WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

May 12, 2025 – 08:55 PM EDT

PDB ID	:	6VVZ / pdb_00006vvz
EMDB ID	:	EMD-21408
Title	:	Mycobacterium tuberculosis RNAP S456L mutant transcription initiation intermediate structure with Sorangicin
Authors	:	Lilic, M.; Boyaci, H.; Chen, J.; Darst, S.A.; Campbell, E.A.
Deposited on	:	2020-02-18
Resolution	:	3.72 Å(reported)

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

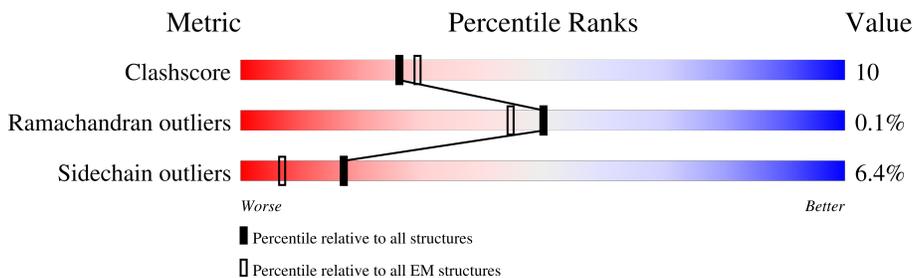|		
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.72 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	Percentile Ranks	Value
Clashscore		10
Ramachandran outliers		0.1%
Sidechain outliers		6.4%

Worse   *Better*

▌Percentile relative to all structures

▯Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	347	43% 21% • 35%
1	B	347	48% 19% • 32%
2	C	1179	66% 26% • 6%
3	D	1326	69% 25% • 5%
4	E	110	54% 20% • 25%
5	F	531	44% 16% 40%
6	J	111	61% 34% • •
7	M	162	67% 28% • •

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Mol	Chain	Length	Quality of chain
8	P	90	7%　　　59%　　　10%　　　31%
9	O	90	62%　　　10%　　　28%

2 Entry composition ⓘ

There are 12 unique types of molecules in this entry. The entry contains 29860 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	225	Total 1716	C 1080	N 296	O 338	S 2	0	0
1	B	237	Total 1759	C 1112	N 298	O 346	S 3	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	1111	Total 8577	C 5377	N 1504	O 1657	S 39	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	456	LEU	SER	engineered mutation	UNP V9Z879
C	1179	LEU	-	expression tag	UNP V9Z879
C	1180	ALA	-	expression tag	UNP V9Z879
C	1181	ARG	-	expression tag	UNP V9Z879
C	1182	HIS	-	expression tag	UNP V9Z879
C	1183	GLY	-	expression tag	UNP V9Z879
C	1184	GLY	-	expression tag	UNP V9Z879
C	1185	SER	-	expression tag	UNP V9Z879

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	1266	Total 9873	C 6184	N 1794	O 1853	S 42	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	GLY	-	expression tag	UNP A5U053

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PROTEIN DATA BANK

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Chain	Residue	Modelled	Actual	Comment	Reference
D	0	ALA	-	expression tag	UNP A5U053
D	1317	HIS	-	expression tag	UNP A5U053
D	1318	HIS	-	expression tag	UNP A5U053
D	1319	HIS	-	expression tag	UNP A5U053
D	1320	HIS	-	expression tag	UNP A5U053
D	1321	HIS	-	expression tag	UNP A5U053
D	1322	HIS	-	expression tag	UNP A5U053
D	1323	HIS	-	expression tag	UNP A5U053
D	1324	HIS	-	expression tag	UNP A5U053

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	E	83	Total	C	N	O	0	0
			649	414	108	127		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	1	GLY	-	expression tag	UNP A0A0T9N9K3

- Molecule 5 is a protein called RNA polymerase sigma factor SigA.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	319	Total	C	N	O	S	0	0
			2503	1563	456	475	9		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-2	GLY	-	expression tag	UNP P9WGI0
F	-1	PRO	-	expression tag	UNP P9WGI0
F	0	HIS	-	expression tag	UNP P9WGI0

- Molecule 6 is a protein called RNA polymerase-binding protein RbpA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	108	Total	C	N	O	S	0	0
			875	540	165	167	3		

- Molecule 7 is a protein called RNA polymerase-binding transcription factor CarD.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	M	159	Total	C	N	O	S	0	0
			1241	777	224	239	1		

- Molecule 8 is a DNA chain called DNA (62-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
8	P	62	Total	C	N	O	P	0	0
			1270	601	239	368	62		

- Molecule 9 is a DNA chain called DNA (65-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
9	O	65	Total	C	N	O	P	0	0
			1336	633	243	395	65		

- Molecule 10 is SORANGICIN A (CCD ID: SRN) (formula: $C_{47}H_{66}O_{11}$) (labeled as "Ligand of Interest" by depositor).
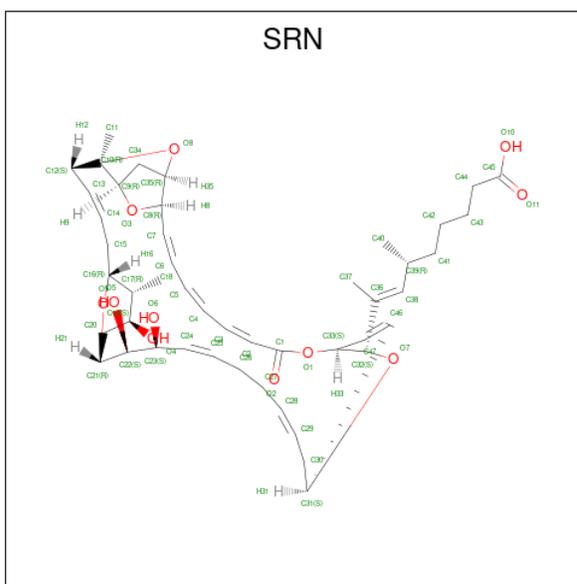
Mol	Chain	Residues	Atoms			AltConf
10	C	1	Total	C	O	0
			58	47	11	

- Molecule 11 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
11	D	2	Total	Zn	0
			2	2	

- Molecule 12 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
12	D	1	Total 1	Mg 1	0

3　Residue-property plots ⓘ

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: DNA-directed RNA polymerase subunit alpha

Chain A:

• Molecule 1: DNA-directed RNA polymerase subunit alpha

Chain B:

• Molecule 2: DNA-directed RNA polymerase subunit beta

Chain C:

• Molecule 3: DNA-directed RNA polymerase subunit beta'

Chain D:

69% 25% 5%

• Molecule 4: DNA-directed RNA polymerase subunit omega

Chain E:

| 54% | 20% | • | 25% |

• Molecule 5: RNA polymerase sigma factor SigA

Chain F:

| 44% | 16% | 40% |

ALA PRO GLY GLN THR ALA ASP ASP ASP GLU GLU ILE ALA GLU PRO THR GLU THR LYS ASP LYS ALA SER GLY ASP PHE VAL TRP ASP GLU GLU S209 E210 A211 L212 R213 Q214 A215 R216 K217 D218 A219 E220 L221 T222 A223 S224 A225 D226 R229 L232 K233 G236 K237 V238 E248

R252 T260 T264 R269 A276 D280 M281 M282 D289 N293 H294 L295 L296 E297 A298 N299 L300 R301 L302 S305 L306 A307 K308 T311 G312 R313 D319 Q322 N325 L326 G327 L328 I329 V332 E333 K334 F335 D336 Y337 T338 S344 T348 I351

R352 Q353 R367 M372 V375 R381 L386 L390 G391 R392 E393 E430 G431 D432 V446 A447 V448 D449 A450 V451 S452 Q459 L460 Q461 S462 V463 T466 R470 R476 Q485 T488 L489 D490 E491 I492 Y496 T499 R500 E501 R502 I503 R504 Q505

L514 V522 L523 L527 ASP

• Molecule 6: RNA polymerase-binding protein RbpA

Chain J:

61% 34%

MET ALA ASP R4 V5 L6 R10 L11 G12 A13 V14 S15 Y16 E17 R20 R27 Y32 R33 T34 D35 N36 F40 E41 V42 A45 G52 N58 G59 M60 E61 G62 T63 L64 I65 E66 L69 P72 K73 K76 P77 P78 D83 M84 L85 L86 E87 R88 R89

S90 I91 E92 L97 L98 K99 E100 R101 L102 E103 L104 I105 R109 R110 G111

• Molecule 7: RNA polymerase-binding transcription factor CarD

Chain M:

67% 28%

MET I2 V5 G6 V9 V10 Y11 G15 A16 A17 L18 V19 I22 E23 T24 R25 T26 I27 Q31 Y34 L35 V36 L37 K38 L44 R47 V48 N52 V56 E65 V70 F71 L74 R75 W85 S86 R87 R88 N92 K95 L96 A97 S98

V104 R109 W112 D115 Q116 G119 L120 S121 L128 R132 L135 V136 T145 D146 A160 ALA SER

• Molecule 8: DNA (62-MER)

Chain P:

7%

59% 10% 31%

DC DG DT DG DC DT DG DT DT DT DC C77 G78 C79 C80 C81 G82 C96 T97 G98 DC DC DA G102 T103 C104 A107 G126 T127 C128 C134 A135 G141 DG DT DC DA DT DC DC DA DT DA DG DC DC

• Molecule 9: DNA (65-MER)

Chain O:

62% 10% 28%

DG DG DC DT DA DT DG DG DA DT DG DA DC C14 G22 T23 T44 G45 T46 G51 T54 G72 C73 G76 C77 G78 DG DA DA DA DC DA DA DG DC DA DC DG DG

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	47371	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/Å^2)$	71	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	2.038	Depositor
Minimum map value	-0.711	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.089	Depositor
Recommended contour level	0.394	Depositor
Map size (Å)	332.8, 332.8, 332.8	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3, 1.3, 1.3	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, SRN, MG

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	0.39	0/1742	0.50	0/2370
1	B	0.35	0/1786	0.52	0/2435
2	C	0.41	0/8736	0.58	1/11851 (0.0%)
3	D	0.38	0/10037	0.53	0/13570
4	E	0.35	0/662	0.51	0/901
5	F	0.29	0/2534	0.50	1/3418 (0.0%)
6	J	0.29	0/891	0.53	0/1203
7	M	0.29	0/1257	0.58	0/1700
8	P	0.36	0/1424	0.53	0/2192
9	O	0.38	0/1497	0.55	0/2310
All	All	0.37	0/30566	0.54	2/41950 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1
2	C	0	1
3	D	0	2
All	All	0	4

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	F	448	VAL	N-CA-C	-6.98	105.98	112.96
2	C	584	ARG	CA-CB-CG	5.51	125.13	114.10

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	15	THR	Peptide
2	C	282	ARG	Peptide
3	D	501	ALA	Peptide
3	D	578	ARG	Peptide

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	1716	0	1756	48	0
1	B	1759	0	1783	40	0
2	C	8577	0	8496	204	0
3	D	9873	0	9938	205	0
4	E	649	0	645	14	0
5	F	2503	0	2518	56	0
6	J	875	0	850	26	0
7	M	1241	0	1259	28	0
8	P	1270	0	695	8	0
9	O	1336	0	732	7	0
10	C	58	0	63	11	0
11	D	2	0	0	0	0
12	D	1	0	0	0	0
All	All	29860	0	28735	576	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 10.

