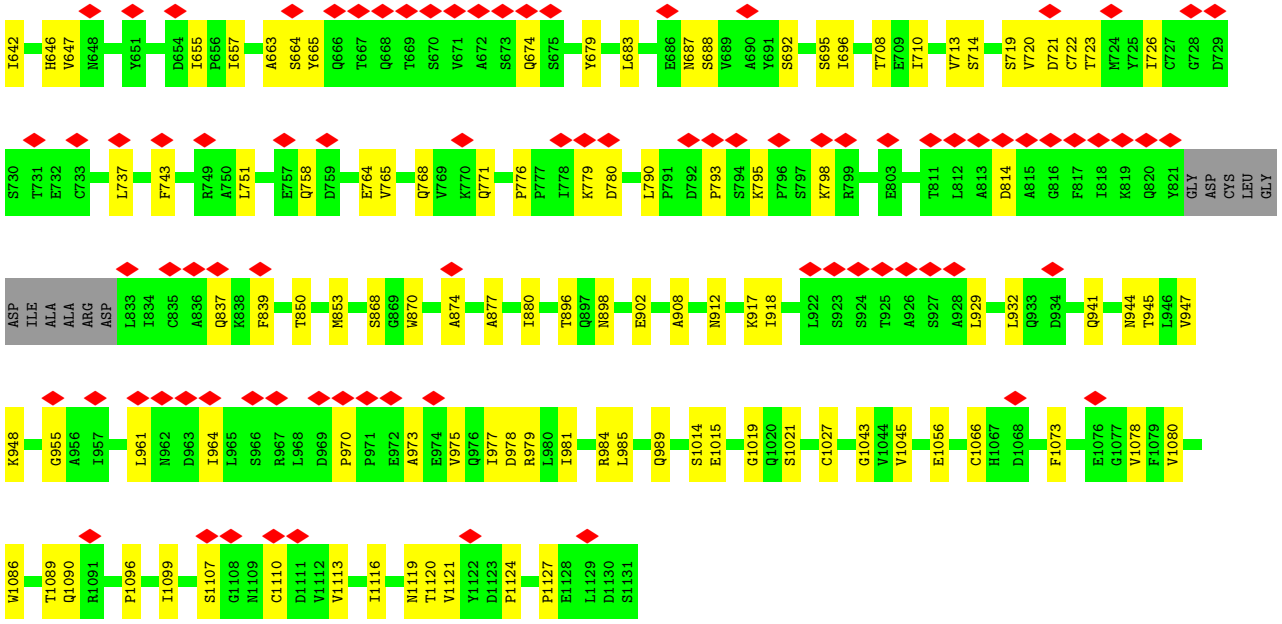
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Spike glycoprotein

Chain C:

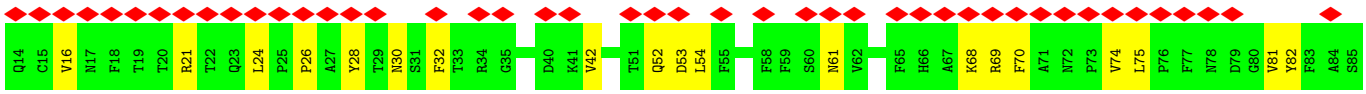


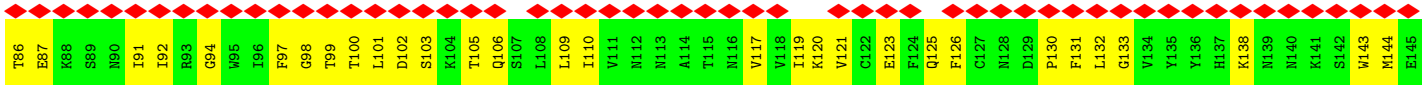


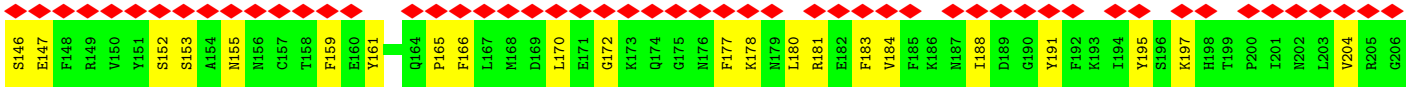


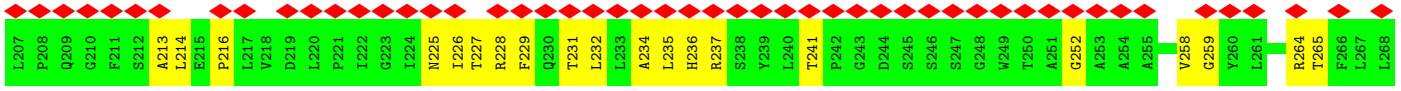
- Molecule 1: Spike glycoprotein

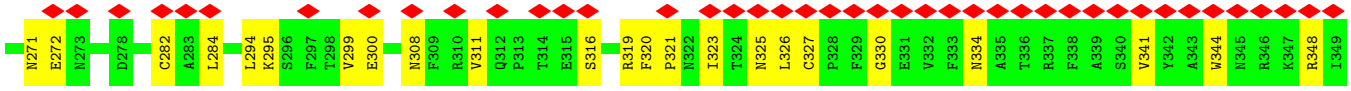
Chain B:

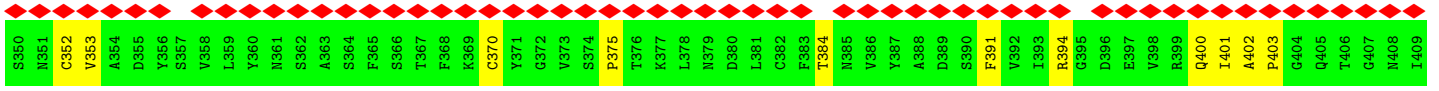


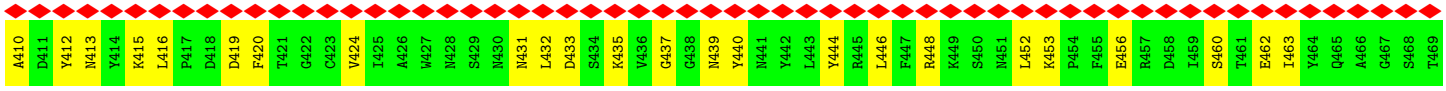


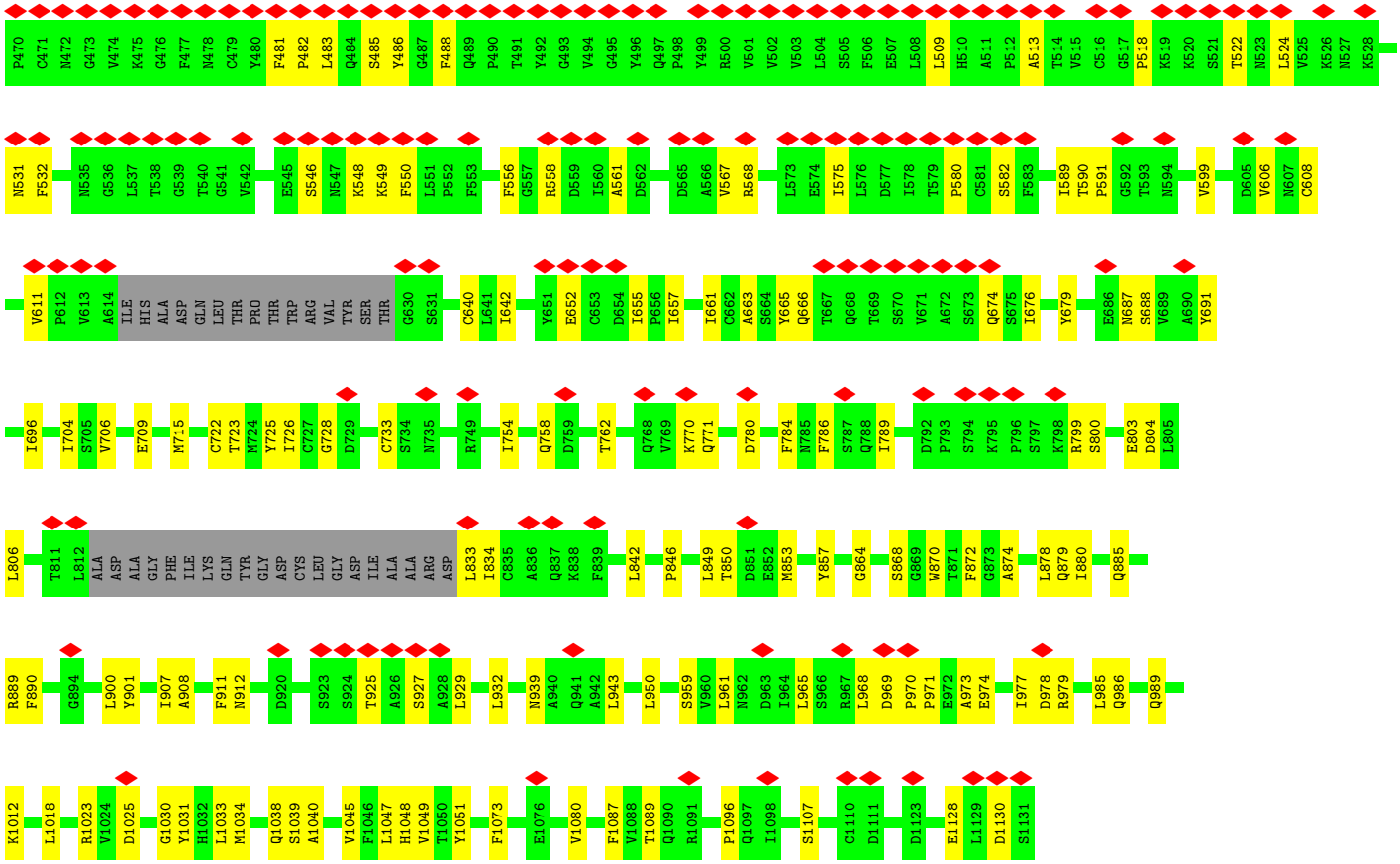






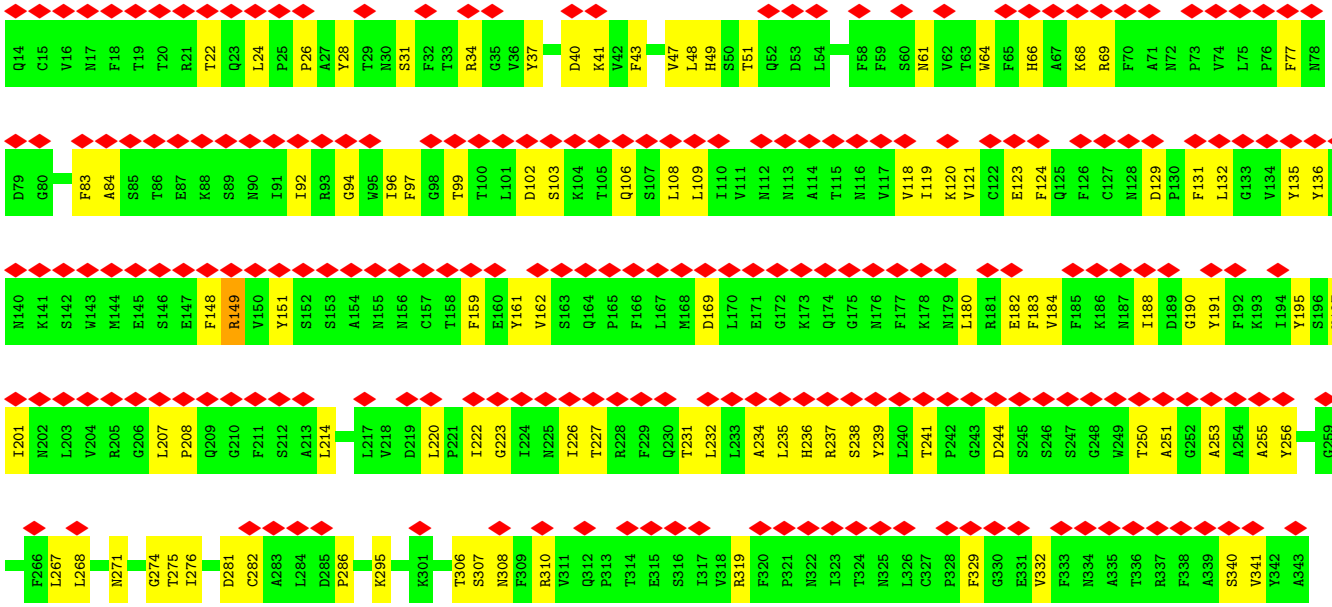


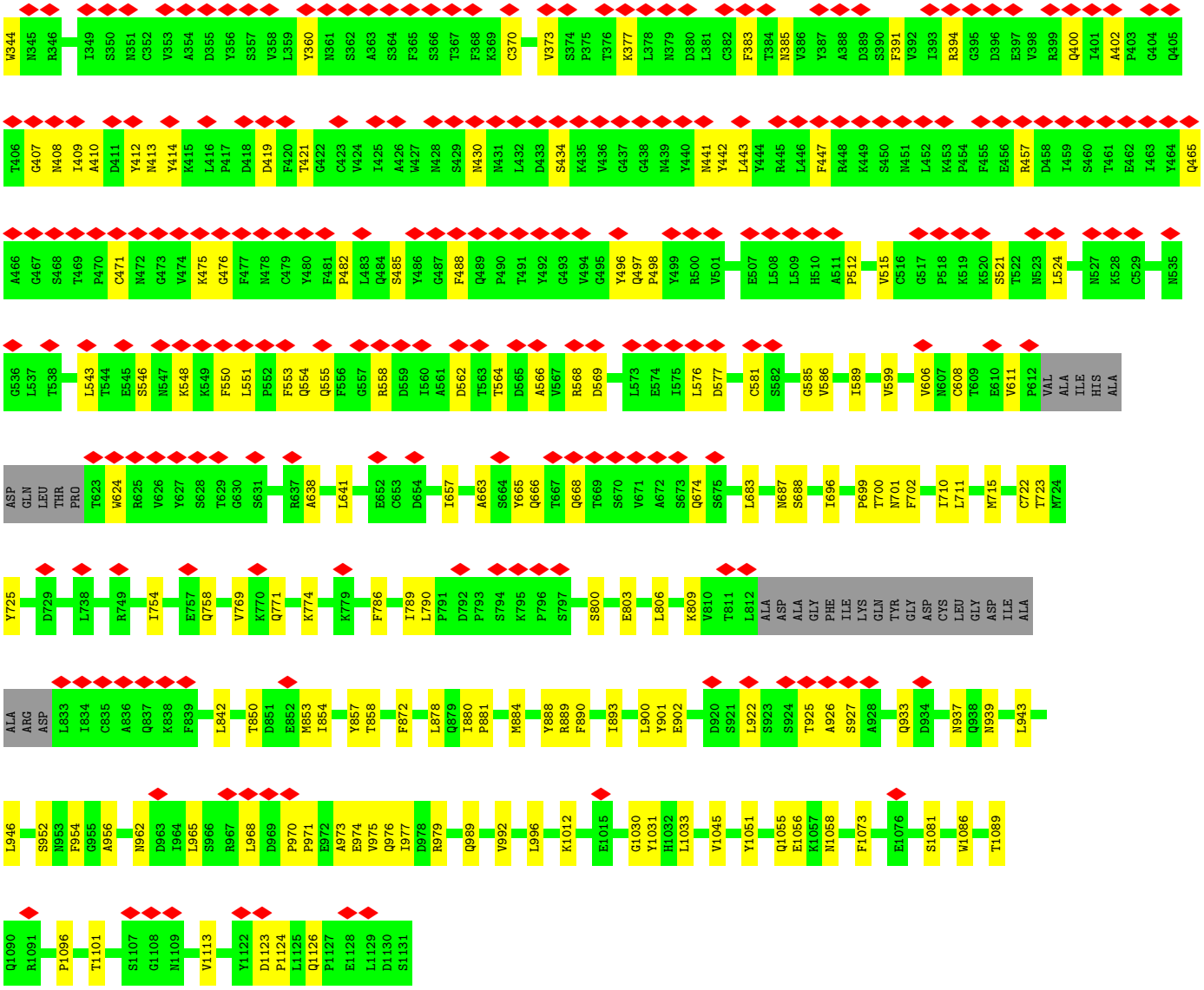




• Molecule 1: Spike glycoprotein

Chain A:




W344 N345 R346 I349 S350 N351 C352 V353 A354 D355 Y356 S357 V358 L359 Y360 N361 S362 A363 S364 F365 S366 T367 F368 K369 C370 V373 S374 P375 T376 K377 L378 N379 D380 L381 C382 F383 T384 N385 V386 Y387 A388 D389 S390 F391 V392 I393 R394 G395 D396 E397 V398 R399 Q400 I401 A402 P403 G404 Q405
T406 G407 N408 I409 A410 D411 Y412 N413 Y414 K415 L416 P417 D418 D419 F420 T421 G422 C423 V424 I425 A426 W427 N428 S429 N430 N431 L432 D433 S434 K435 V436 G437 G438 N439 Y440 N441 Y442 L443 Y444 R445 L446 F447 R448 K449 S450 N451 L452 K453 P454 F455 E456 R457 D458 I459 S460 T461 E462 I463 Y464 Q465
A466 G467 S468 T469 P470 C471 N472 G473 V474 K475 G476 F477 N478 C479 Y480 F481 P482 L483 Q484 S485 Y486 G487 F488 Q489 P490 T491 Y492 G493 V494 G495 Y496 Q497 P498 Y499 R500 V501 E507 L508 L509 H510 A511 P512 V515 C516 G517 P518 K519 K520 S521 T522 N523 L524 N527 K528 C529 N535
G536 L537 T538 L543 T544 E545 S546 N547 K548 K549 F550 L551 P552 F553 Q554 Q555 F556 G557 R558 D559 I560 A561 D562 T563 T564 D565 A566 V567 R568 D569 L573 E574 I575 L576 D577 C581 S582 G585 V586 I589 V599 V606 N607 C608 T609 E610 V611 P612 VAL ALA ILE HIS ALA
ASP GLN LEU THR PRO T623 W624 R625 V626 Y627 S628 T629 G630 S631 R637 A638 L641 E652 C653 D654 I657 A663 S664 Y665 Q666 T667 Q668 T669 S670 V671 A672 S673 Q674 S675 L683 N687 S688 I696 P699 T700 N701 F702 I710 L711 M715 C722 T723 M724
Y725 D729 L738 R749 I754 E757 Q758 V769 K770 Q771 K774 K779 F786 I789 L790 P791 D792 P793 S794 K795 P796 S797 S800 E803 L806 K809 V810 T811 L812 ALA ASP ALA GLY PHE ILE LYS GLN TYR GLY ASP CYS LEU GLY ASP ILE ALA
ALA ARG ASP L833 I834 C835 A836 Q837 K838 F839 L842 T850 D851 E852 M853 I854 Y857 T858 F872 L878 Q879 I880 P881 M884 Y888 R889 F890 I893 L900 Y901 E902 D920 S921 L922 S923 S924 T925 A926 S927 A928 Q933 D934 N937 Q938 N939 L943
L946 S952 N953 F954 G955 A956 N962 D963 I964 L965 S966 R967 L968 D969 P970 P971 E972 A973 E974 V975 Q976 I977 D978 R979 Q989 V992 L996 K1012 E1015 G1030 Y1031 H1032 L1033 V1045 Y1051 Q1055 E1056 K1057 N1058 F1073 E1076 S1081 W1086 T1089
Q1090 R1091 P1096 T1101 S1107 G1108 N1109 V1113 Y1122 D1123 P1124 L1125 Q1126 P1127 E1128 L1129 D1130 S1131

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	191107	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	1.875	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.084	Depositor
Minimum map value	-0.031	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	332.8, 332.8, 332.8	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.04, 1.04, 1.04	Depositor

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.26	0/8697	0.48	0/11845
1	B	0.26	0/8640	0.48	0/11766
1	C	0.25	0/8727	0.47	0/11881
All	All	0.26	0/26064	0.48	0/35492

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8495	0	8277	179	0
1	B	8441	0	8231	216	0
1	C	8526	0	8328	200	0
All	All	25462	0	24836	546	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 11.

