



## Full wwPDB EM Validation Report ⓘ

Dec 18, 2022 – 09:23 am GMT

PDB ID : 7ADE  
EMDB ID : EMD-11725  
Title : Transcription termination complex IVa  
Authors : Said, N.; Hilal, T.; Loll, B.; Wahl, C.M.  
Deposited on : 2020-09-14  
Resolution : 4.20 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](mailto: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>.

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

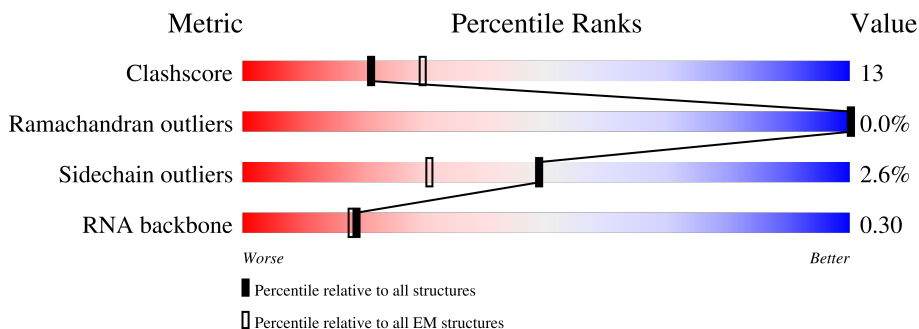
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.4, CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.3

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 4.20 Å.

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





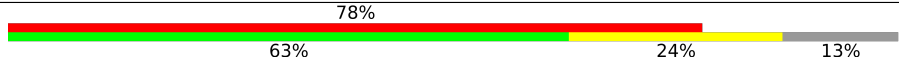
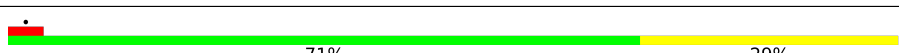
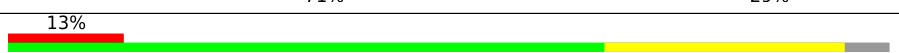
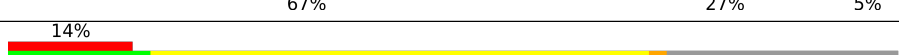
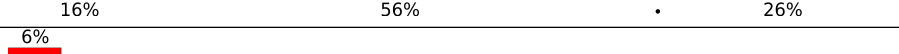
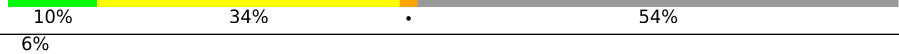
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 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  $\leq 5\%$ . 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	419	94% 5%
1	b	419	94% 5%
1	c	419	94% 5%
1	d	419	94% 5%
1	e	419	94% 5% 6%
1	f	419	94% 5% 9%
2	A	497	70% 29% 48%

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Mol	Chain	Length	Quality of chain
3	U	329	
3	V	329	
4	W	91	
5	X	1342	
6	Y	1416	
7	L	50	
8	K	50	
9	R	99	

## 2 Entry composition [i](#)

There are 14 unique types of molecules in this entry. The entry contains 51553 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 Transcription termination factor Rho.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	f	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	a	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	b	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	c	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	d	417	Total 3280	C 2065	N 581	O 617	S 17	0	0
1	e	417	Total 3280	C 2065	N 581	O 617	S 17	0	0

- Molecule 2 is a protein called Transcription termination/antitermination protein NusA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	495	Total 3852	C 2396	N 669	O 774	S 13	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP C3SSN7
A	0	ALA	-	expression tag	UNP C3SSN7

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	U	235	Total 1825	C 1135	N 325	O 359	S 6	0	0
3	V	321	Total 2504	C 1566	N 441	O 489	S 8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	W	79	627	382	118	126	1	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	X	1340	10567	6631	1841	2052	43	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	Y	1343	10431	6553	1854	1974	50	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	1408	LEU	-	expression tag	UNP C3SIA2
Y	1409	GLU	-	expression tag	UNP C3SIA2
Y	1410	VAL	-	expression tag	UNP C3SIA2
Y	1411	HIS	-	expression tag	UNP C3SIA2
Y	1412	HIS	-	expression tag	UNP C3SIA2
Y	1413	HIS	-	expression tag	UNP C3SIA2
Y	1414	HIS	-	expression tag	UNP C3SIA2
Y	1415	HIS	-	expression tag	UNP C3SIA2
Y	1416	HIS	-	expression tag	UNP C3SIA2

- Molecule 7 is a DNA chain called tDNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	L	37	741	355	131	218	37	0	0

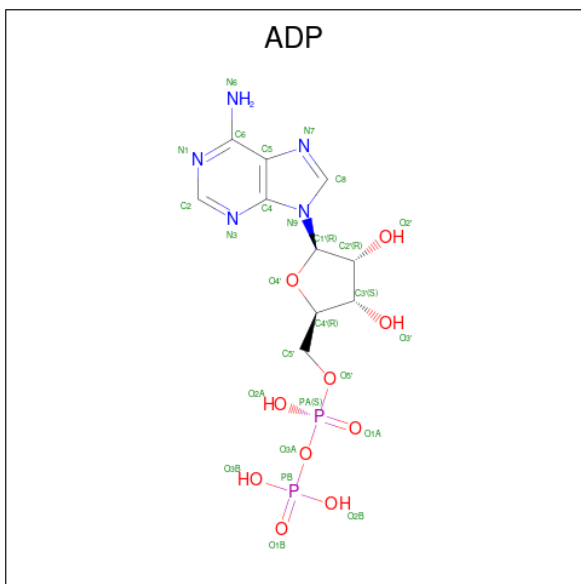
- Molecule 8 is a DNA chain called ntDNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	K	23	474	225	96	130	23	0	0

- Molecule 9 is a RNA chain called rut RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
9	R	32	674	302	117	223	32	0	0

- Molecule 10 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
10	a	1	27	10	5	10	2	0
10	b	1	27	10	5	10	2	0
10	c	1	27	10	5	10	2	0
10	d	1	27	10	5	10	2	0
10	e	1	27	10	5	10	2	0

- Molecule 11 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

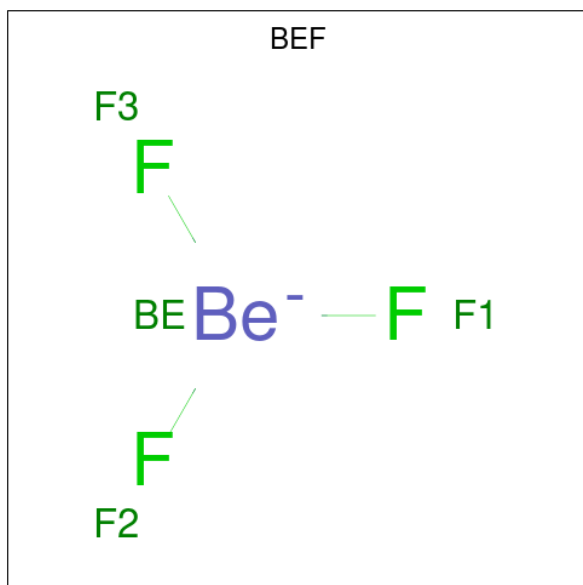
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
11	a	1	1	1	0
11	b	1	1	1	0
11	c	1	1	1	0

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Mol	Chain	Residues	Atoms		AltConf
11	d	1	Total	Mg	0
			1	1	
11	e	1	Total	Mg	0
			1	1	
11	Y	1	Total	Mg	0
			1	1	

- Molecule 12 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula: BeF<sub>3</sub>).



Mol	Chain	Residues	Atoms			AltConf
12	a	1	Total	Be	F	0
			4	1	3	
12	b	1	Total	Be	F	0
			4	1	3	
12	c	1	Total	Be	F	0
			4	1	3	
12	d	1	Total	Be	F	0
			4	1	3	
12	e	1	Total	Be	F	0
			4	1	3	

- Molecule 13 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
13	Y	2	Total	Zn	0
			2	2	

- Molecule 14 is water.

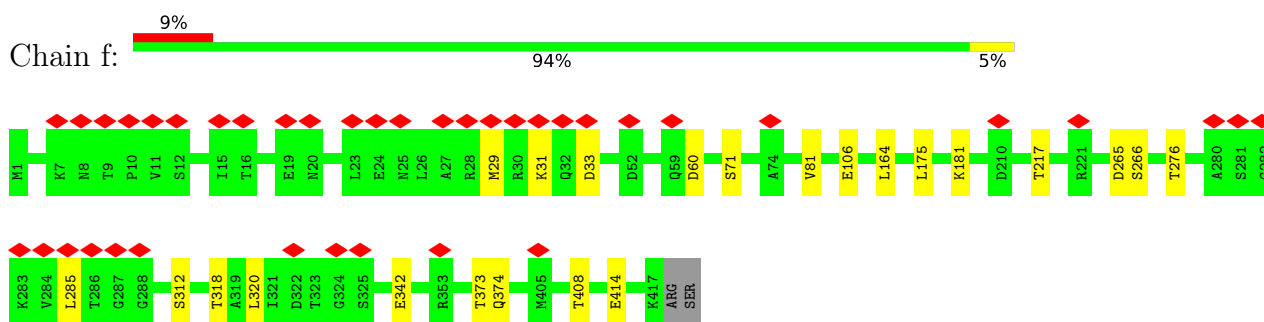
Mol	Chain	Residues	Atoms	AltConf
14	a	3	Total O 3 3	0
14	b	3	Total O 3 3	0
14	c	3	Total O 3 3	0
14	d	3	Total O 3 3	0
14	e	3	Total O 3 3	0



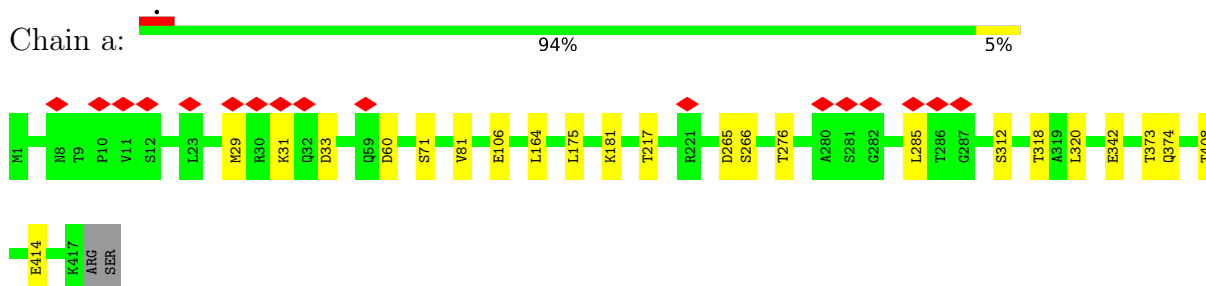
### 3 Residue-property plots [i](#)

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.