All (576) 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)
10:C:1201:SRN:C10	10:C:1201:SRN:C12	1.76	1.59
10:C:1201:SRN:O3	10:C:1201:SRN:C8	1.79	1.29
10:C:1201:SRN:O3	10:C:1201:SRN:C9	1.81	1.28
3:D:144:ARG:O	3:D:148:LEU:HB2	1.57	1.04

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:C:1201:SRN:C10	10:C:1201:SRN:C13	2.50	0.90
5:F:386:LEU:O	5:F:390:LEU:HB3	1.84	0.78
3:D:1169:ASP:HB2	3:D:1202:ALA:H	1.51	0.76
10:C:1201:SRN:C12	10:C:1201:SRN:C9	2.55	0.76
2:C:147:ILE:HG12	7:M:47:ARG:H	1.52	0.74
10:C:1201:SRN:C12	10:C:1201:SRN:C11	2.63	0.74
7:M:95:LYS:HZ3	7:M:104:VAL:HA	1.55	0.70
5:F:492:ILE:O	5:F:496:TYR:HB2	1.93	0.68
5:F:500:ARG:NH2	8:P:126:DG:N7	2.43	0.67
7:M:22:ILE:HA	7:M:35:LEU:HA	1.75	0.66
2:C:548:ILE:HG23	2:C:550:ALA:H	1.59	0.66
3:D:676:LEU:HD12	3:D:715:LYS:HB3	1.79	0.65
2:C:1051:MET:SD	6:J:10:ARG:NH1	2.70	0.65
3:D:739:PRO:HG2	3:D:742:LYS:HB2	1.80	0.64
1:A:2:LEU:HB3	1:B:143:GLY:HA2	1.78	0.64
3:D:824:VAL:HG11	3:D:852:ASN:HA	1.80	0.63
1:B:183:VAL:HA	1:B:188:ASP:H	1.62	0.63
2:C:74:ALA:HA	2:C:77:ARG:HE	1.64	0.63
3:D:924:THR:HG23	3:D:980:GLY:HA2	1.80	0.63
2:C:774:PRO:HD2	2:C:834:ASP:HB2	1.80	0.62
3:D:529:CYS:HB2	3:D:578:ARG:HH22	1.64	0.62
3:D:155:MET:HE1	3:D:219:LEU:HB3	1.82	0.62
3:D:360:LEU:HD21	5:F:329:ILE:HG21	1.80	0.62
5:F:280:ASP:HB2	6:J:105:ILE:HD13	1.80	0.62
5:F:220:GLU:O	5:F:229:ARG:NH1	2.32	0.61
1:A:6:ARG:HH22	1:B:217:GLU:HB3	1.65	0.61
2:C:150:GLN:HG3	7:M:44:LEU:HB3	1.83	0.61
2:C:583:PRO:HG2	2:C:584:ARG:HH21	1.67	0.60
2:C:62:GLU:HG3	2:C:70:TRP:HB2	1.83	0.60
2:C:654:SER:HG	2:C:657:TYR:H	1.49	0.60
3:D:646:ILE:O	3:D:650:LEU:HB2	2.02	0.60
3:D:688:MET:HB3	3:D:693:GLN:HE21	1.66	0.60
3:D:891:CYS:SG	3:D:963:ARG:NH2	2.75	0.60
2:C:102:SER:O	2:C:141:ASN:ND2	2.33	0.60
3:D:525:HIS:HE1	3:D:527:LEU:HD12	1.66	0.60
2:C:633:ARG:NH1	2:C:637:ASP:OD2	2.35	0.60
2:C:347:ARG:NH2	2:C:354:THR:O	2.34	0.59
2:C:881:ASP:N	2:C:881:ASP:OD1	2.33	0.59
2:C:771:ARG:NH2	2:C:781:LEU:O	2.36	0.59
3:D:243:GLU:HB3	3:D:247:ARG:HH21	1.66	0.59
2:C:1023:VAL:HA	3:D:730:THR:HG21	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:403:ARG:NH1	2:C:416:THR:O	2.35	0.59
3:D:71:LYS:O	6:J:27:ARG:NH1	2.36	0.59
3:D:108:LYS:O	3:D:386:ARG:NH1	2.35	0.59
2:C:453:ARG:NH2	2:C:501:SER:O	2.35	0.59
3:D:952:LEU:HD22	3:D:957:ILE:HD11	1.85	0.59
1:B:56:ILE:HG23	1:B:136:VAL:HG22	1.85	0.58
3:D:96:GLU:O	3:D:351:ASN:ND2	2.36	0.58
1:A:153:ARG:NH2	2:C:783:ASP:OD2	2.35	0.58
5:F:500:ARG:NH1	8:P:127:DT:O4	2.36	0.58
6:J:58:ASN:ND2	6:J:60:MET:SD	2.77	0.58
2:C:369:ASP:O	2:C:375:ASN:ND2	2.35	0.58
3:D:67:ARG:NH1	6:J:17:GLU:OE2	2.37	0.58
2:C:683:CYS:SG	2:C:684:ALA:N	2.76	0.57
2:C:938:TRP:HB2	2:C:1026:GLY:HA2	1.86	0.57
3:D:442:GLY:HA3	3:D:523:GLN:HB2	1.87	0.57
5:F:216:ARG:O	5:F:220:GLU:HB2	2.03	0.57
2:C:784:LEU:HA	2:C:790:VAL:HA	1.86	0.57
2:C:443:ASN:OD1	2:C:443:ASN:N	2.37	0.57
1:B:71:GLU:HG2	1:B:75:GLU:HB3	1.87	0.57
2:C:855:ARG:NH1	2:C:862:PRO:O	2.37	0.57
3:D:491:ILE:HG23	3:D:514:PRO:HG2	1.85	0.57
2:C:185:VAL:O	2:C:319:LYS:NZ	2.38	0.57
2:C:421:ARG:HH12	8:P:103:DT:H5"	1.70	0.57
6:J:85:LEU:HD12	6:J:88:ARG:HE	1.70	0.57
3:D:104:ILE:HD12	3:D:379:ASP:HB3	1.85	0.57
3:D:427:ARG:NH1	3:D:540:GLN:OE1	2.38	0.57
3:D:1058:GLY:H	3:D:1062:TYR:HA	1.69	0.57
3:D:1140:GLU:HA	3:D:1143:ARG:HD2	1.87	0.56
1:B:182:ARG:HG3	1:B:186:ARG:H	1.70	0.56
2:C:38:ARG:NH1	2:C:972:VAL:O	2.39	0.56
2:C:454:ARG:NH1	10:C:1201:SRN:O6	2.37	0.56
3:D:83:THR:OG1	3:D:84:ARG:N	2.36	0.56
2:C:758:ASP:N	2:C:758:ASP:OD1	2.35	0.56
2:C:1042:HIS:NE2	2:C:1063:PHE:O	2.37	0.56
3:D:245:VAL:O	3:D:249:GLY:HA3	2.05	0.56
3:D:1089:PHE:O	3:D:1097:ARG:N	2.39	0.56
2:C:380:THR:OG1	2:C:381:VAL:N	2.37	0.56
2:C:604:ARG:NH1	2:C:607:MET:SD	2.79	0.56
2:C:610:ASN:OD1	2:C:613:ARG:NH2	2.38	0.56
3:D:101:VAL:O	3:D:314:LEU:N	2.35	0.56
3:D:578:ARG:H	3:D:581:MET:HE3	1.70	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1204:ARG:NH1	3:D:1205:PRO:O	2.38	0.56
1:B:106:THR:HA	1:B:124:HIS:HA	1.87	0.56
2:C:173:ARG:NH1	2:C:437:SER:OG	2.39	0.56
2:C:635:ALA:HB2	2:C:713:MET:HG2	1.88	0.56
3:D:1087:ARG:NH1	3:D:1110:GLN:OE1	2.39	0.56
1:A:142:ARG:NH2	1:B:230:GLU:OE1	2.38	0.56
2:C:38:ARG:HG2	2:C:973:SER:HB3	1.88	0.56
2:C:959:LEU:HD22	2:C:960:PRO:HD2	1.87	0.56
2:C:1050:SER:OG	2:C:1051:MET:N	2.38	0.56
3:D:74:ILE:HD12	6:J:42:VAL:HG13	1.87	0.56
3:D:1274:PRO:HG3	4:E:79:VAL:HG11	1.88	0.56
5:F:248:GLU:OE2	6:J:101:ARG:NH2	2.38	0.56
3:D:1055:LEU:HA	3:D:1064:ILE:HG23	1.88	0.55
1:B:71:GLU:OE2	1:B:79:ASN:ND2	2.38	0.55
2:C:265:ASP:OD1	2:C:265:ASP:N	2.39	0.55
1:B:18:ARG:HG3	1:B:197:GLU:HB2	1.89	0.55
2:C:482:ARG:NH2	2:C:536:GLU:OE1	2.38	0.55
2:C:785:ASP:OD2	2:C:787:ARG:NH1	2.39	0.55
3:D:290:LEU:HA	3:D:293:LEU:HD12	1.89	0.55
3:D:641:ARG:HB2	3:D:657:GLN:HE21	1.70	0.55
1:A:225:LEU:O	1:B:205:ARG:NH1	2.39	0.55
4:E:65:ASN:O	4:E:69:ASN:ND2	2.40	0.55
2:C:185:VAL:HG12	2:C:204:VAL:HG22	1.89	0.55
3:D:144:ARG:NH1	3:D:226:PHE:O	2.39	0.55
1:A:9:LEU:HB2	1:B:221:LEU:HB3	1.89	0.55
2:C:613:ARG:NH1	10:C:1201:SRN:O5	2.39	0.55
3:D:20:ILE:HD13	3:D:318:PRO:HD3	1.89	0.55
3:D:262:GLN:HG3	3:D:310:MET:HE1	1.88	0.55
1:A:53:SER:HA	1:A:164:VAL:HG23	1.89	0.55
2:C:1067:ARG:NH2	3:D:419:GLY:O	2.39	0.55
3:D:1190:ASN:HA	3:D:1193:VAL:HG12	1.87	0.55
2:C:519:VAL:HA	2:C:524:VAL:HA	1.88	0.55
3:D:387:ARG:NH1	5:F:225:ALA:O	2.40	0.55
3:D:24:SER:OG	3:D:25:TYR:N	2.39	0.54
3:D:605:ASP:OD1	3:D:605:ASP:N	2.40	0.54
3:D:928:ASP:OD1	3:D:940:ARG:N	2.40	0.54
5:F:501:GLU:OE1	8:P:128:DC:N4	2.39	0.54
3:D:329:GLN:HG2	6:J:11:LEU:HD21	1.90	0.54
1:A:71:GLU:HB3	1:A:75:GLU:HB3	1.88	0.54
2:C:168:ILE:HB	2:C:173:ARG:HD2	1.89	0.54
2:C:188:ASP:OD1	2:C:188:ASP:N	2.41	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:68:VAL:HB	6:J:20:ARG:HH21	1.72	0.54
3:D:642:PRO:HG2	3:D:647:GLU:HB2	1.90	0.54
3:D:387:ARG:HH22	5:F:225:ALA:HA	1.73	0.54
3:D:767:HIS:O	3:D:771:ASN:ND2	2.41	0.54
7:M:115:ASP:HA	7:M:119:GLY:H	1.71	0.54
2:C:740:ARG:O	2:C:744:GLU:HB2	2.08	0.54
2:C:822:ARG:NH1	2:C:828:LYS:O	2.40	0.54
3:D:69:ARG:NH2	5:F:485:GLN:OE1	2.40	0.53
3:D:904:ARG:HB3	3:D:910:LEU:HD13	1.90	0.53
2:C:50:VAL:O	2:C:633:ARG:NH2	2.40	0.53
2:C:494:ILE:HD13	3:D:860:LEU:HB3	1.89	0.53
2:C:1131:LEU:HD23	3:D:402:LEU:HD22	1.90	0.53
2:C:808:PRO:HA	2:C:832:VAL:HG12	1.89	0.53
3:D:37:ARG:NH2	9:O:44:DT:OP1	2.41	0.53
3:D:245:VAL:O	3:D:249:GLY:CA	2.56	0.53
5:F:322:GLN:OE1	5:F:325:ASN:ND2	2.41	0.53
7:M:11:TYR:O	7:M:15:GLY:N	2.42	0.53
2:C:736:ILE:HD11	2:C:916:ILE:HD12	1.90	0.53
4:E:48:SER:OG	4:E:49:SER:N	2.41	0.53
5:F:281:MET:HG3	5:F:282:MET:HE2	1.89	0.53
2:C:721:VAL:HG11	2:C:1028:MET:HB2	1.91	0.53
3:D:1168:ILE:HA	3:D:1177:PRO:HA	1.91	0.53
7:M:6:GLY:H	7:M:19:VAL:HG23	1.73	0.53
1:A:57:ASP:OD1	1:A:57:ASP:N	2.41	0.53
5:F:326:LEU:HA	5:F:329:ILE:HD12	1.91	0.53
2:C:224:VAL:HB	2:C:232:GLN:HG3	1.91	0.53
2:C:403:ARG:HD2	2:C:417:LEU:HA	1.90	0.53
2:C:582:SER:OG	2:C:583:PRO:O	2.26	0.53
3:D:1235:ASP:OD1	3:D:1235:ASP:N	2.36	0.52
2:C:256:GLU:HG2	2:C:259:ARG:HH11	1.73	0.52
2:C:563:ARG:HB3	2:C:567:GLU:HB2	1.91	0.52
2:C:678:SER:OG	2:C:679:ASN:N	2.43	0.52
2:C:814:LEU:O	2:C:819:ARG:NH2	2.41	0.52
2:C:1015:SER:OG	2:C:1016:GLY:N	2.42	0.52
5:F:295:LEU:O	5:F:299:ASN:ND2	2.39	0.52
3:D:191:ALA:HA	3:D:194:ARG:HE	1.74	0.52
2:C:150:GLN:HB2	2:C:414:PRO:HG2	1.91	0.52
2:C:451:HIS:HD2	10:C:1201:SRN:H23	1.73	0.52
1:B:36:ASN:ND2	2:C:1015:SER:O	2.41	0.52
2:C:232:GLN:NE2	2:C:233:PRO:O	2.43	0.52
2:C:236:VAL:HG12	2:C:277:ILE:HG12	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:809:LYS:HB2	2:C:833:ARG:HB2	1.91	0.52
5:F:289:ASP:O	5:F:293:ASN:ND2	2.43	0.52
3:D:1068:PRO:HD3	3:D:1074:GLU:HA	1.91	0.52
2:C:425:ALA:O	2:C:429:GLU:HB2	2.09	0.52
7:M:18:LEU:HB2	7:M:38:LYS:HE3	1.92	0.52
3:D:38:THR:HG23	3:D:40:LYS:H	1.74	0.52
5:F:392:ARG:NH1	5:F:393:GLU:O	2.43	0.52
7:M:74:LEU:HG	7:M:75:ARG:HG3	1.92	0.52
1:A:186:ARG:NH1	1:B:149:ALA:O	2.43	0.52
2:C:1045:SER:OG	2:C:1046:THR:N	2.43	0.52
5:F:293:ASN:HA	5:F:296:LEU:HD12	1.91	0.52
2:C:113:ASP:HB2	2:C:132:PRO:HD2	1.91	0.51
2:C:144:THR:O	7:M:52:ASN:ND2	2.42	0.51
2:C:232:GLN:HE22	2:C:236:VAL:HB	1.74	0.51
3:D:613:SER:N	3:D:617:GLU:OE1	2.42	0.51
1:A:100:GLN:NE2	1:A:132:GLY:O	2.42	0.51
2:C:485:PRO:O	3:D:857:ARG:NH2	2.42	0.51
3:D:173:ARG:HH21	3:D:201:GLY:HA2	1.74	0.51
3:D:412:ARG:NH1	3:D:415:GLN:OE1	2.41	0.51
3:D:1170:SER:HA	3:D:1175:PHE:HB2	1.92	0.51
5:F:328:LEU:HD23	5:F:351:ILE:HD11	1.93	0.51
7:M:24:THR:HB	7:M:31:GLN:HB3	1.93	0.51
1:A:64:THR:OG1	1:A:65:THR:N	2.42	0.51
1:A:99:LYS:NZ	1:A:109:ASP:OD2	2.40	0.51
1:A:144:ARG:NH1	1:B:27:GLU:OE2	2.43	0.51
3:D:101:VAL:HG13	3:D:375:GLN:HE22	1.76	0.51
3:D:326:PRO:O	3:D:338:SER:OG	2.29	0.51