All (546) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:325:ASN:CB	1:B:353:VAL:HB	2.06	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:325:ASN:HB2	1:B:353:VAL:O	1.82	0.80
1:C:149:ARG:HH22	1:C:245:SER:HB2	1.50	0.75
1:A:754:ILE:HD11	1:A:996:LEU:HD23	1.68	0.75
1:C:411:ASP:O	1:C:448:ARG:NH2	2.19	0.74
1:A:881:PRO:HB2	1:A:884:MET:HG3	1.68	0.73
1:A:786:PHE:HB3	1:A:790:LEU:HD23	1.72	0.72
1:A:188:ILE:HB	1:A:191:TYR:HB2	1.72	0.72
1:C:341:VAL:HA	1:C:391:PHE:HB2	1.72	0.71
1:B:370:CYS:HB2	1:B:375:PRO:HG3	1.73	0.70
1:A:94:GLY:HA3	1:A:232:LEU:HB2	1.74	0.70
1:B:98:GLY:HA2	1:B:226:ILE:HG12	1.72	0.69
1:A:370:CYS:HB3	1:A:373:VAL:HG23	1.74	0.69
1:B:325:ASN:HB3	1:B:353:VAL:HB	1.74	0.68
1:B:401:ILE:HD12	1:B:424:VAL:HG11	1.76	0.68
1:A:64:TRP:HE1	1:A:66:HIS:HB3	1.59	0.67
1:C:743:PHE:HD2	1:C:985:LEU:HD21	1.59	0.67
1:B:109:LEU:HB3	1:B:120:LYS:HB2	1.77	0.67
1:B:188:ILE:HB	1:B:191:TYR:HB2	1.77	0.67
1:A:22:THR:OG1	1:A:69:ARG:NH1	2.27	0.67
1:A:850:THR:H	1:A:853:MET:HE3	1.59	0.67
1:C:443:LEU:HD23	1:C:483:LEU:HB3	1.77	0.67
1:C:507:GLU:OE2	1:C:510:HIS:ND1	2.24	0.66
1:A:97:PHE:HD2	1:A:226:ILE:HG21	1.60	0.66
1:A:131:PHE:HB2	1:A:234:ALA:HA	1.78	0.66
1:A:889:ARG:NH1	1:A:1033:LEU:O	2.29	0.66
1:C:132:LEU:H	1:C:234:ALA:HA	1.61	0.66
1:C:896:THR:OG1	1:C:1090:GLN:NE2	2.30	0.65
1:A:666:GLN:O	1:A:668:GLN:NE2	2.29	0.65
1:B:97:PHE:HD2	1:B:226:ILE:HG21	1.59	0.65
1:A:968:LEU:HB2	1:A:973:ALA:HB2	1.79	0.65
1:C:737:LEU:HD13	1:C:981:ILE:HD11	1.79	0.65
1:B:184:VAL:HB	1:B:195:TYR:HB2	1.78	0.65
1:A:24:LEU:O	1:A:26:PRO:HD3	1.98	0.64
1:A:131:PHE:HB3	1:A:232:LEU:HD12	1.79	0.64
1:A:106:GLN:NE2	1:A:121:VAL:O	2.29	0.64
1:C:683:LEU:HD21	1:A:853:MET:HG2	1.78	0.64
1:B:52:GLN:OE1	1:B:265:THR:OG1	2.16	0.64
1:A:97:PHE:HB2	1:A:108:LEU:HB2	1.80	0.64
1:A:383:PHE:HB2	1:A:515:VAL:HB	1.81	0.63
1:C:384:THR:HA	1:C:513:ALA:HA	1.79	0.63
1:A:31:SER:HB3	1:A:207:LEU:HD23	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:110:ILE:HG13	1:B:119:ILE:HG23	1.79	0.63
1:A:310:ARG:HH22	1:A:581:CYS:H	1.46	0.63
1:A:434:SER:HB2	1:A:498:PRO:HG3	1.79	0.62
1:C:537:LEU:HD11	1:C:564:THR:HG21	1.81	0.62
1:A:83:PHE:HD2	1:A:183:PHE:HB2	1.63	0.62
1:B:968:LEU:HB3	1:B:973:ALA:HB2	1.81	0.62
1:B:548:LYS:H	1:B:575:ILE:HG21	1.63	0.62
1:B:723:THR:O	1:B:728:GLY:N	2.30	0.62
1:C:42:VAL:HG11	1:B:558:ARG:HH21	1.65	0.61
1:C:238:SER:O	1:C:249:TRP:NE1	2.33	0.61
1:B:846:PRO:HG3	1:A:638:ALA:HB2	1.81	0.61
1:C:898:ASN:HA	1:B:1073:PHE:HE2	1.65	0.61
1:B:969:ASP:HB3	1:B:971:PRO:HD2	1.81	0.61
1:C:776:PRO:HG3	1:B:691:TYR:HB3	1.82	0.61
1:A:722:CYS:SG	1:A:723:THR:N	2.73	0.61
1:C:635:GLN:NE2	1:C:636:THR:O	2.34	0.61
1:C:631:SER:OG	1:C:632:ASN:N	2.34	0.60
1:A:184:VAL:HB	1:A:195:TYR:HD2	1.66	0.60
1:C:634:PHE:HE2	1:C:646:HIS:HB2	1.66	0.60
1:A:34:ARG:NH1	1:A:182:GLU:OE2	2.34	0.60
1:C:237:ARG:H	1:C:249:TRP:HD1	1.47	0.60
1:C:328:PRO:HD2	1:C:349:ILE:HG23	1.83	0.60
1:A:475:LYS:NZ	1:A:476:GLY:O	2.35	0.60
1:C:366:SER:H	1:C:427:TRP:HA	1.65	0.60
1:C:86:THR:OG1	1:C:178:LYS:O	2.19	0.60
1:C:384:THR:HG21	1:C:511:ALA:HB3	1.83	0.59
1:C:1056:GLU:HG2	1:A:878:LEU:HD21	1.85	0.59
1:A:34:ARG:NH2	1:A:208:PRO:O	2.35	0.59
1:B:24:LEU:O	1:B:26:PRO:HD3	2.02	0.59
1:A:989:GLN:HA	1:A:992:VAL:HG12	1.85	0.59
1:C:24:LEU:O	1:C:26:PRO:HD3	2.02	0.59
1:C:721:ASP:OD2	1:B:308:ASN:ND2	2.34	0.59
1:A:49:HIS:NE2	1:A:51:THR:OG1	2.36	0.59
1:A:551:LEU:O	1:A:568:ARG:NH1	2.36	0.59
1:C:1119:ASN:OD1	1:C:1120:THR:N	2.33	0.58
1:A:340:SER:OG	1:A:443:LEU:O	2.19	0.58
1:B:75:LEU:O	1:B:229:PHE:N	2.37	0.58
1:B:901:TYR:HD2	1:A:1073:PHE:HE2	1.51	0.58
1:B:403:PRO:HA	1:B:416:LEU:HD13	1.86	0.58
1:B:770:LYS:NZ	1:B:872:PHE:O	2.37	0.58
1:B:1038:GLN:HG3	1:B:1047:LEU:HD23	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1110:CYS:HB2	1:C:1116:ILE:HG12	1.85	0.58
1:A:28:TYR:HB3	1:A:61:ASN:HB3	1.86	0.58
1:B:970:PRO:HG2	1:B:971:PRO:HD3	1.84	0.57
1:C:82:TYR:O	1:C:259:GLY:N	2.37	0.57
1:C:317:ILE:HD12	1:C:530:VAL:HG21	1.86	0.57
1:C:604:GLN:HA	1:C:639:GLY:HA3	1.85	0.57
1:B:929:LEU:HD23	1:B:932:LEU:HD12	1.86	0.57
1:B:68:LYS:HG3	1:B:69:ARG:HG3	1.86	0.57
1:B:412:TYR:HB3	1:B:446:LEU:HA	1.86	0.57
1:B:950:LEU:O	1:B:959:SER:OG	2.21	0.57
1:C:308:ASN:HA	1:C:585:GLY:HA2	1.86	0.57
1:C:1014:SER:HB3	1:B:1025:ASP:HB3	1.85	0.57
1:B:311:VAL:H	1:B:582:SER:HB3	1.69	0.57
1:C:357:SER:O	1:C:361:ASN:ND2	2.37	0.57
1:C:413:ASN:OD1	1:C:414:TYR:N	2.38	0.56
1:B:74:VAL:HG21	1:B:228:ARG:HE	1.70	0.56
1:B:889:ARG:NH1	1:B:1034:MET:HB3	2.20	0.56
1:C:370:CYS:HA	1:C:423:CYS:HB2	1.86	0.56
1:A:341:VAL:HA	1:A:391:PHE:HB2	1.87	0.56
1:A:608:CYS:HA	1:A:611:VAL:HG23	1.87	0.56
1:C:443:LEU:HB3	1:C:483:LEU:HD12	1.86	0.56
1:C:1073:PHE:HE2	1:A:901:TYR:HB2	1.70	0.56
1:B:448:ARG:HD2	1:B:460:SER:HB3	1.88	0.56
1:A:558:ARG:NH1	1:A:562:ASP:O	2.38	0.56
1:B:908:ALA:O	1:B:912:ASN:ND2	2.39	0.56
1:C:687:ASN:OD1	1:C:688:SER:N	2.39	0.56
1:B:87:GLU:HG2	1:B:181:ARG:HH22	1.71	0.56
1:B:319:ARG:NH1	1:B:522:THR:OG1	2.38	0.56
1:A:106:GLN:HA	1:A:123:GLU:HB3	1.86	0.56
1:A:443:LEU:HA	1:A:485:SER:HA	1.87	0.56
1:C:67:ALA:HA	1:C:233:LEU:HD21	1.87	0.56
1:A:149:ARG:NH2	1:A:244:ASP:OD1	2.38	0.55
1:A:400:GLN:HB2	1:A:409:ILE:HD12	1.89	0.55
1:C:710:ILE:HG13	1:C:1045:VAL:HG23	1.87	0.55
1:C:87:GLU:OE2	1:C:181:ARG:NH2	2.40	0.55
1:B:99:THR:O	1:B:227:THR:OG1	2.23	0.55
1:A:102:ASP:OD1	1:A:103:SER:N	2.40	0.55
1:B:172:GLY:HA2	1:B:177:PHE:HB2	1.88	0.55
1:A:68:LYS:HG3	1:A:253:ALA:HA	1.88	0.55
1:C:100:THR:OG1	1:C:102:ASP:OD2	2.22	0.55
1:A:48:LEU:HB3	1:A:267:LEU:HD21	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:108:LEU:HD21	1:C:222:ILE:HG21	1.88	0.55
1:C:947:VAL:HG11	1:B:561:ALA:HB1	1.89	0.55
1:A:286:PRO:HB2	1:A:599:VAL:HG21	1.89	0.55
1:B:974:GLU:OE1	1:B:974:GLU:N	2.39	0.55
1:A:447:PHE:H	1:A:482:PRO:HB2	1.72	0.55
1:A:975:VAL:O	1:A:979:ARG:HG2	2.07	0.55
1:C:989:GLN:OE1	1:B:986:GLN:NE2	2.38	0.54
1:C:94:GLY:HA3	1:C:232:LEU:HB2	1.87	0.54
1:B:413:ASN:HD22	1:B:444:TYR:HB2	1.72	0.54
1:C:393:ILE:HD12	1:C:397:GLU:HB2	1.90	0.54
1:A:933:GLN:NE2	1:A:937:ASN:OD1	2.33	0.54
1:B:82:TYR:N	1:B:259:GLY:O	2.36	0.54
1:C:43:PHE:N	1:B:556:PHE:O	2.37	0.54
1:C:657:ILE:HD11	1:C:663:ALA:HB2	1.90	0.54
1:C:683:LEU:HD11	1:A:853:MET:HB3	1.90	0.54
1:A:687:ASN:OD1	1:A:688:SER:N	2.41	0.54
1:B:123:GLU:HG3	1:B:155:ASN:HD21	1.72	0.54
1:B:722:CYS:O	1:B:726:ILE:N	2.27	0.54
1:B:784:PHE:HD2	1:B:911:PHE:HD2	1.56	0.54
1:A:715:MET:N	1:A:758:GLN:OE1	2.40	0.54
1:B:608:CYS:N	1:B:640:CYS:SG	2.80	0.53
1:B:652:GLU:O	1:B:679:TYR:OH	2.25	0.53
1:C:72:ASN:O	1:C:230:GLN:NE2	2.41	0.53
1:A:319:ARG:HD2	1:A:524:LEU:HB2	1.90	0.53
1:B:94:GLY:HA3	1:B:232:LEU:HB2	1.90	0.53
1:C:28:TYR:HB3	1:C:61:ASN:HB3	1.90	0.53
1:B:42:VAL:HG11	1:A:558:ARG:HG2	1.90	0.53
1:B:589:ILE:HG23	1:B:655:ILE:HG21	1.89	0.53
1:B:974:GLU:HA	1:B:977:ILE:HG22	1.89	0.53
1:B:330:GLY:O	1:B:334:ASN:N	2.39	0.53
1:C:375:PRO:HA	1:C:378:LEU:HG	1.89	0.53
1:C:448:ARG:HH21	1:C:452:LEU:H	1.57	0.53
1:B:889:ARG:NH1	1:B:1033:LEU:O	2.42	0.52
1:A:657:ILE:HD11	1:A:663:ALA:HB2	1.92	0.52
1:C:475:LYS:NZ	1:C:476:GLY:O	2.42	0.52
1:B:687:ASN:OD1	1:B:688:SER:N	2.41	0.52
1:B:901:TYR:HB3	1:A:1113:VAL:HG23	1.91	0.52
1:C:302:GLY:HA2	1:C:655:ILE:HD12	1.92	0.52
1:A:286:PRO:HG3	1:A:624:TRP:CD1	2.44	0.52
1:A:558:ARG:NH2	1:A:564:THR:OG1	2.41	0.52
1:C:273:ASN:HA	1:B:549:LYS:HG3	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:133:GLY:H	1:B:147:GLU:HB3	1.75	0.52
1:C:708:THR:HB	1:C:918:ILE:HD11	1.90	0.52
1:B:126:PHE:HE2	1:B:130:PRO:HD2	1.73	0.52
1:C:342:TYR:HB3	1:C:444:TYR:HA	1.90	0.52
1:B:879:GLN:NE2	1:A:1058:ASN:OD1	2.43	0.52
1:B:144:MET:SD	1:B:146:SER:OG	2.64	0.52
1:B:706:VAL:HG22	1:B:1049:VAL:HG22	1.91	0.52
1:B:965:LEU:O	1:A:377:LYS:NZ	2.40	0.52
1:B:1038:GLN:HB2	1:B:1045:VAL:HG13	1.91	0.52
1:A:37:TYR:HA	1:A:214:LEU:HB2	1.92	0.52
1:A:589:ILE:HD12	1:A:641:LEU:HD21	1.92	0.52
1:C:386:VAL:HG12	1:C:506:PHE:HB3	1.92	0.51
1:C:555:GLN:HG2	1:A:41:LYS:HZ1	1.76	0.51
1:B:91:ILE:HG23	1:B:235:LEU:HB2	1.91	0.51
1:C:565:ASP:OD1	1:C:566:ALA:N	2.43	0.51
1:C:696:ILE:HG13	1:A:880:ILE:HD13	1.92	0.51
1:A:308:ASN:HA	1:A:585:GLY:HA2	1.91	0.51
1:A:344:TRP:O	1:A:457:ARG:NH1	2.43	0.51