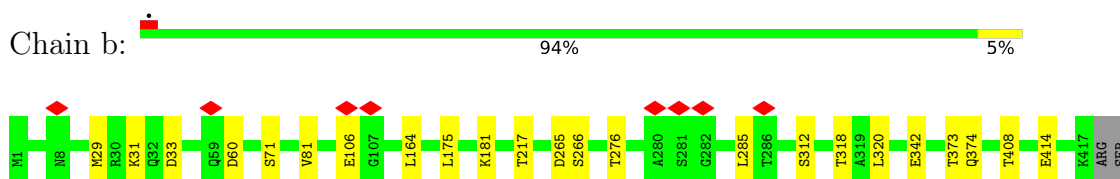
- Molecule 1: Transcription termination factor Rho



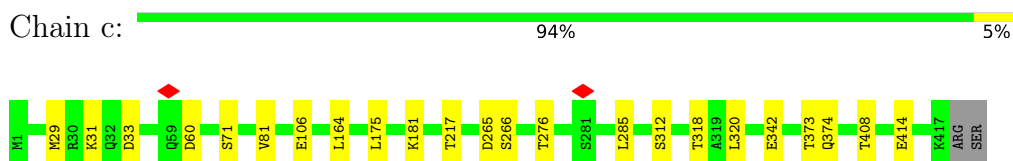
- Molecule 1: Transcription termination factor Rho



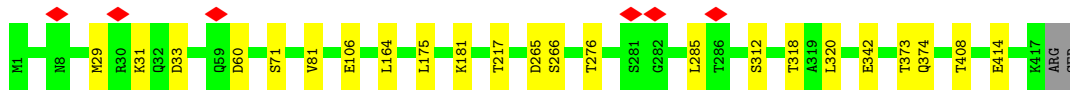
- Molecule 1: Transcription termination factor Rho



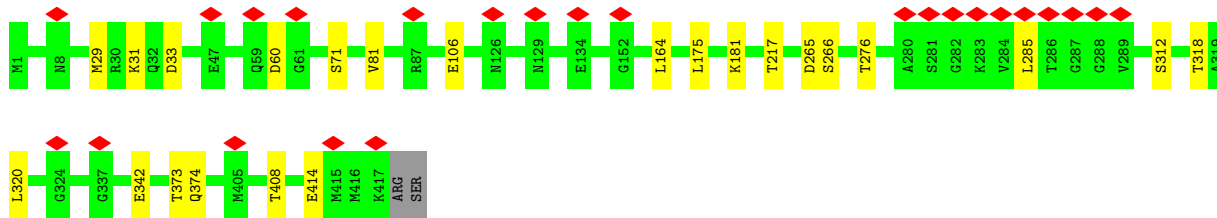
- Molecule 1: Transcription termination factor Rho



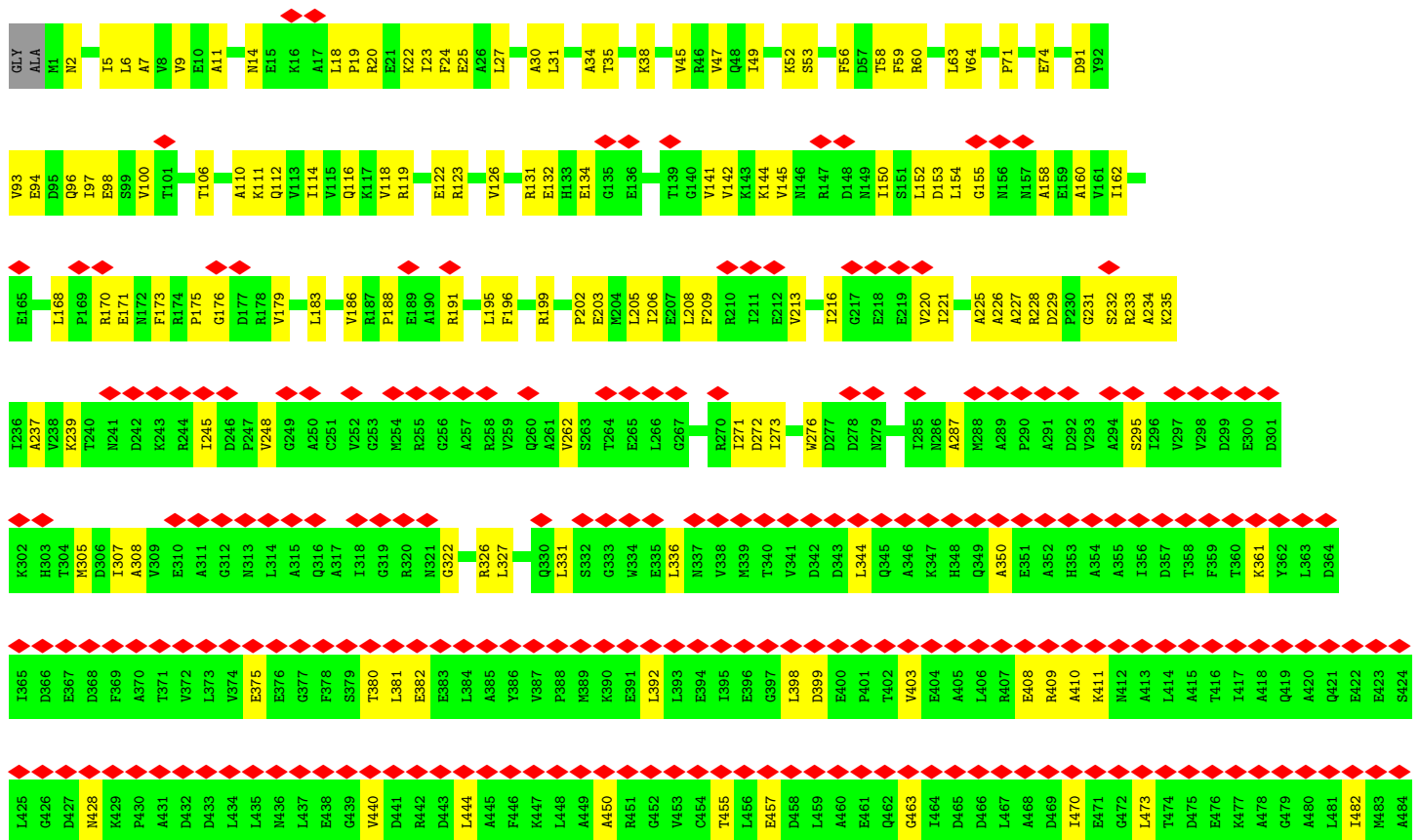
• Molecule 1: Transcription termination factor Rho



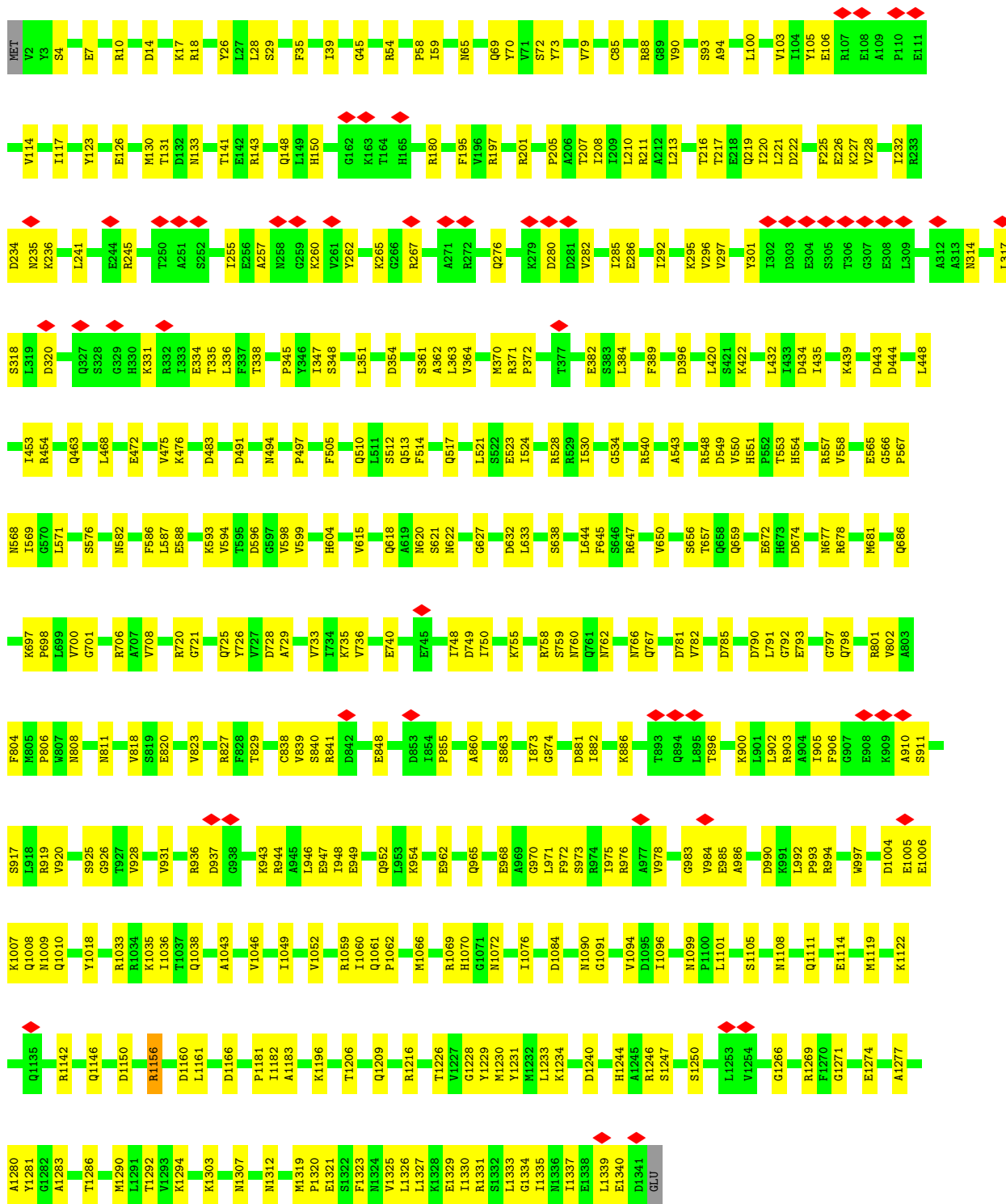
• Molecule 1: Transcription termination factor Rho



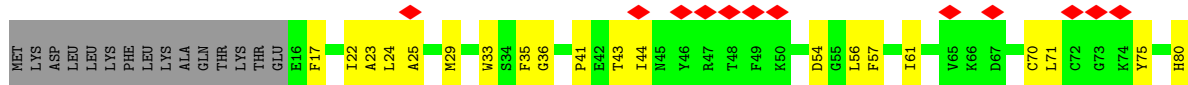
• Molecule 2: Transcription termination/antitermination protein NusA





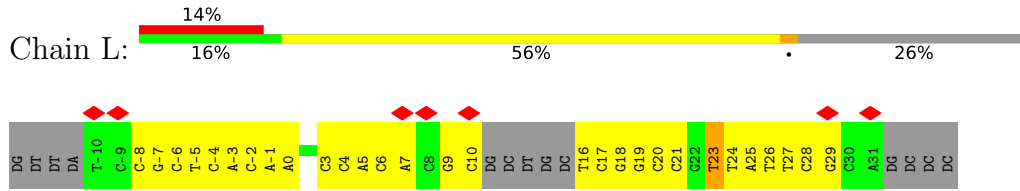


• Molecule 6: DNA-directed RNA polymerase subunit beta'