4:E:60:ARG:NH2	4:E:80:GLY:O	2.44	0.51
5:F:502:ARG:NH1	5:F:505:GLN:OE1	2.43	0.51
6:J:34:THR:HA	6:J:62:GLY:HA2	1.93	0.51
1:A:3:ILE:O	1:B:144:ARG:NH2	2.42	0.51
1:B:128:LEU:HD11	1:B:134:LEU:HD22	1.93	0.51
3:D:35:ASN:HD22	3:D:38:THR:HG22	1.76	0.51
3:D:331:ASP:OD1	3:D:331:ASP:N	2.42	0.51
2:C:758:ASP:HB3	2:C:868:LEU:HD23	1.92	0.51
2:C:215:ASP:HB2	2:C:223:GLY:HA3	1.93	0.51
2:C:351:GLY:O	2:C:352:GLN:NE2	2.44	0.51
2:C:740:ARG:NH1	2:C:744:GLU:OE1	2.43	0.50
2:C:749:SER:OG	2:C:751:HIS:NE2	2.43	0.50
3:D:475:MET:HE2	3:D:480:ARG:HG3	1.93	0.50
3:D:966:LEU:HD11	3:D:1155:GLU:HG2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:238:VAL:HG21	5:F:297:GLU:HB3	1.93	0.50
2:C:207:SER:OG	2:C:307:ASP:O	2.28	0.50
2:C:434:SER:OG	2:C:435:GLN:N	2.42	0.50
3:D:1036:GLU:HB3	3:D:1038:ARG:HG2	1.92	0.50
2:C:214:PHE:HD1	2:C:224:VAL:HG13	1.75	0.50
2:C:587:VAL:HG22	2:C:591:THR:HB	1.92	0.50
2:C:759:ALA:O	2:C:866:ASN:N	2.39	0.50
2:C:945:LYS:HA	2:C:965:GLU:HA	1.93	0.50
5:F:463:VAL:O	5:F:466:THR:OG1	2.28	0.50
1:A:102:PRO:HD3	1:A:130:ASP:HA	1.93	0.50
3:D:444:PRO:HG2	3:D:447:MET:HB3	1.93	0.50
1:A:99:LYS:HG2	1:A:105:VAL:HG22	1.94	0.50
1:A:153:ARG:HD2	2:C:797:ARG:HE	1.76	0.50
5:F:260:THR:O	5:F:264:THR:OG1	2.26	0.50
5:F:311:THR:OG1	5:F:312:GLY:N	2.44	0.50
5:F:449:ASP:OD1	5:F:449:ASP:N	2.40	0.50
1:B:199:LYS:HG3	1:B:201:SER:H	1.77	0.50
2:C:271:ASP:HA	2:C:274:LEU:HB2	1.93	0.50
2:C:625:LEU:HA	2:C:971:ILE:HG22	1.94	0.50
2:C:1138:LEU:HB2	3:D:9:GLU:HB3	1.94	0.50
3:D:137:THR:OG1	3:D:267:ASN:ND2	2.38	0.50
3:D:169:GLU:HB3	3:D:208:ILE:HD13	1.93	0.50
1:A:43:LEU:HA	1:A:171:VAL:HG11	1.94	0.50
1:B:102:PRO:HB3	1:B:130:ASP:HA	1.93	0.50
2:C:45:ARG:HH12	2:C:47:PRO:HG3	1.77	0.50
2:C:71:ARG:NH1	2:C:82:PRO:O	2.45	0.50
2:C:762:THR:OG1	2:C:763:LYS:N	2.44	0.50
2:C:664:ASN:N	2:C:664:ASN:OD1	2.44	0.50
3:D:527:LEU:HD11	3:D:717:LYS:HB2	1.94	0.50
2:C:542:ALA:HB3	2:C:579:MET:HG3	1.93	0.49
2:C:611:MET:HG3	2:C:1033:LEU:HD21	1.94	0.49
2:C:723:ILE:O	2:C:919:THR:OG1	2.30	0.49
2:C:760:ARG:HG2	2:C:865:VAL:HG22	1.94	0.49
3:D:278:ARG:HB3	3:D:282:ARG:HH21	1.76	0.49
3:D:500:ARG:NH2	3:D:539:ASP:OD2	2.45	0.49
7:M:71:PHE:HA	7:M:74:LEU:HD22	1.94	0.49
2:C:650:ILE:HG21	2:C:653:VAL:HG13	1.94	0.49
2:C:705:GLY:N	2:C:708:THR:OG1	2.44	0.49
2:C:907:LEU:HD11	2:C:1001:LEU:HB3	1.94	0.49
1:B:41:THR:HG21	1:B:215:LEU:HG	1.94	0.49
2:C:947:ASP:OD1	2:C:947:ASP:N	2.41	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:589:THR:HG21	3:D:688:MET:HG2	1.94	0.49
1:A:10:SER:OG	1:A:22:VAL:O	2.31	0.49
1:A:155:SER:OG	1:A:156:GLY:N	2.44	0.49
1:A:173:LYS:HB3	1:A:197:GLU:HB3	1.94	0.49
1:B:97:LEU:HB3	1:B:136:VAL:HB	1.95	0.49
1:B:200:ASN:OD1	1:B:200:ASN:N	2.39	0.49
3:D:651:PHE:HE2	3:D:655:GLY:HA2	1.76	0.49
2:C:240:ALA:HA	2:C:274:LEU:HD22	1.93	0.49
2:C:1051:MET:HE3	3:D:328:VAL:HG21	1.93	0.49
2:C:288:THR:HG23	2:C:291:SER:HB3	1.94	0.49
3:D:1247:GLY:O	3:D:1251:ASN:ND2	2.42	0.49
2:C:354:THR:HA	2:C:365:VAL:H	1.77	0.49
3:D:554:GLU:O	3:D:558:LEU:HB2	2.13	0.49
5:F:336:ASP:OD1	5:F:338:THR:OG1	2.28	0.49
3:D:432:VAL:HG13	3:D:434:PRO:HD3	1.95	0.49
5:F:344:SER:O	5:F:348:THR:OG1	2.31	0.48
6:J:88:ARG:HG2	6:J:89:ARG:HG2	1.95	0.48
3:D:1208:MET:HG3	3:D:1213:ALA:HB2	1.95	0.48
1:B:104:GLU:HA	1:B:127:THR:HA	1.94	0.48
2:C:646:GLU:OE1	2:C:662:HIS:ND1	2.46	0.48
3:D:767:HIS:CE1	3:D:771:ASN:HD21	2.32	0.48
2:C:101:GLY:O	2:C:142:ASN:ND2	2.47	0.48
2:C:715:LEU:N	2:C:1029:TYR:OH	2.46	0.48
3:D:222:ILE:HG13	3:D:244:LEU:HD12	1.95	0.48
2:C:789:ILE:HD13	2:C:850:ILE:HD13	1.95	0.48
1:B:28:PRO:HA	1:B:29:GLY:HA2	1.58	0.48
2:C:90:LEU:O	2:C:94:SER:N	2.44	0.48
3:D:329:GLN:HA	3:D:335:PHE:HA	1.95	0.48
3:D:568:PRO:O	3:D:1153:HIS:NE2	2.35	0.48
1:A:183:VAL:HG13	1:A:185:GLN:H	1.78	0.48
2:C:927:ASN:OD1	2:C:927:ASN:N	2.46	0.48
3:D:246:ASP:N	3:D:246:ASP:OD1	2.42	0.48
3:D:912:ARG:HG3	3:D:916:ILE:HD12	1.96	0.48
7:M:115:ASP:HB3	7:M:120:LEU:HD13	1.94	0.48
2:C:783:ASP:O	2:C:791:ARG:NH2	2.47	0.48
2:C:807:THR:O	2:C:833:ARG:N	2.47	0.48
3:D:384:ASN:ND2	3:D:391:VAL:O	2.40	0.48
1:A:83:LEU:HA	1:A:120:ASN:HD21	1.78	0.48
1:A:151:GLN:NE2	2:C:795:GLU:OE2	2.42	0.48
1:B:11:GLU:HG3	1:B:21:PHE:HE1	1.78	0.48
2:C:755:HIS:NE2	2:C:843:GLU:OE1	2.40	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:770:THR:OG1	2:C:771:ARG:N	2.46	0.48
6:J:90:SER:OG	6:J:92:GLU:OE1	2.31	0.48
7:M:88:ARG:O	7:M:92:ASN:ND2	2.47	0.48
1:A:104:GLU:HG3	1:A:124:HIS:HD2	1.78	0.48
1:A:219:PHE:HE1	1:B:34:LEU:HB2	1.78	0.48
1:A:184:GLU:OE1	1:A:186:ARG:NH2	2.44	0.47
2:C:607:MET:O	2:C:611:MET:HB2	2.14	0.47
2:C:1058:GLY:O	2:C:1062:GLN:NE2	2.47	0.47
3:D:405:LEU:O	3:D:412:ARG:N	2.46	0.47
4:E:52:ALA:O	4:E:56:TYR:HB2	2.14	0.47
7:M:34:TYR:HB3	7:M:47:ARG:HG3	1.96	0.47
7:M:70:VAL:O	7:M:109:ARG:NH1	2.45	0.47
7:M:132:ARG:O	7:M:136:VAL:HB	2.13	0.47
2:C:313:ARG:HG3	2:C:331:SER:HA	1.96	0.47
2:C:372:HIS:NE2	2:C:537:ASP:OD2	2.46	0.47
2:C:435:GLN:HA	10:C:1201:SRN:H5	1.97	0.47
2:C:455:LEU:HD21	2:C:500:LEU:HG	1.96	0.47
5:F:297:GLU:HA	5:F:300:LEU:HD12	1.96	0.47
2:C:429:GLU:OE2	2:C:433:THR:OG1	2.32	0.47
2:C:454:ARG:HE	2:C:497:ILE:HG22	1.79	0.47
3:D:389:ARG:HH12	5:F:226:ASP:HB2	1.80	0.47
2:C:994:PRO:HB3	2:C:999:ASP:H	1.79	0.47
3:D:136:ILE:HA	3:D:254:GLY:HA2	1.96	0.47
5:F:305:SER:HA	5:F:308:LYS:HD2	1.97	0.47
1:A:56:ILE:HB	1:A:59:VAL:HG22	1.97	0.47
2:C:473:ARG:NH1	2:C:492:PRO:O	2.45	0.47
3:D:943:ASP:OD2	3:D:981:ARG:NE	2.46	0.47
4:E:38:PRO:HG2	4:E:43:LEU:HD11	1.97	0.47
4:E:40:ILE:HA	4:E:43:LEU:HB2	1.97	0.47
2:C:675:PHE:N	2:C:685:ASN:OD1	2.44	0.47
3:D:408:GLY:O	3:D:414:ARG:NH1	2.47	0.47
3:D:537:ASP:N	3:D:537:ASP:OD1	2.38	0.47
3:D:1033:GLU:HB2	3:D:1038:ARG:HB2	1.97	0.47
3:D:327:MET:HG2	3:D:335:PHE:HD2	1.80	0.47
3:D:968:CYS:SG	3:D:970:THR:OG1	2.72	0.47
2:C:543:GLN:NE2	2:C:580:ASP:OD2	2.47	0.47
10:C:1201:SRN:O3	10:C:1201:SRN:C35	2.55	0.47
3:D:386:ARG:HH21	3:D:1230:THR:HG21	1.79	0.47
3:D:1054:ARG:HB3	3:D:1065:THR:HB	1.95	0.47
7:M:10:VAL:HA	7:M:16:ALA:HA	1.96	0.47
1:A:18:ARG:HH12	2:C:996:ARG:HH12	1.62	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:144:THR:OG1	7:M:52:ASN:ND2	2.47	0.47
2:C:535:GLU:O	2:C:539:HIS:ND1	2.48	0.47
2:C:717:LYS:NZ	2:C:746:VAL:O	2.42	0.47
3:D:428:SER:OG	3:D:429:VAL:N	2.46	0.47
2:C:704:ASP:OD2	2:C:710:ASP:N	2.44	0.46
3:D:1055:LEU:N	3:D:1101:ASP:OD1	2.43	0.46
7:M:87:ARG:HH22	9:O:51:DG:H8	1.63	0.46
3:D:592:VAL:HG21	3:D:630:ARG:HH21	1.80	0.46
3:D:611:VAL:HG12	3:D:634:LYS:HB2	1.96	0.46
1:B:56:ILE:HG12	1:B:136:VAL:HG13	1.96	0.46
3:D:73:ILE:HD12	6:J:45:ALA:HB2	1.97	0.46
3:D:241:TYR:OH	3:D:254:GLY:O	2.29	0.46
9:O:22:DG:H2'	9:O:23:DT:H71	1.97	0.46
3:D:812:THR:HB	3:D:815:ARG:HH21	1.80	0.46
3:D:1176:LEU:O	3:D:1179:SER:OG	2.34	0.46
1:B:69:VAL:HG12	1:B:128:LEU:HG	1.98	0.46
2:C:239:LYS:HB3	2:C:270:THR:HA	1.96	0.46
3:D:469:ILE:HD11	5:F:452:SER:HB2	1.98	0.46
3:D:487:LEU:HD23	3:D:516:LEU:HD11	1.97	0.46
5:F:381:ARG:NH2	8:P:104:DC:O3'	2.48	0.46
3:D:778:TRP:CD2	3:D:835:PRO:HG3	2.51	0.46
4:E:47:VAL:HG21	4:E:53:LEU:HB2	1.98	0.46
4:E:98:GLU:HB3	4:E:104:LEU:HD11	1.97	0.46
2:C:238:LEU:HD13	2:C:241:LEU:HD23	1.96	0.46
2:C:797:ARG:N	2:C:800:ASP:OD2	2.41	0.46
3:D:565:ILE:HG23	3:D:575:ALA:HB3	1.97	0.46
3:D:1167:ILE:O	3:D:1178:GLY:N	2.48	0.46
2:C:329:THR:OG1	2:C:330:SER:N	2.49	0.46
2:C:995:ASN:N	2:C:995:ASN:OD1	2.42	0.46
3:D:32:GLU:HG2	5:F:367:ARG:HD3	1.98	0.46
3:D:74:ILE:HG12	3:D:81:GLU:HB2	1.97	0.46
1:A:149:ALA:N	1:A:165:ASP:OD1	2.48	0.46
3:D:1044:ALA:N	3:D:1115:SER:O	2.48	0.46
6:J:15:SER:OG	6:J:16:TYR:N	2.47	0.46
6:J:36:ASN:OD1	6:J:36:ASN:N	2.40	0.46
3:D:142:GLU:O	3:D:146:ASN:ND2	2.40	0.46
3:D:392:THR:HA	3:D:398:PRO:HA	1.97	0.46
3:D:958:THR:OG1	3:D:959:GLN:OE1	2.32	0.46
7:M:35:LEU:N	7:M:48:VAL:O	2.44	0.46
2:C:89:VAL:HG11	2:C:389:ILE:HG22	1.99	0.45
2:C:449:LEU:HD13	2:C:638:ALA:HA	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:809:LYS:H	2:C:832:VAL:HA	1.80	0.45
2:C:981:GLN:N	2:C:984:GLU:OE1	2.44	0.45
3:D:271:ASP:OD1	3:D:303:GLN:NE2	2.47	0.45
3:D:305:SER:OG	3:D:307:ASN:ND2	2.49	0.45
3:D:1045:PRO:O	3:D:1111:LEU:N	2.43	0.45
1:A:184:GLU:O	1:A:185:GLN:NE2	2.49	0.45
2:C:191:ILE:HA	2:C:198:THR:HA	1.99	0.45
3:D:627:LEU:HD13	3:D:668:LEU:HD12	1.97	0.45
5:F:461:GLN:OE1	5:F:476:ARG:NH2	2.46	0.45
2:C:106:SER:OG	2:C:107:PHE:N	2.49	0.45
2:C:717:LYS:HG3	2:C:746:VAL:HG12	1.97	0.45
2:C:760:ARG:N	2:C:767:GLU:OE1	2.42	0.45
3:D:612:TYR:HB2	3:D:635:VAL:HG12	1.98	0.45
5:F:470:ARG:HG2	5:F:496:TYR:HE1	1.81	0.45
2:C:227:ASP:OD1	2:C:228:ARG:NH1	2.49	0.45
2:C:577:ASP:OD1	2:C:577:ASP:N	2.49	0.45
2:C:294:THR:O	2:C:298:ASN:N	2.48	0.45
2:C:926:MET:HB3	2:C:926:MET:HE3	1.82	0.45