1:A:344:TRP:NE1	1:A:414:TYR:HB2	2.26	0.51
1:B:412:TYR:O	1:B:448:ARG:NH2	2.40	0.51
1:B:440:TYR:HE2	1:B:485:SER:HB2	1.74	0.51
1:B:709:GLU:OE1	1:B:1012:LYS:NZ	2.44	0.51
1:B:123:GLU:HB3	1:B:125:GLN:HE22	1.75	0.51
1:A:99:THR:O	1:A:227:THR:OG1	2.29	0.51
1:A:419:ASP:OD1	1:A:421:THR:OG1	2.28	0.51
1:A:1031:TYR:HB2	1:A:1051:TYR:HB3	1.92	0.51
1:B:889:ARG:HH12	1:B:1034:MET:HB3	1.76	0.51
1:A:394:ARG:HE	1:A:488:PHE:HB3	1.75	0.51
1:A:465:GLN:NE2	1:A:471:CYS:SG	2.76	0.51
1:A:803:GLU:HA	1:A:806:LEU:HD12	1.93	0.51
1:A:512:PRO:HB3	1:A:555:GLN:HG3	1.91	0.51
1:C:109:LEU:HD11	1:C:126:PHE:HE1	1.75	0.51
1:C:1089:THR:HG22	1:C:1096:PRO:HA	1.93	0.51
1:C:1099:ILE:HG22	1:C:1121:VAL:HG13	1.93	0.51
1:B:101:LEU:N	1:B:105:THR:HG21	2.25	0.51
1:C:82:TYR:HE1	1:C:182:GLU:HB3	1.76	0.51
1:C:99:THR:OG1	1:C:100:THR:N	2.43	0.51
1:C:514:THR:HG23	1:C:515:VAL:HG23	1.93	0.51
1:A:77:PHE:HD2	1:A:226:ILE:HB	1.75	0.51
1:B:925:THR:HG22	1:B:927:SER:H	1.75	0.50
1:C:21:ARG:HD3	1:C:69:ARG:O	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:109:LEU:HD22	1:C:120:LYS:HZ2	1.76	0.50
1:C:975:VAL:O	1:C:979:ARG:HG2	2.12	0.50
1:B:433:ASP:O	1:B:439:ASN:ND2	2.44	0.50
1:C:328:PRO:O	1:C:331:GLU:HG3	2.12	0.50
1:C:392:VAL:HG21	1:C:442:TYR:CZ	2.46	0.50
1:B:68:LYS:HA	1:B:252:GLY:HA3	1.93	0.50
1:B:803:GLU:OE2	1:B:1038:GLN:NE2	2.45	0.50
1:A:711:LEU:HD11	1:A:1012:LYS:HE3	1.93	0.50
1:C:267:LEU:HB3	1:C:280:VAL:HB	1.92	0.50
1:C:726:ILE:HG21	1:C:981:ILE:HD12	1.94	0.50
1:C:795:LYS:O	1:C:798:LYS:NZ	2.42	0.50
1:A:307:SER:OG	1:A:308:ASN:N	2.44	0.50
1:B:853:MET:HB3	1:A:683:LEU:HD11	1.94	0.49
1:A:952:SER:HB2	1:A:954:PHE:CE1	2.47	0.49
1:C:538:THR:HG23	1:A:962:ASN:HB3	1.93	0.49
1:C:719:SER:OG	1:C:720:VAL:N	2.45	0.49
1:B:195:TYR:HB3	1:B:214:LEU:HB3	1.94	0.49
1:A:394:ARG:HB3	1:A:496:TYR:HA	1.93	0.49
1:A:237:ARG:HG3	1:A:251:ALA:HB2	1.94	0.49
1:C:722:CYS:SG	1:C:723:THR:N	2.85	0.49
1:C:874:ALA:HA	1:B:1030:GLY:HA2	1.94	0.49
1:C:970:PRO:HA	1:C:973:ALA:HB3	1.94	0.49
1:B:81:VAL:HG13	1:B:258:VAL:HG23	1.93	0.49
1:C:320:PHE:HE2	1:C:519:LYS:HB2	1.77	0.49
1:B:28:TYR:HB3	1:B:61:ASN:HB3	1.93	0.49
1:B:344:TRP:HB3	1:B:391:PHE:HB3	1.94	0.49
1:C:408:ASN:ND2	1:A:360:TYR:O	2.44	0.49
1:C:511:ALA:HA	1:A:41:LYS:HD2	1.95	0.49
1:C:317:ILE:HD11	1:C:525:VAL:HG12	1.95	0.49
1:A:268:LEU:HD22	1:A:276:ILE:HD13	1.95	0.49
1:C:430:ASN:HD21	1:C:497:GLN:HB3	1.77	0.49
1:C:1078:VAL:HB	1:A:888:TYR:OH	2.13	0.49
1:B:665:TYR:HE1	1:B:674:GLN:HA	1.77	0.49
1:A:550:PHE:HD2	1:A:568:ARG:HD2	1.78	0.49
1:C:929:LEU:HD21	1:C:932:LEU:HB2	1.95	0.49
1:C:30:ASN:HB2	1:C:32:PHE:CE1	2.48	0.48
1:C:195:TYR:HB3	1:C:214:LEU:HB3	1.95	0.48
1:B:264:ARG:HH22	1:B:284:LEU:H	1.60	0.48
1:B:86:THR:HB	1:B:180:LEU:HD13	1.95	0.48
1:B:770:LYS:HG3	1:B:771:GLN:HG3	1.94	0.48
1:B:1130:ASP:N	1:B:1130:ASP:OD1	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:75:LEU:O	1:C:229:PHE:N	2.33	0.48
1:B:771:GLN:OE1	1:A:687:ASN:ND2	2.36	0.48
1:A:190:GLY:HA2	1:A:223:GLY:HA2	1.95	0.48
1:C:44:ARG:HG3	1:B:558:ARG:HB3	1.96	0.48
1:C:348:ARG:NH1	1:C:387:TYR:OH	2.46	0.48
1:A:554:GLN:O	1:A:568:ARG:NH1	2.46	0.48
1:C:319:ARG:HD3	1:C:524:LEU:HB2	1.96	0.48
1:B:197:LYS:HD2	1:B:213:ALA:H	1.78	0.48
1:B:435:LYS:HG3	1:B:437:GLY:H	1.77	0.48
1:B:611:VAL:HG22	1:B:642:ILE:HD12	1.95	0.48
1:B:842:LEU:HD13	1:B:943:LEU:HD22	1.94	0.48
1:A:430:ASN:HB2	1:A:497:GLN:NE2	2.28	0.48
1:B:591:PRO:HD3	1:B:676:ILE:HD11	1.95	0.48
1:A:96:ILE:HG22	1:A:109:LEU:HG	1.96	0.48
1:C:92:ILE:HD11	1:C:231:THR:OG1	2.14	0.48
1:C:687:ASN:ND2	1:A:771:GLN:OE1	2.39	0.48
1:C:556:PHE:H	1:A:41:LYS:NZ	2.12	0.47
1:C:126:PHE:O	1:C:130:PRO:HD3	2.14	0.47
1:C:325:ASN:HB3	1:C:352:CYS:HA	1.96	0.47
1:C:647:VAL:HG12	1:C:679:TYR:HB3	1.96	0.47
1:C:764:GLU:O	1:C:768:GLN:NE2	2.34	0.47
1:B:419:ASP:OD1	1:B:419:ASP:N	2.48	0.47
1:B:546:SER:OG	1:B:575:ILE:HG22	2.14	0.47
1:A:47:VAL:HG12	1:A:49:HIS:H	1.78	0.47
1:A:409:ILE:HG23	1:A:413:ASN:OD1	2.13	0.47
1:C:555:GLN:H	1:A:41:LYS:HZ1	1.63	0.47
1:B:463:ILE:HD12	1:B:482:PRO:HD3	1.96	0.47
1:C:692:SER:HB3	1:C:695:SER:HB3	1.97	0.47
1:B:235:LEU:HD21	1:B:252:GLY:HA2	1.96	0.47
1:A:319:ARG:NH2	1:A:569:ASP:OD2	2.47	0.47
1:C:42:VAL:HG12	1:B:556:PHE:HB2	1.97	0.47
1:C:377:LYS:NZ	1:A:965:LEU:O	2.48	0.47
1:C:158:THR:O	1:B:348:ARG:NH1	2.48	0.47
1:C:448:ARG:NH2	1:C:451:ASN:HA	2.29	0.47
1:B:237:ARG:NH1	1:B:241:THR:OG1	2.46	0.47
1:A:409:ILE:HA	1:A:413:ASN:HD21	1.80	0.47
1:C:868:SER:HB3	1:C:877:ALA:HB1	1.96	0.47
1:C:1021:SER:OG	1:C:1027:CYS:SG	2.64	0.47
1:A:329:PHE:HA	1:A:332:VAL:HB	1.97	0.47
1:B:181:ARG:HB3	1:B:183:PHE:HE1	1.80	0.47
1:A:441:ASN:OD1	1:A:442:TYR:N	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:193:LYS:NZ	1:C:219:ASP:OD1	2.37	0.46
1:C:237:ARG:HD2	1:C:251:ALA:HB3	1.97	0.46
1:B:53:ASP:OD1	1:B:54:LEU:N	2.46	0.46
1:B:448:ARG:NH2	1:B:452:LEU:HD22	2.30	0.46
1:B:590:THR:HB	1:B:599:VAL:HG12	1.97	0.46
1:A:890:PHE:HA	1:A:893:ILE:HG12	1.96	0.46
1:C:32:PHE:O	1:C:33:THR:OG1	2.29	0.46
1:C:424:VAL:HB	1:C:503:VAL:HG13	1.96	0.46
1:C:488:PHE:CE2	1:C:498:PRO:HB3	2.50	0.46
1:B:300:GLU:OE1	1:B:300:GLU:N	2.48	0.46
1:C:344:TRP:HZ3	1:C:346:ARG:HB2	1.81	0.46
1:B:316:SER:HA	1:B:531:ASN:HB3	1.96	0.46
1:B:325:ASN:HB2	1:B:353:VAL:HB	1.91	0.46
1:B:320:PHE:N	1:B:321:PRO:HD3	2.31	0.46
1:B:762:THR:HG22	1:B:849:LEU:HD12	1.96	0.46
1:A:118:VAL:HA	1:A:162:VAL:HG12	1.97	0.46
1:B:117:VAL:HB	1:B:165:PRO:HA	1.98	0.46
1:B:264:ARG:HH22	1:B:284:LEU:N	2.13	0.46
1:B:833:LEU:HD12	1:B:834:ILE:HG12	1.97	0.46
1:A:119:ILE:HB	1:A:161:TYR:O	2.15	0.46
1:A:925:THR:HG22	1:A:927:SER:H	1.80	0.46
1:C:908:ALA:O	1:C:912:ASN:ND2	2.48	0.46
1:B:102:ASP:OD1	1:B:105:THR:HG23	2.15	0.46
1:A:235:LEU:HD12	1:A:250:THR:HA	1.98	0.46
1:C:14:GLN:HE21	1:C:149:ARG:HB3	1.81	0.46
1:C:97:PHE:HD2	1:C:226:ILE:HG21	1.80	0.46
1:C:98:GLY:HA2	1:C:226:ILE:HG12	1.96	0.46
1:C:233:LEU:HD23	1:C:235:LEU:HD11	1.96	0.46
1:B:850:THR:H	1:B:853:MET:HE3	1.81	0.46
1:A:566:ALA:HA	1:A:577:ASP:HA	1.96	0.46
1:C:296:SER:OG	1:C:297:PHE:N	2.49	0.46
1:C:751:LEU:HD23	1:C:751:LEU:HA	1.81	0.46
1:B:582:SER:O	1:B:582:SER:OG	2.31	0.46
1:A:569:ASP:OD1	1:A:569:ASP:N	2.49	0.46
1:C:99:THR:O	1:C:227:THR:OG1	2.31	0.46
1:B:402:ALA:HA	1:B:420:PHE:CE1	2.51	0.46
1:A:84:ALA:HB1	1:A:180:LEU:HD11	1.97	0.46
1:A:281:ASP:OD1	1:A:282:CYS:N	2.49	0.46
1:A:319:ARG:HE	1:A:569:ASP:HB2	1.81	0.46
1:A:1081:SER:HB3	1:A:1086:TRP:CD2	2.51	0.46
1:B:1080:VAL:O	1:B:1087:PHE:N	2.45	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:319:ARG:HA	1:A:521:SER:HB2	1.97	0.45
1:A:1089:THR:HG22	1:A:1096:PRO:HA	1.98	0.45
1:B:704:ILE:HD12	1:B:907:ILE:HG23	1.98	0.45
1:B:978:ASP:OD1	1:B:979:ARG:N	2.49	0.45
1:A:64:TRP:NE1	1:A:66:HIS:HB3	2.29	0.45
1:C:70:PHE:HB2	1:C:250:THR:HG23	1.98	0.45
1:C:902:GLU:OE2	1:B:1107:SER:OG	2.35	0.45
1:C:978:ASP:HA	1:C:981:ILE:HG22	1.97	0.45
1:A:108:LEU:HD21	1:A:222:ILE:HG21	1.99	0.45
1:A:159:PHE:CZ	1:A:220:LEU:HD21	2.51	0.45
1:C:239:TYR:HA	1:C:249:TRP:HZ2	1.80	0.45
1:A:715:MET:HB2	1:A:939:ASN:HD21	1.81	0.45
1:A:769:VAL:HG12	1:A:872:PHE:HE2	1.82	0.45
1:A:1031:TYR:O	1:A:1051:TYR:N	2.49	0.45
1:B:325:ASN:CA	1:B:353:VAL:HB	2.47	0.45
1:B:874:ALA:HB1	1:A:1030:GLY:HA2	1.98	0.45
1:C:97:PHE:CE2	1:C:226:ILE:HD13	2.52	0.45
1:C:443:LEU:HG	1:C:485:SER:HA	1.98	0.45
1:A:1101:THR:HG22	1:A:1124:PRO:HD2	1.98	0.45
1:B:394:ARG:HG2	1:B:488:PHE:HE1	1.82	0.45
1:B:394:ARG:HG2	1:B:488:PHE:CE1	2.52	0.45
1:A:43:PHE:CE1	1:A:274:GLY:HA3	2.51	0.45
1:A:543:LEU:HB3	1:A:576:LEU:HD23	1.97	0.45
1:C:419:ASP:OD1	1:C:420:PHE:N	2.49	0.45
1:B:21:ARG:HD3	1:B:70:PHE:O	2.17	0.45
1:A:83:PHE:HE1	1:A:256:TYR:HB2	1.81	0.45
1:C:174:GLN:OE1	1:C:175:GLY:N	2.49	0.45
1:C:683:LEU:HD12	1:A:857:TYR:CE1	2.51	0.45
1:A:546:SER:HB2	1:A:548:LYS:HE2	1.99	0.45
1:C:337:ARG:HH21	1:C:441:ASN:HD21	1.65	0.45
1:C:400:GLN:OE1	1:C:409:ILE:N	2.50	0.45
1:B:132:LEU:HB2	1:B:234:ALA:HA	1.98	0.45
1:A:66:HIS:HA	1:A:255:ALA:HA	1.98	0.45
1:B:103:SER:HA	1:B:125:GLN:NE2	2.32	0.44
1:B:106:GLN:H	1:B:123:GLU:CD	2.20	0.44
1:A:710:ILE:HG13	1:A:1045:VAL:HG23	1.99	0.44
1:A:842:LEU:HD23	1:A:943:LEU:HD22	1.99	0.44
1:A:890:PHE:CE2	1:A:900:LEU:HD12	2.52	0.44
1:C:27:ALA:HB3	1:C:64:TRP:HB2	1.99	0.44