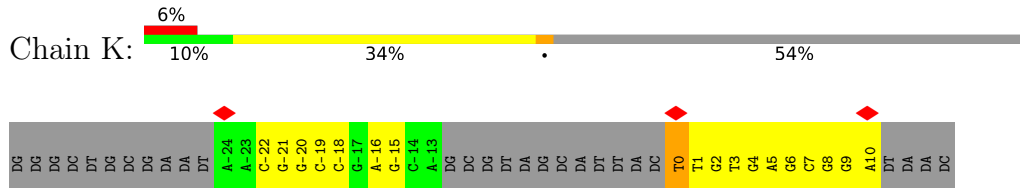


SER	T1328	Q1088	V1035	V952	L849	T705	V637	H450	LYS	D256	E162	R81
ASP	T1329	Y1099	R1036	K953	T863	R709	H545	R431	ARG	G257	E163	G82
ASN	R1330	F1100	D1039	I958	A854	D710	A546	L432	PRO	G258	Q164	V83
LEU	E1334	K1104	M1040	K959	L857	S718	R547	G433	GLU	R259	Y165	V90
LEU	E1337	I1106	I1041	L960	V858	M724	V548	O435	VAL	F260	L166	E91
HIS	D1212	D1111	I1042	K964	V868	R731	V550	L327	HIS	A261	D167	R98
HIS	D1218	G1112	G1043	V967	W868	A735	A559	A436	HIS	T262	E170	R101
HIS	D1219	V1113	Q1044	N968	C869	R738	R576	A328	HIS	D263	E171	R101
HIS	I1220	V1114	T1045	S969	L872	Q739	A577	M330	HIS	S264	F172	I105
HIS	R1224	I1115	I1046	S970	V882	A741	R576	I331	HIS	L265	G173	P110
HIS	V1234	S1116	Q1049	K972	R883	A746	A577	I331	HIS	D266	D174	P110
HIS	Q1238	R1123	T1050	K974	W885	L740	R576	I331	HIS	L267	F174	P110
HIS	R1242	I1124	T1051	I975	V886	L746	A577	I331	HIS	L268	G175	P111
HIS	I1248	Q1125	E1052	T976	C895	D751	R576	I331	HIS	L269	F176	P111
HIS	I1253	Q1126	L1053	S977	C898	G752	R576	I331	HIS	L270	D177	P111
HIS	E1254	E1127	T1054	R978	A904	S753	R576	I331	HIS	R271	A178	P111
HIS	G1254	S1128	T1055	N979	A904	F763	R576	I331	HIS	V272	K179	P111
HIS	V1255	G1129	G1055	T980	A904	L767	R576	I331	HIS	I273	M180	P111
HIS	V1256	G1130	L1056	L984	N910	Q771	R576	I331	HIS	N274	A184	P111
HIS	V1257	T1131	S1057	E987	R911	L796	R576	I331	HIS	L279	L188	P111
HIS	R1258	D1132	V1060	F988	G912	I797	R576	I331	HIS	R280	L189	P111
HIS	M1260	I1134	V1061	P998	A914	I797	R576	I331	HIS	R281	K190	P111
HIS	V1261	L1138	L1062	Y999	T918	Q771	R576	I331	HIS	L282	S122	P111
HIS	R1262	E1146	D1063	A1000	Q921	L796	R576	I331	HIS	L283	R123	P111
HIS	S1271	E1147	S1064	I1001	S922	I797	R576	I331	HIS	L284	I124	P111
HIS	G1277	R1148	E1065	V1002	G924	F763	R576	I331	HIS	L285	G125	P111
HIS	E1278	G1161	R1067	L1003	E925	L767	R576	I331	HIS	L286	L126	P111
HIS	E1281	G1164	T1068	K1005	F926	Q805	R576	I331	HIS	A287	L127	P111
HIS	R1284	F1165	A1069	D1007	W932	Q805	R576	I331	HIS	P288	D128	P111
HIS	V1298	K1166	G1070	G1013	R933	V808	R576	I331	HIS	D289	M130	P111
HIS	L1306	K1167	G1071	G1014	T934	V809	R576	I331	HIS	L290	R133	P111
HIS	L1307	E1168	D1073	G1015	F935	C814	R576	I331	HIS	V291	D134	P111
HIS	K1311	T1169	L1074	E1015	H936	T823	R576	I331	HIS	R292	R137	P111
HIS	A1315	K1170	R1075	V1017	I937	P824	R576	I331	HIS	N294	V138	P111
HIS	S1321	G1171	P1076	A1018	G938	G828	R576	I331	HIS	E295	L140	P111
HIS	A1322	T1172	K1079	M1019	G939	V828	R576	I331	HIS	R297	F141	P111
HIS	S1323	T1178	D1082	M1020	A940	E833	R576	I331	HIS	L299	E142	P111
HIS	S1324	V1180	A1083	D1021	A941	P834	R576	I331	HIS	Q300	V146	P111
HIS	F1325	D1181	Q1084	P1022	S942	L835	R576	I331	HIS	E301	I147	P111
HIS	Q1326	A1322	Q1085	T1024	R943	R836	R576	I331	HIS	L307	G150	P111
HIS	E1327	S1183	G1085	M1025	A944	T844	R576	I331	HIS	D308	M151	P111
HIS		P1184	M1086	P1027	A945	D684	R576	I331	HIS	N309	T152	P111
HIS		Y1186	D1087	I1028	A946	E704	R576	I331	HIS	GLY	M153	P111
HIS		E1187	V1088	I1029	E947		R576	I331	HIS	ARG	L154	P111
HIS			L1089	V1031	S948		R576	I331	HIS	ARG	D248	P111
HIS			I1090	S1032	S949		R576	I331	HIS	GLY	L249	P111
HIS			P1091		I951		R576	I331	HIS	ARG	R250	P111
HIS			G1092				R576	I331	HIS	ALA	P251	P111
HIS			T1093				R576	I331	HIS	ALA	L252	P111
HIS			D1094				R576	I331	HIS	THR	V253	P111
HIS			M1095				R576	I331	HIS	GLY	P254	P111
HIS			P1096				R576	I331	HIS	ASN	L255	P111
HIS			A1097				R576	I331	HIS			

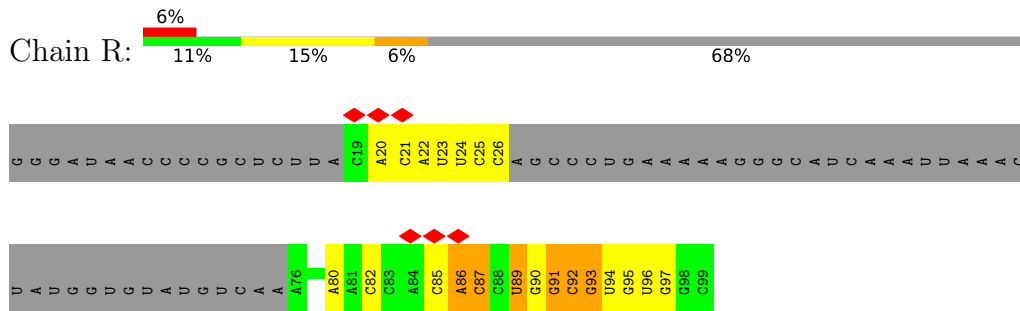
• Molecule 7: tDNA



• Molecule 8: ntDNA



• Molecule 9: rut RNA



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	42083	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	8000	Depositor
Maximum defocus (nm)	25000	Depositor
Magnification	31000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.323	Depositor
Minimum map value	-0.000	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	372.0, 372.0, 372.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.24, 1.24, 1.24	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: BEF, ZN, ADP, 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	0.25	0/3329	0.43	0/4483
1	b	0.25	0/3329	0.43	0/4483
1	c	0.25	0/3329	0.43	0/4483
1	d	0.25	0/3329	0.43	0/4483
1	e	0.25	0/3329	0.43	0/4483
1	f	0.25	0/3329	0.43	0/4483
2	A	0.23	0/3897	0.45	0/5273
3	U	0.23	0/1847	0.43	0/2503
3	V	0.23	0/2538	0.44	0/3441
4	W	0.23	0/629	0.43	0/847
5	X	0.25	0/10736	0.42	0/14487
6	Y	0.24	0/10590	0.44	0/14301
7	L	0.65	0/827	1.03	1/1262 (0.1%)
8	K	0.63	0/533	0.94	1/812 (0.1%)
9	R	0.25	0/750	1.07	7/1162 (0.6%)
All	All	0.26	0/52321	0.47	9/70986 (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
6	Y	0	1

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	R	85	C	N1-C2-O2	8.80	124.18	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	R	85	C	C2-N1-C1'	8.74	128.42	118.80
9	R	85	C	N3-C2-O2	-7.04	116.97	121.90
9	R	89	U	N1-C2-O2	6.51	127.36	122.80
9	R	85	C	C6-N1-C1'	-6.00	113.59	120.80
9	R	89	U	N3-C2-O2	-5.99	118.01	122.20
9	R	85	C	C6-N1-C2	-5.83	117.97	120.30
8	K	0	DT	N3-C4-O4	5.15	122.99	119.90
7	L	23	DT	N3-C4-O4	5.06	122.94	119.90

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
6	Y	120	LEU	Peptide

## 5.2 Too-close contacts [i](#)

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	3280	0	3358	0	0
1	b	3280	0	3358	0	0
1	c	3280	0	3358	0	0
1	d	3280	0	3358	0	0
1	e	3280	0	3358	0	0
1	f	3280	0	3359	0	0
2	A	3852	0	3835	101	0
3	U	1825	0	1853	57	0
3	V	2504	0	2558	55	0
4	W	627	0	634	17	0
5	X	10567	0	10585	288	0
6	Y	10431	0	10636	284	0
7	L	741	0	417	37	0
8	K	474	0	258	19	0
9	R	674	0	347	13	0
10	a	27	0	12	0	0
10	b	27	0	12	0	0
10	c	27	0	12	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	d	27	0	12	0	0
10	e	27	0	12	0	0
11	Y	1	0	0	0	0
11	a	1	0	0	0	0
11	b	1	0	0	0	0
11	c	1	0	0	0	0
11	d	1	0	0	0	0
11	e	1	0	0	0	0
12	a	4	0	0	0	0
12	b	4	0	0	0	0
12	c	4	0	0	0	0
12	d	4	0	0	0	0
12	e	4	0	0	0	0
13	Y	2	0	0	0	0
14	a	3	0	0	0	0
14	b	3	0	0	0	0
14	c	3	0	0	0	0
14	d	3	0	0	0	0
14	e	3	0	0	0	0
All	All	51553	0	51332	818	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 13.