3:D:277:LEU:HB3	3:D:296:LEU:HD22	1.98	0.45
2:C:730:ASN:ND2	2:C:917:LEU:O	2.41	0.45
2:C:464:SER:OG	8:P:96:DC:OP1	2.27	0.45
3:D:1046:ILE:HA	3:D:1110:GLN:HA	1.99	0.45
1:A:24:GLU:HB3	1:A:191:LYS:HG3	1.97	0.45
3:D:1220:TRP:NE1	3:D:1241:ARG:O	2.50	0.45
5:F:217:LYS:HD3	5:F:217:LYS:HA	1.77	0.45
1:A:51:VAL:O	1:A:166:SER:OG	2.33	0.45
2:C:757:ILE:HD12	2:C:757:ILE:HA	1.81	0.45
3:D:1182:ASP:OD2	3:D:1185:GLU:N	2.49	0.45
2:C:716:GLY:N	2:C:1029:TYR:OH	2.43	0.44
3:D:56:ARG:HG2	6:J:13:ALA:H	1.82	0.44
3:D:97:LEU:HD11	3:D:317:VAL:HG23	1.98	0.44
2:C:649:VAL:HA	2:C:695:ARG:HA	1.98	0.44
2:C:719:LEU:HD22	2:C:1030:ILE:HD11	1.99	0.44
2:C:777:SER:OG	2:C:778:ASP:N	2.49	0.44
3:D:409:LYS:HA	3:D:414:ARG:HD2	1.99	0.44
1:A:100:GLN:HE22	1:A:133:LYS:HB2	1.82	0.44
2:C:990:SER:OG	2:C:991:CYS:N	2.50	0.44
1:A:91:GLU:H	1:A:91:GLU:HG2	1.57	0.44
1:B:150:VAL:HG13	1:B:155:SER:HB3	1.99	0.44
3:D:505:HIS:CD2	3:D:1005:GLU:HG3	2.53	0.44
3:D:972:THR:O	3:D:972:THR:OG1	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:981:ARG:HD3	3:D:986:GLY:HA2	2.00	0.44
3:D:443:LEU:HD12	3:D:443:LEU:HA	1.83	0.44
5:F:276:ALA:HB1	6:J:109:ARG:HH12	1.82	0.44
5:F:336:ASP:OD1	6:J:89:ARG:NH2	2.40	0.44
2:C:570:TYR:HD1	2:C:570:TYR:HA	1.71	0.44
2:C:701:VAL:HG11	2:C:711:GLY:HA2	1.99	0.44
5:F:236:GLY:HA2	5:F:301:ARG:HH21	1.83	0.44
7:M:112:TRP:O	7:M:116:GLN:HB2	2.17	0.44
1:A:8:THR:OG1	1:A:24:GLU:O	2.32	0.44
3:D:901:LEU:HD21	3:D:949:ILE:HD12	1.98	0.44
3:D:1257:LEU:HD12	3:D:1257:LEU:HA	1.89	0.44
1:A:61:HIS:CD2	1:A:63:PHE:H	2.36	0.43
3:D:342:ASP:OD1	3:D:342:ASP:N	2.50	0.43
3:D:475:MET:HB2	3:D:475:MET:HE3	1.85	0.43
3:D:703:ARG:HE	3:D:703:ARG:HB3	1.63	0.43
3:D:816:THR:HG22	3:D:821:LYS:HA	2.00	0.43
3:D:1133:HIS:HA	3:D:1136:ARG:HH21	1.83	0.43
5:F:353:GLN:HE21	5:F:353:GLN:HB3	1.68	0.43
2:C:604:ARG:NH2	2:C:890:GLY:O	2.52	0.43
2:C:891:ASN:HD21	2:C:1028:MET:HE1	1.83	0.43
3:D:674:ASN:ND2	3:D:684:VAL:H	2.16	0.43
3:D:988:LEU:HD12	3:D:988:LEU:HA	1.88	0.43
1:B:39:ARG:NH1	3:D:623:ASP:OD2	2.39	0.43
2:C:563:ARG:N	2:C:567:GLU:O	2.51	0.43
3:D:7:PHE:H	3:D:1256:LYS:NZ	2.16	0.43
3:D:674:ASN:HD21	3:D:684:VAL:H	1.67	0.43
3:D:737:LEU:N	3:D:793:TYR:OH	2.48	0.43
5:F:306:LEU:HD23	5:F:306:LEU:HA	1.80	0.43
2:C:71:ARG:HH11	2:C:82:PRO:HG2	1.83	0.43
2:C:255:SER:OG	2:C:258:MET:N	2.40	0.43
2:C:410:GLU:HG2	7:M:56:VAL:HG23	2.00	0.43
3:D:937:ILE:HD11	3:D:951:ALA:HB1	2.00	0.43
3:D:1249:LYS:HB2	3:D:1249:LYS:HE2	1.84	0.43
8:P:134:DC:H2"	8:P:135:DA:H5'	2.00	0.43
3:D:654:SER:O	3:D:656:TRP:N	2.51	0.43
1:A:213:LYS:HA	1:B:223:ARG:HG3	1.99	0.43
3:D:278:ARG:HA	3:D:278:ARG:HD3	1.77	0.43
3:D:817:LEU:HA	3:D:817:LEU:HD23	1.85	0.43
2:C:413:THR:HG22	2:C:416:THR:HG23	2.00	0.43
3:D:460:LEU:HB3	3:D:486:VAL:HG11	2.00	0.43
3:D:944:LEU:HA	3:D:948:GLU:HG3	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1118:PRO:HA	3:D:1121:VAL:HG12	2.01	0.43
5:F:502:ARG:HA	5:F:502:ARG:HD2	1.89	0.43
1:B:62:GLU:HG2	1:B:64:THR:H	1.83	0.43
3:D:70:PHE:HB3	3:D:73:ILE:HD11	2.01	0.43
2:C:720:LEU:HD23	2:C:913:VAL:HA	2.01	0.42
3:D:196:LYS:HA	3:D:199:ASP:HB2	2.00	0.42
1:B:99:LYS:HD3	1:B:105:VAL:HG22	2.01	0.42
2:C:177:SER:HB3	2:C:378:LEU:HD11	2.00	0.42
2:C:488:THR:O	2:C:610:ASN:ND2	2.44	0.42
9:O:22:DG:H2"	9:O:23:DT:H5'	2.00	0.42
3:D:11:ARG:HA	3:D:1242:SER:HA	2.01	0.42
3:D:339:ASP:OD2	3:D:397:ARG:NH1	2.38	0.42
3:D:506:ARG:HE	3:D:506:ARG:HB3	1.63	0.42
3:D:924:THR:OG1	3:D:977:THR:O	2.32	0.42
5:F:233:LYS:HE2	5:F:233:LYS:HB3	1.78	0.42
7:M:145:THR:OG1	7:M:146:ASP:N	2.51	0.42
1:A:95:MET:HG3	1:A:138:LEU:HB2	2.02	0.42
2:C:295:LEU:HA	2:C:298:ASN:HB2	2.01	0.42
3:D:29:LYS:HB2	3:D:29:LYS:HE3	1.83	0.42
1:B:63:PHE:HD2	3:D:603:SER:HB3	1.84	0.42
2:C:960:PRO:HG2	2:C:963:LEU:HD12	2.01	0.42
2:C:771:ARG:HH21	2:C:781:LEU:HB3	1.84	0.42
3:D:94:HIS:HA	3:D:318:PRO:HA	2.01	0.42
3:D:552:GLN:O	3:D:556:ARG:HB2	2.20	0.42
3:D:893:THR:O	3:D:963:ARG:NH1	2.53	0.42
2:C:182:SER:OG	2:C:186:TYR:OH	2.37	0.42
2:C:646:GLU:HB3	2:C:662:HIS:HD1	1.85	0.42
3:D:890:ASP:OD1	3:D:977:THR:OG1	2.35	0.42
5:F:459:GLN:NE2	5:F:522:VAL:O	2.53	0.42
3:D:353:ARG:NH1	5:F:319:ASP:OD1	2.41	0.42
3:D:736:VAL:HG12	3:D:818:ALA:HB2	2.02	0.42
5:F:489:LEU:HB3	5:F:503:ILE:HB	2.02	0.42
2:C:1011:PHE:HA	2:C:1018:PRO:HA	2.02	0.42
3:D:101:VAL:HG11	3:D:378:VAL:HG11	2.00	0.42
3:D:222:ILE:HD12	3:D:240:LEU:HD12	2.01	0.42
5:F:302:LEU:N	9:O:54:DT:O2	2.53	0.42
7:M:26:THR:HB	7:M:31:GLN:HE21	1.85	0.42
1:A:182:ARG:HH12	3:D:625:GLY:H	1.68	0.41
2:C:84:GLY:N	2:C:87:GLU:OE1	2.49	0.41
3:D:567:SER:HB2	3:D:571:GLY:H	1.84	0.41
2:C:438:GLN:OE1	2:C:451:HIS:NE2	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:210:ASP:HA	3:D:213:GLN:HB3	2.02	0.41
3:D:590:THR:HA	3:D:687:GLN:HG3	2.01	0.41
5:F:522:VAL:HG23	5:F:523:LEU:HG	2.01	0.41
3:D:662:TRP:CZ3	3:D:664:ALA:HB2	2.55	0.41
1:A:120:ASN:OD1	1:A:120:ASN:N	2.52	0.41
2:C:445:PRO:HB3	2:C:640:ASP:HB2	2.02	0.41
3:D:453:LYS:HA	3:D:456:VAL:HG12	2.01	0.41
3:D:556:ARG:NH2	4:E:35:ILE:O	2.48	0.41
3:D:557:ILE:HG21	4:E:53:LEU:HD12	2.02	0.41
3:D:762:ARG:HA	3:D:762:ARG:HD3	1.84	0.41
4:E:46:ARG:NH1	4:E:102:ASP:OD1	2.54	0.41
6:J:99:LYS:HA	6:J:99:LYS:HD3	1.88	0.41
2:C:1112:ILE:HG13	3:D:548:SER:HA	2.03	0.41
4:E:75:ILE:HD12	4:E:75:ILE:HA	1.96	0.41
6:J:52:GLY:O	6:J:64:LEU:N	2.54	0.41
6:J:58:ASN:HB3	6:J:60:MET:HG2	2.01	0.41
7:M:121:SER:OG	8:P:107:DA:OP1	2.34	0.41
1:A:90:ASP:HA	1:A:142:ARG:HG3	2.03	0.41
1:B:80:LEU:HD13	1:B:138:LEU:HD21	2.03	0.41
2:C:611:MET:HE3	2:C:892:LYS:HB3	2.03	0.41
2:C:719:LEU:HD13	2:C:1030:ILE:HG12	2.02	0.41
2:C:903:ASP:OD1	2:C:903:ASP:N	2.46	0.41
2:C:441:ASP:OD2	2:C:447:SER:OG	2.38	0.41
1:B:38:LEU:HD12	1:B:38:LEU:HA	1.84	0.41
2:C:771:ARG:HD2	2:C:786:GLU:HA	2.03	0.41
2:C:444:ASN:HD22	2:C:715:LEU:HD22	1.86	0.41
2:C:444:ASN:OD1	2:C:444:ASN:N	2.53	0.41
2:C:562:ARG:HD3	3:D:847:LEU:HD11	2.03	0.41
2:C:579:MET:HE2	2:C:579:MET:HB3	1.88	0.41
2:C:899:LEU:HD13	2:C:899:LEU:HA	1.96	0.41
3:D:281:ILE:HA	3:D:289:LYS:HG3	2.02	0.41
3:D:567:SER:OG	3:D:572:ARG:O	2.39	0.41
3:D:717:LYS:HE3	3:D:717:LYS:HB3	1.79	0.41
3:D:1167:ILE:HD13	3:D:1167:ILE:HA	1.96	0.41
5:F:527:LEU:HD23	5:F:527:LEU:HA	1.91	0.41
2:C:251:ARG:HD3	2:C:251:ARG:HA	1.81	0.41
3:D:33:THR:OG1	3:D:34:ILE:N	2.54	0.41
3:D:97:LEU:HA	3:D:351:ASN:HD21	1.86	0.41
3:D:123:LYS:HB2	3:D:123:LYS:HE2	1.88	0.41
3:D:1087:ARG:HG3	3:D:1089:PHE:HD2	1.86	0.41
5:F:229:ARG:HA	5:F:232:LEU:HD12	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:J:64:LEU:HD23	6:J:66:GLU:H	1.86	0.41
9:O:45:DG:H2'	9:O:46:DT:H71	2.03	0.41
1:A:40:ARG:NH1	2:C:903:ASP:HB3	2.36	0.40
1:A:95:MET:HE2	1:A:95:MET:HB3	1.87	0.40
1:A:97:LEU:HB3	1:A:136:VAL:HG13	2.03	0.40
1:A:161:ARG:HA	1:A:161:ARG:HD3	1.78	0.40
1:B:33:THR:OG1	1:B:34:LEU:N	2.53	0.40
1:B:159:ILE:H	1:B:159:ILE:HG13	1.74	0.40
3:D:716:LEU:HD23	3:D:716:LEU:HA	1.87	0.40
3:D:876:ARG:HD3	3:D:876:ARG:HA	1.88	0.40
3:D:1190:ASN:HA	3:D:1190:ASN:HD22	1.65	0.40
5:F:372:MET:HA	5:F:375:VAL:HG22	2.03	0.40
1:A:80:LEU:HD23	1:A:80:LEU:HA	1.91	0.40
2:C:103:MET:HE2	2:C:103:MET:HB3	1.91	0.40
2:C:244:THR:H	2:C:247:GLN:HB2	1.86	0.40
2:C:674:LYS:HA	2:C:674:LYS:HD2	1.92	0.40
2:C:997:ASP:OD1	2:C:997:ASP:N	2.53	0.40
5:F:222:THR:OG1	5:F:223:ALA:N	2.53	0.40
6:J:83:ASP:OD1	6:J:83:ASP:N	2.52	0.40
9:O:72:DG:H1'	9:O:73:DC:H5'	2.02	0.40
2:C:69:ARG:O	2:C:73:SER:OG	2.27	0.40
2:C:96:ILE:O	2:C:105:LEU:N	2.46	0.40
2:C:624:PRO:HA	2:C:718:ASN:HD21	1.86	0.40
3:D:1089:PHE:HD1	3:D:1090:LYS:HB2	1.86	0.40
3:D:1265:ASN:OD1	3:D:1268:ARG:NH2	2.52	0.40
5:F:488:THR:OG1	5:F:491:GLU:OE1	2.28	0.40
6:J:32:TYR:N	6:J:40:PHE:O	2.44	0.40
3:D:1079:LYS:HA	3:D:1079:LYS:HD3	1.77	0.40
5:F:252:ARG:HG3	6:J:101:ARG:HH21	1.87	0.40
7:M:95:LYS:O	7:M:98:SER:OG	2.31	0.40
1:B:95:MET:N	1:B:138:LEU:O	2.55	0.40
1:B:107:ALA:N	1:B:123:MET:O	2.54	0.40
2:C:93:LEU:HD13	2:C:93:LEU:HA	1.91	0.40
2:C:446:LEU:HD23	2:C:613:ARG:HB3	2.03	0.40
2:C:549:ASP:OD1	2:C:553:ARG:N	2.55	0.40
2:C:1038:ASP:HA	2:C:1041:ILE:HG22	2.04	0.40
3:D:585:LEU:O	3:D:589:THR:OG1	2.27	0.40
4:E:90:LYS:HD3	4:E:90:LYS:HA	1.87	0.40
7:M:25:ARG:NH1	7:M:26:THR:O	2.55	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	223/347 (64%)	205 (92%)	18 (8%)	0	100	100
1	B	235/347 (68%)	215 (92%)	20 (8%)	0	100	100
2	C	1109/1179 (94%)	1009 (91%)	100 (9%)	0	100	100
3	D	1260/1326 (95%)	1184 (94%)	75 (6%)	1 (0%)	48	78
4	E	81/110 (74%)	75 (93%)	6 (7%)	0	100	100
5	F	317/531 (60%)	306 (96%)	11 (4%)	0	100	100
6	J	106/111 (96%)	95 (90%)	10 (9%)	1 (1%)	14	46
7	M	157/162 (97%)	148 (94%)	9 (6%)	0	100	100
All	All	3488/4113 (85%)	3237 (93%)	249 (7%)	2 (0%)	50	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	D	238	GLU
6	J	78	PRO