1:C:140:ASN:HB3	1:C:141:LYS:HE2	2.00	0.44
1:B:295:LYS:HB3	1:B:295:LYS:HE2	1.87	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:341:VAL:HG11	1:B:486:TYR:HE2	1.82	0.44
1:B:864:GLY:O	1:B:868:SER:OG	2.26	0.44
1:A:306:THR:HB	1:A:586:VAL:HG23	1.98	0.44
1:C:182:GLU:O	1:C:196:SER:HA	2.17	0.44
1:C:713:VAL:HB	1:C:1043:GLY:HA2	1.99	0.44
1:C:714:SER:HA	1:C:758:GLN:OE1	2.18	0.44
1:B:16:VAL:HG12	1:B:16:VAL:O	2.17	0.44
1:B:92:ILE:HD11	1:B:231:THR:OG1	2.18	0.44
1:B:715:MET:HB2	1:B:939:ASN:HD21	1.83	0.44
1:B:1031:TYR:O	1:B:1051:TYR:N	2.51	0.44
1:A:701:ASN:OD1	1:A:702:PHE:N	2.49	0.44
1:B:97:PHE:CE2	1:B:226:ILE:HD13	2.53	0.44
1:B:264:ARG:HE	1:B:264:ARG:HB3	1.58	0.44
1:B:294:LEU:HD13	1:B:299:VAL:HG22	2.00	0.44
1:B:319:ARG:HH22	1:B:524:LEU:HA	1.82	0.44
1:A:271:ASN:N	1:A:275:THR:O	2.46	0.44
1:A:699:PRO:HA	1:A:1056:GLU:HA	2.00	0.44
1:A:1123:ASP:OD2	1:A:1126:GLN:N	2.50	0.44
1:C:795:LYS:HE2	1:C:795:LYS:HB2	1.86	0.44
1:C:955:GLY:HA3	1:C:979:ARG:HH22	1.82	0.44
1:A:407:GLY:H	1:A:410:ALA:HB3	1.82	0.44
1:A:800:SER:N	1:A:803:GLU:OE2	2.39	0.44
1:C:113:ASN:OD1	1:C:114:ALA:N	2.50	0.44
1:C:664:SER:HB3	1:C:679:TYR:HE1	1.81	0.44
1:B:21:ARG:HG2	1:B:69:ARG:O	2.17	0.44
1:B:126:PHE:HB3	1:B:152:SER:HB3	1.98	0.44
1:B:341:VAL:HA	1:B:391:PHE:HA	1.99	0.44
1:B:101:LEU:H	1:B:105:THR:HG21	1.83	0.44
1:B:1128:GLU:OE1	1:B:1128:GLU:N	2.51	0.44
1:A:447:PHE:HB3	1:A:482:PRO:HB3	1.99	0.44
1:A:974:GLU:HA	1:A:977:ILE:HG22	1.99	0.44
1:B:28:TYR:HD2	1:B:61:ASN:HB3	1.82	0.43
1:B:131:PHE:HE2	1:B:236:HIS:HB2	1.82	0.43
1:B:532:PHE:HZ	1:B:567:VAL:HG21	1.83	0.43
1:B:657:ILE:HB	1:B:661:ILE:O	2.18	0.43
1:A:956:ALA:HB1	1:A:976:GLN:HB3	2.00	0.43
1:C:317:ILE:N	1:C:531:ASN:O	2.47	0.43
1:B:885:GLN:O	1:B:889:ARG:HG2	2.17	0.43
1:C:850:THR:HG22	1:C:853:MET:HG2	2.01	0.43
1:B:271:ASN:OD1	1:B:272:GLU:N	2.46	0.43
1:B:1089:THR:HB	1:B:1096:PRO:HA	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:944:ASN:O	1:C:948:LYS:HG2	2.18	0.43
1:A:92:ILE:HD11	1:A:231:THR:OG1	2.19	0.43
1:A:809:LYS:NZ	1:A:922:LEU:O	2.38	0.43
1:C:726:ILE:O	1:C:984:ARG:NH1	2.51	0.43
1:B:99:THR:HA	1:B:227:THR:H	1.83	0.43
1:B:265:THR:H	1:B:282:CYS:HB2	1.84	0.43
1:C:238:SER:C	1:C:249:TRP:HE1	2.20	0.43
1:C:880:ILE:HD13	1:B:696:ILE:HG13	2.00	0.43
1:B:400:GLN:HB3	1:B:410:ALA:HB2	2.00	0.43
1:B:786:PHE:CD1	1:B:789:ILE:HD11	2.53	0.43
1:B:803:GLU:HA	1:B:806:LEU:HD12	1.99	0.43
1:A:786:PHE:CD1	1:A:789:ILE:HD11	2.54	0.43
1:C:124:PHE:CE2	1:C:151:TYR:HA	2.54	0.43
1:C:237:ARG:N	1:C:249:TRP:HD1	2.14	0.43
1:C:1124:PRO:O	1:C:1127:PRO:HD2	2.18	0.43
1:B:880:ILE:HD13	1:A:696:ILE:HG13	2.01	0.43
1:A:159:PHE:HZ	1:A:220:LEU:HD21	1.82	0.43
1:C:242:PRO:HA	1:C:249:TRP:CH2	2.53	0.43
1:C:870:TRP:HB2	1:C:1019:GLY:HA2	2.01	0.43
1:B:188:ILE:HG22	1:B:188:ILE:O	2.19	0.43
1:B:786:PHE:HD1	1:B:789:ILE:HD11	1.83	0.43
1:A:237:ARG:NH2	1:A:241:THR:OG1	2.52	0.43
1:B:119:ILE:HB	1:B:161:TYR:HD2	1.84	0.43
1:B:138:LYS:HB3	1:B:143:TRP:CD2	2.54	0.43
1:C:136:TYR:HA	1:C:143:TRP:CZ3	2.53	0.42
1:C:961:LEU:HA	1:C:964:ILE:HD12	2.01	0.42
1:A:135:TYR:CE1	1:A:239:TYR:HB3	2.54	0.42
1:A:237:ARG:HG2	1:A:238:SER:H	1.84	0.42
1:C:272:GLU:OE2	1:C:273:ASN:ND2	2.53	0.42
1:B:961:LEU:HD23	1:B:977:ILE:HD11	2.01	0.42
1:B:462:GLU:HG2	1:B:463:ILE:N	2.34	0.42
1:B:868:SER:HA	1:B:878:LEU:O	2.20	0.42
1:C:1113:VAL:HG13	1:C:1116:ILE:HB	2.00	0.42
1:B:606:VAL:HG12	1:B:608:CYS:H	1.84	0.42
1:A:665:TYR:HE1	1:A:674:GLN:HA	1.84	0.42
1:C:973:ALA:O	1:C:977:ILE:HG12	2.20	0.42
1:C:1086:TRP:HD1	1:C:1119:ASN:HD22	1.66	0.42
1:B:100:THR:HA	1:B:228:ARG:HD2	2.02	0.42
1:B:353:VAL:HG12	1:B:518:PRO:HD3	2.02	0.42
1:C:131:PHE:CZ	1:C:147:GLU:HG2	2.54	0.42
1:C:336:THR:OG1	1:C:337:ARG:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:543:LEU:HD23	1:C:576:LEU:HD23	2.00	0.42
1:B:133:GLY:HA2	1:B:236:HIS:HB2	2.01	0.42
1:C:173:LYS:HG2	1:C:179:ASN:HB3	2.02	0.42
1:C:179:ASN:OD1	1:C:199:THR:N	2.53	0.42
1:C:771:GLN:OE1	1:B:687:ASN:ND2	2.41	0.42
1:C:780:ASP:OD1	1:C:780:ASP:N	2.42	0.42
1:A:123:GLU:HG2	1:A:124:PHE:N	2.35	0.42
1:B:166:PHE:CZ	1:B:170:LEU:HD21	2.54	0.42
1:B:178:LYS:HE3	1:B:204:VAL:HG12	2.01	0.42
1:B:733:CYS:HB2	1:B:977:ILE:HD11	2.01	0.42
1:B:1039:SER:OG	1:B:1040:ALA:N	2.53	0.42
1:A:129:ASP:HB3	1:A:131:PHE:HD2	1.84	0.42
1:C:78:ASN:HB2	1:C:260:TYR:HB3	2.02	0.42
1:C:436:VAL:HG22	1:C:490:PRO:HG3	2.02	0.42
1:C:587:SER:HB2	1:C:602:LEU:HB3	2.02	0.42
1:C:713:VAL:HG11	1:C:765:VAL:HG11	2.02	0.42
1:B:101:LEU:HD12	1:B:101:LEU:HA	1.92	0.42
1:A:40:ASP:OD1	1:A:41:LYS:N	2.48	0.42
1:A:119:ILE:H	1:A:162:VAL:HG12	1.85	0.42
1:A:344:TRP:CD1	1:A:414:TYR:HB2	2.55	0.42
1:C:917:LYS:HE3	1:C:917:LYS:HB2	1.87	0.41
1:C:1078:VAL:HG13	1:C:1080:VAL:HG13	2.01	0.41
1:B:709:GLU:OE1	1:B:1048:HIS:NE2	2.53	0.41
1:B:970:PRO:CG	1:B:971:PRO:HD3	2.48	0.41
1:A:180:LEU:HB2	1:A:201:ILE:HD13	2.02	0.41
1:A:267:LEU:HD11	1:A:295:LYS:HA	2.00	0.41
1:C:112:ASN:OD1	1:C:113:ASN:N	2.52	0.41
1:C:726:ILE:HG21	1:C:981:ILE:CD1	2.50	0.41
1:B:657:ILE:HD11	1:B:663:ALA:HB2	2.02	0.41
1:B:799:ARG:HH21	1:B:804:ASP:HA	1.84	0.41
1:A:809:LYS:HD3	1:A:926:ALA:HA	2.02	0.41
1:C:793:PRO:HA	1:C:798:LYS:HZ1	1.84	0.41
1:C:428:ASN:HA	1:C:499:TYR:CD1	2.55	0.41
1:B:125:GLN:H	1:B:153:SER:HB2	1.86	0.41
1:B:431:ASN:OD1	1:B:432:LEU:N	2.53	0.41
1:B:452:LEU:HD23	1:B:452:LEU:H	1.85	0.41
1:B:943:LEU:HD23	1:B:943:LEU:HA	1.93	0.41
1:A:109:LEU:HB3	1:A:120:LYS:O	2.20	0.41
1:C:68:LYS:HG3	1:C:69:ARG:HG3	2.02	0.41
1:C:133:GLY:HA3	1:C:236:HIS:CB	2.50	0.41
1:C:435:LYS:HE2	1:C:439:ASN:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:439:ASN:HB3	1:C:488:PHE:HB2	2.02	0.41
1:C:601:VAL:HB	1:C:642:ILE:HD11	2.02	0.41
1:B:225:ASN:O	1:B:226:ILE:HG13	2.20	0.41
1:B:550:PHE:HB3	1:B:568:ARG:NH2	2.36	0.41
1:A:700:THR:OG1	1:A:1055:GLN:O	2.31	0.41
1:A:854:ILE:O	1:A:858:THR:HG23	2.21	0.41
1:C:665:TYR:OH	1:C:674:GLN:NE2	2.52	0.41
1:C:743:PHE:CD2	1:C:985:LEU:HD21	2.48	0.41
1:B:30:ASN:HB2	1:B:32:PHE:CE1	2.55	0.41
1:B:509:LEU:HD22	1:B:513:ALA:HB2	2.03	0.41
1:B:754:ILE:O	1:B:758:GLN:N	2.53	0.41
1:A:136:TYR:OH	1:A:236:HIS:O	2.39	0.41
1:C:138:LYS:HD2	1:C:138:LYS:HA	1.85	0.41
1:C:367:THR:HG22	1:C:426:ALA:HB3	2.02	0.41
1:B:853:MET:HG2	1:A:683:LEU:HD21	2.03	0.41
1:B:857:TYR:CZ	1:A:683:LEU:HD12	2.55	0.41
1:A:197:LYS:HD2	1:A:197:LYS:HA	1.91	0.41
1:C:688:SER:HB2	1:A:774:LYS:NZ	2.36	0.41
1:B:123:GLU:HB3	1:B:125:GLN:OE1	2.21	0.41
1:A:169:ASP:OD1	1:A:169:ASP:N	2.51	0.41
1:A:970:PRO:N	1:A:971:PRO:HD2	2.35	0.41
1:C:356:TYR:HD1	1:C:359:LEU:HD12	1.86	0.41
1:B:191:TYR:HH	1:A:385:ASN:HD21	1.60	0.41
1:B:890:PHE:CD2	1:B:900:LEU:HB2	2.56	0.41
1:A:132:LEU:HA	1:A:148:PHE:HD1	1.85	0.41
1:C:814:ASP:OD2	1:C:837:GLN:NE2	2.54	0.41
1:C:1107:SER:OG	1:A:902:GLU:OE2	2.33	0.41
1:B:216:PRO:HD2	1:A:553:PHE:CD2	2.56	0.41
1:B:384:THR:HA	1:B:513:ALA:HA	2.03	0.41
1:A:120:LYS:HG3	1:A:151:TYR:OH	2.21	0.41
1:C:839:PHE:CE2	1:B:580:PRO:HD3	2.56	0.40
1:C:941:GLN:O	1:C:945:THR:HG22	2.21	0.40
1:B:415:LYS:HZ3	1:B:453:LYS:HA	1.86	0.40
1:B:725:TYR:CZ	1:B:950:LEU:HD21	2.56	0.40
1:B:870:TRP:HB2	1:B:1018:LEU:O	2.21	0.40
1:C:779:LYS:HE3	1:C:790:LEU:HD13	2.03	0.40
1:B:126:PHE:CE2	1:B:130:PRO:HD2	2.54	0.40
1:B:453:LYS:O	1:B:456:GLU:HG2	2.20	0.40
1:B:481:PHE:HE2	1:B:483:LEU:HD12	1.86	0.40
1:B:968:LEU:HD12	1:B:968:LEU:HA	1.92	0.40
1:C:366:SER:N	1:C:426:ALA:O	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1066:CYS:N	1:C:1116:ILE:HD11	2.36	0.40
1:B:415:LYS:HD2	1:B:415:LYS:HA	1.87	0.40
1:B:800:SER:H	1:B:803:GLU:HG3	1.86	0.40
1:B:985:LEU:O	1:B:989:GLN:HG2	2.21	0.40
1:B:327:CYS:HB2	1:B:352:CYS:HB2	1.76	0.40
1:A:408:ASN:O	1:A:412:TYR:HB2	2.21	0.40
1:A:725:TYR:OH	1:A:946:LEU:O	2.32	0.40
1:C:547:ASN:N	1:C:547:ASN:OD1	2.54	0.40
1:C:1015:GLU:OE2	1:B:1023:ARG:HB3	2.22	0.40
1:B:30:ASN:ND2	1:B:61:ASN:HA	2.36	0.40
1:B:121:VAL:HG21	1:B:159:PHE:CD2	2.57	0.40
1:B:780:ASP:OD1	1:B:780:ASP:N	2.41	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	1082/1118 (97%)	1005 (93%)	75 (7%)	2 (0%)	47 79
1	B	1077/1118 (96%)	990 (92%)	87 (8%)	0	100 100
1	C	1086/1118 (97%)	1010 (93%)	76 (7%)	0	100 100
All	All	3245/3354 (97%)	3005 (93%)	238 (7%)	2 (0%)	54 84