All (818) 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)
3:V:167:PRO:HD2	3:V:170:ARG:HG2	1.58	0.85
5:X:1327:LEU:HB3	5:X:1337:ILE:HG21	1.58	0.85
6:Y:287:ALA:HB1	6:Y:291:ILE:HG21	1.57	0.84
2:A:142:VAL:HG12	2:A:152:LEU:HG	1.60	0.83
3:U:107:ILE:HA	3:U:133:LEU:O	1.78	0.82
6:Y:886:VAL:HG12	6:Y:1258:ARG:HB2	1.62	0.81
5:X:227:LYS:HA	5:X:335:THR:O	1.79	0.81
5:X:510:GLN:HG2	5:X:534:GLY:HA2	1.62	0.81
7:L:17:DC:H2'	7:L:18:DG:C8	2.17	0.79
5:X:986:ALA:O	5:X:990:ASP:HB2	1.83	0.79
8:K:0:DT:H2'	8:K:1:DT:H71	1.62	0.79
6:Y:362:ARG:H	6:Y:365:GLN:HE21	1.29	0.78
7:L:24:DT:H2''	7:L:25:DA:C8	2.19	0.77
2:A:145:VAL:HG22	2:A:175:PRO:HD3	1.68	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:26:DT:H3'	7:L:27:DT:H5''	1.67	0.76
5:X:818:VAL:HB	5:X:1076:ILE:HD11	1.68	0.74
6:Y:705:THR:HG21	6:Y:718:SER:HA	1.70	0.74
7:L:-6:DC:H2''	7:L:-5:DT:H71	1.70	0.74
5:X:226:GLU:HB3	5:X:245:ARG:HH21	1.53	0.73
6:Y:1075:ARG:HE	6:Y:1100:PHE:HB3	1.52	0.73
3:U:32:GLU:OE1	3:U:195:ARG:NH2	2.21	0.73
5:X:448:LEU:HD21	5:X:587:LEU:HB2	1.70	0.72
5:X:1271:GLY:N	5:X:1274:GLU:OE2	2.23	0.72
6:Y:41:PRO:HG3	6:Y:274:ASN:HD22	1.53	0.72
6:Y:335:GLN:HB3	6:Y:340:GLN:HB3	1.72	0.72
5:X:448:LEU:HD23	5:X:557:ARG:HD3	1.71	0.72
2:A:144:LYS:HA	2:A:175:PRO:HG3	1.70	0.71
6:Y:291:ILE:HG13	6:Y:292:VAL:H	1.56	0.71
7:L:4:DC:H2'	7:L:5:DA:C8	2.26	0.70
7:L:18:DG:H2'	7:L:19:DG:C8	2.25	0.70
5:X:1274:GLU:HB2	6:Y:434:ILE:HD11	1.72	0.70
6:Y:527:LEU:HD23	6:Y:548:VAL:HG11	1.72	0.70
7:L:6:DC:H2'	7:L:7:DA:C8	2.26	0.70
6:Y:809:VAL:HG13	6:Y:912:GLY:H	1.56	0.70
5:X:141:THR:OG1	5:X:760:ASN:ND2	2.24	0.70
6:Y:56:LEU:HD21	6:Y:266:ASN:HB2	1.74	0.69
3:V:109:PRO:HB3	3:V:132:HIS:HA	1.74	0.69
6:Y:425:ARG:HG3	6:Y:427:PRO:HD2	1.74	0.69
6:Y:43:THR:HA	6:Y:56:LEU:HB3	1.75	0.69
4:W:30:MET:HA	4:W:35:LYS:HG2	1.75	0.68
5:X:838:CYS:SG	5:X:886:LYS:NZ	2.63	0.68
2:A:186:VAL:HG12	2:A:188:PRO:HD3	1.75	0.68
3:U:57:THR:HG21	3:U:147:GLN:HE21	1.58	0.68
5:X:14:ASP:HA	5:X:1183:ALA:HB3	1.74	0.68
6:Y:128:LEU:HD22	6:Y:130:MET:HB2	1.74	0.68
5:X:211:ARG:HH12	5:X:217:THR:HG23	1.59	0.67
2:A:97:ILE:HG22	2:A:98:GLU:H	1.59	0.67
6:Y:126:LEU:HG	6:Y:223:LEU:HD22	1.77	0.67
5:X:1070:HIS:NE2	5:X:1114:GLU:OE1	2.28	0.67
5:X:1340:GLU:OE2	6:Y:1341:ARG:NH2	2.27	0.67
5:X:241:LEU:HD11	5:X:285:ILE:HG12	1.77	0.66
3:U:182:ARG:HG2	3:U:206:GLU:HB3	1.76	0.66
6:Y:926:PRO:HG2	6:Y:1248:ILE:HD11	1.76	0.66
6:Y:418:GLU:HB3	6:Y:481:ARG:HH12	1.60	0.66
5:X:296:VAL:HG23	5:X:336:LEU:HD13	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:726:TYR:HB3	5:X:733:VAL:HB	1.77	0.66
6:Y:1322:ALA:HB1	6:Y:1331:VAL:HB	1.78	0.66
5:X:1334:GLY:HA3	6:Y:25:ALA:HB2	1.77	0.65
6:Y:746:LEU:HD23	6:Y:758:PRO:HB3	1.77	0.65
2:A:31:LEU:HB3	2:A:47:VAL:HG11	1.78	0.65
3:U:118:ASP:HA	3:V:255:ARG:HH22	1.60	0.65
5:X:528:ARG:NH2	5:X:576:SER:O	2.30	0.65
5:X:700:VAL:HG21	5:X:1114:GLU:HG3	1.78	0.65
6:Y:267:ASP:HA	6:Y:270:ARG:HG2	1.79	0.65
7:L:16:DT:H2'	7:L:17:DC:C6	2.32	0.65
5:X:255:ILE:HD11	5:X:285:ILE:HD12	1.78	0.65
6:Y:582:ILE:HD12	6:Y:623:GLN:HB3	1.79	0.65
6:Y:824:PRO:HD3	6:Y:835:LEU:HB2	1.77	0.65
5:X:615:VAL:HG12	5:X:638:SER:HA	1.78	0.65
3:V:321:TRP:HA	3:V:323:PRO:HD3	1.79	0.65
6:Y:36:GLY:HA3	6:Y:61:ILE:HG12	1.78	0.65
6:Y:972:LYS:HE2	6:Y:1002:VAL:HG13	1.79	0.65
5:X:983:GLY:O	5:X:986:ALA:HB3	1.97	0.65
6:Y:452:LEU:HD21	6:Y:500:ILE:HA	1.79	0.65
5:X:829:THR:HG22	5:X:1059:ARG:HA	1.79	0.64
3:U:124:VAL:HG13	3:U:125:LYS:HG2	1.79	0.64
2:A:71:PRO:HA	2:A:74:GLU:HB2	1.79	0.64
5:X:1323:PHE:O	5:X:1327:LEU:HG	1.98	0.64
9:R:92:C:H2'	9:R:93:G:C8	2.33	0.64
2:A:134:GLU:HA	2:A:183:LEU:HB3	1.80	0.64
2:A:209:PHE:HE1	2:A:262:VAL:HG21	1.63	0.63
5:X:217:THR:HG22	5:X:351:LEU:HD11	1.81	0.63
5:X:1142:ARG:NH1	5:X:1161:LEU:O	2.32	0.63
5:X:1303:LYS:O	5:X:1307:ASN:ND2	2.31	0.63
2:A:142:VAL:HG23	2:A:175:PRO:HA	1.79	0.63
2:A:142:VAL:HA	2:A:152:LEU:HA	1.81	0.62
5:X:88:ARG:NH1	5:X:1035:LYS:O	2.32	0.62
6:Y:82:GLY:HA2	6:Y:91:GLU:HG2	1.80	0.62
6:Y:945:ALA:HB3	6:Y:1022:PRO:HA	1.82	0.62
8:K:2:DG:H2'	8:K:3:DT:C6	2.34	0.62
3:U:80:GLU:O	3:U:84:ASN:ND2	2.32	0.62
5:X:720:ARG:HH21	5:X:736:VAL:HG21	1.64	0.62
2:A:123:ARG:NH2	2:A:191:ARG:O	2.32	0.62
2:A:444:LEU:HD12	2:A:473:LEU:HD11	1.82	0.62
5:X:314:ASN:HD21	5:X:348:SER:HA	1.63	0.62
6:Y:180:MET:HG3	6:Y:296:LYS:HE3	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:1277:ALA:HA	6:Y:921:GLN:HE22	1.65	0.62
6:Y:933:ARG:NH2	6:Y:934:THR:O	2.33	0.62
2:A:145:VAL:HG11	2:A:173:PHE:HB3	1.82	0.62
6:Y:291:ILE:HG13	6:Y:292:VAL:N	2.15	0.62
2:A:154:LEU:HD11	2:A:160:ALA:HB2	1.82	0.62
3:V:16:ILE:HG23	3:V:26:VAL:HG12	1.82	0.62
5:X:265:LYS:O	5:X:267:ARG:NH1	2.33	0.62
2:A:209:PHE:O	2:A:213:VAL:N	2.32	0.62
5:X:180:ARG:NH2	5:X:396:ASP:OD2	2.32	0.61
3:V:283:GLN:NE2	3:V:318:LEU:O	2.32	0.61
5:X:672:GLU:HB2	6:Y:767:LEU:HB2	1.82	0.61
6:Y:576:ARG:HD3	6:Y:593:ASN:HA	1.82	0.61
5:X:841:ARG:HA	5:X:1046:VAL:HA	1.81	0.61
3:U:33:ARG:HH11	3:U:197:ASP:HB2	1.66	0.61
5:X:733:VAL:HG22	5:X:750:ILE:HG12	1.81	0.61
6:Y:884:SER:OG	6:Y:1254:GLU:OE2	2.18	0.61
5:X:839:VAL:O	5:X:886:LYS:NZ	2.33	0.61
7:L:17:DC:H2'	7:L:18:DG:H8	1.63	0.61
5:X:618:GLN:HB3	5:X:621:SER:HB3	1.83	0.61
7:L:4:DC:H2'	7:L:5:DA:H8	1.65	0.61
2:A:131:ARG:HG3	2:A:186:VAL:HG21	1.83	0.60
3:U:92:VAL:O	3:U:148:ARG:NH2	2.33	0.60
3:V:60:GLU:HB2	3:V:143:ARG:HB3	1.82	0.60
6:Y:117:LEU:HD23	6:Y:124:ILE:HD13	1.83	0.60
7:L:3:DC:H2'	7:L:4:DC:C6	2.36	0.60
5:X:1246:ARG:NH2	5:X:1250:SER:O	2.34	0.60
5:X:1330:ILE:O	5:X:1334:GLY:N	2.33	0.60
2:A:168:LEU:HD23	2:A:170:ARG:HG2	1.82	0.60
5:X:512:SER:N	9:R:89:U:O4	2.35	0.60
5:X:195:PHE:HA	5:X:205:PRO:HA	1.84	0.60
6:Y:1046:ILE:HG22	6:Y:1061:VAL:HG12	1.83	0.60
5:X:936:ARG:NH2	5:X:1043:ALA:O	2.35	0.60
5:X:1269:ARG:HH22	6:Y:340:GLN:HE22	1.48	0.59
5:X:210:LEU:HD22	5:X:220:ILE:HG12	1.84	0.59
7:L:6:DC:H2'	7:L:7:DA:H8	1.67	0.59
9:R:96:U:H2'	9:R:97:G:C8	2.38	0.59
5:X:1066:MET:HG3	5:X:1234:LYS:HA	1.83	0.59
5:X:1072:ASN:ND2	5:X:1111:GLN:OE1	2.34	0.59
6:Y:340:GLN:HA	6:Y:343:LEU:HB2	1.85	0.59
2:A:47:VAL:HG12	2:A:58:THR:HG22	1.84	0.59
2:A:305:MET:HB2	2:A:336:LEU:HD22	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:Y:141:PHE:CE2	6:Y:297:ARG:HA	2.37	0.59
5:X:1005:GLU:O	5:X:1009:ASN:ND2	2.35	0.59
6:Y:105:ILE:HG12	6:Y:273:ILE:HD11	1.85	0.59
6:Y:1000:GLY:HA3	6:Y:1026:PRO:HG3	1.84	0.59
7:L:-2:DC:H2'	7:L:-1:DA:C8	2.37	0.59
7:L:3:DC:H2'	7:L:4:DC:H6	1.67	0.59
2:A:487:ASN:HA	2:A:491:PHE:HB2	1.85	0.58
3:V:57:THR:O	3:V:158:ARG:NH1	2.36	0.58
2:A:116:GLN:OE1	2:A:119:ARG:NH1	2.33	0.58
2:A:202:PRO:HA	2:A:228:ARG:HD3	1.85	0.58
5:X:213:LEU:HD13	5:X:422:LYS:HG2	1.85	0.58
6:Y:294:ASN:HA	6:Y:297:ARG:HG2	1.84	0.58
6:Y:1029:THR:HA	6:Y:1099:TYR:HE2	1.68	0.58
2:A:205:LEU:HD23	2:A:228:ARG:HD2	1.86	0.58
5:X:582:ASN:HB3	5:X:586:PHE:H	1.68	0.58
6:Y:337:ARG:O	6:Y:341:ASN:ND2	2.36	0.58
2:A:52:LYS:HD2	2:A:53:SER:HB3	1.85	0.58
6:Y:1218:HIS:NE2	6:Y:1306:LEU:O	2.36	0.58
6:Y:1346:GLY:O	6:Y:1350:ASN:ND2	2.37	0.58
