Full wwPDB EM Validation Report ⓘ

Sep 9, 2025 – 03:51 PM JST

PDB ID	:	9JI3 / pdb_00009ji3
EMDB ID	:	EMD-61493
Title	:	Cryo-EM structure of Mycobacterium tuberculosis transcription activation complex with two PhoP molecules
Authors	:	Lin, W.; Feng, Y.
Deposited on	:	2024-09-11
Resolution	:	3.36 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:

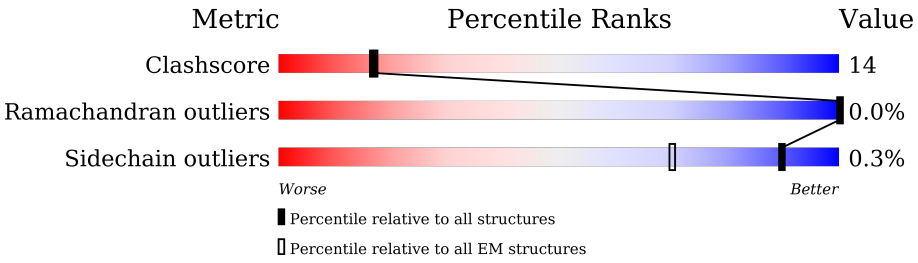
EMDB validation analysis	:	0.0.1.dev126
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 3.36 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	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	48% 17% 35%
1	B	347	46% 22% 32%
2	C	1178	67% 28% 6%
3	D	1316	70% 26%
4	E	110	55% 21% 25%
5	H	76	7% 37% 33% 30%
6	G	76	5% 22% 47% 30%
7	F	528	37% 24% 39%

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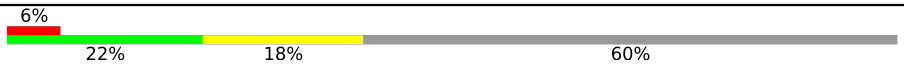
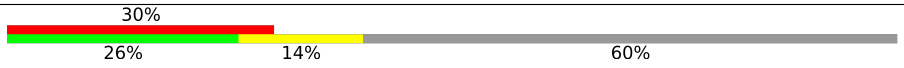
Mol	Chain	Length	Quality of chain
8	J	247	
8	K	247	

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 28870 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	224	Total	C	N	O	S	0	0
			1708	1074	295	337	2		
1	B	237	Total	C	N	O	S	0	0
			1765	1115	301	346	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	1111	Total	C	N	O	S	0	0
			8551	5357	1500	1655	39		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	1268	Total	C	N	O	S	0	0
			9877	6182	1795	1858	42		

- 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		

- Molecule 5 is a DNA chain called Non-template strand DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	53	Total	C	N	O	P	0	0
			1078	513	189	323	53		

- Molecule 6 is a DNA chain called Template strand DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	53	Total	C	N	O	P	0	0
			1108	521	223	311	53		

- Molecule 7 is a protein called RNA polymerase sigma factor SigA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	F	322	Total	C	N	O	S	0	0
			2529	1577	454	489	9		

- Molecule 8 is a protein called DNA-binding response regulator.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	J	99	Total	C	N	O	0	0
			801	515	139	147		
8	K	99	Total	C	N	O	0	0
			801	515	139	147		

- Molecule 9 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

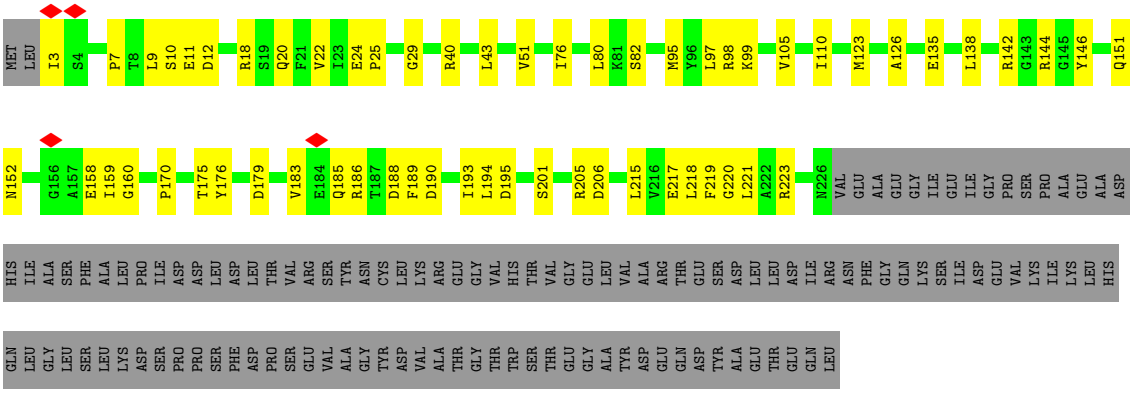
Mol	Chain	Residues	Atoms		AltConf
10	D	1	Total	Mg	0
			1	1	

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.

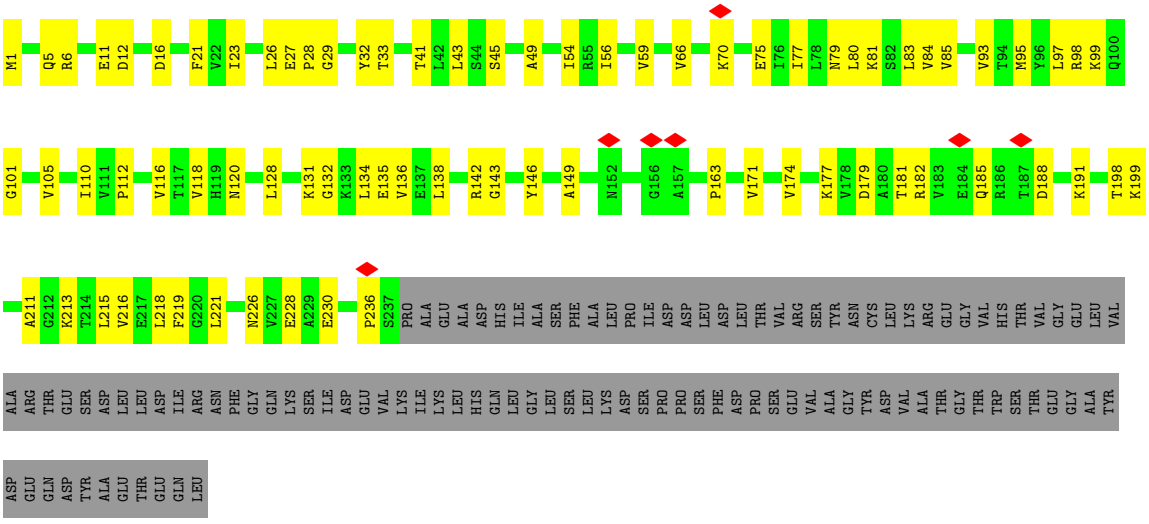
• Molecule 1: DNA-directed RNA polymerase subunit alpha

Chain A:



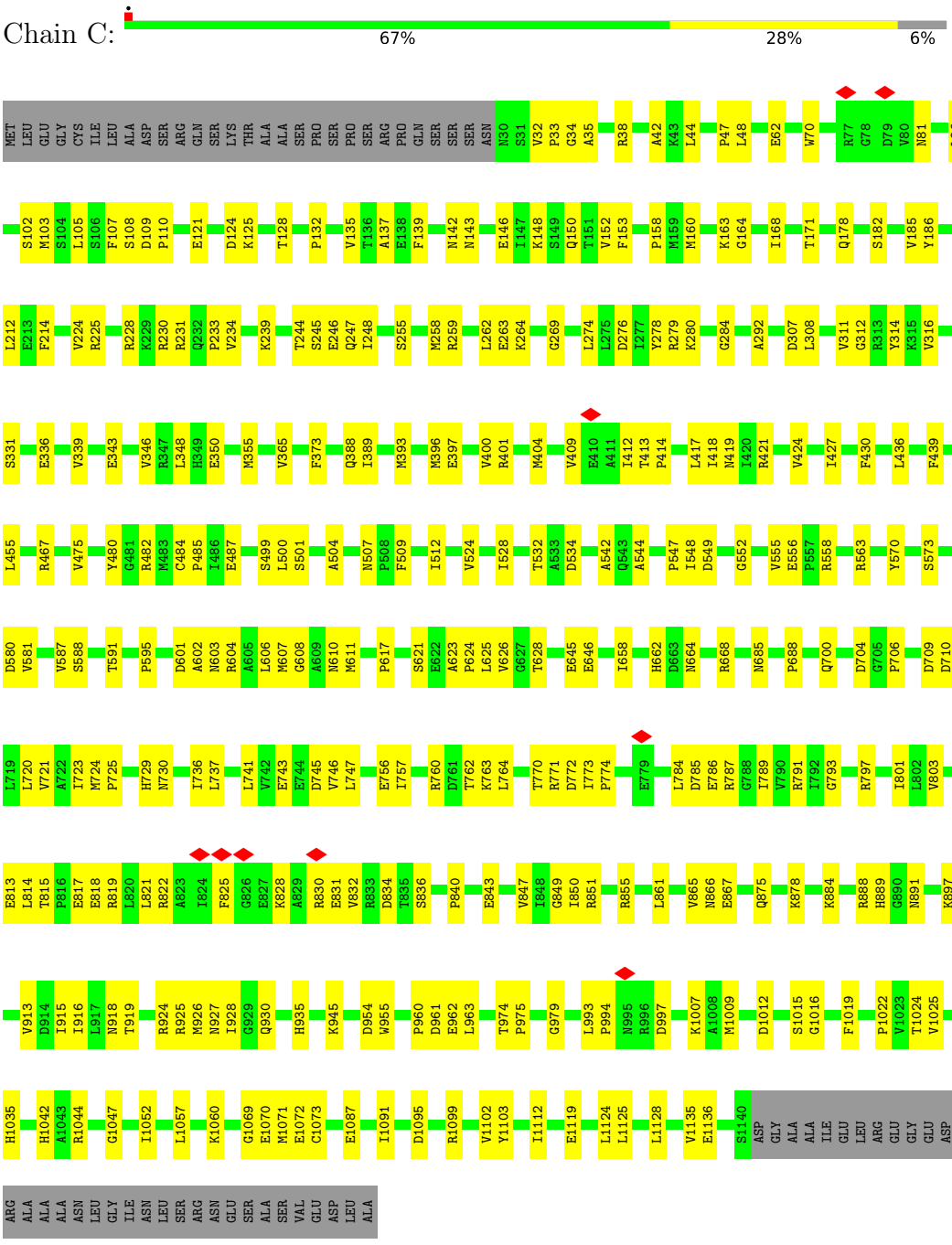
• Molecule 1: DNA-directed RNA polymerase subunit alpha

Chain B:



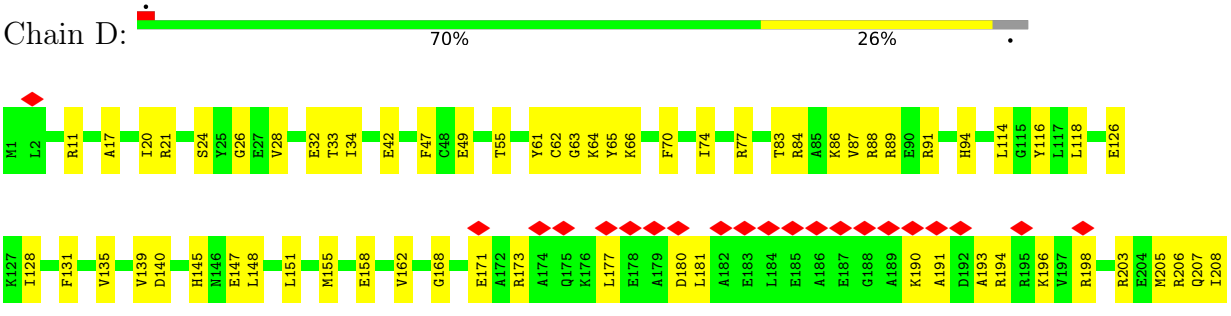
• Molecule 2: DNA-directed RNA polymerase subunit beta

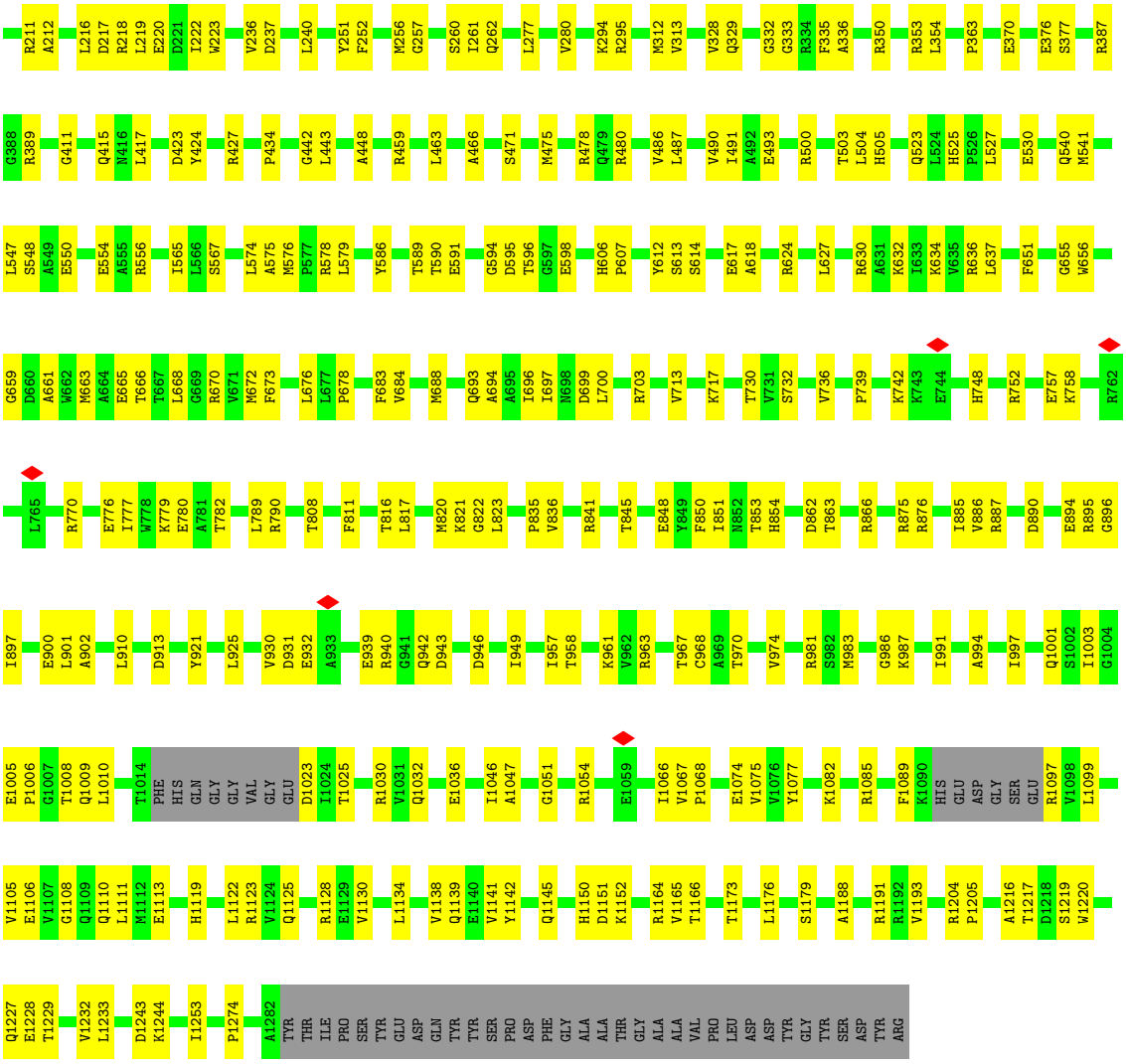
Chain C:



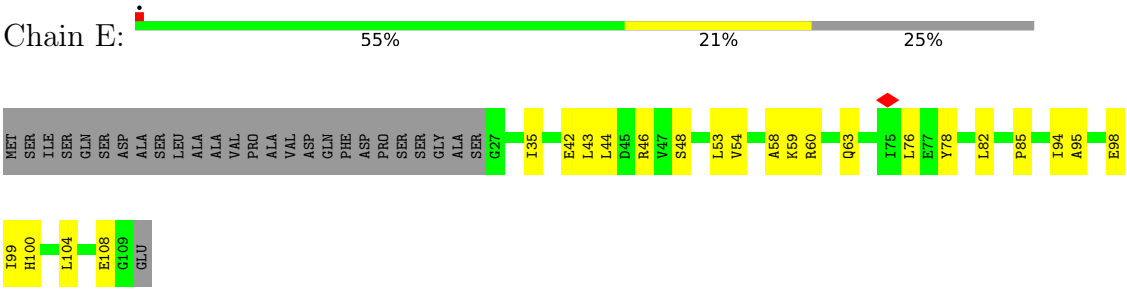
• Molecule 3: DNA-directed RNA polymerase subunit beta'

Chain D:

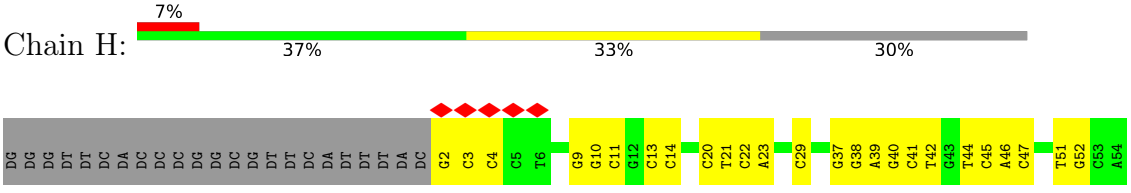




• Molecule 4: DNA-directed RNA polymerase subunit omega

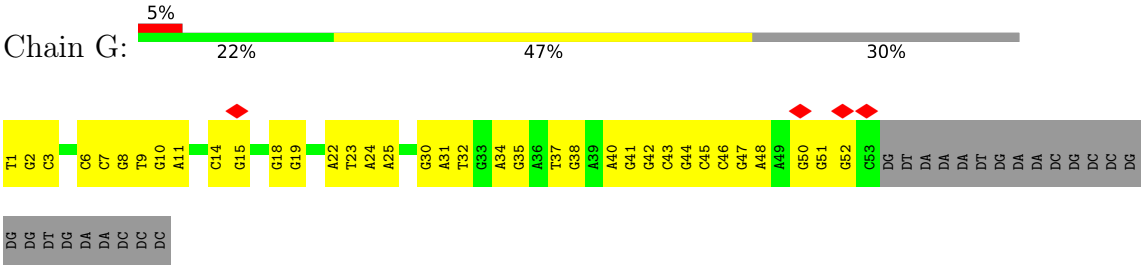


• Molecule 5: Non-template strand DNA



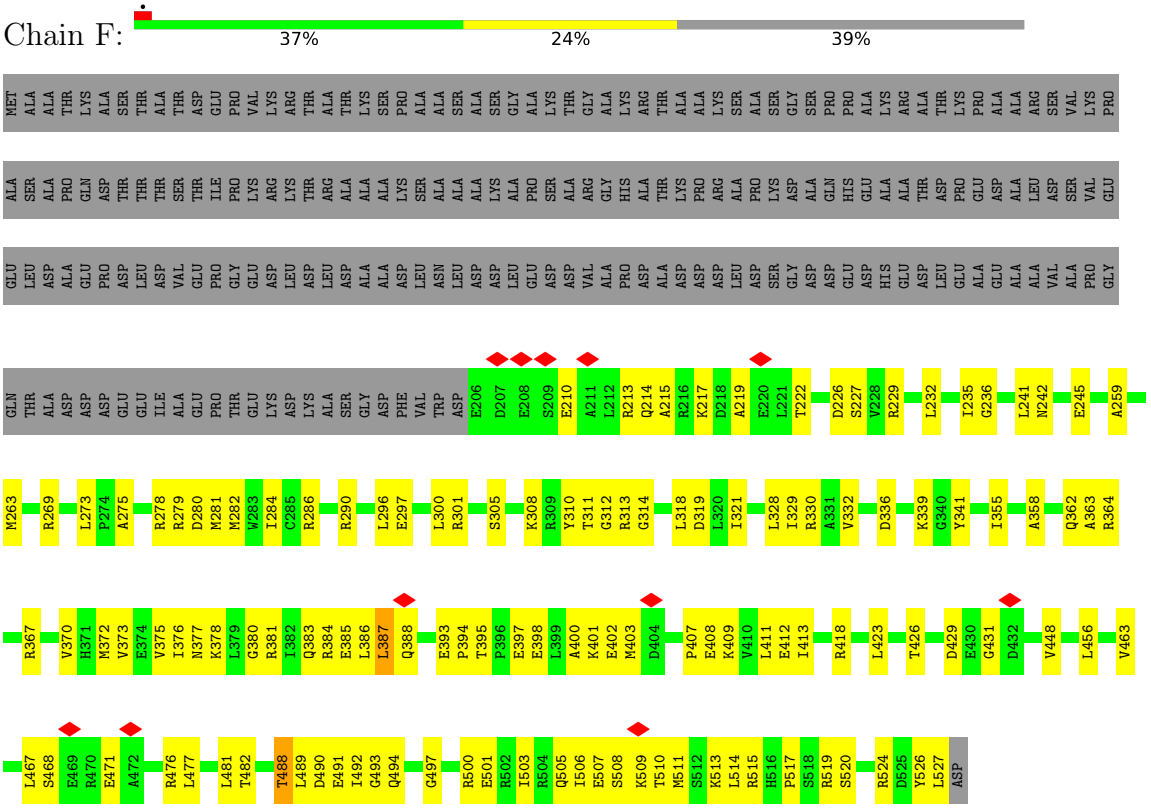
• Molecule 6: Template strand DNA

Chain G:



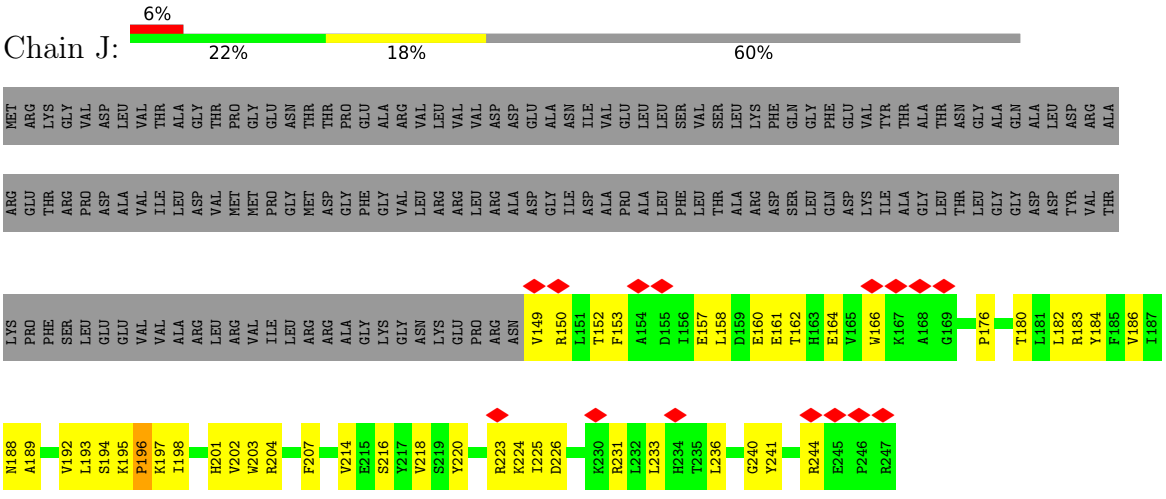
• Molecule 7: RNA polymerase sigma factor SigA

Chain F:



• Molecule 8: DNA-binding response regulator

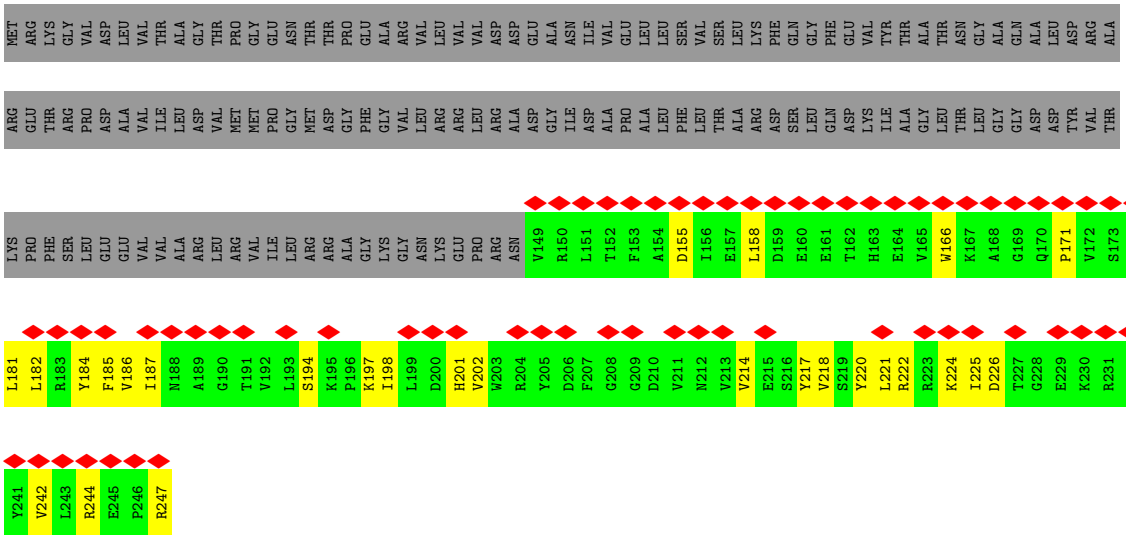
Chain J:



• Molecule 8: DNA-binding response regulator

Chain K:


30%
26%
14%
60%


MET ARG LYS GLY VAL ASP LEU VAL THR ALA GLY THR PRO GLY GLU ASN THR THR PRO GLU ALA ARG VAL LEU VAL VAL ASP ASP GLU ALA ASN ILE VAL GLU LEU LEU SER VAL SER LEU LYS PHE GLN GLY PHE GLU VAL TYR THR ALA THR ASN GLY ALA GLN ALA LEU ASP ARG ALA
ARG GLU THR ARG PRO ASP ALA VAL ILE LEU ASP VAL MET MET PRO GLY MET ASP GLY PHE GLY VAL LEU ARG ARG LEU ARG ALA ASP GLY ILE ASP ALA PRO ALA LEU PHE LEU THR ALA ARG ASP SER LEU GLN ASP LYS ILE ALA GLY LEU THR LEU GLY GLY ASP ASP TYR VAL THR
LYS PRO PHE SER LEU GLU GLU VAL VAL ALA ALA ARG LEU ARG VAL ILE LEU ARG ARG ALA GLY LYS GLY ASN LYS GLU PRO ARG ASN V149 R150 L151 T152 F153 A154 D155 I156 E157 L158 D159 E160 E161 T162 H163 E164 V165 W166 K167 A168 G169 Q170 P171 V172 S173 L174 S175 P176 T177 E178 F179 T180
L181 L182 R183 Y184 F185 V186 I187 N188 A189 G190 T191 V192 L193 S194 K195 P196 K197 I198 L199 D200 H201 V202 W203 R204 Y205 D206 F207 G208 G209 D210 V211 N212 V213 V214 E215 S216 Y217 V218 S219 Y220 L221 R222 R223 K224 I225 D226 T227 G228 E229 K230 R231 L232 L233 H234 T235 L236 R237 G238 V239 G240
Y241 V242 L243 R244 E245 P246 R247

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	32425	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 ($e^-/Å^2$)	52	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.880	Depositor
Minimum map value	-0.458	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.033	Depositor
Recommended contour level	0.08	Depositor
Map size (Å)	307.2, 307.2, 307.2	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.2, 1.2, 1.2	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, 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	0.15	0/1734	0.35	0/2359
1	B	0.17	0/1792	0.43	0/2442
2	C	0.16	0/8706	0.38	0/11807
3	D	0.14	0/10040	0.35	0/13575
4	E	0.14	0/662	0.35	0/901
5	H	0.20	0/1205	0.42	0/1856
6	G	0.19	0/1249	0.36	0/1930
7	F	0.13	0/2559	0.37	0/3453
8	J	0.25	0/819	0.50	0/1111
8	K	0.16	0/819	0.41	0/1111
All	All	0.16	0/29585	0.37	0/40545

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	1708	0	1745	46	0
1	B	1765	0	1794	58	0
2	C	8551	0	8448	248	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	D	9877	0	9921	252	0
4	E	649	0	645	17	0
5	H	1078	0	598	25	0
6	G	1108	0	592	33	0
7	F	2529	0	2536	108	0
8	J	801	0	799	43	0
8	K	801	0	799	26	0
9	D	2	0	0	0	0
10	D	1	0	0	0	0
All	All	28870	0	27877	776	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 14.