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	606	VAL
1	A	402	ALA

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	947/970 (98%)	946 (100%)	1 (0%)	93 97
1	B	941/970 (97%)	938 (100%)	3 (0%)	92 95
1	C	950/970 (98%)	948 (100%)	2 (0%)	93 96
All	All	2838/2910 (98%)	2832 (100%)	6 (0%)	93 96

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	44	ARG
1	C	448	ARG
1	B	323	ILE
1	B	326	LEU
1	B	666	GLN
1	A	149	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	325	ASN
1	B	666	GLN
1	B	1038	GLN
1	A	1038	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

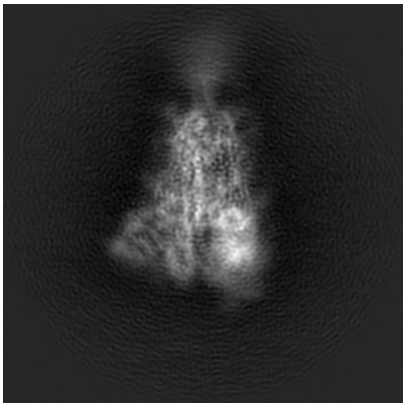
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-31998. These allow visual inspection of the internal detail of the map and identification of artifacts.

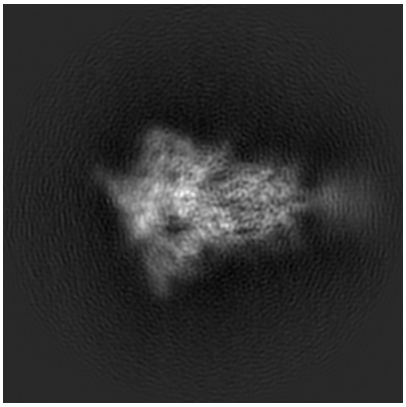
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

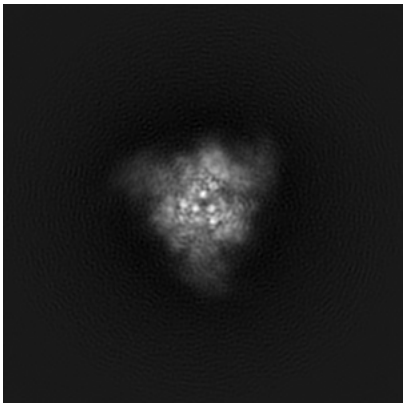
6.1.1 Primary map



X



Y

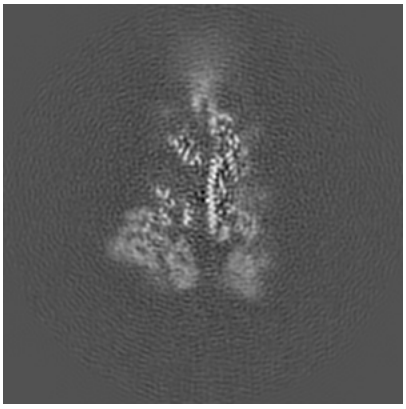


Z

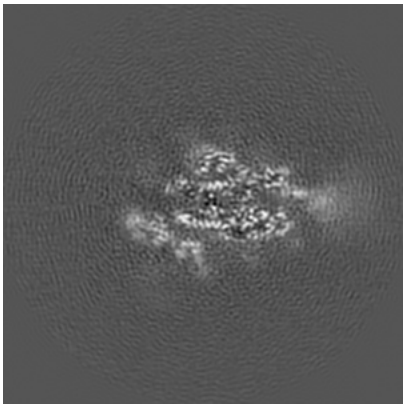
The images above show the map projected in three orthogonal directions.