6:Y:201:LEU:HD21	6:Y:220:ARG:HB2	1.84	0.58
5:X:720:ARG:NH2	5:X:749:ASP:OD1	2.37	0.58
6:Y:279:LEU:HD12	6:Y:295:GLU:HA	1.85	0.58
5:X:633:LEU:HD21	5:X:644:LEU:HD23	1.85	0.58
5:X:1339:LEU:HB3	6:Y:17:PHE:HB3	1.86	0.58
6:Y:161:THR:H	6:Y:164:GLN:HB2	1.68	0.58
5:X:633:LEU:HA	5:X:645:PHE:O	2.03	0.58
5:X:971:LEU:O	5:X:975:ILE:HG23	2.03	0.58
5:X:222:ASP:HA	5:X:227:LYS:HD3	1.86	0.57
6:Y:43:THR:HB	6:Y:56:LEU:HD23	1.85	0.57
3:V:56:VAL:HA	3:V:146:VAL:HG12	1.86	0.57
2:A:199:ARG:HD2	2:A:228:ARG:HH22	1.70	0.57
5:X:524:ILE:HD13	5:X:708:VAL:HG23	1.86	0.57
5:X:952:GLN:HG3	5:X:1036:ILE:HD12	1.85	0.57
5:X:1283:ALA:HB1	5:X:1286:THR:HB	1.87	0.57
2:A:131:ARG:NH2	2:A:132:GLU:OE2	2.35	0.57
3:V:102:LEU:HD13	3:V:115:ILE:HD13	1.87	0.57
5:X:197:ARG:NH1	5:X:201:ARG:O	2.35	0.57
5:X:1119:MET:HB2	5:X:1228:GLY:HA2	1.86	0.57
6:Y:124:ILE:HA	6:Y:127:LEU:HD12	1.87	0.57
6:Y:1178:THR:HA	6:Y:1184:ASP:HB3	1.86	0.57
5:X:700:VAL:HG23	5:X:1069:ARG:HH22	1.70	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:34:ALA:HB1	2:A:106:THR:HG22	1.87	0.57
3:V:248:GLU:OE2	3:V:320:ASN:ND2	2.37	0.57
5:X:972:PHE:HA	5:X:975:ILE:HG12	1.86	0.57
3:V:51:MET:HG3	3:V:179:PRO:HD2	1.86	0.56
3:V:100:LEU:HD21	3:V:121:VAL:HG21	1.87	0.56
3:V:196:THR:HG21	6:Y:370:LYS:HD2	1.86	0.56
6:Y:172:PHE:HB2	6:Y:176:PHE:HB2	1.87	0.56
2:A:38:LYS:HE3	2:A:100:VAL:H	1.70	0.56
6:Y:576:ARG:NH1	6:Y:593:ASN:OD1	2.39	0.56
3:U:212:ASP:HB3	3:U:215:GLU:HB3	1.87	0.56
5:X:656:SER:HB3	5:X:659:GLN:HE21	1.70	0.56
2:A:30:ALA:HB1	2:A:110:ALA:HA	1.87	0.56
5:X:1329:GLU:HG2	6:Y:331:ILE:HD11	1.88	0.56
2:A:216:ILE:HB	2:A:221:ILE:HD11	1.86	0.56
5:X:1307:ASN:OD1	5:X:1312:ASN:ND2	2.38	0.56
5:X:1326:LEU:HB3	6:Y:337:ARG:HH21	1.70	0.56
5:X:598:VAL:HG23	5:X:627:GLY:HA3	1.88	0.55
5:X:808:ASN:H	6:Y:633:ALA:HB2	1.71	0.55
4:W:22:VAL:HG13	4:W:64:LEU:HD23	1.88	0.55
5:X:1290:MET:HA	5:X:1294:LYS:HD3	1.88	0.55
6:Y:960:LEU:HD11	6:Y:980:THR:HB	1.87	0.55
5:X:260:LYS:NZ	5:X:280:ASP:OD2	2.39	0.55
6:Y:1002:VAL:HB	6:Y:1019:ASN:HB3	1.87	0.55
5:X:45:GLY:HA3	5:X:54:ARG:HD2	1.88	0.55
6:Y:952:VAL:HG11	6:Y:984:LEU:HD13	1.89	0.55
7:L:29:DG:H2'	7:L:29:DG:N3	2.20	0.55
6:Y:972:LYS:HZ3	6:Y:1002:VAL:HA	1.72	0.55
6:Y:1045:THR:HG21	6:Y:1076:PRO:HD3	1.89	0.55
2:A:225:ALA:HB1	2:A:331:LEU:HD11	1.88	0.55
2:A:344:LEU:HD23	2:A:350:ALA:HA	1.88	0.55
2:A:60:ARG:N	2:A:93:VAL:O	2.31	0.55
3:V:190:ALA:HB2	3:V:200:LYS:HB2	1.89	0.55
5:X:798:GLN:HG2	5:X:827:ARG:HG2	1.88	0.55
9:R:94:U:H2'	9:R:95:G:H8	1.72	0.55
5:X:873:ILE:HG13	5:X:944:ARG:HH21	1.70	0.55
6:Y:709:ARG:NH1	6:Y:710:ASP:OD2	2.40	0.55
6:Y:1044:GLN:NE2	6:Y:1070:GLY:O	2.38	0.55
9:R:87:C:O2'	9:R:91:G:N7	2.33	0.55
5:X:1280:ALA:HB1	6:Y:918:ILE:HG22	1.90	0.54
6:Y:437:PHE:HZ	6:Y:453:VAL:HG21	1.72	0.54
2:A:145:VAL:HG12	2:A:150:ILE:HB	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:1006:GLU:O	5:X:1010:GLN:NE2	2.39	0.54
6:Y:393:THR:HG23	6:Y:396:ALA:H	1.72	0.54
9:R:94:U:H2'	9:R:95:G:C8	2.43	0.54
3:U:81:ILE:O	3:U:85:LEU:HG	2.07	0.54
5:X:632:ASP:HA	5:X:647:ARG:HB3	1.89	0.54
6:Y:269:TYR:O	6:Y:272:VAL:HG12	2.07	0.54
6:Y:1146:GLU:HB3	6:Y:1148:ARG:HG3	1.90	0.54
2:A:233:ARG:HB3	2:A:327:LEU:HD11	1.88	0.54
6:Y:250:ARG:NE	6:Y:269:TYR:OH	2.40	0.54
5:X:811:ASN:O	5:X:1099:ASN:ND2	2.41	0.54
2:A:141:VAL:O	2:A:153:ASP:N	2.40	0.54
6:Y:958:ILE:HG13	6:Y:1005:LYS:HE2	1.90	0.54
3:U:201:LEU:HD21	3:U:203:ILE:HG13	1.88	0.54
5:X:785:ASP:OD2	5:X:791:LEU:N	2.40	0.54
5:X:855:PRO:HG3	5:X:910:ALA:HB3	1.88	0.53
2:A:63:LEU:N	2:A:91:ASP:OD1	2.41	0.53
6:Y:491:LEU:HB2	6:Y:904:ALA:HA	1.89	0.53
5:X:513:GLN:HB3	9:R:89:U:C4	2.44	0.53
2:A:18:LEU:HD12	2:A:22:LYS:HB3	1.90	0.53
6:Y:201:LEU:HD21	6:Y:220:ARG:CB	2.38	0.53
2:A:19:PRO:HG2	2:A:22:LYS:HB2	1.90	0.53
2:A:470:ILE:HB	2:A:473:LEU:HD13	1.90	0.53
5:X:1146:GLN:NE2	5:X:1150:ASP:OD2	2.40	0.53
5:X:1323:PHE:O	5:X:1326:LEU:HG	2.08	0.53
5:X:1331:ARG:HH21	6:Y:29:MET:HB2	1.73	0.53
5:X:1105:SER:HB3	6:Y:731:ARG:HG3	1.90	0.53
6:Y:848:VAL:HG22	6:Y:858:VAL:HB	1.91	0.53
7:L:5:DA:H2'	7:L:6:DC:C6	2.43	0.53
2:A:381:LEU:HD13	2:A:410:ALA:HA	1.90	0.53
3:V:158:ARG:NH1	3:V:173:VAL:O	2.41	0.53
7:L:-8:DC:H2''	7:L:-7:DG:C8	2.44	0.53
8:K:7:DC:H2''	8:K:8:DG:C8	2.44	0.53
6:Y:110:PRO:HB2	6:Y:238:ILE:HG22	1.89	0.53
6:Y:218:THR:HA	6:Y:221:ILE:HG22	1.91	0.53
5:X:594:VAL:HG11	5:X:650:VAL:HG23	1.91	0.52
3:U:95:LYS:NZ	3:U:120:ASP:OD2	2.34	0.52
3:V:85:LEU:HA	3:V:88:LEU:HG	1.91	0.52
5:X:123:TYR:OH	5:X:126:GLU:OE1	2.28	0.52
6:Y:949:SER:HB3	6:Y:1020:TRP:CD1	2.44	0.52
5:X:26:TYR:HB3	5:X:29:SER:HB3	1.90	0.52
5:X:1196:LYS:HD2	5:X:1206:THR:HG22	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:Y:174:ASP:OD1	6:Y:174:ASP:N	2.42	0.52
7:L:-2:DC:H2''	7:L:-1:DA:H8	1.73	0.52
3:U:174:ASP:OD1	3:U:174:ASP:N	2.40	0.52
3:V:301:THR:HA	3:V:304:LYS:HG2	1.92	0.52
5:X:148:GLN:HB3	5:X:454:ARG:HG2	1.92	0.52
2:A:27:LEU:HD22	2:A:114:ILE:HD11	1.90	0.52
2:A:322:GLY:O	2:A:326:ARG:N	2.40	0.52
2:A:463:GLY:HA2	2:A:482:ILE:HG12	1.91	0.52
3:U:27:THR:HG22	3:U:202:VAL:HG22	1.91	0.52
2:A:168:LEU:HB3	2:A:171:GLU:H	1.74	0.52
3:U:91:ARG:NH1	3:U:122:GLU:OE1	2.43	0.52
3:V:93:GLN:O	3:V:148:ARG:NH2	2.43	0.52
5:X:236:LYS:HE3	5:X:286:GLU:HG2	1.91	0.52
6:Y:130:MET:HG3	6:Y:157:GLN:HB2	1.92	0.52
6:Y:245:LEU:HD11	6:Y:249:LEU:HD22	1.91	0.52
6:Y:329:ASP:HA	6:Y:332:LYS:HB2	1.92	0.52
5:X:59:ILE:HD11	5:X:476:LYS:HD2	1.91	0.52
6:Y:741:ALA:O	6:Y:762:ASN:ND2	2.43	0.52
6:Y:804:ALA:O	6:Y:805:GLN:HG2	2.10	0.52
7:L:27:DT:O3'	7:L:28:DC:H3'	2.10	0.52
7:L:-6:DC:H2''	7:L:-5:DT:C7	2.39	0.51
5:X:232:ILE:HG12	5:X:331:LYS:HG3	1.91	0.51
8:K:1:DT:C2	8:K:2:DG:C8	2.98	0.51
3:V:246:LYS:NZ	3:V:247:PRO:O	2.35	0.51
5:X:801:ARG:HD3	5:X:1094:VAL:HA	1.93	0.51
6:Y:330:MET:HG2	6:Y:337:ARG:HB2	1.92	0.51
6:Y:421:VAL:HG22	6:Y:439:PRO:HG3	1.91	0.51
2:A:173:PHE:HE1	2:A:179:VAL:HG11	1.74	0.51
5:X:721:GLY:N	5:X:740:GLU:OE1	2.43	0.51
5:X:726:TYR:OH	5:X:728:ASP:OD2	2.26	0.51
2:A:18:LEU:HD22	2:A:118:VAL:HG12	1.93	0.51
2:A:49:ILE:HA	2:A:56:PHE:HA	1.92	0.51
3:U:5:VAL:HG23	3:U:6:THR:HG23	1.93	0.51
3:V:61:ILE:HG21	3:V:64:VAL:HB	1.93	0.51
5:X:88:ARG:HH22	5:X:1038:GLN:HG3	1.75	0.51
5:X:1321:GLU:O	5:X:1325:VAL:HG23	2.11	0.51
5:X:1244:HIS:NE2	5:X:1266:GLY:O	2.44	0.51
6:Y:116:PHE:HB2	6:Y:237:MET:SD	2.51	0.51
6:Y:1258:ARG:NH2	6:Y:1259:GLN:OE1	2.43	0.51
7:L:26:DT:H3'	7:L:27:DT:C5'	2.38	0.51
2:A:235:LYS:NZ	2:A:287:ALA:O	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:292:ILE:HD12	5:X:295:LYS:HD2	1.90	0.51
6:Y:660:GLU:O	6:Y:663:GLU:HG3	2.10	0.51
2:A:227:ALA:HB2	2:A:331:LEU:HD22	1.93	0.51
5:X:806:PRO:HA	5:X:811:ASN:HD21	1.76	0.51
6:Y:473:THR:HG22	6:Y:476:ALA:H	1.75	0.51
6:Y:836:ARG:NE	6:Y:869:CYS:SG	2.84	0.51
6:Y:1281:GLU:OE1	6:Y:1284:ARG:N	2.43	0.51
6:Y:1002:VAL:N	6:Y:1019:ASN:O	2.39	0.51
8:K:-21:DG:H2''	8:K:-20:DG:H8	1.76	0.51
2:A:440:VAL:HG13	2:A:444:LEU:HD22	1.92	0.51
3:U:100:LEU:HD23	3:U:115:ILE:HD12	1.93	0.51
3:U:133:LEU:HD11	3:U:140:ILE:HG12	1.93	0.51