All (776) 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)
8:J:193:LEU:HD13	8:J:197:LYS:HZ2	1.30	0.93
2:C:811:GLU:HB3	8:J:197:LYS:HB3	1.53	0.90
2:C:625:LEU:HB2	2:C:718:ASN:HD21	1.46	0.80
2:C:926:MET:HE1	3:D:817:LEU:HG	1.63	0.79
7:F:500:ARG:HA	7:F:503:ILE:HD12	1.61	0.79
6:G:47:DG:H2"	6:G:48:DA:H5"	1.66	0.78
7:F:219:ALA:O	7:F:222:THR:HG23	1.82	0.78
7:F:373:VAL:HA	7:F:376:ILE:HD12	1.66	0.78
8:J:194:SER:H	8:J:197:LYS:HE3	1.47	0.77
3:D:752:ARG:HB3	3:D:777:ILE:HD13	1.69	0.75
3:D:1173:THR:HG21	3:D:1193:VAL:HG21	1.69	0.74
2:C:396:MET:HE2	2:C:396:MET:HA	1.70	0.74
1:A:40:ARG:HD3	1:B:33:THR:HG22	1.70	0.73
1:B:95:MET:HA	1:B:95:MET:HE3	1.71	0.73
2:C:831:GLU:HG3	8:J:188:ASN:HD21	1.51	0.73
2:C:485:PRO:HB2	3:D:853:THR:HG21	1.71	0.73
8:J:184:TYR:HD2	8:J:202:VAL:HG23	1.52	0.73
3:D:1089:PHE:HD2	3:D:1099:LEU:HD21	1.54	0.72
3:D:739:PRO:HG2	3:D:742:LYS:HB2	1.69	0.72
8:J:161:GLU:HB3	8:K:244:ARG:HH22	1.53	0.72
2:C:244:THR:HG22	2:C:245:SER:H	1.54	0.72
3:D:736:VAL:O	3:D:841:ARG:NH1	2.24	0.70
2:C:48:LEU:HD23	2:C:528:ILE:HG13	1.72	0.70
3:D:875:ARG:NH2	6:G:11:DA:OP1	2.25	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:790:ARG:HB2	3:D:811:PHE:HE1	1.57	0.69
3:D:637:LEU:O	3:D:661:ALA:HA	1.93	0.69
2:C:814:LEU:O	2:C:819:ARG:NH2	2.25	0.69
3:D:203:ARG:HA	3:D:206:ARG:HG2	1.75	0.69
2:C:32:VAL:HB	2:C:35:ALA:HB2	1.74	0.69
3:D:478:ARG:HD2	3:D:478:ARG:O	1.91	0.69
2:C:606:LEU:O	2:C:610:ASN:ND2	2.26	0.68
2:C:771:ARG:NH2	2:C:784:LEU:O	2.26	0.68
8:K:185:PHE:CE1	8:K:233:LEU:HG	2.28	0.68
1:A:82:SER:OG	1:A:123:MET:SD	2.51	0.68
8:J:226:ASP:HB3	8:J:231:ARG:HB2	1.75	0.68
2:C:774:PRO:HB3	2:C:830:ARG:HE	1.56	0.68
2:C:1052:ILE:HD12	2:C:1052:ILE:H	1.58	0.68
7:F:426:THR:HG21	7:F:431:GLY:HA2	1.75	0.67
2:C:373:PHE:HD2	2:C:512:ILE:HG21	1.60	0.67
3:D:155:MET:HE2	3:D:223:TRP:HB2	1.75	0.67
1:A:206:ASP:OD1	1:B:226:ASN:ND2	2.26	0.67
7:F:509:LYS:HG2	7:F:513:LYS:HE3	1.75	0.67
1:B:134:LEU:HD11	1:B:136:VAL:HG23	1.77	0.67
2:C:279:ARG:HB2	2:C:280:LYS:HZ2	1.60	0.66
2:C:736:ILE:HD11	2:C:916:ILE:HD12	1.76	0.66
8:K:194:SER:OG	8:K:197:LYS:NZ	2.27	0.66
2:C:128:THR:HG22	2:C:168:ILE:HA	1.76	0.66
1:A:223:ARG:HH21	1:B:213:LYS:HG3	1.60	0.66
2:C:1136:GLU:OE1	3:D:11:ARG:NH2	2.27	0.66
3:D:895:ARG:HB3	3:D:967:THR:HB	1.78	0.66
6:G:46:DC:H2"	6:G:47:DG:C8	2.31	0.66
7:F:296:LEU:HD11	7:F:329:ILE:HG12	1.76	0.65
7:F:476:ARG:HA	7:F:481:LEU:HD23	1.77	0.65
1:B:181:THR:HG21	1:B:191:LYS:HE2	1.77	0.65
3:D:876:ARG:NH1	3:D:1036:GLU:OE2	2.28	0.65
3:D:1139:GLN:NE2	3:D:1151:ASP:OD1	2.29	0.65
7:F:305:SER:HA	7:F:308:LYS:HE2	1.79	0.65
2:C:773:ILE:HD11	2:C:834:ASP:HB2	1.79	0.65
1:A:40:ARG:NH2	2:C:903:ASP:OD1	2.29	0.64
1:A:99:LYS:HD3	1:A:105:VAL:HG12	1.77	0.64
5:H:10:DG:N2	6:G:45:DC:O2	2.30	0.64
2:C:745:ASP:OD1	2:C:878:LYS:NZ	2.30	0.64
1:A:142:ARG:NH1	1:B:230:GLU:OE2	2.29	0.64
2:C:626:VAL:O	2:C:888:ARG:NH2	2.31	0.64
2:C:808:PRO:HA	2:C:832:VAL:HG12	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:43:LEU:HB3	4:E:53:LEU:HD11	1.79	0.64
6:G:23:DT:O2	7:F:313:ARG:NH1	2.31	0.63
3:D:17:ALA:HB1	3:D:21:ARG:HH21	1.63	0.63
3:D:32:GLU:OE1	7:F:367:ARG:NE	2.25	0.63
2:C:1119:GLU:OE2	3:D:89:ARG:NH1	2.31	0.63
7:F:517:PRO:HA	7:F:520:SER:HB2	1.79	0.63
6:G:24:DA:H2'	6:G:25:DA:H4'	1.80	0.63
3:D:1164:ARG:NH2	3:D:1216:ALA:O	2.32	0.63
3:D:820:MET:HE2	3:D:822:GLY:H	1.62	0.63
3:D:466:ALA:HB1	3:D:471:SER:HB3	1.81	0.62
2:C:1042:HIS:HB2	2:C:1060:LYS:HD3	1.81	0.62
1:B:97:LEU:HD22	1:B:110:ILE:HG12	1.81	0.62
3:D:1046:ILE:HG22	3:D:1110:GLN:HA	1.82	0.62
7:F:263:MET:HE2	7:F:281:MET:HB3	1.81	0.62
2:C:601:ASP:HB2	2:C:926:MET:HG3	1.81	0.62
2:C:924:ARG:HD3	3:D:808:THR:HB	1.81	0.62
2:C:455:LEU:HD21	2:C:500:LEU:HD13	1.81	0.62
3:D:1082:LYS:O	3:D:1085:ARG:NH1	2.32	0.62
2:C:396:MET:HE1	2:C:419:ASN:O	2.00	0.62
7:F:219:ALA:O	7:F:222:THR:CG2	2.48	0.62
2:C:171:THR:HB	2:C:439:PHE:HE1	1.65	0.62
8:J:195:LYS:N	8:J:196:PRO:HD2	2.15	0.62
2:C:604:ARG:HD3	2:C:927:ASN:HB3	1.81	0.61
6:G:41:DG:H2"	6:G:42:DG:C8	2.35	0.61
1:B:75:GLU:OE2	1:B:79:ASN:ND2	2.33	0.61
8:J:150:ARG:HH22	8:K:247:ARG:HH22	1.48	0.61
2:C:311:VAL:HA	2:C:509:PHE:CE2	2.35	0.61
2:C:264:LYS:HG2	2:C:264:LYS:O	2.00	0.61
4:E:42:GLU:O	4:E:46:ARG:NH1	2.34	0.61
3:D:757:GLU:OE2	3:D:770:ARG:NH1	2.32	0.61
5:H:2:DG:H2"	5:H:3:DC:H5"	1.83	0.61
8:K:185:PHE:HE1	8:K:233:LEU:HG	1.65	0.61
2:C:1112:ILE:HD13	3:D:548:SER:HA	1.82	0.61
2:C:102:SER:HA	2:C:142:ASN:HB2	1.82	0.61
5:H:51:DT:H2"	5:H:52:DG:N7	2.15	0.61
3:D:363:PRO:HG2	7:F:296:LEU:HD22	1.81	0.60
8:J:225:ILE:HG13	8:J:226:ASP:N	2.15	0.60
2:C:259:ARG:O	2:C:263:GLU:HG2	2.01	0.60
7:F:273:LEU:HB3	7:F:278:ARG:HB2	1.82	0.60
8:J:160:GLU:HA	8:J:183:ARG:HH22	1.66	0.60
2:C:97:GLU:O	2:C:401:ARG:NH1	2.35	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:645:GLU:OE1	2:C:668:ARG:NH1	2.34	0.60
7:F:467:LEU:HB2	7:F:519:ARG:HH12	1.66	0.60
8:K:158:LEU:HD11	8:K:179:PHE:HE1	1.66	0.60
2:C:720:LEU:HD23	2:C:913:VAL:HA	1.82	0.60
7:F:370:VAL:HA	7:F:373:VAL:HG12	1.83	0.60
2:C:821:LEU:HG	7:F:524:ARG:HH22	1.66	0.60
2:C:124:ASP:OD1	2:C:851:ARG:NH1	2.35	0.60
2:C:954:ASP:OD1	2:C:955:TRP:N	2.35	0.60
3:D:442:GLY:HA3	3:D:523:GLN:HB2	1.83	0.60
7:F:503:ILE:HA	7:F:506:ILE:HG22	1.82	0.60
2:C:139:PHE:HB3	2:C:148:LYS:HB2	1.84	0.60
1:A:24:GLU:OE2	1:A:24:GLU:N	2.34	0.59
2:C:770:THR:HG23	2:C:772:ASP:H	1.67	0.59
2:C:658:ILE:HD11	2:C:688:PRO:HB3	1.83	0.59
3:D:579:LEU:HD22	3:D:808:THR:HG22	1.84	0.59
2:C:811:GLU:OE1	8:J:196:PRO:HB2	2.03	0.59
3:D:262:GLN:HB2	3:D:313:VAL:HG11	1.85	0.59
3:D:1023:ASP:OD1	3:D:1023:ASP:N	2.35	0.59
2:C:152:VAL:HG21	2:C:418:ILE:HG21	1.85	0.59
1:B:182:ARG:NH1	1:B:185:GLN:HG3	2.18	0.59
3:D:590:THR:OG1	3:D:630:ARG:NH1	2.34	0.59
2:C:279:ARG:HH12	7:F:215:ALA:HB1	1.68	0.59
3:D:1217:THR:HG23	3:D:1219:SER:H	1.66	0.59
2:C:928:ILE:HD12	3:D:817:LEU:HD21	1.84	0.58
3:D:173:ARG:HE	3:D:177:LEU:HG	1.67	0.58
3:D:1009:GLN:O	3:D:1145:GLN:NE2	2.36	0.58
2:C:760:ARG:HB3	2:C:865:VAL:HG12	1.85	0.58
2:C:961:ASP:OD2	2:C:962:GLU:N	2.34	0.58
8:K:181:LEU:HD12	8:K:202:VAL:HG11	1.84	0.58
2:C:774:PRO:HD2	2:C:834:ASP:HB3	1.84	0.58
3:D:885:ILE:HG22	3:D:994:ALA:HA	1.85	0.58
6:G:9:DT:H2'	6:G:10:DG:C8	2.38	0.58
2:C:308:LEU:O	2:C:331:SER:OG	2.20	0.58
2:C:797:ARG:HH22	3:D:478:ARG:HA	1.69	0.58
6:G:44:DG:H5'	6:G:44:DG:C8	2.39	0.58
8:J:216:SER:O	8:J:220:TYR:HD1	1.85	0.58
2:C:785:ASP:HA	2:C:791:ARG:HH21	1.68	0.58
1:A:217:GLU:OE1	1:A:217:GLU:N	2.33	0.58
5:H:41:DC:H2"	5:H:42:DT:H72	1.86	0.58
7:F:467:LEU:HD11	7:F:513:LYS:HD2	1.86	0.58
8:K:225:ILE:HG13	8:K:226:ASP:H	1.67	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:64:LYS:HZ2	3:D:77:ARG:HE	1.51	0.58
3:D:139:VAL:HG12	3:D:252:PHE:HB2	1.85	0.58
3:D:1227:GLN:HG3	6:G:10:DG:H5'	1.86	0.57
7:F:506:ILE:O	7:F:510:THR:HG23	2.04	0.57
2:C:1024:THR:H	3:D:730:THR:HG21	1.69	0.57
3:D:190:LYS:HE2	3:D:193:ALA:HB2	1.86	0.57
4:E:85:PRO:HB3	4:E:94:ILE:HD11	1.85	0.57
1:A:40:ARG:HE	2:C:902:GLU:HB3	1.69	0.57
6:G:9:DT:H2'	6:G:10:DG:H8	1.68	0.57
8:J:184:TYR:CD2	8:J:202:VAL:HG23	2.37	0.57
1:B:12:ASP:OD1	1:B:12:ASP:N	2.37	0.57
2:C:736:ILE:HG12	2:C:916:ILE:HB	1.85	0.57
3:D:981:ARG:O	3:D:1152:LYS:NZ	2.37	0.57
2:C:601:ASP:OD1	2:C:602:ALA:N	2.37	0.57
7:F:339:LYS:HB3	7:F:341:TYR:CE1	2.40	0.57
7:F:471:GLU:HB3	7:F:510:THR:HG22	1.85	0.57
3:D:24:SER:OG	3:D:26:GLY:O	2.23	0.57
2:C:1012:ASP:OD2	2:C:1015:SER:OG	2.21	0.57
7:F:456:LEU:HB2	7:F:526:TYR:CE2	2.39	0.57
1:A:220:GLY:HA2	1:A:223:ARG:HG2	1.85	0.57
2:C:228:ARG:HH12	5:H:42:DT:H2"	1.69	0.57
3:D:576:MET:HE1	3:D:694:ALA:HA	1.86	0.57
3:D:782:THR:HG22	3:D:820:MET:HG3	1.87	0.57
3:D:1106:GLU:OE2	3:D:1125:GLN:NE2	2.38	0.57
2:C:475:VAL:HB	3:D:854:HIS:HD2	1.70	0.56
3:D:1089:PHE:CD2	3:D:1099:LEU:HD21	2.37	0.56
7:F:409:LYS:O	7:F:413:ILE:HG22	2.06	0.56
1:B:80:LEU:HA	1:B:83:LEU:HG	1.87	0.56
1:B:95:MET:HB2	1:B:138:LEU:HB2	1.88	0.56
2:C:311:VAL:HA	2:C:509:PHE:HE2	1.71	0.56
2:C:774:PRO:HB3	2:C:830:ARG:NE	2.20	0.56
3:D:983:MET:HA	3:D:983:MET:HE3	1.87	0.56
5:H:51:DT:H2"	5:H:52:DG:C8	2.41	0.56
7:F:296:LEU:HD23	7:F:300:LEU:HD21	1.88	0.56
7:F:310:TYR:CD2	7:F:355:ILE:HG21	2.40	0.56
7:F:226:ASP:HB3	7:F:229:ARG:HB3	1.87	0.56
1:B:23:ILE:HG22	1:B:26:LEU:HD11	1.86	0.56
2:C:773:ILE:HD12	2:C:774:PRO:HD2	1.88	0.56
3:D:61:TYR:HB3	3:D:77:ARG:HH12	1.70	0.56
3:D:678:PRO:HG2	3:D:700:LEU:HD11	1.88	0.56
3:D:739:PRO:HD3	3:D:789:LEU:HD13	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:F:490:ASP:OD1	7:F:490:ASP:N	2.37	0.56
7:F:508:SER:HA	7:F:511:MET:SD	2.46	0.56
1:B:171:VAL:HA	1:B:198:THR:HA	1.88	0.56
2:C:231:ARG:HB2	2:C:280:LYS:HD3	1.88	0.56
2:C:393:MET:HE3	2:C:393:MET:HA	1.86	0.56
3:D:900:GLU:OE1	3:D:900:GLU:N	2.30	0.56
5:H:38:DG:C8	5:H:38:DG:H5"	2.41	0.56
3:D:459:ARG:HH12	3:D:463:LEU:HG	1.70	0.56
1:A:76:ILE:HD11	1:A:126:ALA:HB2	1.87	0.55
1:B:16:ASP:N	1:B:16:ASP:OD1	2.37	0.55
5:H:39:DA:H4'	5:H:40:DG:OP1	2.07	0.55
3:D:173:ARG:NH2	3:D:180:ASP:OD2	2.40	0.55
3:D:530:GLU:HB2	3:D:578:ARG:HD2	1.87	0.55
2:C:1102:VAL:HG22	2:C:1112:ILE:HG23	1.89	0.55
2:C:532:THR:OG1	2:C:534:ASP:OD1	2.24	0.55
3:D:1122:LEU:HB2	3:D:1130:VAL:HG21	1.88	0.55
6:G:30:DG:H2"	6:G:31:DA:C8	2.42	0.55
6:G:37:DT:H2'	6:G:38:DG:C8	2.42	0.55
7:F:241:LEU:HD22	7:F:245:GLU:HG2	1.88	0.55
3:D:1108:GLY:HA3	3:D:1125:GLN:HE21	1.71	0.55
2:C:587:VAL:HG22	2:C:591:THR:HB	1.88	0.55
3:D:939:GLU:OE2	3:D:942:GLN:NE2	2.35	0.55
3:D:632:LYS:NZ	3:D:665:GLU:OE2	2.34	0.55
7:F:286:ARG:O	7:F:290:ARG:HG2	2.07	0.55
5:H:20:DC:H2'	5:H:21:DT:C6	2.42	0.54
5:H:22:DC:H2'	5:H:23:DA:C8	2.43	0.54
7:F:386:LEU:HD22	7:F:394:PRO:HB3	1.89	0.54
1:A:3:ILE:HD13	1:A:189:PHE:HB3	1.88	0.54
2:C:793:GLY:H	2:C:847:VAL:HG23	1.72	0.54
6:G:8:DG:H2'	6:G:9:DT:H71	1.89	0.54
7:F:398:GLU:HA	7:F:401:LYS:HD2	1.89	0.54
2:C:746:VAL:HG12	2:C:747:LEU:HD12	1.90	0.54
2:C:818:GLU:O	2:C:822:ARG:HG2	2.07	0.54
7:F:311:THR:OG1	7:F:312:GLY:N	2.40	0.54
8:J:157:GLU:HB2	8:J:166:TRP:HD1	1.71	0.54
8:J:214:VAL:O	8:J:218:VAL:HG23	2.07	0.54
1:A:9:LEU:HB2	1:B:221:LEU:HD21	1.89	0.54
1:B:84:VAL:HG12	1:B:199:LYS:HD3	1.89	0.54
2:C:1124:LEU:HD22	3:D:417:LEU:HD11	1.88	0.54
3:D:84:ARG:HD3	3:D:86:LYS:HZ1	1.71	0.54
4:E:42:GLU:OE1	4:E:100:HIS:NE2	2.37	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:ARG:NE	1:A:135:GLU:OE2	2.36	0.54
3:D:500:ARG:HB2	3:D:541:MET:HE2	1.90	0.54
3:D:504:LEU:HB3	3:D:1005:GLU:HG2	1.90	0.54
7:F:210:GLU:O	7:F:214:GLN:NE2	2.41	0.54
1:A:51:VAL:HG21	1:A:138:LEU:HD23	1.89	0.54
8:J:201:HIS:C	8:J:201:HIS:CD2	2.85	0.54
1:A:29:GLY:N	1:A:190:ASP:OD2	2.37	0.54
7:F:318:LEU:HA	7:F:321:ILE:HD12	1.90	0.54
2:C:105:LEU:HD11	2:C:137:ALA:HB1	1.88	0.54
3:D:62:CYS:SG	3:D:77:ARG:NE	2.82	0.54
8:J:193:LEU:HB3	8:J:198:ILE:HD11	1.90	0.54
1:B:27:GLU:OE2	1:B:28:PRO:HD2	2.07	0.53
2:C:143:ASN:HD21	2:C:409:VAL:HG11	1.72	0.53
3:D:116:TYR:HD1	3:D:295:ARG:HG2	1.73	0.53
3:D:417:LEU:HD22	3:D:1253:ILE:HG23	1.88	0.53
3:D:459:ARG:O	3:D:459:ARG:NH1	2.41	0.53
7:F:375:VAL:HG13	7:F:413:ILE:HD12	1.91	0.53
3:D:896:GLY:HA3	3:D:961:LYS:HZ2	1.74	0.53
7:F:511:MET:O	7:F:515:ARG:HD2	2.07	0.53
2:C:1087:GLU:HG3	2:C:1091:ILE:HD11	1.90	0.53
3:D:554:GLU:HG3	4:E:54:VAL:HG11	1.91	0.53
3:D:354:LEU:HD13	3:D:370:GLU:HB3	1.90	0.53
7:F:236:GLY:HA2	7:F:301:ARG:HH22	1.72	0.53
1:B:56:ILE:HG22	1:B:136:VAL:HA	1.91	0.53
2:C:33:PRO:HB2	2:C:700:GLN:HB2	1.90	0.53
2:C:601:ASP:OD1	2:C:603:ASN:ND2	2.41	0.53
2:C:185:VAL:HG23	2:C:316:VAL:HG22	1.89	0.53
5:H:10:DG:N2	6:G:46:DC:O2	2.41	0.53
6:G:31:DA:H2"	6:G:32:DT:H71	1.90	0.53
1:B:146:TYR:O	3:D:624:ARG:NH2	2.42	0.53
3:D:663:MET:HA	3:D:663:MET:HE2	1.91	0.53
7:F:358:ALA:O	7:F:362:GLN:HB3	2.09	0.53
2:C:926:MET:HA	2:C:926:MET:HE2	1.89	0.53
5:H:37:DG:H4'	7:F:308:LYS:HD3	1.91	0.52
7:F:280:ASP:O	7:F:284:ILE:HG12	2.09	0.52
7:F:477:LEU:HD11	7:F:492:ILE:HG12	1.89	0.52
1:A:170:PRO:HB3	1:A:201:SER:HB2	1.91	0.52
1:A:179:ASP:OD1	1:A:179:ASP:N	2.43	0.52
3:D:673:PHE:HA	3:D:676:LEU:HD12	1.91	0.52
3:D:890:ASP:OD1	3:D:963:ARG:NH1	2.42	0.52
1:B:101:GLY:N	1:B:132:GLY:O	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:757:ILE:HG21	2:C:803:VAL:HG21	1.91	0.52
3:D:997:ILE:HG22	3:D:1001:GLN:HE21	1.75	0.52
3:D:1119:HIS:O	3:D:1123:ARG:HG2	2.10	0.52
8:K:178:GLU:HB3	8:K:221:LEU:HD21	1.91	0.52
2:C:276:ASP:O	2:C:280:LYS:NZ	2.42	0.52
7:F:372:MET:HA	7:F:375:VAL:HG12	1.91	0.52
3:D:459:ARG:HG3	3:D:490:VAL:HG12	1.92	0.52
3:D:1047:ALA:HB2	3:D:1111:LEU:HD21	1.90	0.52
4:E:48:SER:OG	4:E:108:GLU:OE2	2.24	0.52
2:C:1024:THR:HG23	3:D:730:THR:HG22	1.91	0.52
3:D:752:ARG:NH2	3:D:780:GLU:OE1	2.43	0.52
7:F:378:LYS:HA	7:F:381:ARG:HG2	1.92	0.52
2:C:764:LEU:HB3	2:C:808:PRO:HB2	1.91	0.52
1:B:142:ARG:HG2	1:B:143:GLY:N	2.25	0.51
2:C:208:ARG:NH2	2:C:307:ASP:OD2	2.42	0.51
2:C:558:ARG:HD2	2:C:570:TYR:HB3	1.92	0.51
2:C:801:ILE:HD11	2:C:836:SER:OG	2.10	0.51
3:D:866:ARG:NH1	3:D:1010:LEU:O	2.43	0.51
6:G:40:DA:H2"	6:G:41:DG:C8	2.45	0.51
7:F:398:GLU:O	7:F:402:GLU:HG3	2.10	0.51
3:D:981:ARG:NH1	3:D:986:GLY:O	2.42	0.51
3:D:1228:GLU:O	3:D:1232:VAL:HG12	2.09	0.51
3:D:1173:THR:O	3:D:1173:THR:OG1	2.29	0.51
7:F:476:ARG:HG3	7:F:481:LEU:HB2	1.91	0.51
2:C:814:LEU:HB3	2:C:819:ARG:HE	1.74	0.51
3:D:207:GLN:O	3:D:211:ARG:HG2	2.10	0.51
3:D:820:MET:HE3	3:D:821:LYS:N	2.25	0.51
8:J:184:TYR:CD1	8:J:193:LEU:HD11	2.45	0.51
1:A:22:VAL:HG12	1:A:193:ILE:HG12	1.92	0.51
3:D:886:VAL:C	3:D:887:ARG:HD2	2.35	0.51
8:J:203:TRP:CD1	8:J:207:PHE:HB2	2.46	0.51
1:B:149:ALA:HB1	1:B:163:PRO:HB2	1.92	0.51
2:C:182:SER:O	2:C:186:TYR:OH	2.21	0.51
3:D:556:ARG:NH2	4:E:35:ILE:O	2.42	0.51
3:D:1030:ARG:HG2	3:D:1141:VAL:HG21	1.91	0.51
3:D:191:ALA:HA	3:D:194:ARG:HG2	1.92	0.51
3:D:350:ARG:HH11	3:D:377:SER:HB2	1.76	0.51
3:D:876:ARG:HH22	3:D:1032:GLN:HG3	1.76	0.51
1:B:43:LEU:HD23	1:B:174:VAL:HG12	1.93	0.51
2:C:308:LEU:H	2:C:308:LEU:HD23	1.74	0.51
2:C:150:GLN:NE2	2:C:413:THR:OG1	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:278:TYR:HD2	2:C:292:ALA:HB2	1.76	0.51
1:A:10:SER:OG	1:A:11:GLU:N	2.42	0.51
2:C:246:GLU:OE2	2:C:246:GLU:N	2.42	0.51
3:D:487:LEU:O	3:D:491:ILE:HG12	2.11	0.51
5:H:13:DC:H1'	5:H:14:DC:H5'	1.93	0.51
8:J:236:LEU:N	8:J:240:GLY:O	2.33	0.51
3:D:74:ILE:HD12	3:D:74:ILE:H	1.75	0.50
3:D:168:GLY:O	3:D:171:GLU:HG3	2.11	0.50
3:D:478:ARG:HH12	3:D:480:ARG:HA	1.76	0.50
5:H:3:DC:H2"	5:H:4:DC:C5	2.46	0.50
1:B:182:ARG:NH1	1:B:185:GLN:H	2.09	0.50
2:C:44:LEU:H	2:C:44:LEU:HD23	1.76	0.50
2:C:121:GLU:HB2	2:C:125:LYS:HE2	1.93	0.50
3:D:1106:GLU:CD	3:D:1108:GLY:H	2.19	0.50
1:A:158:GLU:HG2	1:A:160:GLY:H	1.76	0.50
2:C:507:ASN:C	2:C:509:PHE:H	2.19	0.50
3:D:84:ARG:HD3	3:D:86:LYS:NZ	2.26	0.50
3:D:1176:LEU:O	3:D:1179:SER:OG	2.21	0.50
7:F:463:VAL:HG13	7:F:519:ARG:HD3	1.94	0.50
2:C:421:ARG:HH11	7:F:384:ARG:HH11	1.59	0.50
3:D:203:ARG:HH12	3:D:207:GLN:HB3	1.77	0.50
1:B:5:GLN:N	1:B:5:GLN:OE1	2.44	0.50
1:B:134:LEU:HD12	1:B:135:GLU:N	2.27	0.50
2:C:412:ILE:HD11	2:C:417:LEU:HG	1.93	0.50
3:D:478:ARG:NH1	3:D:480:ARG:HA	2.27	0.50
3:D:862:ASP:OD1	3:D:863:THR:N	2.45	0.50
4:E:95:ALA:O	4:E:99:ILE:HG13	2.12	0.50
7:F:242:ASN:OD1	7:F:242:ASN:N	2.45	0.50
1:A:151:GLN:HA	1:A:151:GLN:OE1	2.12	0.50
7:F:378:LYS:NZ	7:F:403:MET:SD	2.85	0.50
1:A:144:ARG:NH2	1:B:27:GLU:OE1	2.45	0.50
2:C:239:LYS:NZ	2:C:269:GLY:H	2.10	0.50
7:F:488:THR:HG22	7:F:489:LEU:HD12	1.93	0.50
3:D:424:TYR:CE2	3:D:547:LEU:HD11	2.46	0.49
3:D:651:PHE:HB3	3:D:655:GLY:HA2	1.92	0.49
3:D:1243:ASP:OD1	3:D:1244:LYS:N	2.45	0.49
8:J:176:PRO:O	8:J:180:THR:HG23	2.12	0.49
1:A:40:ARG:NH1	1:B:32:TYR:HB2	2.27	0.49
2:C:1052:ILE:O	3:D:89:ARG:NH2	2.43	0.49
7:F:259:ALA:HB1	7:F:281:MET:HG3	1.94	0.49
7:F:263:MET:HE3	7:F:282:MET:HG2	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:F:429:ASP:N	7:F:429:ASP:OD1	2.45	0.49
1:B:95:MET:HE1	1:B:112:PRO:HA	1.93	0.49
2:C:787:ARG:HE	2:C:789:ILE:HD11	1.77	0.49
1:B:85:VAL:HG12	1:B:118:VAL:HG22	1.93	0.49
2:C:102:SER:O	2:C:142:ASN:N	2.46	0.49
2:C:401:ARG:HA	2:C:404:MET:SD	2.52	0.49
8:J:152:THR:HG22	8:J:157:GLU:HG2	1.95	0.49
3:D:219:LEU:O	3:D:222:ILE:HG12	2.12	0.49
4:E:44:LEU:HD12	4:E:53:LEU:HD13	1.93	0.49
7:F:380:GLY:O	7:F:383:GLN:HG3	2.12	0.49
7:F:476:ARG:HD3	7:F:482:THR:HB	1.95	0.49
2:C:34:GLY:HA3	2:C:700:GLN:HG3	1.94	0.49
3:D:790:ARG:HB2	3:D:811:PHE:CE1	2.43	0.49
6:G:1:DT:H2”	6:G:2:DG:H5”	1.94	0.49
6:G:22:DA:H1’	7:F:313:ARG:HD3	1.93	0.49
2:C:542:ALA:HB3	2:C:579:MET:HG3	1.93	0.49
3:D:885:ILE:HG13	3:D:887:ARG:HD3	1.93	0.49
2:C:831:GLU:HG3	8:J:188:ASN:ND2	2.23	0.49
3:D:565:ILE:HG23	3:D:575:ALA:HB3	1.95	0.49
8:J:160:GLU:HA	8:J:183:ARG:NH2	2.28	0.49
2:C:704:ASP:OD2	2:C:710:ASP:N	2.46	0.49
2:C:855:ARG:HG3	2:C:866:ASN:HA	1.95	0.49
2:C:1095:ASP:O	2:C:1099:ARG:HG3	2.13	0.49
8:K:217:TYR:HA	8:K:220:TYR:CD1	2.48	0.49
2:C:42:ALA:HB2	2:C:975:PRO:HG2	1.95	0.48
2:C:202:VAL:HG12	2:C:214:PHE:HB2	1.95	0.48
3:D:486:VAL:O	3:D:490:VAL:HG13	2.13	0.48
3:D:897:ILE:HG23	3:D:1128:ARG:NH2	2.28	0.48
7:F:488:THR:HG22	7:F:489:LEU:H	1.78	0.48
6:G:34:DA:H2”	6:G:35:DG:C8	2.48	0.48
7:F:328:LEU:O	7:F:332:VAL:HG13	2.13	0.48
7:F:477:LEU:CD1	7:F:492:ILE:HG12	2.43	0.48
1:A:205:ARG:NH1	1:B:226:ASN:OD1	2.46	0.48
2:C:787:ARG:HH21	2:C:789:ILE:HD11	1.79	0.48
3:D:684:VAL:HG11	3:D:696:ILE:HD11	1.96	0.48
3:D:567:SER:HB3	3:D:574:LEU:HD22	1.95	0.48
3:D:594:GLY:N	3:D:598:GLU:OE2	2.46	0.48
8:K:214:VAL:O	8:K:218:VAL:HG12	2.14	0.48
2:C:259:ARG:O	2:C:262:LEU:HG	2.12	0.48
2:C:1044:ARG:NH2	3:D:423:ASP:OD2	2.32	0.48