6.2 Central slices

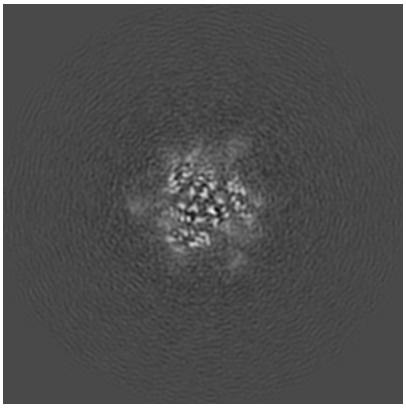
6.2.1 Primary map



X Index: 160



Y Index: 160

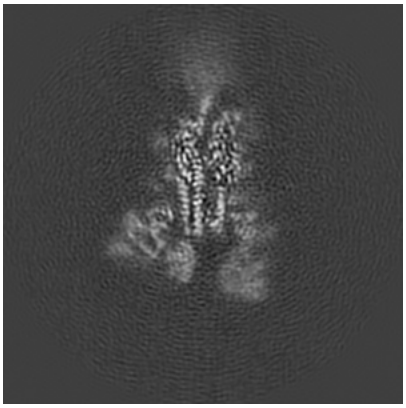


Z Index: 160

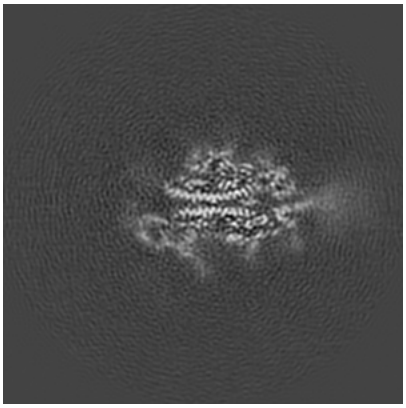
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

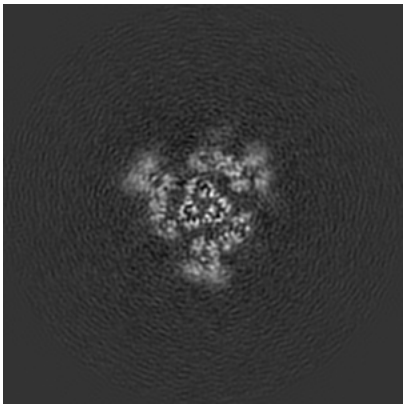
6.3.1 Primary map



X Index: 167



Y Index: 156



Z Index: 143

The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

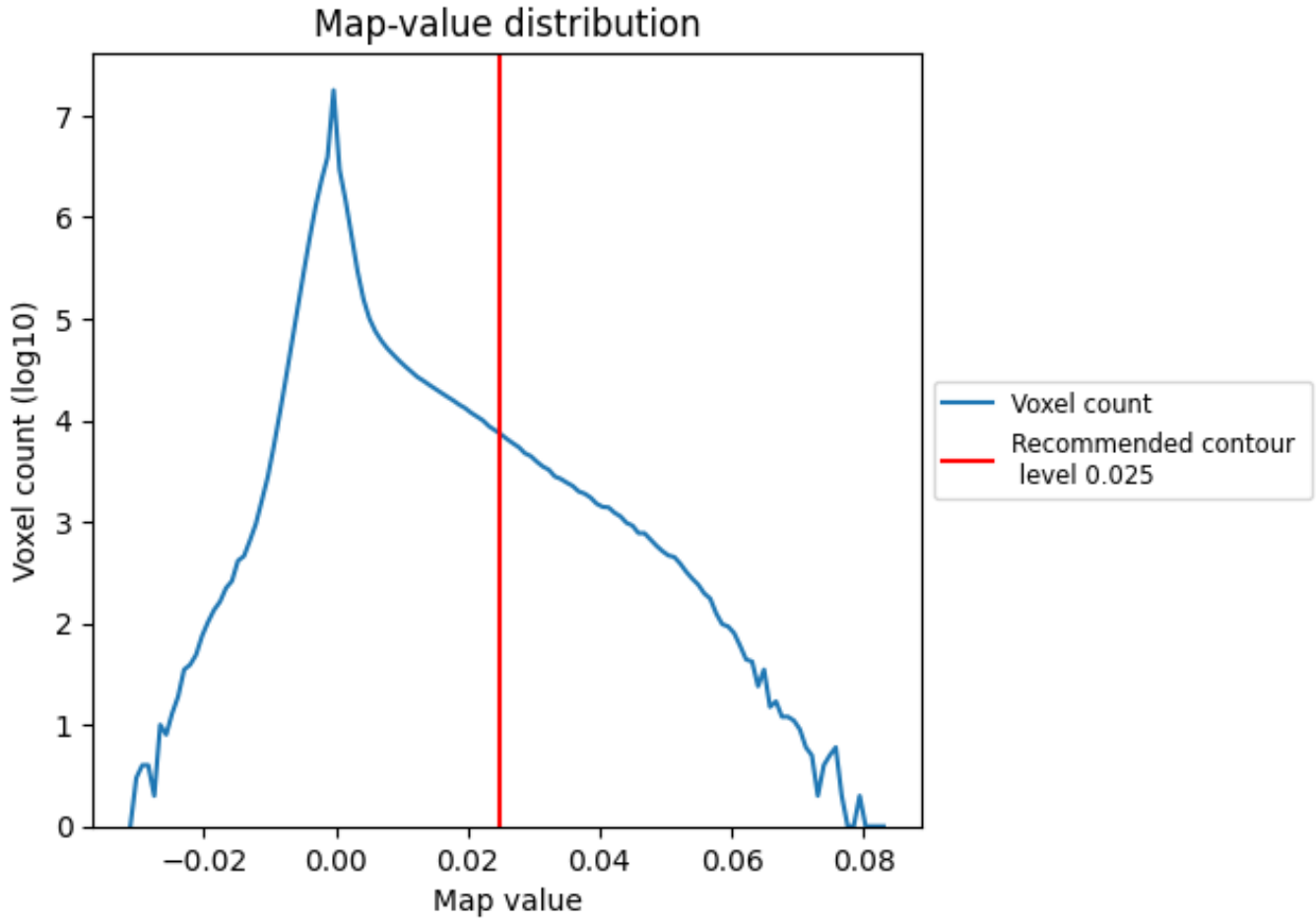
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

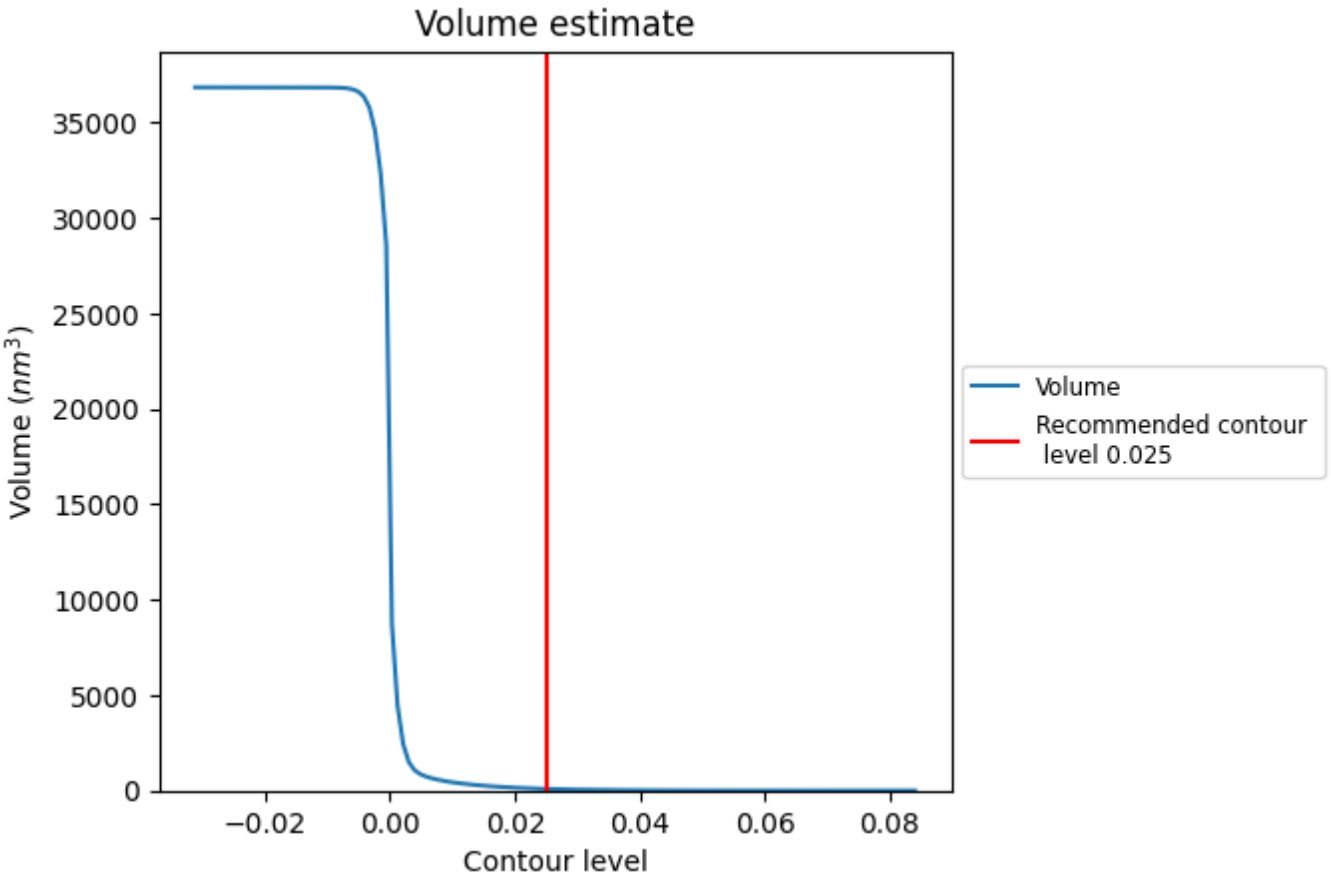
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