5.3.2 Protein sidechains ⓘ

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	194/297 (65%)	180 (93%)	14 (7%)	12	38
1	B	194/297 (65%)	176 (91%)	18 (9%)	7	29
2	C	930/997 (93%)	878 (94%)	52 (6%)	17	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	D	1042/1103 (94%)	985 (94%)	57 (6%)	18	46
4	E	69/89 (78%)	64 (93%)	5 (7%)	12	38
5	F	259/429 (60%)	247 (95%)	12 (5%)	23	49
6	J	92/97 (95%)	81 (88%)	11 (12%)	4	21
7	M	129/131 (98%)	113 (88%)	16 (12%)	4	20
All	All	2909/3440 (85%)	2724 (94%)	185 (6%)	17	41

All (185) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	10	SER
1	A	34	LEU
1	A	74	THR
1	A	88	GLU
1	A	117	THR
1	A	140	VAL
1	A	147	VAL
1	A	150	VAL
1	A	164	VAL
1	A	167	ILE
1	A	171	VAL
1	A	172	LEU
1	A	187	THR
1	A	194	LEU
1	B	3	ILE
1	B	34	LEU
1	B	42	LEU
1	B	61	HIS
1	B	69	VAL
1	B	74	THR
1	B	84	VAL
1	B	85	VAL
1	B	111	VAL
1	B	124	HIS
1	B	125	ILE
1	B	141	GLU
1	B	147	VAL
1	B	150	VAL
1	B	162	ILE
1	B	175	THR

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Mol	Chain	Res	Type
1	B	183	VAL
1	B	196	VAL
2	C	56	VAL
2	C	79	ASP
2	C	80	VAL
2	C	93	LEU
2	C	100	SER
2	C	126	ASP
2	C	128	THR
2	C	193	LYS
2	C	198	THR
2	C	222	VAL
2	C	224	VAL
2	C	241	LEU
2	C	250	GLU
2	C	274	LEU
2	C	275	LEU
2	C	296	LEU
2	C	299	LEU
2	C	324	VAL
2	C	328	ILE
2	C	345	LEU
2	C	369	ASP
2	C	412	ILE
2	C	428	LYS
2	C	443	ASN
2	C	446	LEU
2	C	455	LEU
2	C	456	LEU
2	C	475	VAL
2	C	519	VAL
2	C	540	VAL
2	C	561	VAL
2	C	570	TYR
2	C	574	SER
2	C	584	ARG
2	C	626	VAL
2	C	632	LEU
2	C	643	VAL
2	C	757	ILE
2	C	767	GLU
2	C	777	SER

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Mol	Chain	Res	Type
2	C	781	LEU
2	C	815	THR
2	C	839	VAL
2	C	868	LEU
2	C	885	LEU
2	C	907	LEU
2	C	936	LEU
2	C	985	LEU
2	C	989	LEU
2	C	997	ASP
2	C	1131	LEU
2	C	1137	VAL
3	D	1	MET
3	D	4	VAL
3	D	9	GLU
3	D	18	GLU
3	D	37	ARG
3	D	68	VAL
3	D	82	VAL
3	D	101	VAL
3	D	110	VAL
3	D	117	LEU
3	D	120	LEU
3	D	135	VAL
3	D	208	ILE
3	D	248	TYR
3	D	287	GLN
3	D	313	VAL
3	D	314	LEU
3	D	342	ASP
3	D	381	LEU
3	D	402	LEU
3	D	417	LEU
3	D	418	LEU
3	D	449	LEU
3	D	451	LEU
3	D	453	LYS
3	D	483	VAL
3	D	498	LEU
3	D	556	ARG
3	D	567	SER
3	D	574	LEU

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Mol	Chain	Res	Type
3	D	578	ARG
3	D	579	LEU
3	D	582	VAL
3	D	588	LEU
3	D	600	GLN
3	D	614	SER
3	D	623	ASP
3	D	676	LEU
3	D	729	VAL
3	D	730	THR
3	D	736	VAL
3	D	741	ARG
3	D	761	GLN
3	D	797	ASN
3	D	865	LEU
3	D	901	LEU
3	D	962	VAL
3	D	1034	LEU
3	D	1066	ILE
3	D	1088	VAL
3	D	1117	ASP
3	D	1130	VAL
3	D	1211	THR
3	D	1215	LEU
3	D	1229	THR
3	D	1248	LEU
3	D	1264	ILE
4	E	53	LEU
4	E	65	ASN
4	E	70	GLN
4	E	82	LEU
4	E	87	LEU
5	F	269	ARG
5	F	313	ARG
5	F	328	LEU
5	F	332	VAL
5	F	334	LYS
5	F	352	ARG
5	F	446	VAL
5	F	451	VAL
5	F	459	GLN
5	F	460	LEU