6:G:43:DC:H2”	6:G:44:DG:C8	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:164:GLU:OE2	8:J:164:GLU:N	2.43	0.48
1:B:93:VAL:HG11	1:B:116:VAL:HG21	1.96	0.48
3:D:62:CYS:SG	3:D:64:LYS:HG3	2.53	0.48
3:D:656:TRP:C	3:D:656:TRP:CD1	2.92	0.48
3:D:943:ASP:OD1	3:D:981:ARG:NH2	2.46	0.48
2:C:623:ALA:HB2	2:C:709:ASP:HB3	1.95	0.48
3:D:820:MET:HE3	3:D:821:LYS:H	1.78	0.48
1:B:101:GLY:HA2	1:B:131:LYS:HA	1.95	0.48
2:C:927:ASN:O	2:C:930:GLN:HG3	2.14	0.48
3:D:427:ARG:NH1	3:D:540:GLN:OE1	2.41	0.48
3:D:475:MET:N	3:D:475:MET:HE2	2.29	0.48
8:J:153:PHE:CE2	8:J:189:ALA:HB1	2.48	0.48
8:K:194:SER:H	8:K:197:LYS:HE2	1.78	0.48
1:A:144:ARG:HH21	1:B:1:MET:HE2	1.78	0.48
2:C:38:ARG:NH2	2:C:624:PRO:O	2.47	0.48
1:A:95:MET:HB2	1:A:138:LEU:HB2	1.94	0.48
2:C:501:SER:HB2	2:C:504:ALA:HB2	1.94	0.48
2:C:524:VAL:H	2:C:552:GLY:HA3	1.79	0.48
2:C:577:ASP:OD1	2:C:577:ASP:N	2.46	0.48
7:F:336:ASP:HB3	7:F:339:LYS:HD2	1.96	0.48
3:D:32:GLU:OE2	3:D:42:GLU:HG3	2.13	0.47
4:E:60:ARG:NH2	4:E:63:GLN:OE1	2.46	0.47
1:A:176:TYR:OH	2:C:1016:GLY:O	2.26	0.47
2:C:721:VAL:O	2:C:1025:VAL:HA	2.14	0.47
2:C:771:ARG:NH2	2:C:786:GLU:OE2	2.47	0.47
2:C:821:LEU:HD11	7:F:527:LEU:HD22	1.96	0.47
2:C:1128:LEU:HD23	2:C:1135:VAL:HG21	1.96	0.47
3:D:257:GLY:O	3:D:260:SER:OG	2.29	0.47
3:D:901:LEU:HB3	3:D:958:THR:O	2.13	0.47
4:E:98:GLU:HB3	4:E:104:LEU:HD13	1.94	0.47
2:C:1069:GLY:N	2:C:1072:GLU:OE1	2.47	0.47
3:D:586:TYR:O	3:D:590:THR:HG23	2.14	0.47
3:D:613:SER:O	3:D:636:ARG:HG2	2.14	0.47
3:D:776:GLU:HA	3:D:779:LYS:HE2	1.97	0.47
3:D:114:LEU:HD21	3:D:261:ILE:HD12	1.96	0.47
3:D:218:ARG:O	3:D:222:ILE:HG23	2.14	0.47
3:D:1054:ARG:HH21	3:D:1067:VAL:HG11	1.78	0.47
3:D:1229:THR:O	3:D:1233:LEU:HB2	2.15	0.47
8:J:182:LEU:O	8:J:186:VAL:HG22	2.14	0.47
8:J:193:LEU:HD13	8:J:197:LYS:NZ	2.15	0.47
2:C:103:MET:SD	2:C:404:MET:HE2	2.54	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:348:LEU:HD13	2:C:365:VAL:HG12	1.96	0.47
2:C:595:PRO:O	2:C:889:HIS:NE2	2.42	0.47
2:C:1103:TYR:CZ	7:F:448:VAL:HG22	2.49	0.47
2:C:603:ASN:O	2:C:607:MET:HG3	2.14	0.47
1:A:18:ARG:NH2	2:C:997:ASP:OD2	2.48	0.47
1:A:40:ARG:NH1	1:B:29:GLY:O	2.47	0.47
2:C:884:LYS:HG2	2:C:1033:LEU:HD12	1.96	0.47
2:C:930:GLN:HB2	2:C:1028:MET:HE3	1.96	0.47
3:D:63:GLY:HA3	3:D:66:LYS:HE2	1.97	0.47
3:D:312:MET:HE2	3:D:312:MET:HB2	1.77	0.47
6:G:50:DG:H2"	6:G:51:DG:O4'	2.15	0.47
7:F:397:GLU:O	7:F:401:LYS:HG3	2.15	0.47
8:J:218:VAL:HG13	8:J:233:LEU:HD21	1.97	0.47
1:A:223:ARG:HD2	1:B:216:VAL:HG21	1.96	0.47
2:C:62:GLU:HB3	2:C:70:TRP:HB2	1.96	0.47
2:C:812:THR:OG1	2:C:813:GLU:N	2.48	0.47
2:C:840:PRO:HG2	2:C:843:GLU:OE2	2.15	0.47
2:C:861:LEU:HD23	2:C:865:VAL:HG23	1.96	0.47
3:D:666:THR:HG21	3:D:683:PHE:CE1	2.49	0.47
8:J:157:GLU:HB2	8:J:166:TRP:CD1	2.49	0.47
3:D:634:LYS:HG2	3:D:665:GLU:HG2	1.97	0.46
1:A:97:LEU:HB2	1:A:110:ILE:HG22	1.96	0.46
3:D:493:GLU:HA	4:E:35:ILE:HG22	1.97	0.46
2:C:108:SER:OG	2:C:109:ASP:N	2.48	0.46
3:D:589:THR:HG21	3:D:688:MET:HG3	1.97	0.46
5:H:38:DG:C6	5:H:39:DA:C6	3.04	0.46
8:J:162:THR:HG23	8:J:164:GLU:OE2	2.15	0.46
2:C:646:GLU:HB3	2:C:662:HIS:NE2	2.30	0.46
2:C:685:ASN:OD1	2:C:685:ASN:N	2.46	0.46
3:D:1005:GLU:HB3	3:D:1006:PRO:HD3	1.96	0.46
1:B:59:VAL:HG13	1:B:66:VAL:HG23	1.98	0.46
1:B:99:LYS:HG3	1:B:105:VAL:HG22	1.96	0.46
2:C:274:LEU:HB3	2:C:292:ALA:HB3	1.98	0.46
3:D:902:ALA:H	3:D:913:ASP:HB2	1.79	0.46
3:D:1274:PRO:HB3	4:E:82:LEU:HD11	1.98	0.46
1:B:28:PRO:HG3	1:B:188:ASP:O	2.15	0.46
2:C:1007:LYS:HB3	2:C:1022:PRO:HB2	1.97	0.46
3:D:55:THR:HA	3:D:88:ARG:HD2	1.97	0.46
3:D:574:LEU:HD12	3:D:574:LEU:HA	1.74	0.46
3:D:921:TYR:HE1	3:D:949:ILE:HG13	1.79	0.46
4:E:76:LEU:HD23	4:E:76:LEU:H	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:194:SER:HA	8:K:240:GLY:HA3	1.98	0.46
1:B:182:ARG:HH12	1:B:185:GLN:H	1.62	0.46
2:C:47:PRO:HG2	2:C:581:VAL:HG22	1.97	0.46
2:C:875:GLN:OE1	2:C:875:GLN:N	2.49	0.46
2:C:1034:HIS:O	2:C:1035:HIS:ND1	2.48	0.46
3:D:668:LEU:HG	3:D:672:MET:HE2	1.97	0.46
1:A:146:TYR:CG	2:C:743:GLU:HG2	2.51	0.46
1:A:175:THR:O	1:A:194:LEU:HD12	2.16	0.46
1:B:49:ALA:HA	1:B:142:ARG:HA	1.97	0.46
2:C:555:VAL:HG23	2:C:556:GLU:CD	2.41	0.46
3:D:217:ASP:HA	3:D:220:GLU:HG3	1.97	0.46
3:D:525:HIS:HE1	3:D:527:LEU:HD12	1.81	0.46
3:D:656:TRP:HE1	3:D:659:GLY:HA3	1.81	0.46
3:D:851:ILE:O	3:D:854:HIS:HB2	2.16	0.46
8:J:220:TYR:O	8:J:224:LYS:HG2	2.15	0.46
2:C:244:THR:HB	2:C:246:GLU:OE2	2.16	0.45
5:H:39:DA:H2"	5:H:40:DG:C8	2.50	0.45
2:C:1044:ARG:NH2	2:C:1047:GLY:H	2.13	0.45
3:D:17:ALA:HA	3:D:20:ILE:HD12	1.98	0.45
6:G:14:DC:H2'	6:G:15:DG:C8	2.52	0.45
7:F:507:GLU:O	7:F:510:THR:OG1	2.25	0.45
2:C:163:LYS:HB3	2:C:163:LYS:HE2	1.77	0.45
1:B:228:GLU:OE1	1:B:228:GLU:N	2.49	0.45
2:C:760:ARG:CZ	3:D:332:GLY:HA2	2.46	0.45
2:C:825:PHE:HB2	7:F:524:ARG:HH21	1.81	0.45
3:D:613:SER:OG	3:D:614:SER:N	2.49	0.45
3:D:1025:THR:HG23	3:D:1030:ARG:HB2	1.99	0.45
7:F:232:LEU:HA	7:F:235:ILE:HG22	1.99	0.45
2:C:178:GLN:HB2	2:C:436:LEU:HD21	1.98	0.45
3:D:353:ARG:NH2	7:F:319:ASP:OD1	2.49	0.45
7:F:378:LYS:HD2	7:F:403:MET:HE1	1.98	0.45
2:C:467:ARG:NH1	5:H:44:DT:O4'	2.50	0.45
3:D:212:ALA:O	3:D:216:LEU:HG	2.17	0.45
7:F:407:PRO:O	7:F:411:LEU:HD22	2.17	0.45
2:C:867:GLU:N	2:C:867:GLU:OE1	2.49	0.45
3:D:49:GLU:CD	3:D:49:GLU:H	2.25	0.45
3:D:1046:ILE:O	3:D:1077:TYR:OH	2.29	0.45
8:J:193:LEU:O	8:J:241:TYR:N	2.39	0.45
3:D:236:VAL:HG12	3:D:237:ASP:N	2.32	0.45
3:D:987:LYS:HB2	3:D:987:LYS:HE2	1.76	0.45
8:K:184:TYR:HE2	8:K:201:HIS:CG	2.35	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:132:PRO:HB3	2:C:153:PHE:HE1	1.81	0.45
2:C:225:ARG:HD3	2:C:230:ARG:HA	1.99	0.45
2:C:723:ILE:HG22	2:C:723:ILE:O	2.17	0.45
3:D:62:CYS:H	3:D:77:ARG:NH2	2.14	0.45
3:D:1220:TRP:CD1	3:D:1243:ASP:HB2	2.52	0.45
7:F:493:GLY:O	7:F:497:GLY:N	2.50	0.45
1:A:185:GLN:O	1:A:186:ARG:HG3	2.16	0.45
2:C:421:ARG:HH11	7:F:384:ARG:NH1	2.14	0.45
2:C:484:CYS:HB2	2:C:588:SER:HB3	1.98	0.45
2:C:725:PRO:HA	2:C:730:ASN:HD21	1.82	0.45
3:D:139:VAL:HA	3:D:252:PHE:HA	1.98	0.45
8:K:194:SER:O	8:K:198:ILE:HG13	2.17	0.45
1:B:41:THR:HG23	1:B:211:ALA:HB1	1.98	0.44
2:C:248:ILE:HD11	2:C:258:MET:HE2	1.97	0.44
2:C:617:PRO:HB3	2:C:706:PRO:HB2	1.99	0.44
8:J:162:THR:HB	8:K:244:ARG:CZ	2.48	0.44
3:D:350:ARG:NH1	3:D:377:SER:HB2	2.31	0.44
3:D:527:LEU:HD13	3:D:713:VAL:HG12	1.99	0.44
3:D:699:ASP:OD1	3:D:703:ARG:HD3	2.18	0.44
1:B:54:ILE:HD11	1:B:80:LEU:HD12	1.99	0.44
2:C:255:SER:O	2:C:259:ARG:HG3	2.17	0.44
3:D:1166:THR:HG21	3:D:1204:ARG:NH1	2.32	0.44
7:F:408:GLU:O	7:F:412:GLU:HG2	2.17	0.44
7:F:488:THR:HG23	8:J:204:ARG:HH22	1.81	0.44
2:C:849:GLY:C	2:C:850:ILE:HD12	2.42	0.44
3:D:294:LYS:HA	3:D:294:LYS:HD3	1.78	0.44
3:D:1166:THR:HG22	3:D:1204:ARG:O	2.16	0.44
7:F:376:ILE:HA	7:F:413:ILE:HD11	2.00	0.44
7:F:489:LEU:HA	7:F:492:ILE:HD12	1.99	0.44
8:K:225:ILE:HG13	8:K:226:ASP:N	2.32	0.44
2:C:373:PHE:CD2	2:C:512:ILE:HG21	2.48	0.44
2:C:421:ARG:NH1	6:G:22:DA:H2'	2.32	0.44
3:D:145:HIS:HA	3:D:148:LEU:HD23	2.00	0.44
2:C:414:PRO:HA	2:C:417:LEU:HD12	1.98	0.44
2:C:1009:MET:HE1	2:C:1022:PRO:HD3	1.99	0.44
3:D:606:HIS:ND1	3:D:607:PRO:O	2.49	0.44
8:K:166:TRP:CZ3	8:K:171:PRO:HG3	2.52	0.44
2:C:737:LEU:HD13	2:C:741:LEU:HD12	2.00	0.44
7:F:372:MET:SD	7:F:376:ILE:HD11	2.58	0.44
2:C:621:SER:O	2:C:709:ASP:HB2	2.18	0.44
6:G:6:DC:H2"	6:G:7:DC:C6	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:42:DG:H2"	6:G:43:DC:O5'	2.18	0.44
7:F:314:GLY:HA3	7:F:363:ALA:HB1	1.99	0.44
7:F:501:GLU:O	7:F:505:GLN:HG2	2.17	0.44
8:J:220:TYR:HA	8:J:223:ARG:HG2	1.99	0.44
2:C:224:VAL:HG23	2:C:233:PRO:HA	1.98	0.44
2:C:974:THR:HG23	2:C:979:GLY:HA3	2.00	0.44
3:D:758:LYS:HB3	3:D:758:LYS:HE2	1.78	0.44
6:G:18:DG:H2"	6:G:19:DG:N7	2.33	0.44
7:F:468:SER:OG	7:F:471:GLU:OE1	2.35	0.44
1:A:12:ASP:HB2	1:A:20:GLN:HB2	2.00	0.43
1:B:6:ARG:NH1	1:B:236:PRO:O	2.33	0.43
2:C:784:LEU:O	2:C:791:ARG:NH2	2.52	0.43
8:J:158:LEU:HD11	8:J:183:ARG:NE	2.33	0.43
3:D:1003:ILE:O	3:D:1142:TYR:OH	2.28	0.43
2:C:224:VAL:HG21	2:C:234:VAL:N	2.33	0.43
2:C:762:THR:HG22	2:C:764:LEU:H	1.83	0.43
3:D:1165:VAL:HG23	3:D:1205:PRO:HA	2.00	0.43
7:F:213:ARG:O	7:F:217:LYS:HG3	2.19	0.43
1:B:70:LYS:HA	1:B:70:LYS:HD3	1.71	0.43
1:B:77:ILE:O	1:B:81:LYS:HB2	2.19	0.43
3:D:823:LEU:HD13	3:D:835:PRO:HB3	2.01	0.43
8:K:176:PRO:O	8:K:180:THR:HG23	2.19	0.43
2:C:139:PHE:HB2	2:C:414:PRO:HG3	2.00	0.43
2:C:346:VAL:O	2:C:350:GLU:HG2	2.17	0.43
2:C:388:GLN:HG3	2:C:430:PHE:HB2	2.00	0.43
5:H:44:DT:H5"	5:H:44:DT:C6	2.53	0.43
1:A:18:ARG:NE	1:A:195:ASP:OD2	2.50	0.43
1:B:177:LYS:NZ	1:B:179:ASP:OD1	2.52	0.43
2:C:146:GLU:OE2	2:C:146:GLU:N	2.51	0.43
3:D:83:THR:OG1	3:D:84:ARG:N	2.51	0.43
3:D:612:TYR:CZ	3:D:627:LEU:HD22	2.53	0.43
8:J:192:VAL:HG23	8:J:236:LEU:HD23	1.99	0.43
3:D:866:ARG:NH1	3:D:1008:THR:O	2.51	0.43
3:D:921:TYR:O	3:D:1150:HIS:NE2	2.45	0.43
1:B:41:THR:O	1:B:45:SER:HB2	2.19	0.43
1:B:84:VAL:HG13	1:B:120:ASN:HD21	1.84	0.43
2:C:343:GLU:HB3	2:C:355:MET:HE2	1.99	0.43
2:C:548:ILE:HD12	2:C:549:ASP:H	1.83	0.43
3:D:668:LEU:HG	3:D:672:MET:CE	2.49	0.43
3:D:693:GLN:O	3:D:697:ILE:HG22	2.19	0.43
5:H:45:DC:H2'	5:H:46:DA:C8	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:11:GLU:HB2	1:B:21:PHE:CD1	2.54	0.43
2:C:389:ILE:O	2:C:393:MET:HG2	2.19	0.43
2:C:1057:LEU:HD12	2:C:1057:LEU:H	1.83	0.43
3:D:126:GLU:OE1	3:D:387:ARG:NH2	2.51	0.43
3:D:921:TYR:OH	3:D:946:ASP:OD1	2.28	0.43
3:D:1085:ARG:O	3:D:1113:GLU:HB2	2.19	0.43
4:E:63:GLN:HG2	4:E:78:TYR:CE2	2.53	0.43
2:C:307:ASP:OD1	2:C:307:ASP:N	2.51	0.43
2:C:314:TYR:HB3	2:C:509:PHE:HZ	1.84	0.43
3:D:207:GLN:NE2	3:D:208:ILE:HG13	2.34	0.43
3:D:836:VAL:HG23	3:D:848:GLU:CD	2.44	0.43
3:D:931:ASP:C	3:D:932:GLU:HG3	2.44	0.43
6:G:2:DG:H2"	6:G:3:DC:H5'	2.00	0.43
2:C:475:VAL:HB	3:D:854:HIS:CD2	2.51	0.42
2:C:482:ARG:HG2	2:C:512:ILE:HG23	2.00	0.42
2:C:729:HIS:ND1	2:C:897:LYS:HD2	2.34	0.42
3:D:24:SER:HB2	3:D:94:HIS:HB3	2.01	0.42
3:D:997:ILE:O	3:D:1001:GLN:HG3	2.18	0.42
7:F:377:ASN:C	7:F:377:ASN:ND2	2.77	0.42
8:K:182:LEU:O	8:K:186:VAL:HG23	2.18	0.42
1:A:158:GLU:HG2	1:A:159:ILE:N	2.33	0.42
2:C:110:PRO:HA	2:C:135:VAL:HG12	2.01	0.42
2:C:467:ARG:HA	2:C:467:ARG:HD2	1.76	0.42
3:D:177:LEU:O	3:D:181:LEU:HG	2.19	0.42
3:D:894:GLU:O	3:D:961:LYS:NZ	2.49	0.42
5:H:46:DA:H2"	5:H:47:DC:H5'	2.01	0.42
8:J:184:TYR:HE2	8:J:201:HIS:CG	2.37	0.42
2:C:480:TYR:HB2	3:D:850:PHE:CE2	2.54	0.42
2:C:763:LYS:HE2	2:C:763:LYS:HB2	1.84	0.42
2:C:900:PRO:HB2	2:C:902:GLU:OE1	2.20	0.42
3:D:34:ILE:HD13	3:D:34:ILE:HA	1.89	0.42
2:C:444:ASN:OD1	2:C:444:ASN:N	2.51	0.42
3:D:173:ARG:HG2	3:D:205:MET:HE3	2.00	0.42
3:D:779:LYS:HE2	3:D:779:LYS:HB3	1.76	0.42
1:A:7:PRO:HA	1:A:25:PRO:HD2	2.00	0.42
1:B:218:LEU:O	1:B:221:LEU:HB3	2.19	0.42
2:C:214:PHE:N	2:C:214:PHE:CD1	2.88	0.42
2:C:542:ALA:N	2:C:578:TYR:O	2.52	0.42
2:C:646:GLU:OE2	2:C:664:ASN:ND2	2.51	0.42
7:F:492:ILE:HB	7:F:503:ILE:HD13	2.00	0.42
2:C:94:SER:OG	2:C:107:PHE:N	2.46	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:125:LYS:H	2:C:125:LYS:HG2	1.61	0.42
3:D:118:LEU:HD23	3:D:118:LEU:HA	1.90	0.42
3:D:336:ALA:HB1	7:F:423:LEU:HG	2.01	0.42
3:D:376:GLU:OE2	7:F:227:SER:OG	2.20	0.42
3:D:389:ARG:HH22	5:H:40:DG:H4'	1.84	0.42
3:D:411:GLY:O	3:D:415:GLN:HB3	2.19	0.42
6:G:22:DA:H2"	6:G:23:DT:H5"	2.02	0.42
2:C:628:THR:HG23	2:C:975:PRO:HA	2.02	0.42
3:D:1051:GLY:O	3:D:1105:VAL:HG22	2.20	0.42
7:F:297:GLU:HA	7:F:300:LEU:HG	2.01	0.42
8:J:149:VAL:HG13	8:J:160:GLU:OE2	2.20	0.42
8:J:162:THR:HB	8:K:244:ARG:NH2	2.35	0.42
8:K:222:ARG:HA	8:K:226:ASP:OD2	2.20	0.42
2:C:424:VAL:HA	2:C:427:ILE:HG12	2.00	0.42
2:C:604:ARG:NH1	2:C:925:ARG:HB3	2.35	0.42
2:C:724:MET:HE1	2:C:1019:PHE:CZ	2.55	0.42
3:D:33:THR:HG23	3:D:47:PHE:CD1	2.55	0.42
3:D:443:LEU:HD23	3:D:448:ALA:HB2	2.01	0.42
7:F:269:ARG:O	7:F:269:ARG:NH1	2.53	0.42
7:F:339:LYS:HB3	7:F:341:TYR:HE1	1.83	0.42
7:F:400:ALA:HA	7:F:403:MET:HB2	2.01	0.42
2:C:160:MET:HE2	2:C:164:GLY:C	2.44	0.42
2:C:815:THR:HG1	2:C:818:GLU:H	1.67	0.42
3:D:237:ASP:O	3:D:240:LEU:N	2.53	0.42
3:D:816:THR:HA	3:D:821:LYS:HA	2.01	0.42
7:F:395:THR:OG1	7:F:397:GLU:OE1	2.38	0.42
1:A:152:ASN:OD1	1:A:152:ASN:N	2.52	0.42
2:C:152:VAL:HG11	2:C:418:ILE:HD13	2.02	0.42
2:C:262:LEU:HD12	2:C:263:GLU:N	2.35	0.42
2:C:319:LYS:HA	2:C:319:LYS:HD2	1.75	0.42
2:C:789:ILE:HG22	2:C:803:VAL:HG12	2.01	0.42
3:D:206:ARG:HD3	3:D:206:ARG:N	2.34	0.42
3:D:277:LEU:HA	3:D:280:VAL:HG12	2.02	0.42
6:G:9:DT:C2	6:G:10:DG:N7	2.87	0.42
7:F:269:ARG:C	7:F:269:ARG:HH11	2.28	0.42
7:F:364:ARG:HA	7:F:364:ARG:HD2	1.89	0.42
8:J:244:ARG:HA	8:J:244:ARG:NE	2.35	0.42
2:C:1070:GLU:HA	2:C:1073:CYS:HB2	2.02	0.41
3:D:65:TYR:HB3	3:D:70:PHE:CD2	2.55	0.41
3:D:147:GLU:HG3	3:D:151:LEU:HG	2.02	0.41
5:H:10:DG:H2'	5:H:11:DC:C6	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:945:LYS:HB2	2:C:945:LYS:HE2	1.75	0.41
3:D:151:LEU:HD23	3:D:151:LEU:HA	1.86	0.41
3:D:1188:ALA:HA	3:D:1191:ARG:NH2	2.35	0.41
7:F:236:GLY:HA2	7:F:301:ARG:NH2	2.34	0.41
7:F:385:GLU:OE1	7:F:388:GLN:NE2	2.54	0.41
2:C:284:GLY:HA2	7:F:222:THR:OG1	2.20	0.41
2:C:412:ILE:HD12	2:C:413:THR:H	1.85	0.41
2:C:480:TYR:OH	2:C:580:ASP:OD1	2.31	0.41
3:D:128:ILE:HG12	3:D:135:VAL:CG1	2.51	0.41
3:D:131:PHE:HA	3:D:256:MET:HE2	2.02	0.41
3:D:618:ALA:HB1	3:D:668:LEU:HD22	2.01	0.41
3:D:1066:ILE:HG23	3:D:1075:VAL:HB	2.02	0.41
7:F:386:LEU:HD13	7:F:402:GLU:OE2	2.19	0.41
2:C:1071:MET:HG2	3:D:503:THR:O	2.20	0.41
3:D:140:ASP:HB2	3:D:251:TYR:HA	2.02	0.41
3:D:155:MET:HE1	3:D:219:LEU:HB3	2.02	0.41
3:D:329:GLN:HB2	3:D:335:PHE:CZ	2.55	0.41
3:D:434:PRO:O	3:D:717:LYS:NZ	2.47	0.41
3:D:925:LEU:O	3:D:940:ARG:HG2	2.20	0.41
6:G:30:DG:H2"	6:G:31:DA:H8	1.81	0.41
6:G:51:DG:H2"	6:G:52:DG:O4'	2.20	0.41
2:C:542:ALA:H	2:C:579:MET:HA	1.85	0.41
3:D:1134:LEU:O	3:D:1138:VAL:HG12	2.20	0.41
7:F:275:ALA:HA	7:F:279:ARG:NH1	2.35	0.41
7:F:278:ARG:HH21	7:F:279:ARG:HH22	1.69	0.41
1:B:215:LEU:HD23	1:B:215:LEU:HA	1.80	0.41
2:C:86:LEU:HD23	2:C:86:LEU:HA	1.83	0.41
2:C:336:GLU:HA	2:C:339:VAL:HG22	2.02	0.41
2:C:397:GLU:HA	2:C:400:VAL:HG12	2.02	0.41
2:C:534:ASP:OD1	2:C:534:ASP:N	2.53	0.41
2:C:547:PRO:HB2	2:C:555:VAL:HG22	2.03	0.41
2:C:608:GLY:HA2	2:C:611:MET:HE3	2.01	0.41
2:C:993:LEU:HA	2:C:994:PRO:HD3	1.92	0.41
3:D:333:GLY:C	7:F:418:ARG:HH12	2.28	0.41
3:D:591:GLU:OE1	3:D:670:ARG:NH1	2.52	0.41
3:D:595:ASP:OD1	3:D:596:THR:N	2.40	0.41
3:D:910:LEU:HD13	3:D:910:LEU:HA	1.89	0.41
3:D:949:ILE:HA	3:D:949:ILE:HD13	1.79	0.41
5:H:10:DG:H2"	5:H:11:DC:O4'	2.20	0.41
7:F:511:MET:HA	7:F:514:LEU:HB3	2.03	0.41
8:K:234:HIS:N	8:K:242:VAL:O	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:158:PRO:HD3	2:C:427:ILE:HD12	2.02	0.41
2:C:246:GLU:OE1	2:C:247:GLN:HG2	2.20	0.41
2:C:544:ALA:HA	2:C:580:ASP:HB2	2.01	0.41
2:C:760:ARG:HA	2:C:865:VAL:HA	2.01	0.41
2:C:918:ASN:OD1	2:C:919:THR:N	2.53	0.41
3:D:525:HIS:CE1	3:D:527:LEU:HD12	2.56	0.41
3:D:550:GLU:HG3	4:E:58:ALA:HB1	2.03	0.41
3:D:991:ILE:HD13	3:D:991:ILE:HA	1.84	0.41
3:D:1068:PRO:HD3	3:D:1074:GLU:HA	2.01	0.41
5:H:9:DG:C2	6:G:47:DG:N1	2.89	0.41
1:A:215:LEU:HA	1:A:215:LEU:HD23	1.84	0.41
1:B:98:ARG:O	1:B:99:LYS:HD2	2.21	0.41
2:C:563:ARG:HD2	2:C:563:ARG:HA	1.79	0.41
2:C:935:HIS:CE1	3:D:732:SER:HB2	2.56	0.41
2:C:1125:LEU:HD12	2:C:1125:LEU:HA	1.93	0.41
3:D:158:GLU:O	3:D:162:VAL:HG23	2.20	0.41
3:D:576:MET:CE	3:D:694:ALA:HA	2.51	0.41
3:D:1097:ARG:HH12	3:D:1099:LEU:HA	1.86	0.41
5:H:29:DC:OP2	7:F:330:ARG:NH2	2.54	0.41
1:A:183:VAL:N	1:A:188:ASP:OD1	2.54	0.41
2:C:573:SER:O	2:C:576:VAL:HG22	2.21	0.41
2:C:891:ASN:HD21	2:C:1028:MET:HE1	1.86	0.41
3:D:87:VAL:HB	3:D:91:ARG:HD2	2.02	0.41
3:D:459:ARG:HH22	3:D:463:LEU:HD11	1.86	0.41
3:D:968:CYS:SG	3:D:970:THR:OG1	2.78	0.41
7:F:491:GLU:O	7:F:494:GLN:HG2	2.21	0.41
8:K:155:ASP:OD1	8:K:155:ASP:N	2.54	0.41
2:C:308:LEU:HD12	2:C:312:GLY:C	2.46	0.41
2:C:446:LEU:HB2	2:C:713:MET:HE3	2.03	0.41
2:C:828:LYS:HD3	2:C:830:ARG:H	1.86	0.41
2:C:884:LYS:NZ	2:C:1035:HIS:HD2	2.19	0.41
3:D:612:TYR:HD2	3:D:617:GLU:HG2	1.85	0.41
1:A:80:LEU:HD13	1:A:138:LEU:HD21	2.03	0.40
2:C:212:LEU:HB3	2:C:214:PHE:CE1	2.56	0.40
2:C:1128:LEU:HD11	3:D:1233:LEU:HD21	2.03	0.40
8:K:224:LYS:HG3	8:K:225:ILE:HG23	2.02	0.40
2:C:326:GLU:N	2:C:326:GLU:OE1	2.54	0.40
2:C:487:GLU:HG2	2:C:499:SER:HB3	2.03	0.40
2:C:960:PRO:HG2	2:C:963:LEU:HD12	2.02	0.40
3:D:845:THR:HG22	3:D:848:GLU:CD	2.46	0.40
4:E:59:LYS:O	4:E:63:GLN:HG3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:F:511:MET:HE2	7:F:511:MET:C	2.47	0.40
1:A:218:LEU:O	1:A:221:LEU:HB3	2.20	0.40
1:A:219:PHE:HE2	1:B:219:PHE:CE2	2.38	0.40
3:D:196:LYS:HB2	3:D:196:LYS:HE2	1.94	0.40
3:D:505:HIS:HB3	3:D:1005:GLU:HG3	2.04	0.40
3:D:930:VAL:C	3:D:957:ILE:HD11	2.47	0.40
1:B:128:LEU:HD12	1:B:132:GLY:HA3	2.04	0.40
2:C:81:ASN:OD1	2:C:81:ASN:N	2.54	0.40
2:C:817:GLU:HB3	7:F:456:LEU:HD21	2.03	0.40
8:K:184:TYR:O	8:K:187:ILE:HG22	2.21	0.40
3:D:181:LEU:HD23	3:D:198:ARG:HH12	1.86	0.40
3:D:427:ARG:NH1	3:D:540:GLN:HB2	2.36	0.40
3:D:886:VAL:HA	3:D:974:VAL:O	2.20	0.40
7:F:387:LEU:HD12	7:F:393:GLU:HA	2.03	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	222/347 (64%)	217 (98%)	5 (2%)	0	100	100
1	B	235/347 (68%)	222 (94%)	13 (6%)	0	100	100
2	C	1109/1178 (94%)	1041 (94%)	68 (6%)	0	100	100
3	D	1262/1316 (96%)	1208 (96%)	54 (4%)	0	100	100
4	E	81/110 (74%)	80 (99%)	1 (1%)	0	100	100
7	F	320/528 (61%)	311 (97%)	9 (3%)	0	100	100
8	J	97/247 (39%)	92 (95%)	4 (4%)	1 (1%)	13	39
8	K	97/247 (39%)	94 (97%)	3 (3%)	0	100	100
All	All	3423/4320 (79%)	3265 (95%)	157 (5%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	J	196	PRO