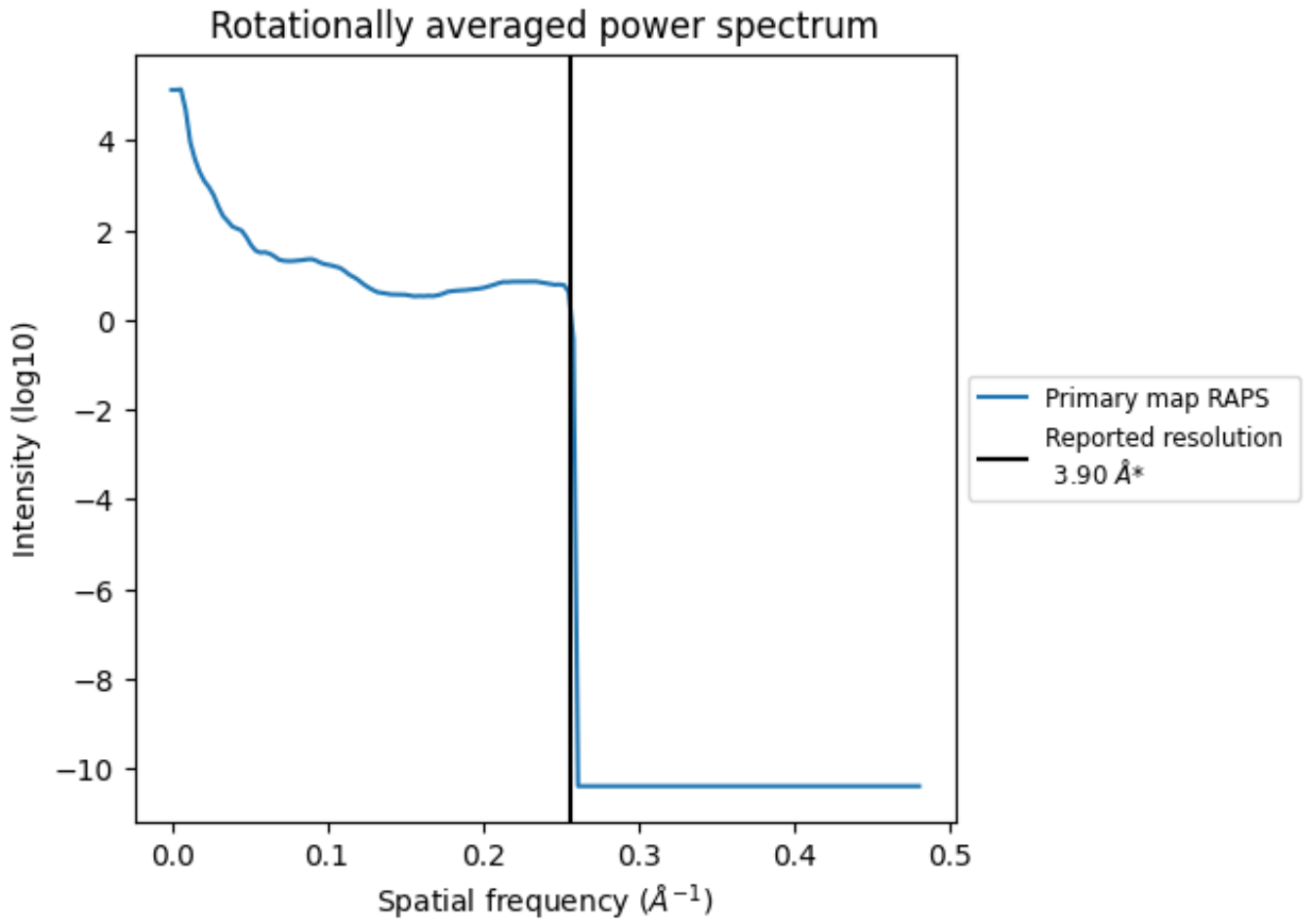
7.2 Volume estimate (i)



The volume at the recommended contour level is 86 nm^3; this corresponds to an approximate mass of 78 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.256 Å^{-1}

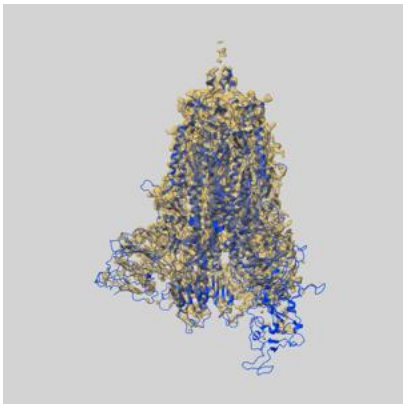
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

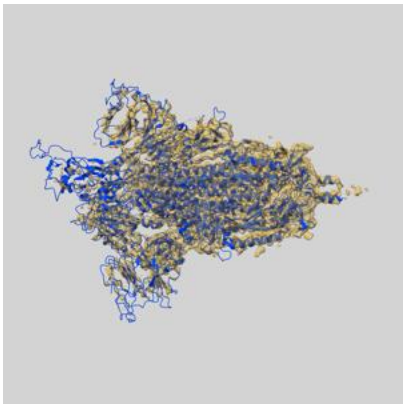
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-31998 and PDB model 7VHL. Per-residue inclusion information can be found in section 3 on page 6.

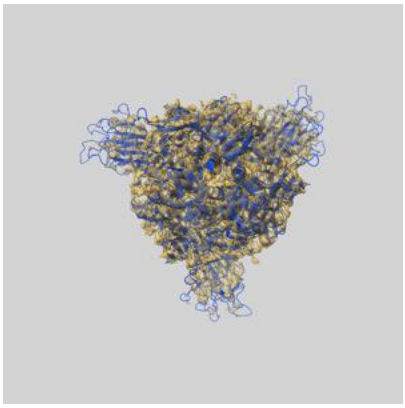
9.1 Map-model overlay



X



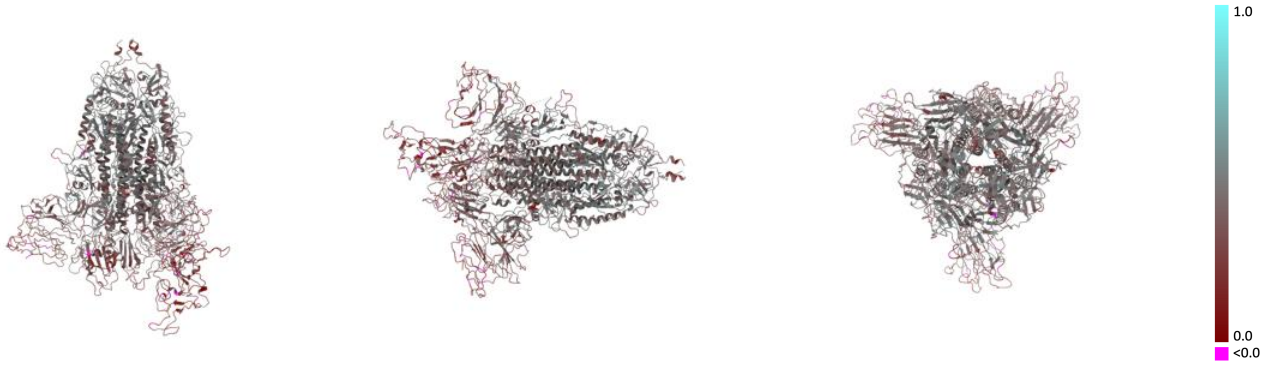
Y



Z

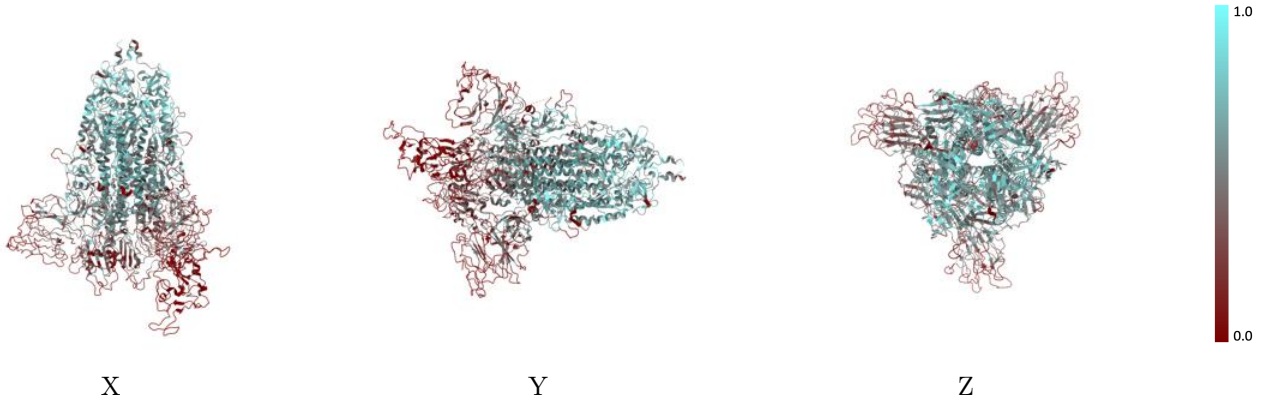
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



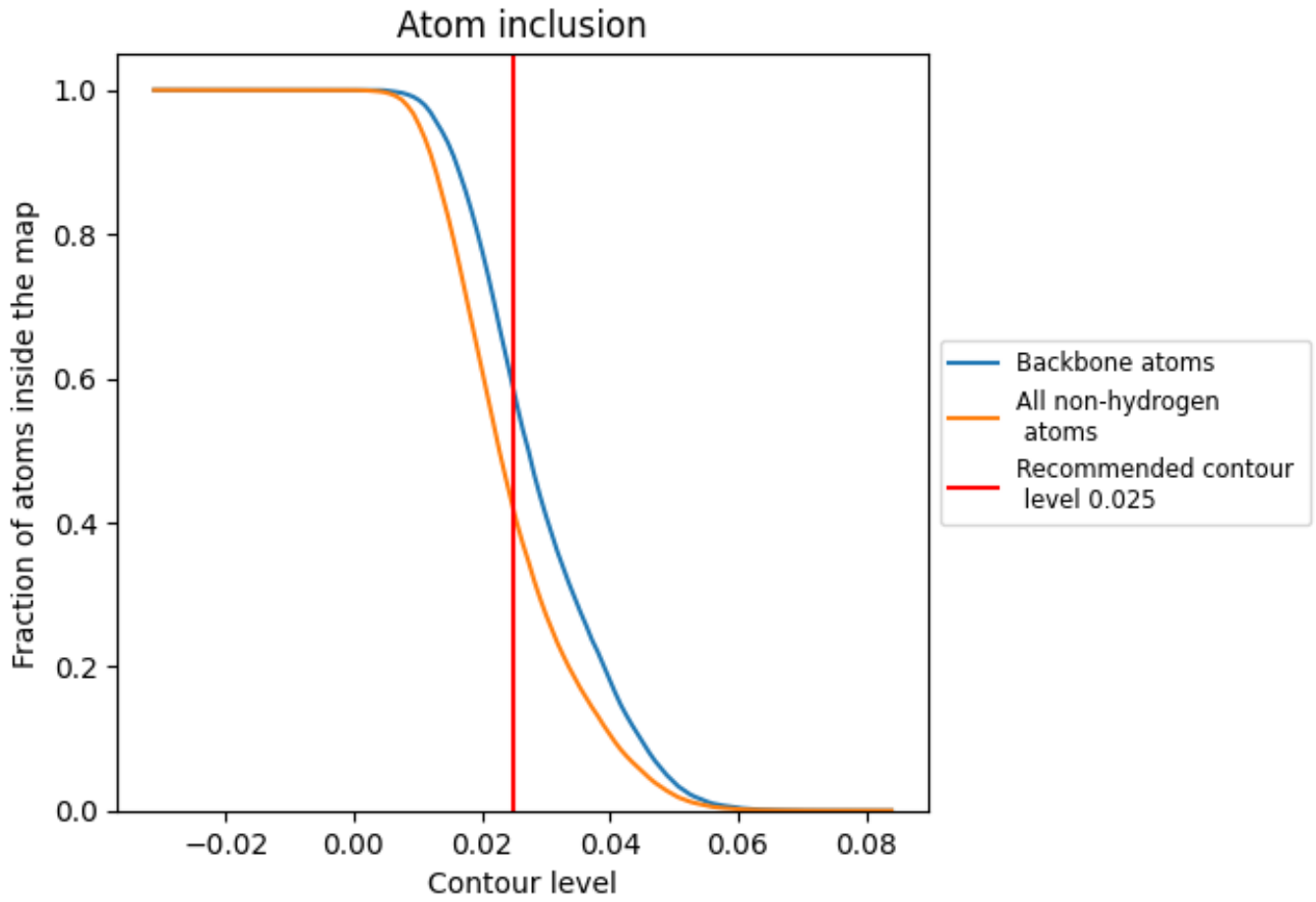
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model (i)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.025).

9.4 Atom inclusion (i)



At the recommended contour level, 58% of all backbone atoms, 42% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4160	0.3780
A	0.4367	0.3840
B	0.3799	0.3660
C	0.4311	0.3830