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Mol	Chain	Res	Type
5	F	499	THR
5	F	514	LEU
6	J	5	VAL
6	J	6	LEU
6	J	16	TYR
6	J	69	LEU
6	J	76	LYS
6	J	83	ASP
6	J	86	LEU
6	J	97	LEU
6	J	100	GLU
6	J	102	LEU
6	J	104	LEU
7	M	5	VAL
7	M	9	VAL
7	M	19	VAL
7	M	27	ILE
7	M	36	VAL
7	M	37	LEU
7	M	65	GLU
7	M	74	LEU
7	M	85	TRP
7	M	95	LYS
7	M	96	LEU
7	M	115	ASP
7	M	121	SER
7	M	128	LEU
7	M	135	LEU
7	M	136	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	61	HIS
1	A	119	HIS
1	A	124	HIS
1	A	185	GLN
1	B	151	GLN
1	B	226	ASN
2	C	57	GLN
2	C	81	ASN
2	C	141	ASN

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Mol	Chain	Res	Type
2	C	232	GLN
2	C	298	ASN
2	C	352	GLN
2	C	386	GLN
2	C	388	GLN
2	C	543	GLN
2	C	612	GLN
2	C	679	ASN
2	C	866	ASN
2	C	920	HIS
2	C	967	GLN
2	C	981	GLN
2	C	1035	HIS
3	D	5	ASN
3	D	35	ASN
3	D	307	ASN
3	D	341	ASN
3	D	368	ASN
3	D	464	ASN
3	D	505	HIS
3	D	544	HIS
3	D	552	GLN
3	D	564	ASN
3	D	657	GLN
3	D	771	ASN
3	D	797	ASN
3	D	1109	GLN
3	D	1145	GLN
3	D	1160	GLN
3	D	1190	ASN
4	E	65	ASN
5	F	234	GLN
5	F	293	ASN
5	F	353	GLN
5	F	377	ASN
5	F	388	GLN
5	F	434	GLN
7	M	14	HIS

5.3.3 RNA ⓘ

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 4 ligands modelled in this entry, 3 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
10	SRN	C	1201	-	60,62,62	5.14	32 (53%)	61,84,84	1.46	10 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	SRN	C	1201	-	-	16/52/105/105	0/4/5/5

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	C	1201	SRN	O3-C8	20.32	1.79	1.44
10	C	1201	SRN	O3-C9	16.24	1.81	1.45
10	C	1201	SRN	C34-C9	-11.23	1.29	1.52
10	C	1201	SRN	C3-C2	9.35	1.59	1.34
10	C	1201	SRN	C34-C35	-9.01	1.33	1.52
10	C	1201	SRN	C4-C5	7.69	1.57	1.36
10	C	1201	SRN	C13-C14	7.07	1.60	1.31
10	C	1201	SRN	C6-C7	6.54	1.57	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	C	1201	SRN	C24-C25	6.35	1.57	1.31
10	C	1201	SRN	C8-C7	-6.00	1.30	1.50
10	C	1201	SRN	C12-C13	-5.95	1.30	1.50
10	C	1201	SRN	C28-C29	5.19	1.61	1.31
10	C	1201	SRN	C10-C9	-5.11	1.43	1.53
10	C	1201	SRN	O8-C12	4.98	1.51	1.43
10	C	1201	SRN	O7-C32	4.88	1.52	1.43
10	C	1201	SRN	C35-C8	-4.50	1.46	1.53
10	C	1201	SRN	C11-C10	-4.48	1.44	1.53
10	C	1201	SRN	C5-C6	4.27	1.57	1.44
10	C	1201	SRN	C3-C4	4.14	1.57	1.44
10	C	1201	SRN	C46-C47	4.08	1.45	1.33
10	C	1201	SRN	C33-C47	-3.93	1.43	1.49
10	C	1201	SRN	C30-C29	3.78	1.61	1.50
10	C	1201	SRN	O7-C31	3.65	1.53	1.44
10	C	1201	SRN	C2-C1	3.63	1.56	1.48
10	C	1201	SRN	O1-C33	3.42	1.51	1.46
10	C	1201	SRN	O1-C1	3.40	1.41	1.34
10	C	1201	SRN	C23-C24	3.16	1.55	1.50
10	C	1201	SRN	C31-C46	3.03	1.55	1.50
10	C	1201	SRN	C15-C14	2.76	1.58	1.50
10	C	1201	SRN	O8-C35	2.30	1.50	1.44
10	C	1201	SRN	C17-C16	2.25	1.57	1.53
10	C	1201	SRN	O6-C23	-2.19	1.39	1.43

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	C	1201	SRN	C23-C24-C25	-3.48	117.48	124.69
10	C	1201	SRN	C8-C7-C6	-3.18	119.43	125.88
10	C	1201	SRN	C35-O8-C12	3.07	117.92	112.93
10	C	1201	SRN	C18-C17-C19	-2.89	107.97	111.35
10	C	1201	SRN	C9-C34-C35	2.73	111.39	103.67
10	C	1201	SRN	C3-C4-C5	-2.69	118.50	124.72
10	C	1201	SRN	C6-C5-C4	-2.65	118.58	124.72
10	C	1201	SRN	C37-C36-C32	2.36	120.61	115.96
10	C	1201	SRN	C20-C19-C17	2.17	114.31	111.16
10	C	1201	SRN	C43-C44-C45	-2.12	108.98	114.51

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	C	1201	SRN	C2-C1-O1-C33
10	C	1201	SRN	C29-C30-C31-C46
10	C	1201	SRN	C29-C30-C31-O7
10	C	1201	SRN	C25-C26-C27-C28
10	C	1201	SRN	O2-C1-O1-C33
10	C	1201	SRN	C39-C41-C42-C43
10	C	1201	SRN	O1-C1-C2-C3
10	C	1201	SRN	O2-C1-C2-C3
10	C	1201	SRN	C13-C14-C15-C16
10	C	1201	SRN	C26-C27-C28-C29
10	C	1201	SRN	C10-C12-C13-C14
10	C	1201	SRN	C28-C29-C30-C31
10	C	1201	SRN	C43-C44-C45-O10
10	C	1201	SRN	C43-C44-C45-O11
10	C	1201	SRN	O8-C12-C13-C14
10	C	1201	SRN	C33-C32-C36-C37

There are no ring outliers.

1 monomer is involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	C	1201	SRN	11	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand SRN C 1201

Bond lengths

Bond angles

Torsions

Rings
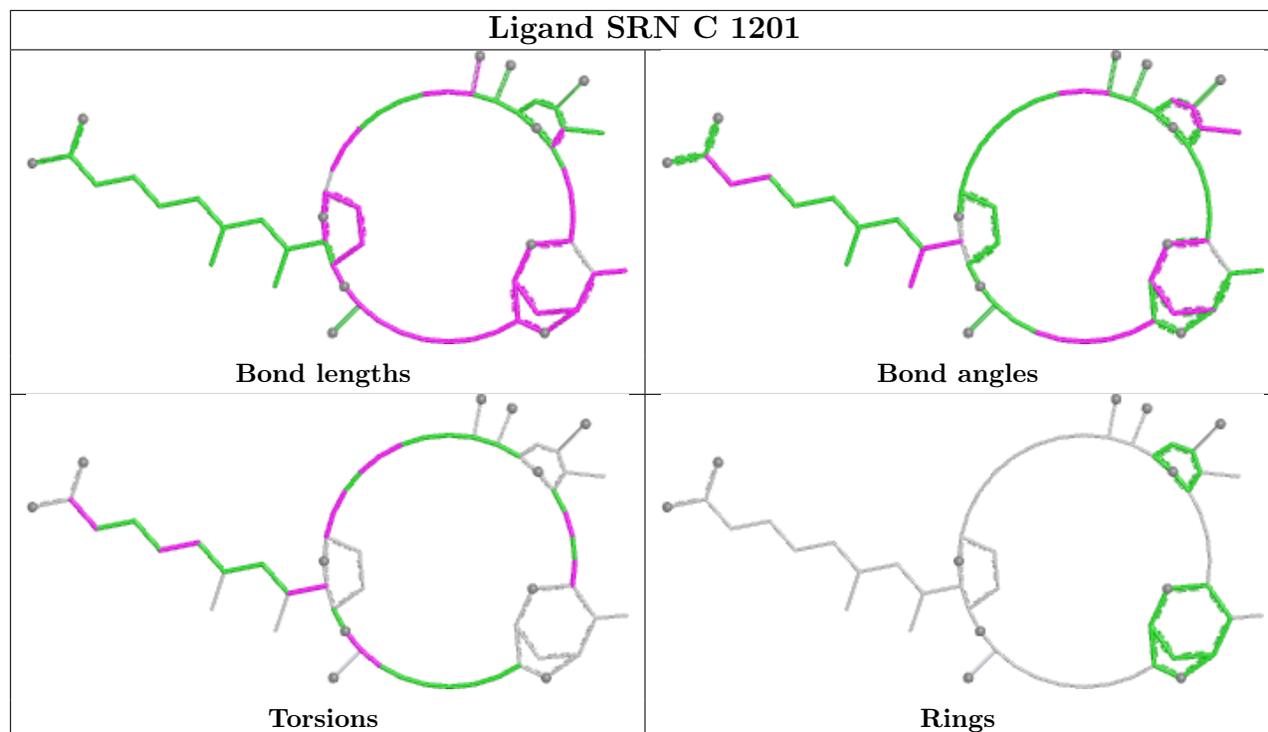
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-21408. 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 |
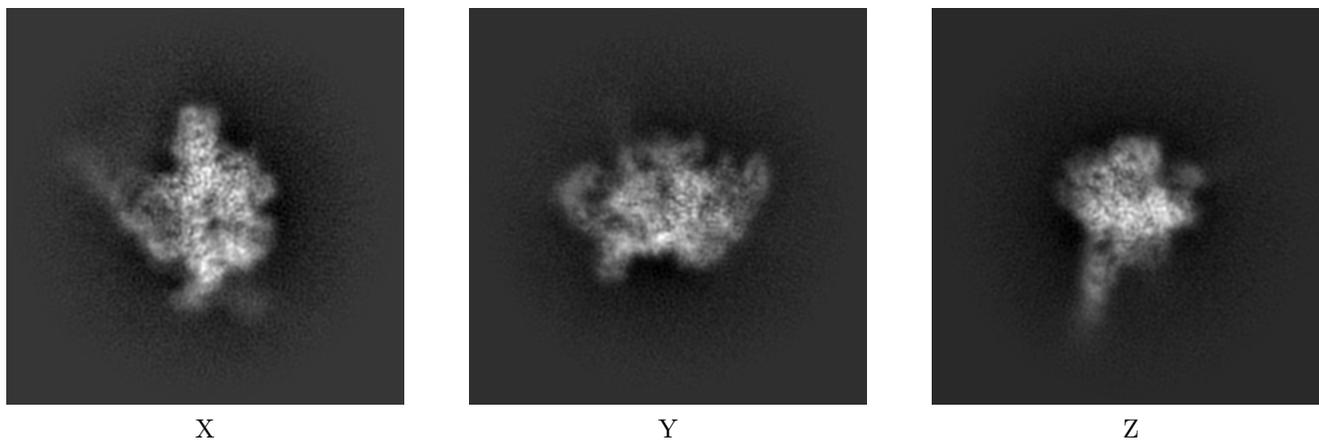
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

6.2.1 Primary map

| X Index: 128 | Y Index: 128 | Z Index: 128 |
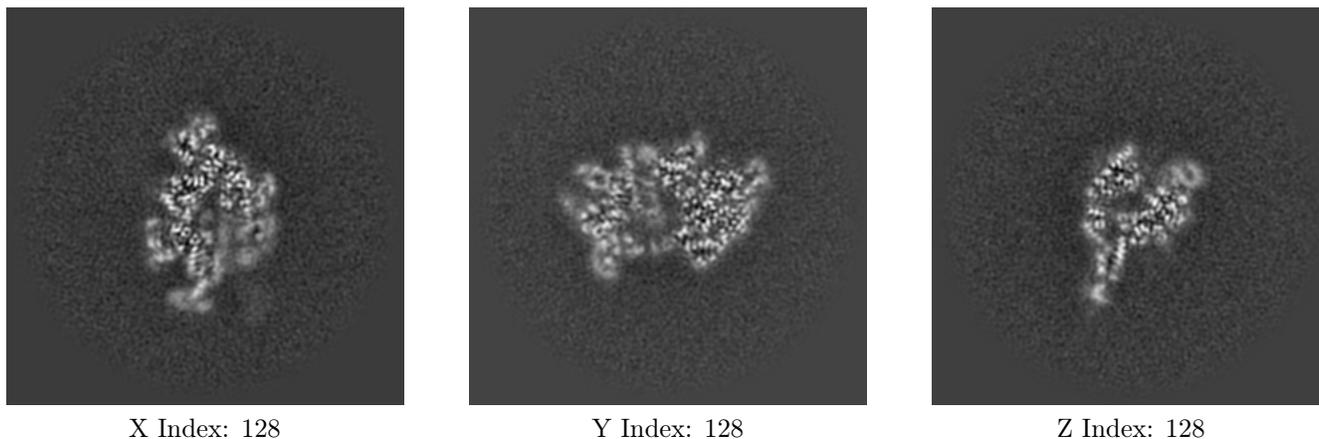
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
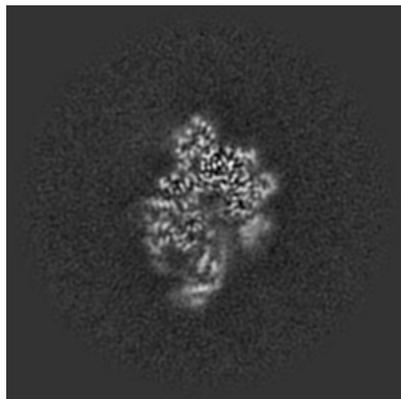
6.3.1 Primary map
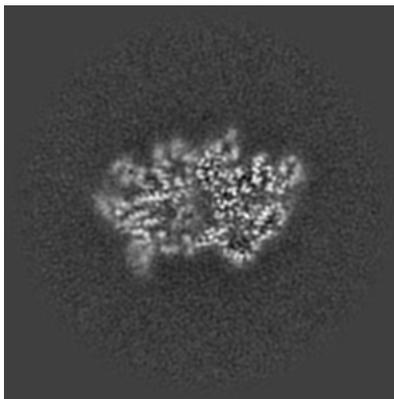
| X Index: 122 | Y Index: 125 | Z Index: 137 |
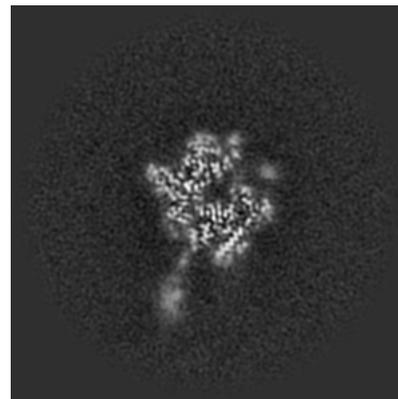
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map