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	193/297 (65%)	192 (100%)	1 (0%)	86 92
1	B	195/297 (66%)	195 (100%)	0	100 100
2	C	923/998 (92%)	921 (100%)	2 (0%)	92 96
3	D	1041/1095 (95%)	1038 (100%)	3 (0%)	91 95
4	E	69/90 (77%)	69 (100%)	0	100 100
7	F	264/427 (62%)	262 (99%)	2 (1%)	79 88
8	J	87/208 (42%)	87 (100%)	0	100 100
8	K	87/208 (42%)	86 (99%)	1 (1%)	70 82
All	All	2859/3620 (79%)	2850 (100%)	9 (0%)	90 95

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	43	LEU
2	C	756	GLU
2	C	915	ILE
3	D	28	VAL
3	D	328	VAL
3	D	748	HIS
7	F	387	LEU
7	F	488	THR
8	K	239	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	GLN
1	A	129	ASN
1	B	36	ASN
2	C	298	ASN
2	C	442	GLN
2	C	585	GLN
2	C	718	ASN
2	C	941	HIS
3	D	303	GLN
3	D	304	GLN
3	D	396	ASN
3	D	440	GLN
3	D	523	GLN
3	D	544	HIS
3	D	563	ASN
3	D	639	GLN
3	D	854	HIS
3	D	1160	GLN
3	D	1269	ASN
4	E	69	ASN
7	F	293	ASN
7	F	388	GLN
7	F	425	GLN
8	J	170	GLN
8	J	188	ASN
8	K	170	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