5:X:448:LEU:H	5:X:553:THR:HG21	1.76	0.51
5:X:781:ASP:OD1	5:X:782:VAL:N	2.44	0.51
5:X:965:GLN:HA	5:X:968:GLU:HG3	1.93	0.51
2:A:220:VAL:HG23	2:A:221:ILE:HG23	1.92	0.50
6:Y:80:HIS:HB3	6:Y:83:VAL:HB	1.93	0.50
6:Y:141:PHE:HB3	6:Y:293:ARG:HD2	1.91	0.50
2:A:20:ARG:HD3	2:A:23:ILE:HD12	1.93	0.50
3:U:88:LEU:HB3	3:U:128:HIS:HD2	1.76	0.50
5:X:211:ARG:NH2	5:X:354:ASP:OD2	2.44	0.50
6:Y:1262:ARG:NH2	6:Y:1315:ALA:O	2.44	0.50
2:A:160:ALA:HA	2:A:195:LEU:HB3	1.93	0.50
6:Y:1025:MET:HB2	6:Y:1124:ILE:HB	1.93	0.50
6:Y:1321:SER:HA	6:Y:1348:LYS:HZ1	1.76	0.50
8:K:-21:DG:H2''	8:K:-20:DG:C8	2.46	0.50
3:U:192:VAL:HB	3:U:198:LEU:HD22	1.94	0.50
3:V:92:VAL:HG13	3:V:121:VAL:HG12	1.92	0.50
5:X:58:PRO:HB3	5:X:69:GLN:HA	1.92	0.50
5:X:297:VAL:HB	5:X:317:LEU:HD21	1.92	0.50
6:Y:70:CYS:SG	6:Y:71:LEU:N	2.84	0.50
2:A:375:GLU:OE1	2:A:375:GLU:N	2.91	0.50
3:V:101:THR:OG1	3:V:103:ASN:OD1	2.30	0.50
5:X:235:ASN:O	5:X:236:LYS:HG2	2.11	0.50
6:Y:640:GLY:N	6:Y:643:ASP:OD2	2.45	0.50
6:Y:1164:SER:OG	6:Y:1165:PHE:N	2.45	0.50
6:Y:280:LYS:HG2	6:Y:283:LEU:HD12	1.94	0.50
6:Y:797:THR:HG22	6:Y:924:GLY:HA3	1.93	0.50
6:Y:975:ILE:HG22	6:Y:977:SER:H	1.76	0.50
6:Y:1026:PRO:HB2	6:Y:1028:ILE:HG23	1.94	0.50
3:U:45:ARG:NH1	5:X:1084:ASP:OD1	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:823:VAL:HG12	5:X:1060:ILE:HG23	1.94	0.50
6:Y:147:ILE:HD13	6:Y:188:LEU:HD23	1.94	0.50
6:Y:753:SER:OG	6:Y:754:ILE:N	2.45	0.50
2:A:35:THR:HA	2:A:38:LYS:HD2	1.93	0.49
6:Y:1061:VAL:HG22	6:Y:1105:ALA:H	1.77	0.49
2:A:428:ASN:HD21	2:A:450:ALA:N	2.10	0.49
5:X:105:TYR:HB2	5:X:114:VAL:HG13	1.94	0.49
5:X:925:SER:OG	5:X:926:GLY:N	2.45	0.49
3:V:299:SER:O	3:V:303:ILE:HG12	2.13	0.49
5:X:216:THR:O	5:X:220:ILE:HG13	2.13	0.49
5:X:1061:GLN:NE2	5:X:1240:ASP:OD1	2.46	0.49
5:X:1335:ILE:HG12	6:Y:22:ILE:HA	1.95	0.49
6:Y:516:ASP:HA	6:Y:545:HIS:HB2	1.95	0.49
6:Y:883:ARG:NH1	6:Y:898:CYS:SG	2.85	0.49
2:A:229:ASP:HB3	2:A:232:SER:HB2	1.94	0.49
4:W:16:ARG:HD2	6:Y:483:LEU:HG	1.94	0.49
5:X:841:ARG:HB3	5:X:1046:VAL:HG12	1.93	0.49
5:X:881:ASP:H	5:X:920:VAL:HG12	1.77	0.49
6:Y:1060:VAL:HG12	6:Y:1106:ILE:HG12	1.93	0.49
6:Y:1183:SER:OG	6:Y:1184:ASP:N	2.46	0.49
2:A:455:THR:HG23	2:A:457:GLU:H	1.77	0.49
5:X:65:ASN:ND2	5:X:106:GLU:O	2.45	0.49
5:X:975:ILE:HA	5:X:978:VAL:HG12	1.94	0.49
5:X:1066:MET:HE1	5:X:1076:ILE:HB	1.95	0.49
6:Y:1321:SER:HA	6:Y:1348:LYS:NZ	2.27	0.49
7:L:-4:DC:C2	7:L:-3:DA:N7	2.80	0.49
5:X:656:SER:OG	5:X:657:THR:N	2.44	0.49
5:X:903:ARG:NH1	5:X:911:SER:OG	2.45	0.49
6:Y:117:LEU:HD23	6:Y:124:ILE:HG21	1.92	0.49
6:Y:279:LEU:HD21	6:Y:298:MET:HG3	1.94	0.49
6:Y:287:ALA:HB1	6:Y:291:ILE:HD13	1.93	0.49
6:Y:527:LEU:HB2	6:Y:550:VAL:HG12	1.93	0.49
3:U:101:THR:OG1	3:U:116:THR:OG1	2.29	0.49
5:X:201:ARG:NE	5:X:370:MET:SD	2.86	0.49
6:Y:272:VAL:HG23	6:Y:302:ALA:HB1	1.93	0.49
8:K:5:DA:H4'	8:K:6:DG:OP1	2.12	0.49
3:U:53:GLY:HA3	3:U:177:TYR:HB2	1.94	0.49
5:X:962:GLU:O	5:X:965:GLN:HG2	2.13	0.49
6:Y:613:GLY:O	6:Y:617:THR:OG1	2.30	0.49
6:Y:1253:ILE:HA	6:Y:1256:ILE:HG22	1.95	0.49
6:Y:1326:GLN:HE22	7:L:0:DA:H4'	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:882:ILE:HA	5:X:919:ARG:HG3	1.95	0.49
5:X:1160:ASP:OD1	5:X:1160:ASP:N	2.44	0.49
5:X:1331:ARG:HD2	5:X:1334:GLY:HA2	1.95	0.49
6:Y:1172:LYS:HD2	6:Y:1191:PRO:HA	1.95	0.49
7:L:25:DA:H1'	7:L:26:DT:O4'	2.13	0.49
5:X:1331:ARG:NH2	6:Y:29:MET:HB2	2.27	0.48
6:Y:111:THR:HG22	6:Y:300:GLN:HE22	1.78	0.48
6:Y:156:ARG:NH2	6:Y:191:SER:OG	2.44	0.48
6:Y:265:LEU:HD13	6:Y:268:LEU:HD12	1.94	0.48
6:Y:1321:SER:O	6:Y:1324:SER:OG	2.26	0.48
7:L:24:DT:H2''	7:L:25:DA:N9	2.27	0.48
2:A:111:LYS:HG3	5:X:905:ILE:HG23	1.96	0.48
5:X:1062:PRO:HA	5:X:1076:ILE:HG23	1.95	0.48
5:X:1331:ARG:HG2	6:Y:33:TRP:CZ3	2.48	0.48
6:Y:280:LYS:HA	6:Y:283:LEU:HD12	1.95	0.48
6:Y:503:SER:OG	6:Y:504:GLN:N	2.45	0.48
2:A:126:VAL:HG21	2:A:158:ALA:HA	1.94	0.48
5:X:361:SER:HA	5:X:364:VAL:HG22	1.95	0.48
6:Y:410:ASP:N	6:Y:410:ASP:OD1	2.46	0.48
8:K:-22:DC:H2''	8:K:-21:DG:O4'	2.13	0.48
3:V:180:VAL:O	6:Y:535:ARG:NH1	2.45	0.48
5:X:551:HIS:HB3	5:X:553:THR:HG22	1.96	0.48
6:Y:1347:LEU:HD22	6:Y:1357:ILE:HG23	1.94	0.48
4:W:9:ALA:HB1	4:W:19:LEU:HD11	1.94	0.48
5:X:363:LEU:HD22	5:X:382:GLU:HA	1.96	0.48
7:L:-2:DC:H2''	7:L:-1:DA:H5'	1.95	0.48
5:X:276:GLN:NE2	5:X:280:ASP:OD2	2.46	0.48
3:U:4:SER:OG	3:U:5:VAL:N	2.46	0.48
3:V:33:ARG:NH1	5:X:820:GLU:OE1	2.45	0.48
3:V:278:ILE:O	3:V:282:VAL:HG23	2.13	0.48
6:Y:510:LEU:HD12	6:Y:601:ILE:HD12	1.96	0.48
3:V:71:LYS:NZ	3:V:72:GLU:O	2.41	0.48
5:X:596:ASP:OD1	5:X:596:ASP:N	2.47	0.48
6:Y:885:VAL:HG12	6:Y:1258:ARG:HD2	1.95	0.48
2:A:96:GLN:NE2	2:A:97:ILE:O	2.47	0.48
5:X:886:LYS:HB3	5:X:917:SER:HA	1.96	0.48
6:Y:1326:GLN:HG3	6:Y:1327:GLU:HG2	1.96	0.48
2:A:168:LEU:HD21	2:A:231:GLY:HA3	1.96	0.47
3:U:92:VAL:HG12	3:U:121:VAL:HG22	1.96	0.47
3:V:182:ARG:HB3	6:Y:531:LYS:HB3	1.96	0.47
6:Y:123:ARG:HG2	6:Y:1337:VAL:HG21	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:Y:377:PHE:HD1	6:Y:380:PHE:HD2	1.60	0.47
3:U:152:TYR:HD1	3:U:176:CYS:HA	1.79	0.47
5:X:517:GLN:HB3	5:X:760:ASN:H	1.77	0.47
5:X:1320:PRO:HG2	6:Y:1354:GLY:HA3	1.95	0.47
5:X:483:ASP:OD1	5:X:483:ASP:N	2.46	0.47
5:X:984:VAL:HG13	5:X:985:GLU:H	1.80	0.47
6:Y:658:GLU:O	6:Y:659:ALA:C	2.52	0.47
6:Y:972:LYS:NZ	6:Y:1002:VAL:HA	2.28	0.47
5:X:453:ILE:HD11	5:X:530:ILE:HD12	1.96	0.47
5:X:594:VAL:HG22	5:X:599:VAL:HG22	1.94	0.47
5:X:946:LEU:O	5:X:949:GLU:HG3	2.14	0.47
6:Y:161:THR:HG22	6:Y:162:GLU:H	1.79	0.47
6:Y:405:GLU:HG3	6:Y:407:VAL:HG12	1.97	0.47
6:Y:116:PHE:CE2	6:Y:1337:VAL:HG23	2.50	0.47
6:Y:1324:SER:HB3	6:Y:1348:LYS:HZ1	1.79	0.47
6:Y:1079:LYS:HD2	6:Y:1098:GLN:HB3	1.96	0.47
2:A:19:PRO:O	2:A:23:ILE:HG13	2.14	0.47
2:A:380:THR:HG22	2:A:382:GLU:H	1.79	0.47
5:X:943:LYS:NZ	5:X:947:GLU:OE1	2.43	0.47
5:X:1070:HIS:CG	5:X:1111:GLN:HB3	2.49	0.47
6:Y:482:ALA:O	6:Y:488:ASN:ND2	2.47	0.47
6:Y:517:CYS:H	6:Y:545:HIS:HD2	1.62	0.47
2:A:221:ILE:HG22	2:A:245:ILE:HD12	1.96	0.47
5:X:735:LYS:HA	5:X:748:ILE:HG22	1.97	0.47
6:Y:419:HIS:CE1	6:Y:471:PRO:HD2	2.49	0.47
6:Y:494:ALA:HB2	6:Y:922:SER:HB2	1.97	0.47
6:Y:620:PHE:CZ	6:Y:624:ILE:HD11	2.50	0.47
6:Y:803:VAL:HG13	6:Y:1256:ILE:HD11	1.97	0.47
3:U:163:GLU:HA	3:U:166:ARG:HG2	1.97	0.47
3:V:47:LEU:HB3	3:V:180:VAL:HG11	1.97	0.47
5:X:338:THR:HG23	5:X:345:PRO:HG3	1.96	0.47
5:X:568:ASN:HB2	5:X:571:LEU:HB2	1.97	0.47
5:X:1246:ARG:HH11	5:X:1266:GLY:HA2	1.80	0.47
6:Y:334:LYS:HD3	6:Y:335:GLN:N	2.30	0.47
8:K:9:DG:H2'	8:K:10:DA:C8	2.50	0.47
2:A:203:GLU:O	2:A:206:ILE:HB	2.15	0.46
2:A:408:GLU:HA	2:A:411:LYS:HE3	1.97	0.46
4:W:50:ALA:O	4:W:54:ILE:HG13	2.14	0.46
5:X:874:GLY:H	5:X:928:VAL:HG13	1.80	0.46
9:R:89:U:H2'	9:R:89:U:O2	2.15	0.46
3:U:218:ARG:HH12	3:V:231:PHE:HA	1.79	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:226:GLU:OE1	5:X:245:ARG:NE	2.47	0.46
5:X:521:LEU:HA	5:X:524:ILE:HG22	1.97	0.46
5:X:1004:ASP:HA	5:X:1008:GLN:HG2	1.98	0.46
3:U:88:LEU:HB3	3:U:128:HIS:CD2	2.50	0.46