| X | Y | Z |
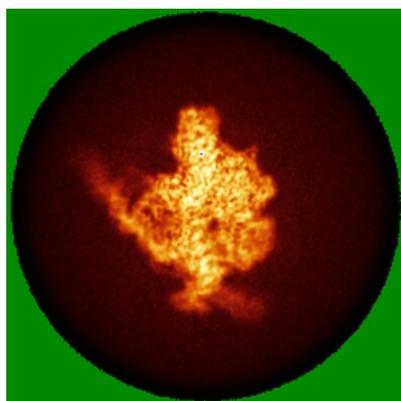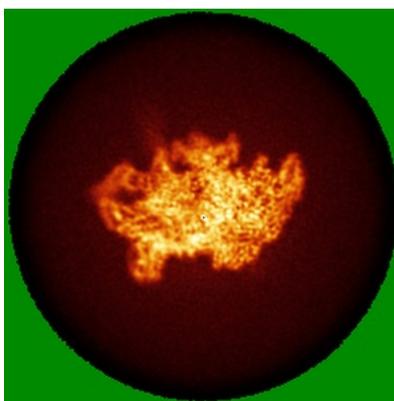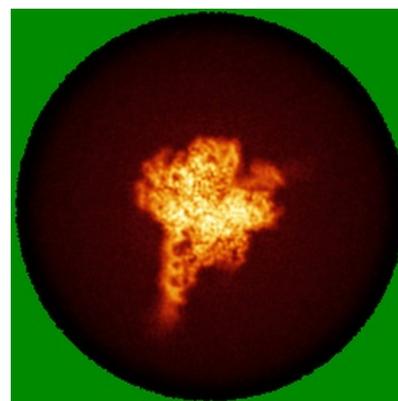
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z
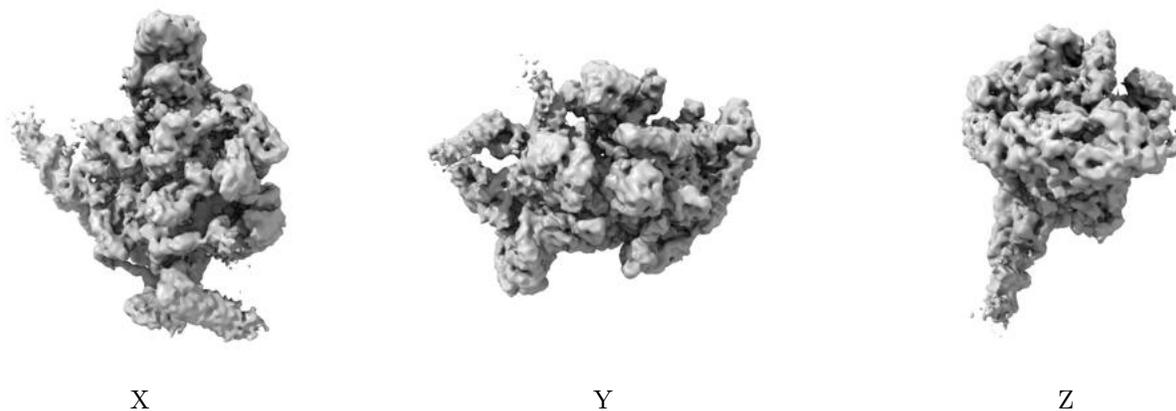
The images above show the 3D surface view of the map at the recommended contour level 0.394. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

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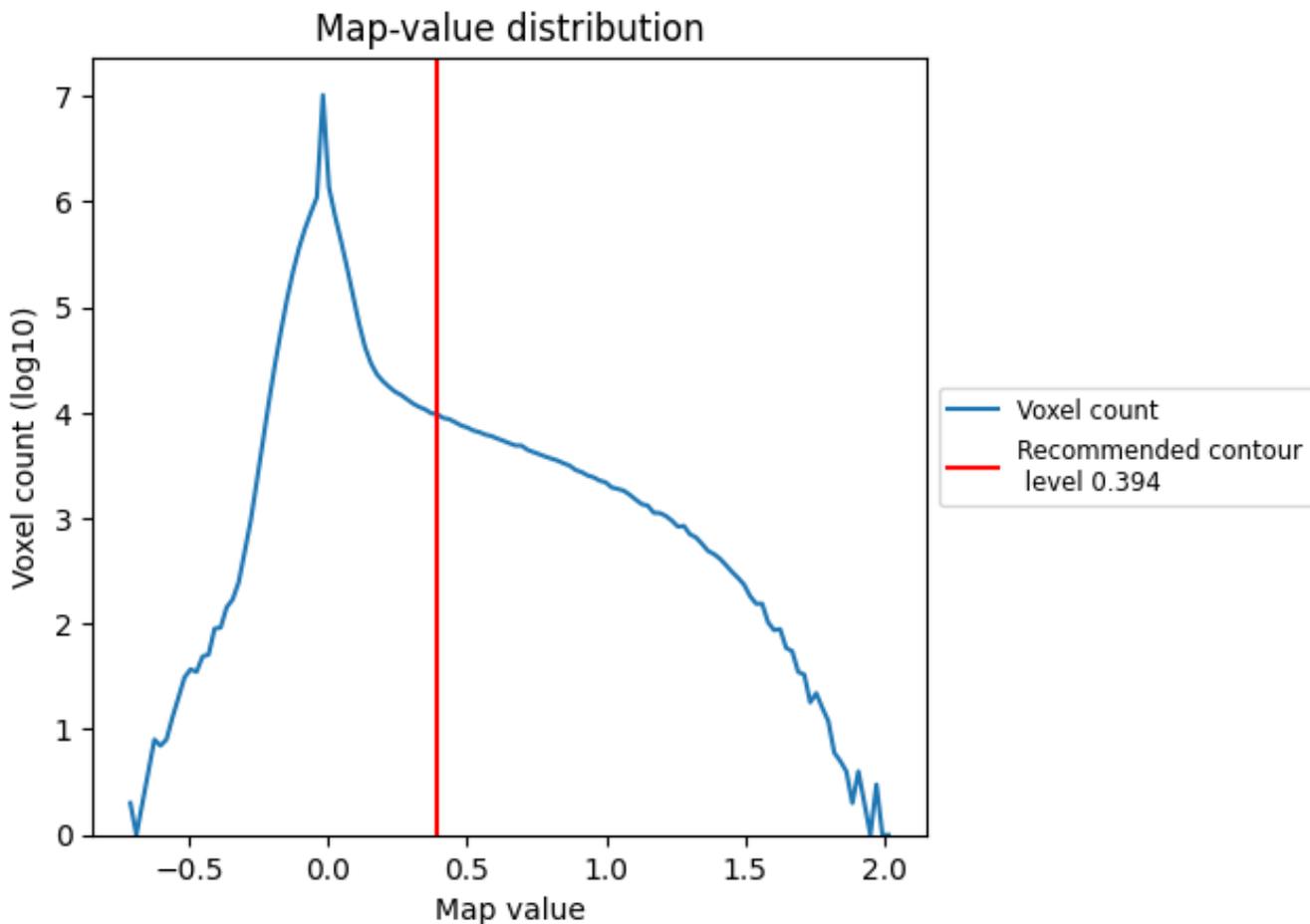
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate (i)
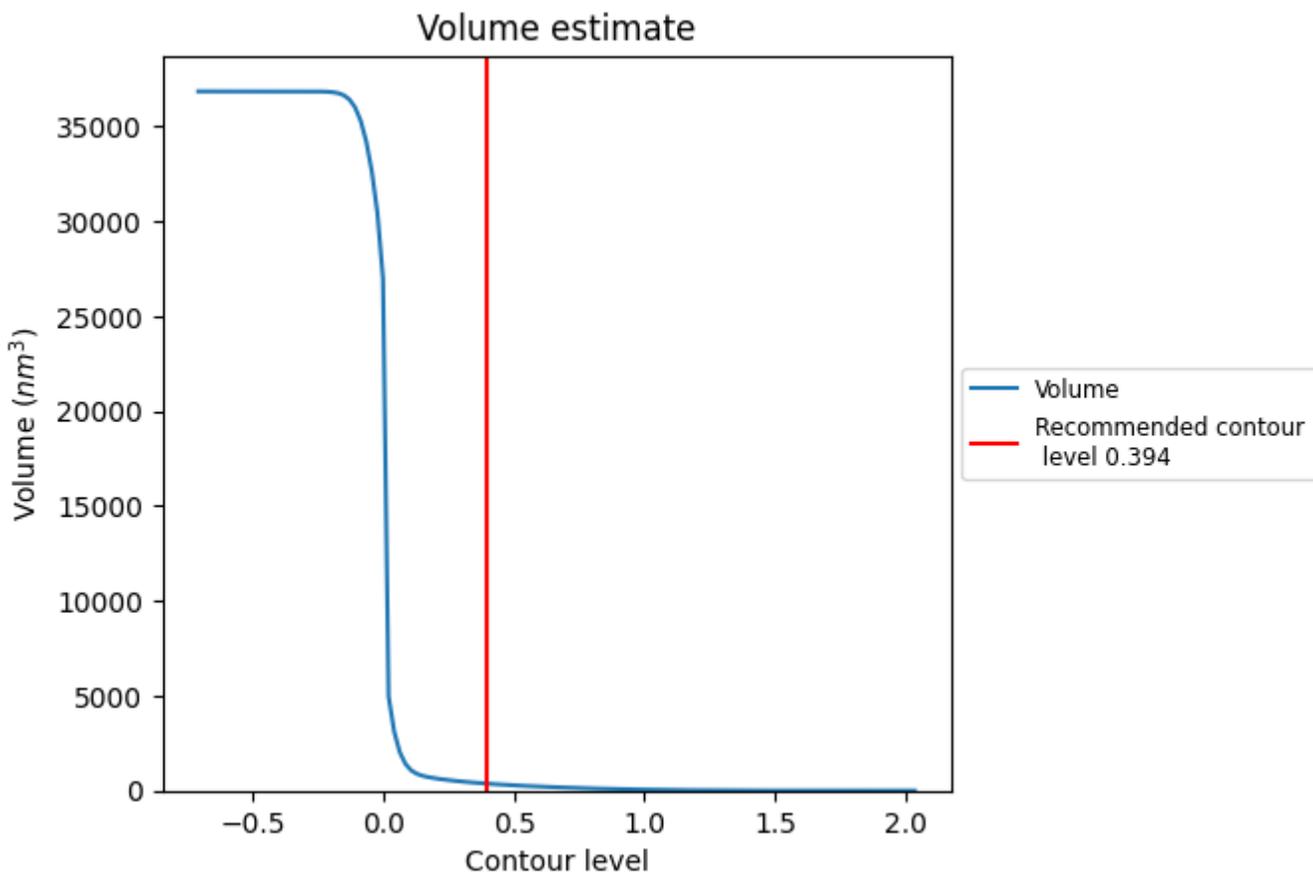
The volume at the recommended contour level is 372 nm^3; this corresponds to an approximate mass of 336 kDa.