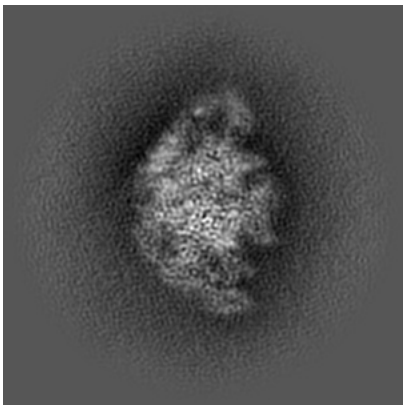
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-61493. These allow visual inspection of the internal detail of the map and identification of artifacts.

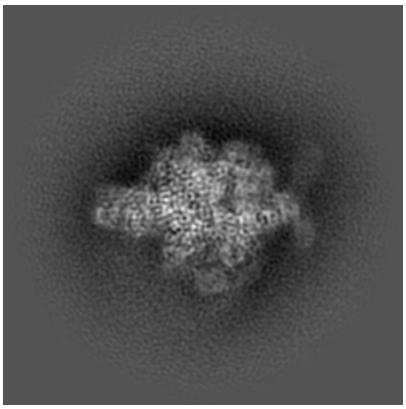
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

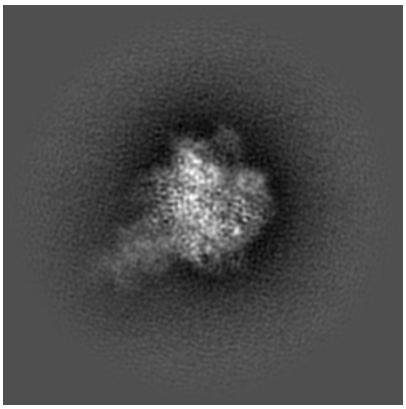
6.1.1 Primary map



X

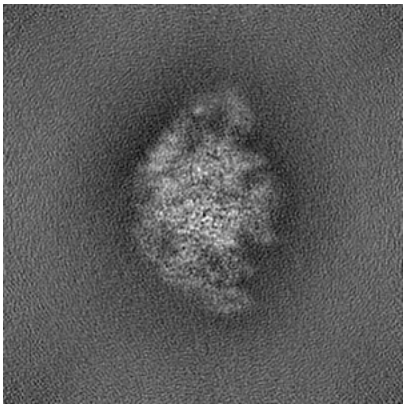


Y

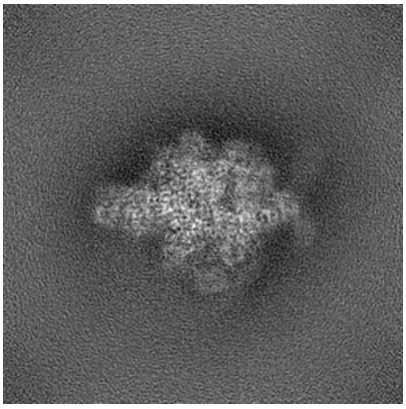


Z

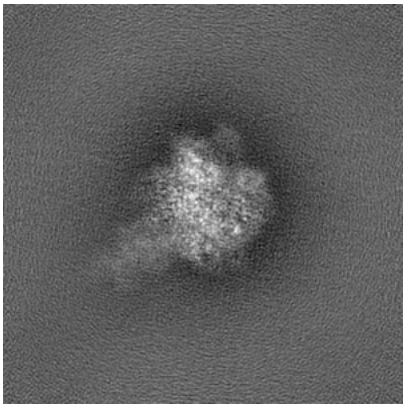
6.1.2 Raw map



X



Y

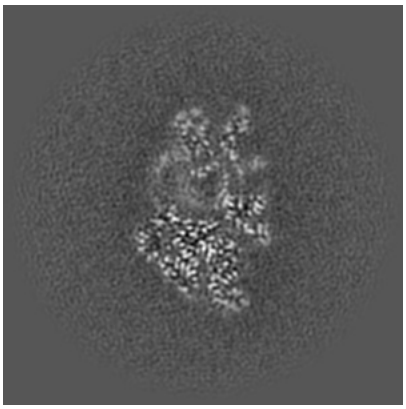


Z

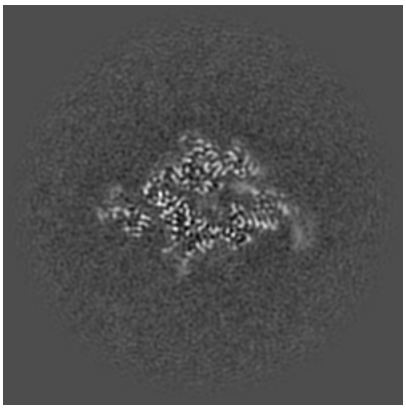
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