2:A:234:ALA:HB3	2:A:271:ILE:HG12	1.98	0.46
3:V:62:ASP:OD1	3:V:62:ASP:N	2.48	0.46
5:X:549:ASP:OD1	5:X:550:VAL:N	2.48	0.46
6:Y:287:ALA:CB	6:Y:291:ILE:HD13	2.46	0.46
6:Y:684:ASP:OD1	6:Y:684:ASP:N	2.48	0.46
3:U:182:ARG:NH1	5:X:1090:ASN:O	2.48	0.46
3:V:323:PRO:HA	3:V:324:ALA:HA	1.52	0.46
5:X:216:THR:N	5:X:219:GLN:OE1	2.38	0.46
5:X:1331:ARG:HA	5:X:1335:ILE:H	1.81	0.46
6:Y:886:VAL:HA	6:Y:1258:ARG:HG3	1.98	0.46
6:Y:999:TYR:HD1	6:Y:1026:PRO:HG2	1.79	0.46
3:V:58:GLU:HB3	3:V:145:LYS:HB3	1.96	0.46
2:A:59:PHE:HA	2:A:94:GLU:HA	1.97	0.46
6:Y:951:GLN:HG3	6:Y:1016:THR:HA	1.97	0.46
6:Y:1194:ARG:NH1	6:Y:1211:SER:OG	2.49	0.46
2:A:225:ALA:HB3	2:A:237:ALA:HB3	1.98	0.46
2:A:361:LYS:HE2	2:A:409:ARG:HH12	1.81	0.46
3:U:78:ILE:HD13	3:U:81:ILE:HD12	1.98	0.46
5:X:143:ARG:HA	5:X:514:PHE:HA	1.98	0.46
5:X:370:MET:HG2	5:X:384:LEU:HD21	1.97	0.46
5:X:566:GLY:H	5:X:569:ILE:HD11	1.80	0.46
8:K:8:DG:H2'	8:K:9:DG:C8	2.50	0.46
2:A:205:LEU:HA	2:A:208:LEU:HD12	1.97	0.46
2:A:233:ARG:NH1	2:A:272:ASP:OD2	2.49	0.46
5:X:208:ILE:HD11	5:X:362:ALA:HA	1.98	0.46
6:Y:189:LEU:HB3	6:Y:234:PRO:HB2	1.98	0.46
6:Y:339:ARG:NH1	6:Y:1325:PHE:O	2.31	0.46
6:Y:436:ALA:HB3	6:Y:485:MET:HA	1.97	0.46
6:Y:868:TRP:O	6:Y:872:LEU:HD23	2.16	0.46
9:R:96:U:H2'	9:R:97:G:H8	1.79	0.46
2:A:45:VAL:HG22	2:A:60:ARG:HA	1.97	0.46
2:A:295:SER:HB3	2:A:308:ALA:HB3	1.98	0.46
3:U:66:HIS:CE1	3:U:69:SER:HB3	2.51	0.46
3:U:120:ASP:OD1	3:U:120:ASP:N	2.44	0.46
3:U:178:SER:O	3:U:208:ASN:ND2	2.49	0.46
3:V:15:ASP:H	3:V:27:THR:HG22	1.81	0.46
5:X:758:ARG:NE	5:X:762:ASN:OD1	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:Y:128:LEU:HD11	6:Y:188:LEU:HD22	1.98	0.46
6:Y:450:HIS:HB3	6:Y:453:VAL:HG12	1.98	0.46
3:V:37:HIS:CE1	5:X:1216:ARG:HD2	2.51	0.45
5:X:494:ASN:O	5:X:497:PRO:HD2	2.16	0.45
5:X:701:GLY:N	5:X:1182:ILE:O	2.42	0.45
5:X:808:ASN:HD21	5:X:1216:ARG:HH22	1.64	0.45
5:X:949:GLU:HA	5:X:952:GLN:HG2	1.97	0.45
5:X:985:GLU:HG2	5:X:986:ALA:N	2.30	0.45
5:X:1281:TYR:CE1	6:Y:431:ARG:HD2	2.50	0.45
2:A:150:ILE:HG12	2:A:162:ILE:HB	1.98	0.45
2:A:307:ILE:HD13	2:A:336:LEU:HD13	1.98	0.45
3:U:191:ARG:HD3	3:U:192:VAL:H	1.81	0.45
5:X:881:ASP:OD1	5:X:882:ILE:N	2.45	0.45
5:X:1333:LEU:HD23	6:Y:113:HIS:HE2	1.80	0.45
6:Y:43:THR:HG23	6:Y:44:ILE:H	1.80	0.45
6:Y:265:LEU:HD11	6:Y:327:LEU:H	1.80	0.45
2:A:112:GLN:O	2:A:116:GLN:HG2	2.17	0.45
4:W:12:LYS:HE2	4:W:57:GLY:HA2	1.98	0.45
5:X:444:ASP:OD1	5:X:444:ASP:N	2.49	0.45
6:Y:141:PHE:HE1	6:Y:296:LYS:HE2	1.82	0.45
3:U:56:VAL:HA	3:U:146:VAL:HG22	1.97	0.45
5:X:674:ASP:OD2	5:X:1070:HIS:ND1	2.50	0.45
5:X:993:PRO:HB2	5:X:997:TRP:HD1	1.82	0.45
5:X:1069:ARG:NH2	5:X:1114:GLU:OE2	2.47	0.45
6:Y:1256:ILE:O	6:Y:1260:MET:HG2	2.16	0.45
2:A:22:LYS:O	2:A:25:GLU:HG2	2.17	0.45
3:V:170:ARG:HD3	3:V:170:ARG:HA	1.71	0.45
3:V:182:ARG:HG2	3:V:206:GLU:HB3	1.98	0.45
4:W:60:ASN:H	4:W:63:ILE:HB	1.82	0.45
5:X:886:LYS:N	5:X:917:SER:OG	2.49	0.45
6:Y:146:VAL:HG12	6:Y:178:ALA:HB2	1.99	0.45
6:Y:998:PRO:HD3	6:Y:1020:TRP:CE2	2.52	0.45
6:Y:1050:THR:HG23	6:Y:1057:SER:HA	1.98	0.45
6:Y:1368:ASP:OD1	6:Y:1371:ARG:NH2	2.49	0.45
3:V:60:GLU:OE1	3:V:169:GLY:HA2	2.16	0.45
5:X:472:GLU:HA	5:X:475:VAL:HG12	1.98	0.45
5:X:540:ARG:NH2	7:L:3:DC:O3'	2.50	0.45
6:Y:43:THR:O	6:Y:57:PHE:HB2	2.17	0.45
7:L:19:DG:C2	7:L:20:DC:C2	3.05	0.45
2:A:119:ARG:O	2:A:122:GLU:HG3	2.15	0.45
3:U:150:ARG:HB2	3:V:6:THR:H	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:W:7:GLN:O	4:W:11:GLU:HG3	2.17	0.45
5:X:1269:ARG:NH2	6:Y:340:GLN:HE22	2.15	0.45
7:L:-4:DC:H2''	7:L:-3:DA:H8	1.82	0.45
3:U:196:THR:O	3:U:198:LEU:HD12	2.16	0.45
5:X:39:ILE:HG13	5:X:39:ILE:O	2.17	0.45
6:Y:740:LEU:HA	6:Y:763:PHE:HD2	1.82	0.45
8:K:-20:DG:C4	8:K:-19:DC:C5	3.05	0.45
2:A:7:ALA:O	2:A:11:ALA:HB3	2.17	0.45
3:V:105:SER:OG	3:V:106:GLY:N	2.50	0.45
5:X:257:ALA:HB2	5:X:285:ILE:HA	1.98	0.45
6:Y:274:ASN:ND2	8:K:-22:DC:H4'	2.31	0.45
6:Y:979:ASN:ND2	6:Y:1208:ASP:OD2	2.50	0.45
9:R:20:A:H2'	9:R:21:C:C6	2.52	0.45
5:X:228:VAL:HB	5:X:335:THR:HG23	1.98	0.45
5:X:839:VAL:HG12	5:X:1049:ILE:HG12	1.98	0.45
5:X:978:VAL:O	5:X:1007:LYS:NZ	2.49	0.45
5:X:1006:GLU:OE1	5:X:1010:GLN:NE2	2.50	0.45
6:Y:180:MET:N	6:Y:184:ALA:HB2	2.32	0.45
5:X:804:PHE:O	6:Y:638:SER:HB2	2.16	0.44
2:A:20:ARG:HG3	2:A:24:PHE:CZ	2.52	0.44
3:U:184:ALA:HB2	5:X:1091:GLY:HA3	1.98	0.44
5:X:818:VAL:HG23	5:X:1096:ILE:HG12	1.99	0.44
6:Y:848:VAL:HG21	6:Y:872:LEU:HD11	1.99	0.44
7:L:19:DG:H2''	7:L:20:DC:H6	1.82	0.44
3:V:111:THR:HA	3:V:129:VAL:HA	1.99	0.44
5:X:517:GLN:HA	5:X:523:GLU:OE2	2.16	0.44
5:X:931:VAL:HG12	5:X:1052:VAL:HG22	1.98	0.44
6:Y:934:THR:OG1	6:Y:935:PHE:N	2.51	0.44
2:A:47:VAL:HA	2:A:58:THR:HG22	1.99	0.44
3:U:192:VAL:HG21	3:U:195:ARG:HB2	1.99	0.44
3:V:46:ILE:HD11	3:V:224:LEU:HD13	1.99	0.44
5:X:949:GLU:OE1	5:X:1033:ARG:NH1	2.50	0.44
6:Y:1238:GLN:NE2	6:Y:1248:ILE:O	2.40	0.44
5:X:93:SER:OG	5:X:94:ALA:N	2.50	0.44
5:X:931:VAL:HG21	5:X:944:ARG:HE	1.81	0.44
5:X:1101:LEU:HD13	6:Y:504:GLN:HB2	1.99	0.44
6:Y:114:ILE:HA	6:Y:117:LEU:HD12	2.00	0.44
6:Y:530:PRO:HB3	6:Y:577:ALA:O	2.18	0.44
6:Y:823:THR:HA	6:Y:835:LEU:HD12	1.99	0.44
6:Y:844:THR:HA	6:Y:882:VAL:HG23	2.00	0.44
3:U:113:ALA:HB2	3:U:126:PRO:HB2	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:V:99:ILE:HG22	3:V:145:LYS:HG3	1.99	0.44
5:X:860:ALA:O	5:X:863:SER:OG	2.33	0.44
5:X:1108:ASN:O	5:X:1111:GLN:HG2	2.18	0.44
6:Y:886:VAL:HG13	6:Y:1254:GLU:OE2	2.17	0.44
2:A:399:ASP:O	2:A:403:VAL:HG23	2.18	0.44
5:X:35:PHE:CD2	5:X:130:MET:HG2	2.53	0.44
5:X:733:VAL:HG13	5:X:748:ILE:HD12	1.99	0.44
6:Y:537:TYR:OH	6:Y:634:ARG:NH2	2.51	0.44
6:Y:1161:GLY:HA3	6:Y:1179:PRO:HA	1.99	0.44
3:V:61:ILE:HD13	3:V:64:VAL:HB	2.00	0.44
8:K:-19:DC:H1'	8:K:-18:DC:H5'	1.99	0.44
5:X:103:VAL:HG12	5:X:117:ILE:HA	1.98	0.44
5:X:150:HIS:CE1	5:X:454:ARG:HE	2.35	0.44
5:X:697:LYS:HD2	5:X:1181:PRO:HG3	2.00	0.44
5:X:221:LEU:HD22	5:X:336:LEU:HD21	2.00	0.43
6:Y:119:SER:OG	6:Y:121:PRO:HD2	2.18	0.43
6:Y:332:LYS:O	6:Y:339:ARG:HD2	2.18	0.43
6:Y:934:THR:HG23	6:Y:936:HIS:H	1.82	0.43
3:U:100:LEU:HD11	3:U:121:VAL:HG21	2.00	0.43
3:V:100:LEU:O	3:V:143:ARG:HG3	2.18	0.43
7:L:-3:DA:H2''	7:L:-2:DC:O5'	2.18	0.43
8:K:2:DG:H2'	8:K:3:DT:H71	1.99	0.43
8:K:3:DT:H2''	8:K:4:DG:H8	1.83	0.43
6:Y:71:LEU:H	6:Y:90:VAL:HG21	1.83	0.43
6:Y:796:LEU:HD22	6:Y:1138:LEU:HD11	2.00	0.43
2:A:202:PRO:HB2	2:A:226:ALA:HB3	1.99	0.43
3:V:284:ARG:NH2	3:V:288:GLU:HB3	2.33	0.43
5:X:463:GLN:HG3	5:X:505:PHE:CG	2.53	0.43
5:X:582:ASN:HB2	5:X:588:GLU:HG3	1.99	0.43
5:X:992:LEU:HG	5:X:993:PRO:HD3	2.00	0.43
6:Y:298:MET:HE1	8:K:-20:DG:H5''	2.00	0.43
3:U:60:GLU:HB3	3:U:143:ARG:HB2	2.00	0.43
3:U:77:ASP:O	3:U:81:ILE:HG13	2.18	0.43
6:Y:123:ARG:HH12	6:Y:1334:GLU:HG2	1.84	0.43
6:Y:332:LYS:HE3	6:Y:1329:THR:HA	2.01	0.43
6:Y:833:GLU:OE2	6:Y:1242:ARG:NH2	2.42	0.43
6:Y:946:ALA:HB2	6:Y:1022:PRO:HB3	2.00	0.43
6:Y:964:LYS:HD3	6:Y:964:LYS:HA	1.82	0.43
2:A:2:ASN:HA	2:A:5:ILE:HD12	2.00	0.43
3:V:275:ILE:HD13	3:V:281:LEU:HD13	2.01	0.43