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 ⓘ
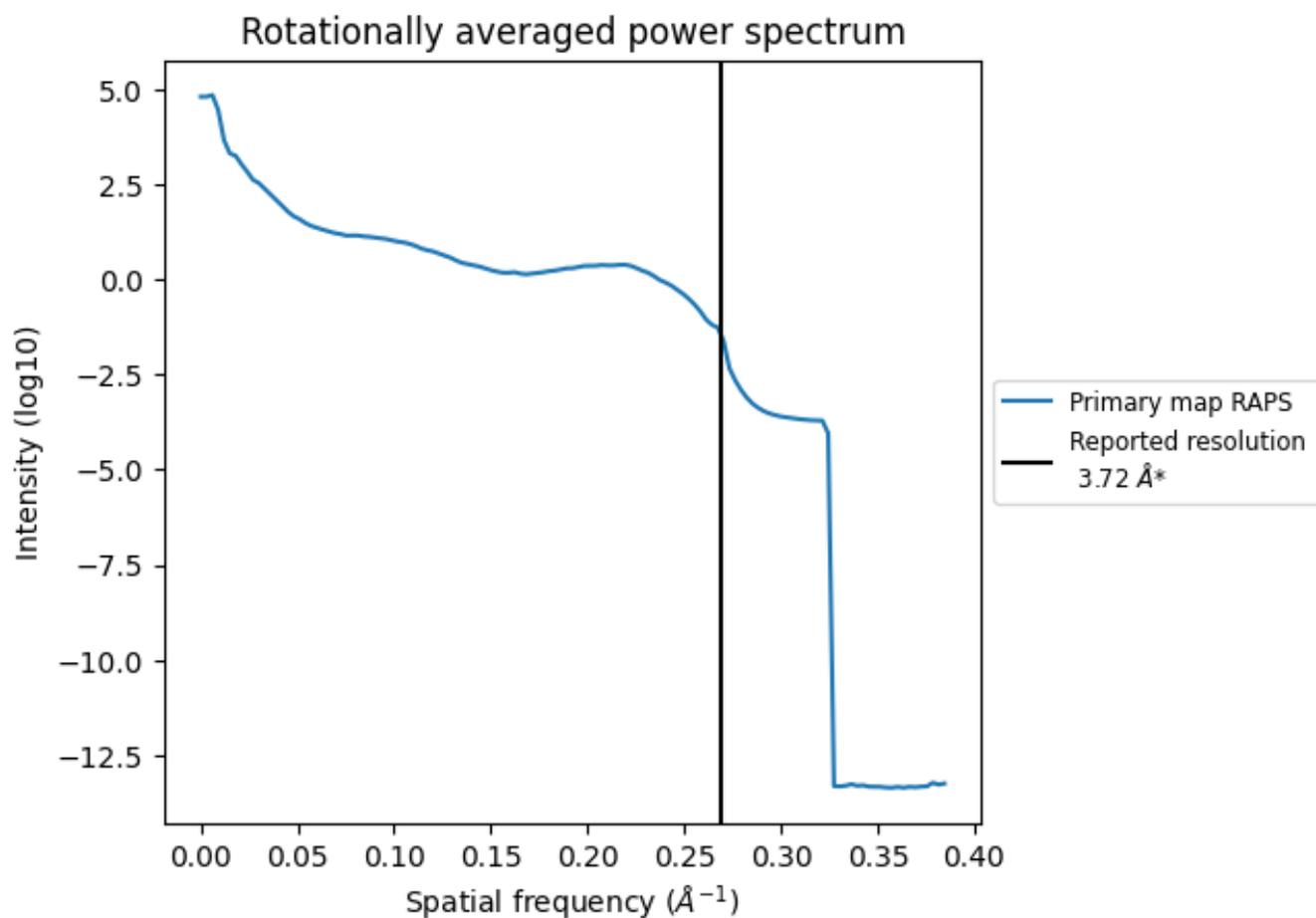
*Reported resolution corresponds to spatial frequency of 0.269 Å^{-1}

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-21408 and PDB model 6VVZ. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay ⓘ

X　　　　　　　　　　　　Y　　　　　　　　　　　　Z
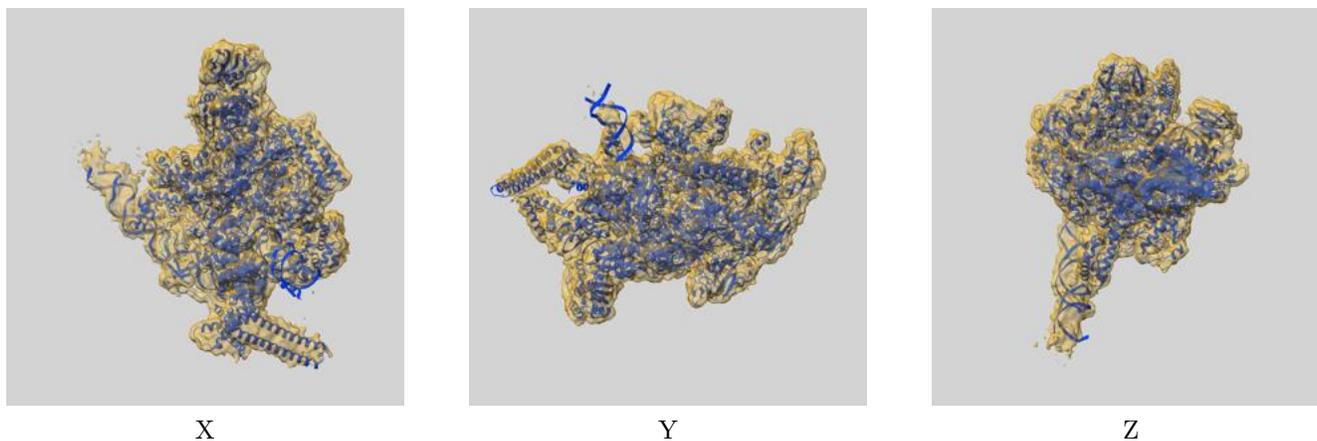
The images above show the 3D surface view of the map at the recommended contour level 0.394 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

X   Y   Z
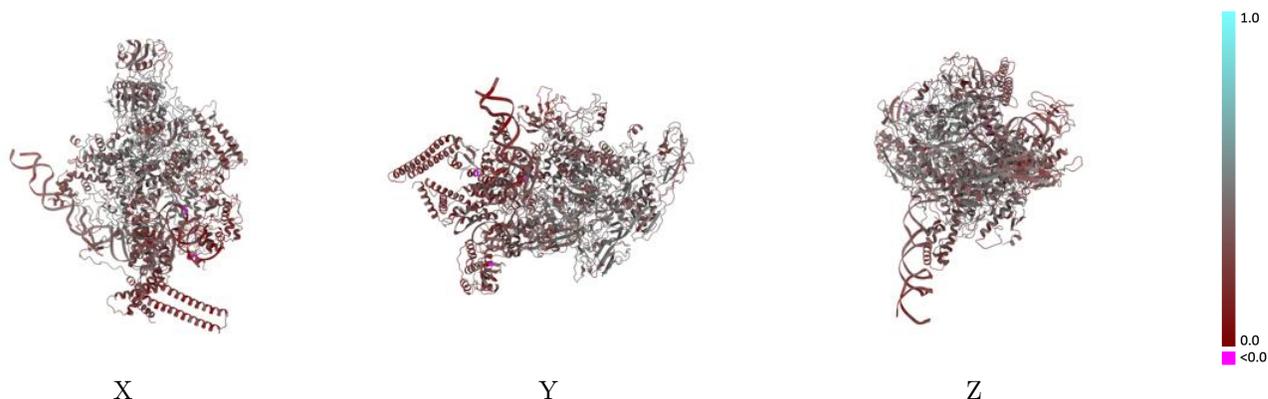
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ

X   Y   Z
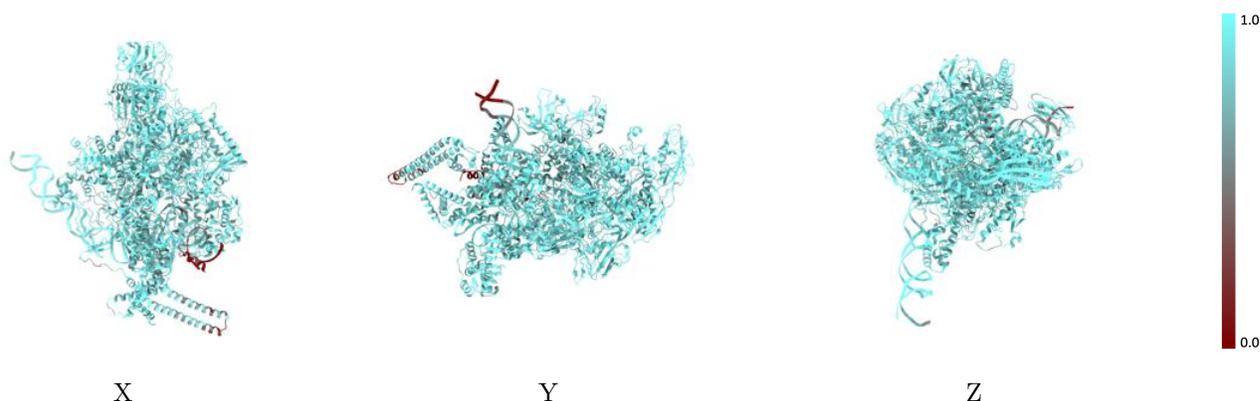
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.394).

9.4　Atom inclusion ⓘ
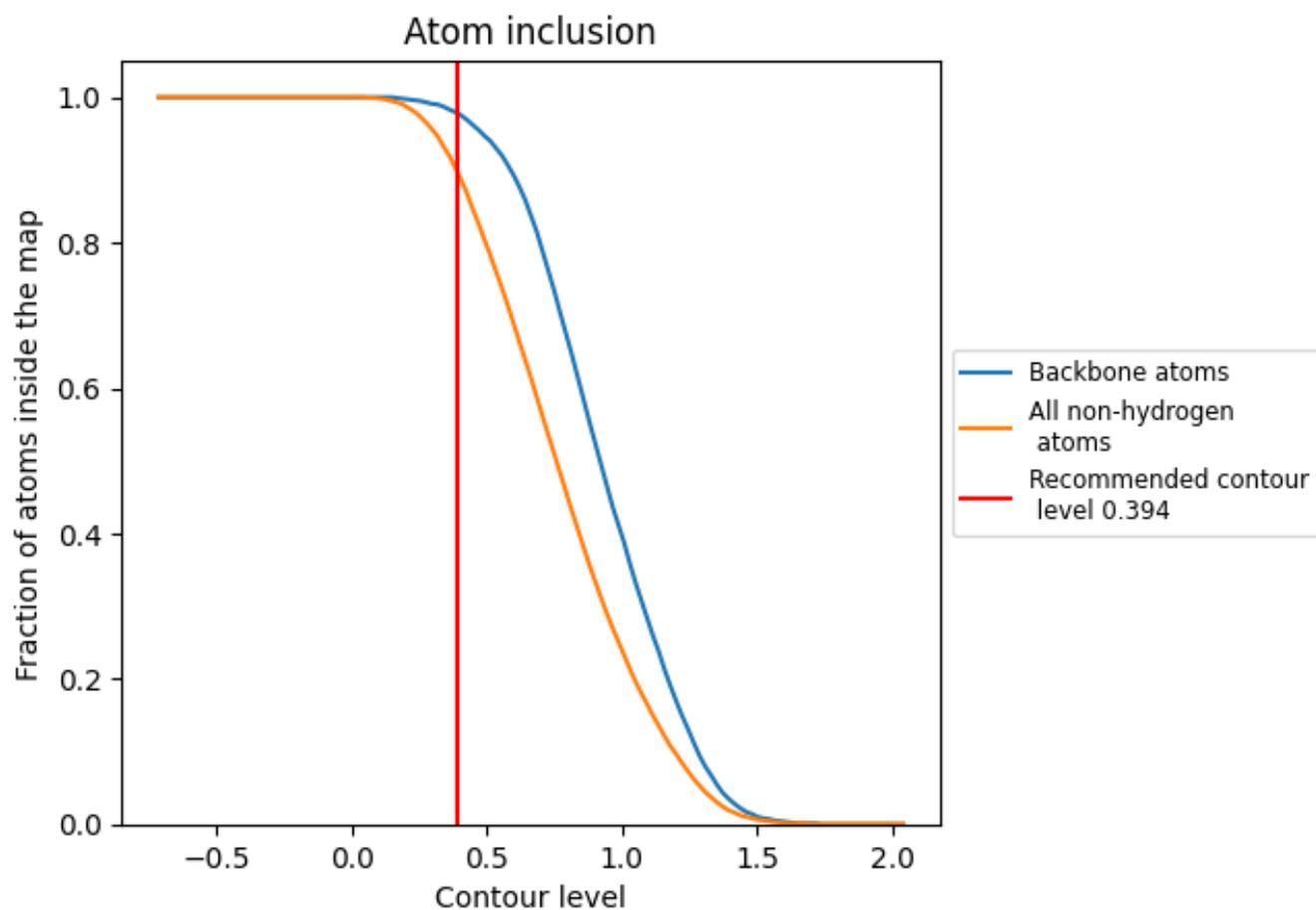
Atom inclusion

At the recommended contour level, 98% of all backbone atoms, 90% 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 (0.394) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8960	0.3610
A	0.9350	0.4150
B	0.9310	0.3790
C	0.9120	0.3930
D	0.8940	0.3710
E	0.8960	0.3850
F	0.8530	0.3050
J	0.8750	0.3270
M	0.8840	0.2670
O	0.8530	0.2680
P	0.8470	0.2720

1.0

0.0
<0.0