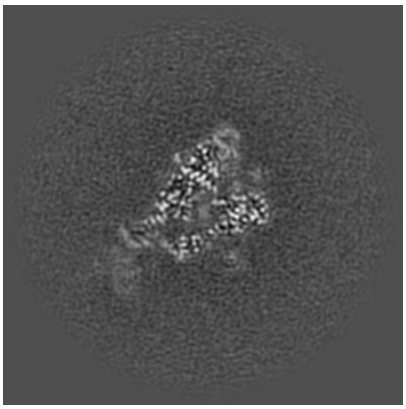
6.2.1 Primary map



X Index: 128

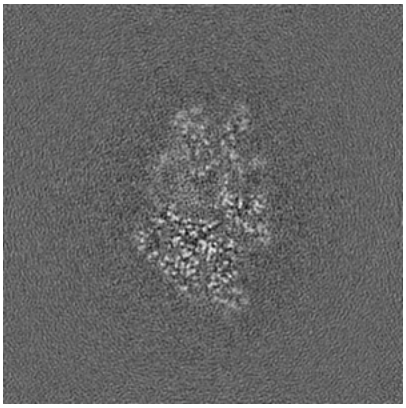


Y Index: 128

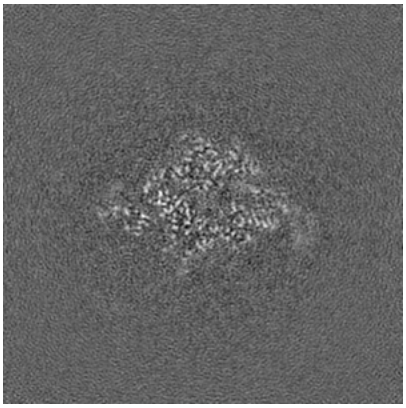


Z Index: 128

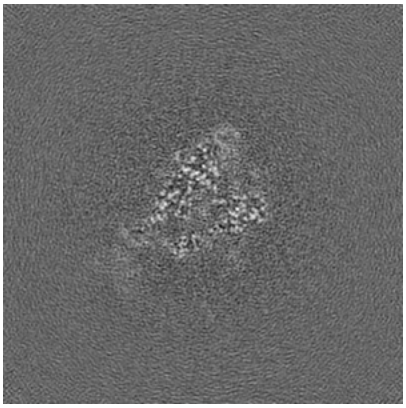
6.2.2 Raw map



X Index: 128



Y Index: 128

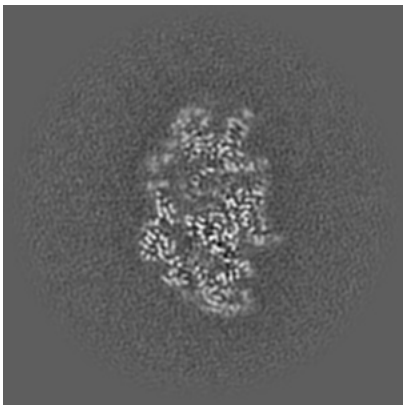


Z Index: 128

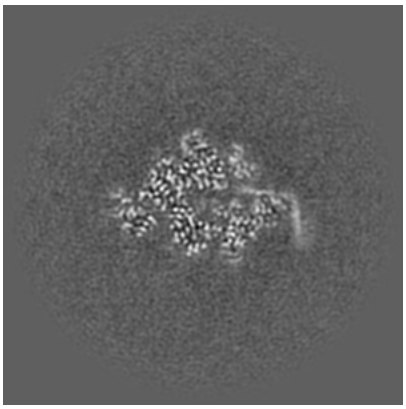
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

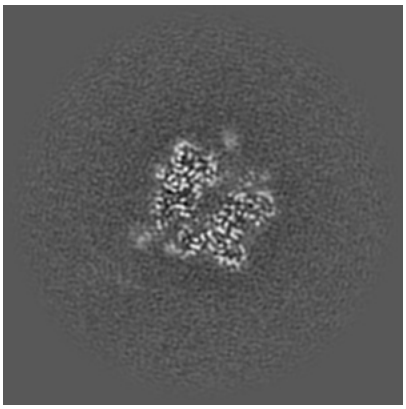
6.3.1 Primary map



X Index: 124

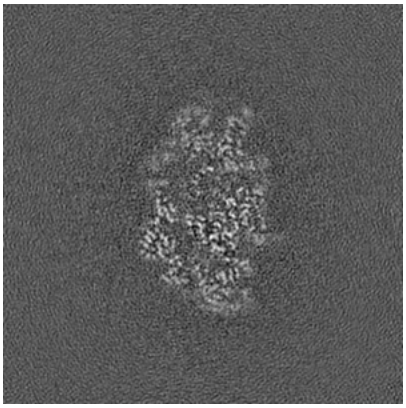


Y Index: 125

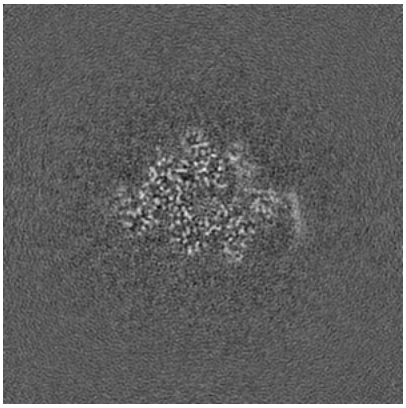


Z Index: 121

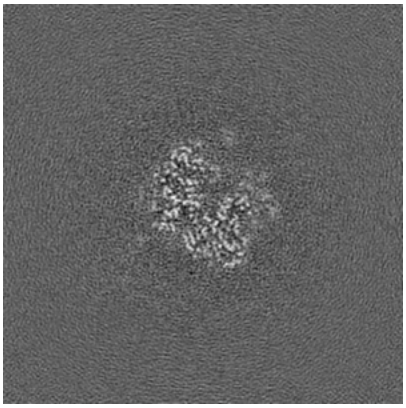
6.3.2 Raw map



X Index: 124



Y Index: 124

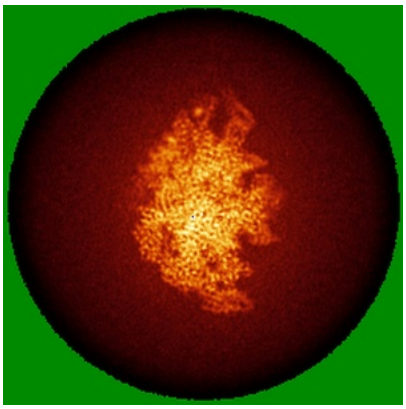


Z Index: 118

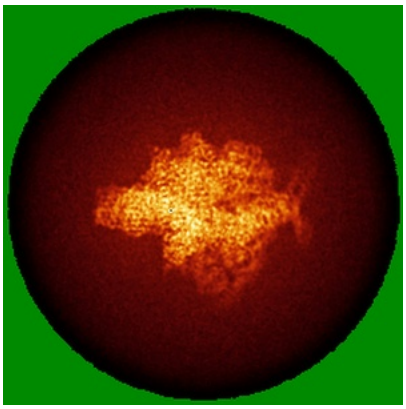
The images above show the largest variance slices of the map in three orthogonal directions.

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

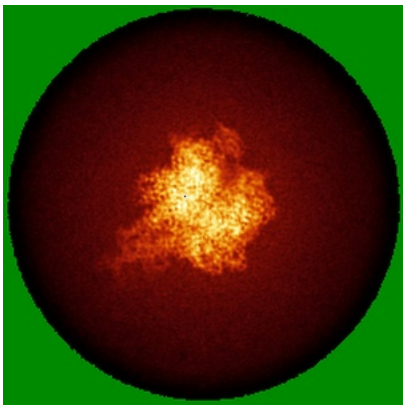
6.4.1 Primary map



X

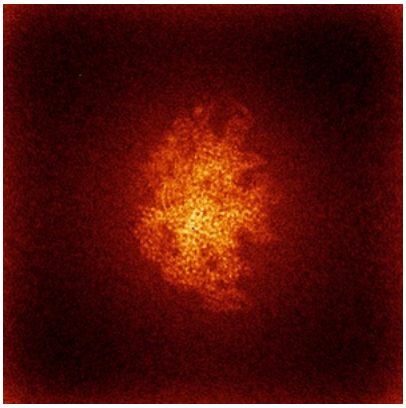


Y

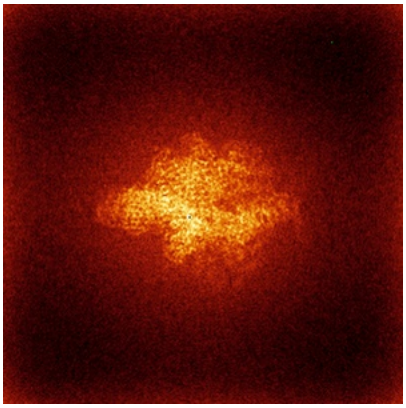


Z

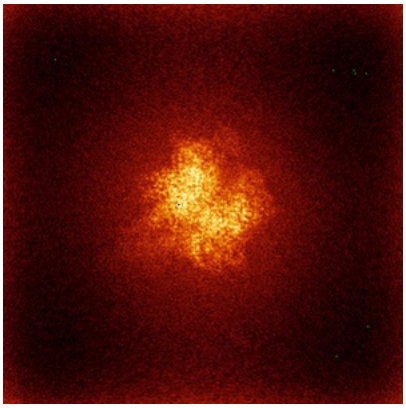
6.4.2 Raw map



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.

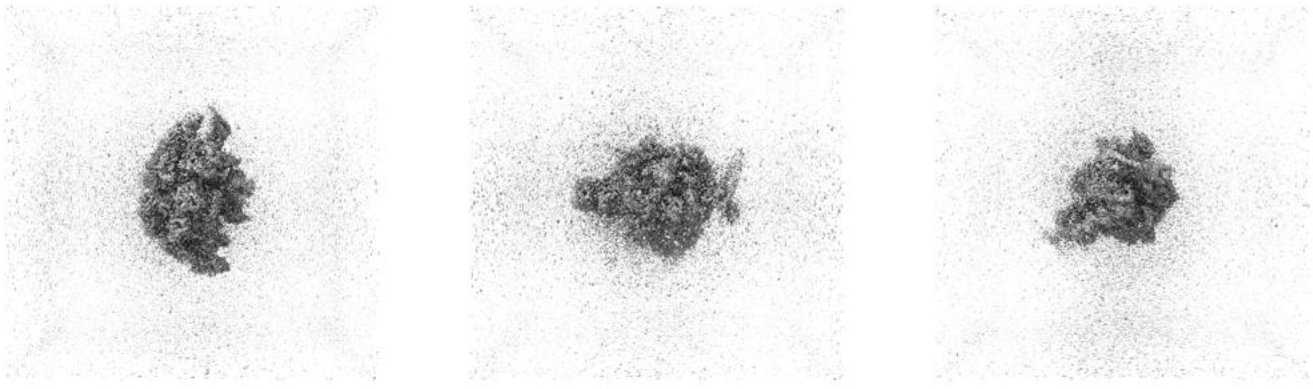
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.08. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

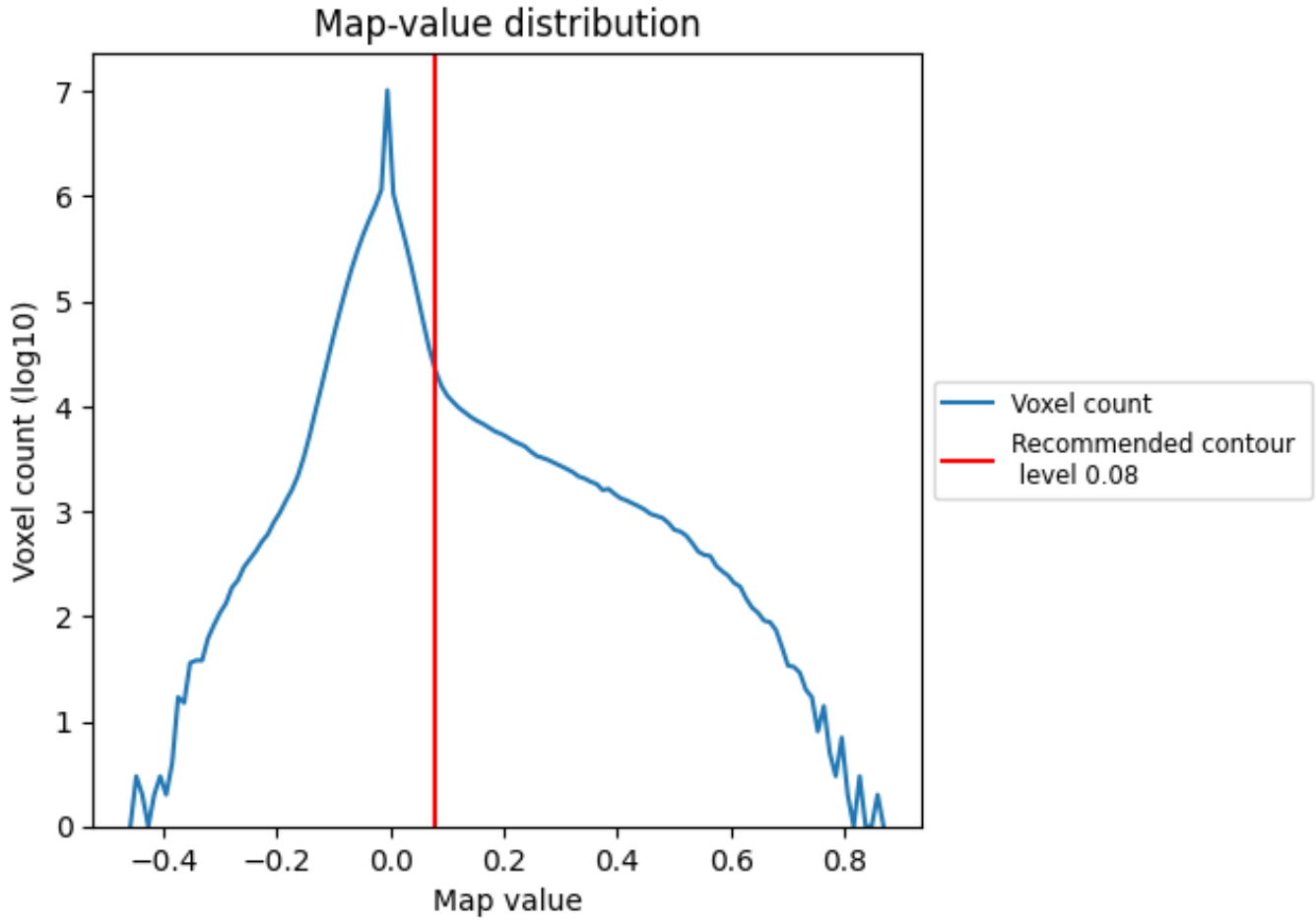
6.6 Mask visualisation (i)

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

7 Map analysis

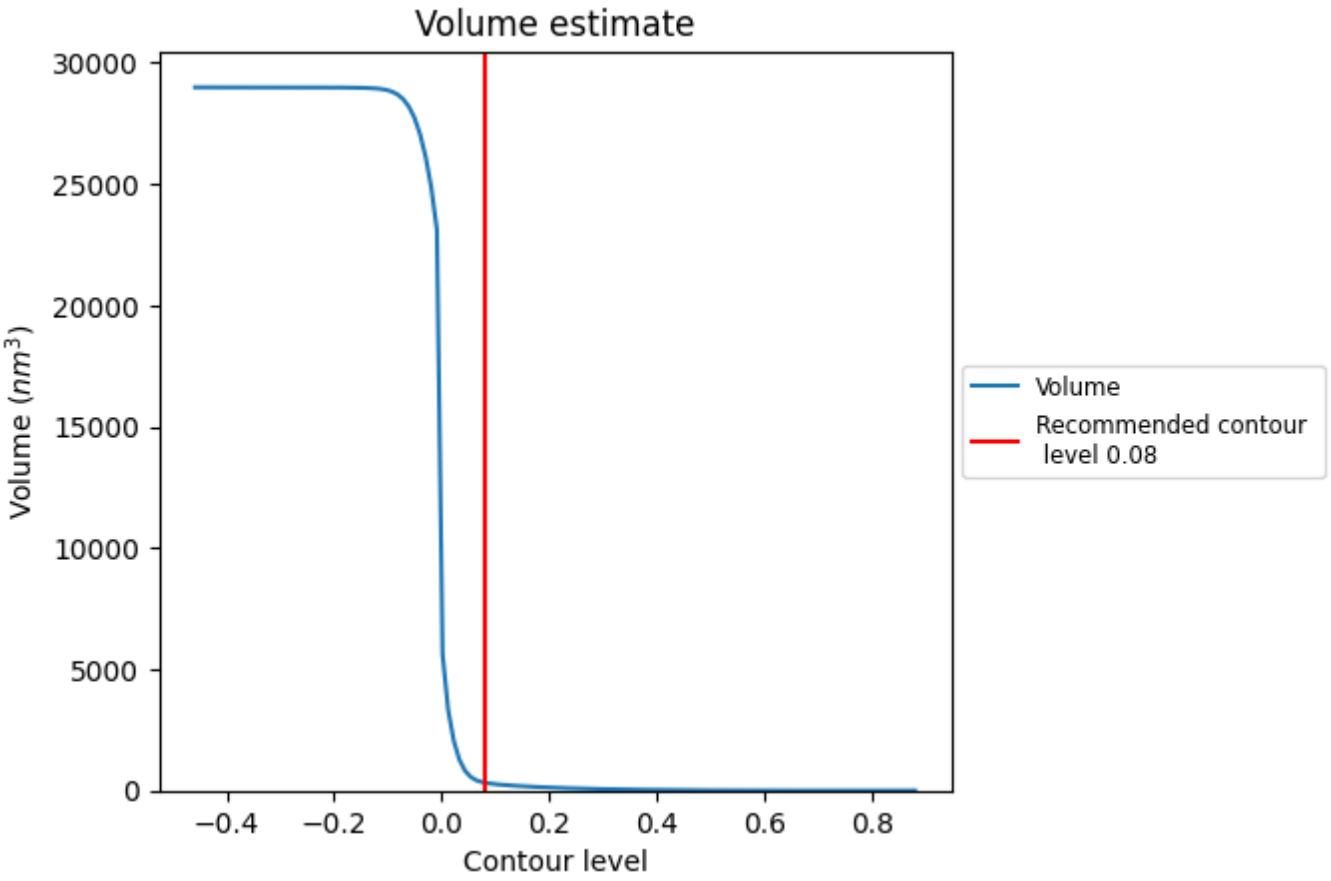
This section contains the results of statistical analysis of the map.

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.

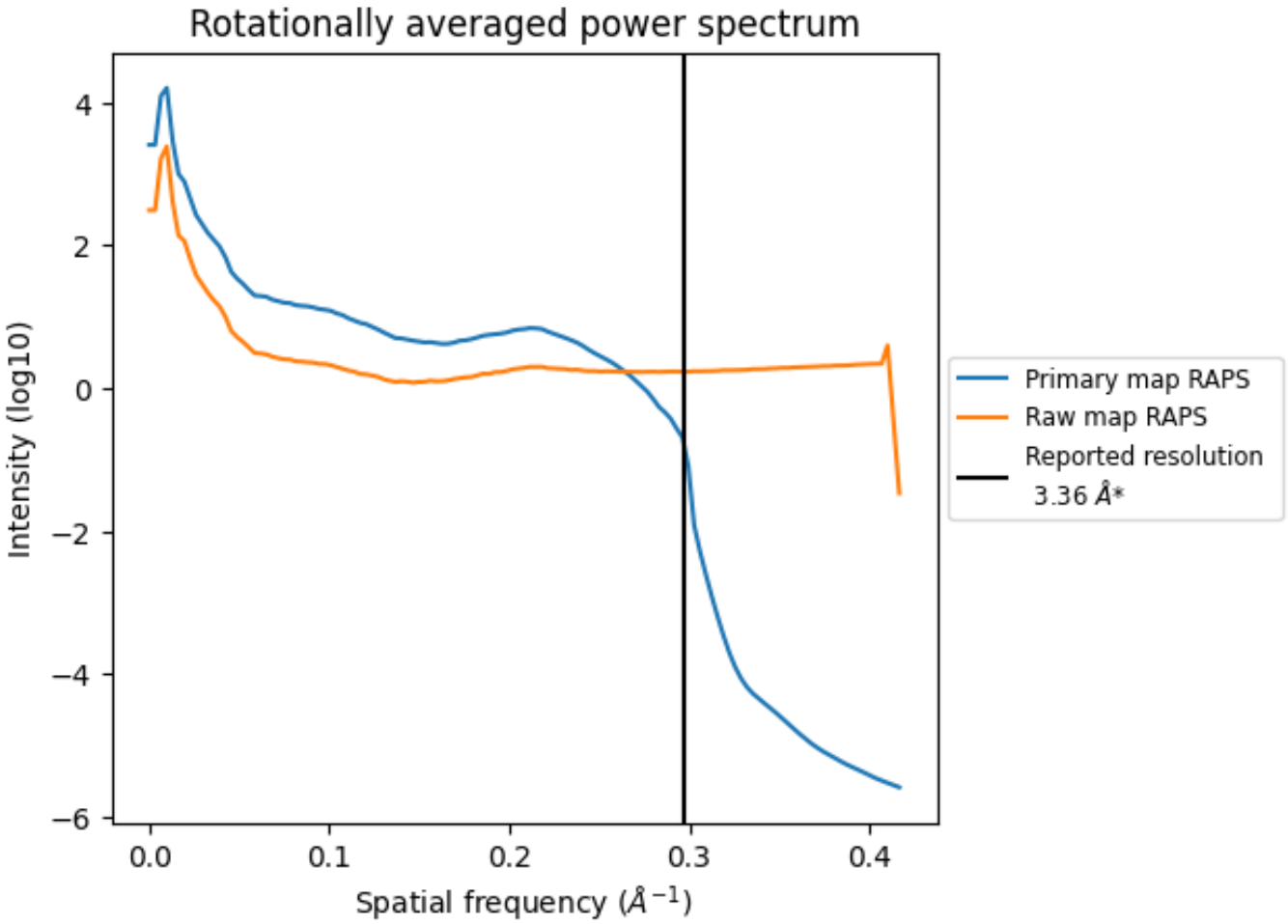
7.2 Volume estimate



The volume at the recommended contour level is 326 nm^3; this corresponds to an approximate mass of 294 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)

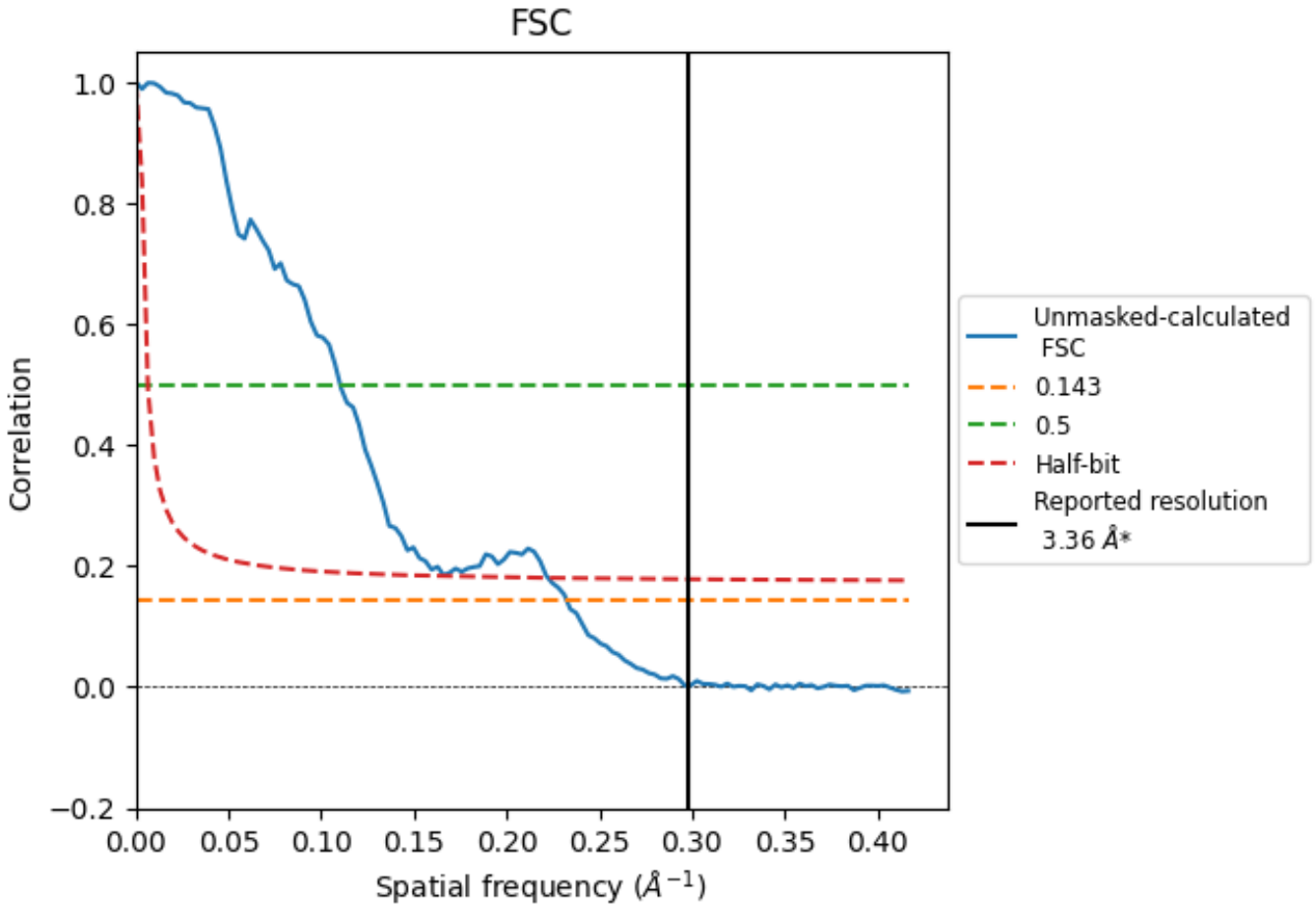


*Reported resolution corresponds to spatial frequency of 0.298 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.298 Å^{-1}

8.2 Resolution estimates (i)

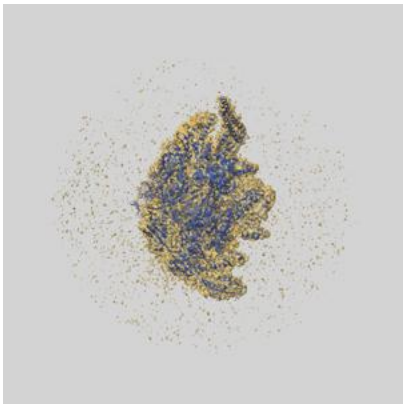
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.36	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.30	9.07	4.50

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.30 differs from the reported value 3.36 by more than 10 %

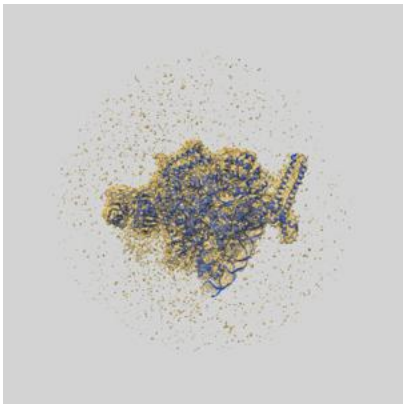
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-61493 and PDB model 9JI3. Per-residue inclusion information can be found in section 3 on page 6.

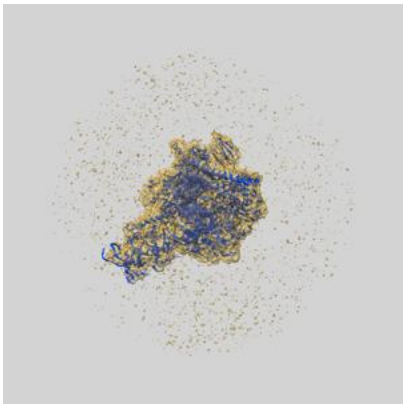
9.1 Map-model overlay



X



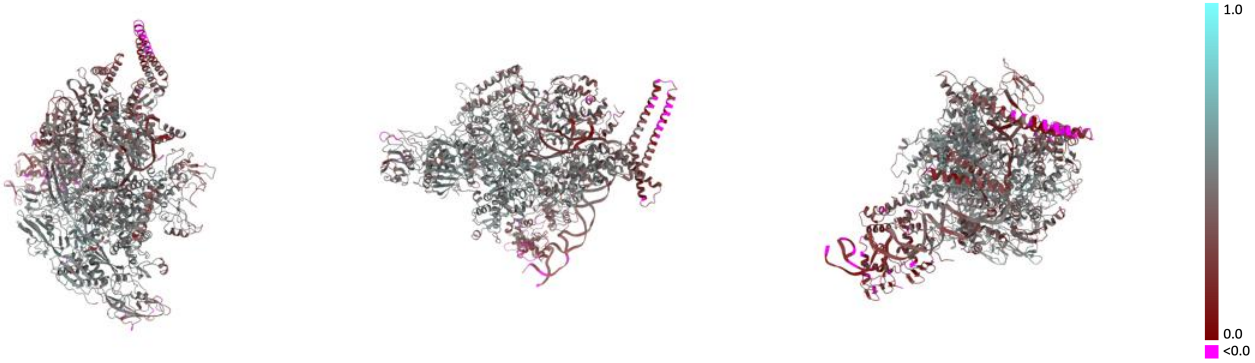
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.08 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.

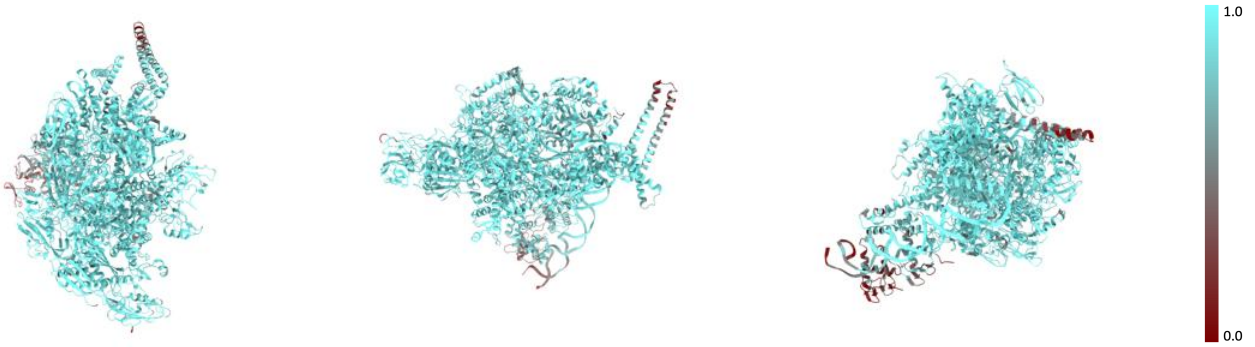
9.2 Q-score mapped to coordinate model (i)



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.

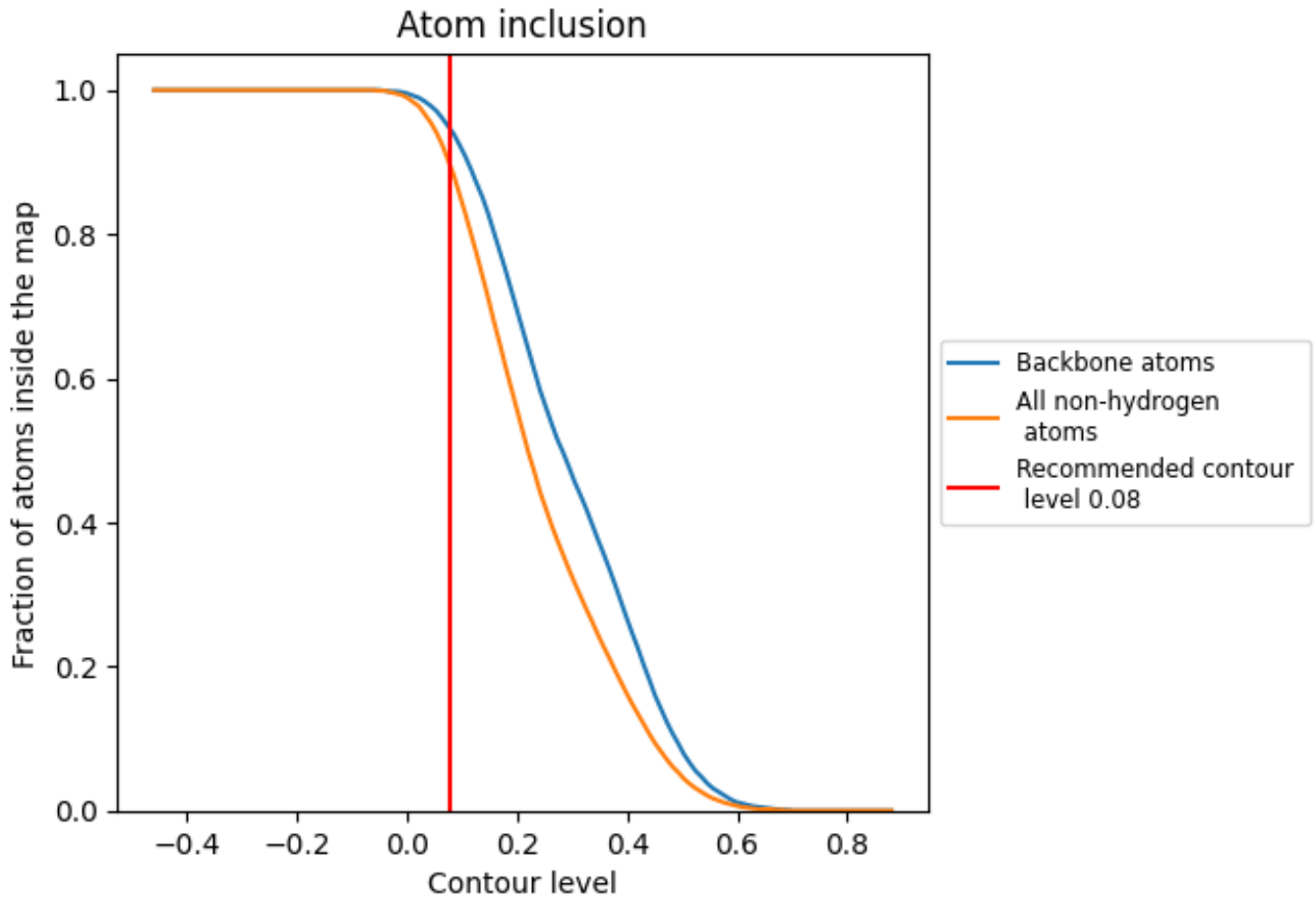
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.08).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 89% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8930	0.4190
A	0.9500	0.4910
B	0.9090	0.4290
C	0.9440	0.4640
D	0.9230	0.4500
E	0.9400	0.4720
F	0.8820	0.3510
G	0.8030	0.2620
H	0.8250	0.2490
J	0.6620	0.2770
K	0.2700	0.1430