5:X:225:PHE:HE2	5:X:347:ILE:HB	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:678:ARG:HG3	5:X:1108:ASN:HB3	2.01	0.43
5:X:936:ARG:HH21	5:X:1043:ALA:H	1.67	0.43
5:X:1330:ILE:HG22	5:X:1335:ILE:HG22	2.01	0.43
6:Y:245:LEU:O	6:Y:250:ARG:NH2	2.42	0.43
5:X:70:TYR:HA	5:X:100:LEU:HD23	2.00	0.43
5:X:766:ASN:OD1	5:X:767:GLN:N	2.52	0.43
5:X:1247:SER:HB2	6:Y:375:GLU:O	2.18	0.43
6:Y:492:SER:OG	6:Y:495:ASN:O	2.29	0.43
6:Y:1271:SER:OG	6:Y:1298:VAL:O	2.29	0.43
5:X:18:ARG:NH2	5:X:620:ASN:O	2.34	0.43
5:X:468:LEU:HD23	5:X:468:LEU:HA	1.91	0.43
5:X:593:LYS:HB2	5:X:604:HIS:HD2	1.83	0.43
5:X:720:ARG:HE	5:X:736:VAL:HG11	1.82	0.43
6:Y:287:ALA:CB	6:Y:291:ILE:HG21	2.38	0.43
6:Y:674:THR:O	6:Y:678:ARG:HB2	2.19	0.43
6:Y:1036:ARG:HH22	6:Y:1085:GLY:HA2	1.84	0.43
8:K:-16:DA:H1'	8:K:-15:DG:H5'	2.01	0.43
3:U:10:LYS:HD2	3:V:230:ALA:HB2	2.00	0.43
3:U:187:VAL:HB	3:U:199:ASP:OD1	2.19	0.43
5:X:10:ARG:NH2	5:X:790:ASP:OD2	2.37	0.43
6:Y:54:ASP:OD1	6:Y:54:ASP:N	2.52	0.43
6:Y:938:GLY:O	6:Y:943:ARG:NH1	2.52	0.43
2:A:6:LEU:HA	2:A:9:VAL:HG12	2.01	0.43
2:A:392:LEU:HD13	2:A:398:LEU:HD11	2.01	0.43
5:X:802:VAL:HG21	5:X:1230:MET:HB3	2.00	0.43
5:X:840:SER:HB2	5:X:848:GLU:HG3	2.01	0.43
5:X:1247:SER:N	6:Y:375:GLU:OE1	2.51	0.43
3:V:280:ASP:OD1	3:V:321:TRP:NE1	2.35	0.42
5:X:236:LYS:HD2	5:X:286:GLU:HA	2.01	0.42
5:X:896:THR:O	5:X:900:LYS:HG2	2.19	0.42
5:X:954:LYS:HE3	5:X:954:LYS:HB3	1.90	0.42
5:X:1335:ILE:HD13	6:Y:23:ALA:HB3	2.01	0.42
6:Y:252:LEU:HD13	6:Y:261:ALA:O	2.19	0.42
6:Y:331:ILE:HG23	6:Y:338:PHE:HB2	2.01	0.42
6:Y:587:LEU:HD21	6:Y:608:CYS:HB2	2.01	0.42
6:Y:1132:LYS:HE2	6:Y:1132:LYS:HB3	1.85	0.42
2:A:209:PHE:CE1	2:A:262:VAL:HG21	2.47	0.42
3:V:220:ALA:O	3:V:223:ILE:HG22	2.19	0.42
4:W:50:ALA:HA	4:W:53:GLU:HG2	2.00	0.42
5:X:4:SER:HB3	5:X:7:GLU:HG3	2.01	0.42
5:X:14:ASP:OD2	5:X:1156:ARG:NH1	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:725:GLN:HB3	5:X:733:VAL:HG12	2.00	0.42
6:Y:659:ALA:O	6:Y:662:ALA:HB3	2.19	0.42
6:Y:1234:VAL:HG23	6:Y:1253:ILE:HG21	2.01	0.42
6:Y:1348:LYS:HA	6:Y:1351:VAL:HG12	2.01	0.42
3:U:166:ARG:NH1	5:X:863:SER:OG	2.49	0.42
6:Y:307:LEU:O	6:Y:328:ALA:HB3	2.19	0.42
2:A:142:VAL:HG23	2:A:176:GLY:H	1.84	0.42
4:W:3:ARG:HH22	4:W:52:ARG:HB2	1.84	0.42
5:X:262:TYR:CE2	5:X:282:VAL:HG21	2.55	0.42
5:X:698:PRO:HG3	5:X:1231:TYR:CZ	2.54	0.42
5:X:1331:ARG:HD3	5:X:1335:ILE:O	2.20	0.42
6:Y:35:PHE:CG	6:Y:101:ARG:HD2	2.54	0.42
6:Y:160:LEU:HD22	6:Y:164:GLN:HB3	2.02	0.42
6:Y:735:ALA:HB1	6:Y:738:ARG:HH21	1.84	0.42
8:K:-21:DG:C2'	8:K:-20:DG:C8	3.03	0.42
3:U:190:ALA:HB3	3:U:198:LEU:HB3	2.01	0.42
5:X:1122:LYS:HG2	5:X:1229:TYR:CE1	2.54	0.42
6:Y:884:SER:OG	6:Y:886:VAL:HG22	2.19	0.42
6:Y:1220:ILE:HG23	6:Y:1224:ARG:HD2	2.00	0.42
3:U:29:GLU:HB3	3:U:200:LYS:HG3	2.02	0.42
3:V:37:HIS:NE2	3:V:187:VAL:HG21	2.34	0.42
3:U:184:ALA:HB3	3:U:204:GLU:HG2	2.01	0.42
5:X:225:PHE:CG	5:X:336:LEU:HD23	2.55	0.42
5:X:554:HIS:HB3	5:X:558:VAL:HB	2.02	0.42
5:X:970:GLY:O	5:X:973:SER:OG	2.33	0.42
6:Y:272:VAL:HG23	6:Y:302:ALA:CB	2.49	0.42
2:A:155:GLY:N	2:A:158:ALA:HB3	2.34	0.42
5:X:434:ASP:HB3	5:X:439:LYS:HG3	2.01	0.42
5:X:443:ASP:OD1	5:X:443:ASP:N	2.45	0.42
5:X:566:GLY:HA3	5:X:567:PRO:HD3	1.95	0.42
5:X:622:ASN:OD1	5:X:622:ASN:N	2.50	0.42
5:X:677:ASN:O	5:X:681:MET:HG2	2.19	0.42
6:Y:134:ASP:O	6:Y:138:VAL:HG23	2.20	0.42
5:X:221:LEU:HD21	5:X:314:ASN:HD22	1.83	0.42
5:X:971:LEU:HD21	5:X:1018:TYR:HB2	2.01	0.42
6:Y:279:LEU:HD13	6:Y:282:LEU:HD12	2.02	0.42
3:V:219:ARG:HA	3:V:222:THR:HG22	2.02	0.42
5:X:517:GLN:HB3	5:X:759:SER:HB2	2.02	0.42
5:X:948:ILE:HG13	5:X:949:GLU:N	2.35	0.42
6:Y:269:TYR:HA	6:Y:272:VAL:HG12	2.01	0.42
5:X:976:ARG:HB2	5:X:994:ARG:HH22	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:1072:ASN:OD1	5:X:1072:ASN:N	2.51	0.41
5:X:1142:ARG:NH2	5:X:1166:ASP:OD1	2.52	0.41
5:X:1331:ARG:HA	5:X:1334:GLY:HA2	2.02	0.41
6:Y:1307:LEU:HD13	6:Y:1311:LYS:HB2	2.01	0.41
2:A:14:ASN:O	2:A:18:LEU:HB3	2.20	0.41
2:A:111:LYS:HE2	2:A:111:LYS:HB3	1.86	0.41
2:A:183:LEU:HD12	2:A:196:PHE:O	2.20	0.41
4:W:45:LYS:HE3	6:Y:419:HIS:HB2	2.03	0.41
5:X:28:LEU:HD21	5:X:524:ILE:HG13	2.01	0.41
5:X:686:GLN:HG3	5:X:1233:LEU:HD11	2.02	0.41
5:X:902:LEU:O	5:X:906:PHE:N	2.37	0.41
6:Y:412:LEU:HA	6:Y:415:VAL:HG22	2.02	0.41
6:Y:605:LEU:HD23	6:Y:605:LEU:HA	1.94	0.41
6:Y:1134:ILE:HG13	6:Y:1134:ILE:O	2.21	0.41
6:Y:1357:ILE:HG22	6:Y:1359:ALA:H	1.85	0.41
7:L:28:DC:H4'	7:L:29:DG:OP1	2.20	0.41
3:U:111:THR:HG23	3:U:113:ALA:H	1.85	0.41
5:X:17:LYS:HE2	5:X:17:LYS:HB2	1.95	0.41
5:X:234:ASP:N	5:X:234:ASP:OD1	2.53	0.41
6:Y:111:THR:HG22	6:Y:300:GLN:NE2	2.35	0.41
6:Y:326:SER:O	6:Y:330:MET:N	2.54	0.41
6:Y:952:VAL:HG23	6:Y:1017:VAL:HG11	2.03	0.41
6:Y:1257:VAL:HA	6:Y:1260:MET:HG2	2.01	0.41
5:X:180:ARG:HG3	5:X:396:ASP:HB2	2.01	0.41
5:X:706:ARG:NE	5:X:792:GLY:O	2.52	0.41
5:X:841:ARG:HH12	9:R:86:A:H61	1.67	0.41
6:Y:24:LEU:HD23	6:Y:24:LEU:HA	1.88	0.41
6:Y:233:LYS:HB2	6:Y:236:TRP:CD2	2.56	0.41
4:W:15:ASN:N	4:W:15:ASN:OD1	2.54	0.41
5:X:131:THR:HG23	5:X:133:ASN:H	1.85	0.41
5:X:491:ASP:N	5:X:491:ASP:OD1	2.52	0.41
6:Y:460:ASP:OD1	6:Y:460:ASP:N	2.53	0.41
6:Y:814:CYS:HB3	6:Y:895:CYS:SG	2.60	0.41
6:Y:1340:LYS:HB2	6:Y:1340:LYS:HE3	1.85	0.41
4:W:61:ASN:O	4:W:64:LEU:HG	2.20	0.41
5:X:85:CYS:HB3	5:X:90:VAL:O	2.21	0.41
5:X:389:PHE:HB3	5:X:420:LEU:HD12	2.03	0.41
5:X:755:LYS:HA	5:X:755:LYS:HD3	1.69	0.41
6:Y:272:VAL:HA	6:Y:275:ARG:HE	1.85	0.41
6:Y:953:LYS:HE2	6:Y:953:LYS:HB3	1.93	0.41
5:X:207:THR:HG21	5:X:354:ASP:HB2	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:X:371:ARG:HA	5:X:372:PRO:HD3	1.94	0.41
5:X:565:GLU:HA	5:X:569:ILE:HG13	2.00	0.41
5:X:797:GLY:HA3	5:X:1233:LEU:HD23	2.03	0.41
5:X:976:ARG:HB2	5:X:994:ARG:NH2	2.35	0.41
5:X:1323:PHE:CZ	5:X:1327:LEU:HD21	2.56	0.41
3:U:104:LYS:HA	3:U:104:LYS:HD2	1.87	0.41
3:U:211:ILE:HD12	3:U:211:ILE:HA	1.91	0.41
5:X:728:ASP:OD1	5:X:729:ALA:N	2.53	0.41
5:X:936:ARG:HD3	5:X:937:ASP:H	1.86	0.41
6:Y:98:ARG:O	6:Y:246:PRO:HB3	2.20	0.41
6:Y:279:LEU:HD13	6:Y:279:LEU:HA	1.83	0.41
7:L:-1:DA:H1'	7:L:0:DA:H5'	2.02	0.41
2:A:64:VAL:HG23	2:A:91:ASP:CG	2.42	0.41
5:X:79:VAL:O	5:X:1035:LYS:NZ	2.40	0.41
5:X:432:LEU:O	5:X:435:ILE:HG22	2.21	0.41
5:X:1209:GLN:HA	5:X:1226:THR:HA	2.02	0.41
6:Y:658:GLU:O	6:Y:661:VAL:HG12	2.21	0.41
6:Y:1368:ASP:HA	6:Y:1371:ARG:HG2	2.02	0.41
9:R:21:C:H2'	9:R:22:A:O4'	2.21	0.41
2:A:52:LYS:HE3	2:A:52:LYS:HB3	1.91	0.41
2:A:171:GLU:OE1	2:A:199:ARG:NH2	2.39	0.41
3:U:85:LEU:O	3:U:88:LEU:HG	2.21	0.41
5:X:72:SER:OG	5:X:73:TYR:N	2.54	0.41
5:X:1122:LYS:HG2	5:X:1229:TYR:CZ	2.56	0.41
5:X:1292:THR:HB	5:X:1320:PRO:HG3	2.03	0.41
6:Y:511:TYR:HE2	6:Y:724:MET:HG2	1.86	0.41
6:Y:586:GLY:HA3	6:Y:612:LEU:HD11	2.02	0.41
6:Y:759:ILE:HG23	6:Y:771:GLN:HB3	2.02	0.41
6:Y:857:LEU:HG	6:Y:858:VAL:HG23	2.02	0.41
6:Y:923:ILE:HD13	6:Y:923:ILE:HA	1.96	0.41
3:U:194:GLN:O	3:U:195:ARG:HG3	2.20	0.40
4:W:22:VAL:HG13	4:W:64:LEU:CD2	2.51	0.40
5:X:318:SER:OG	5:X:320:ASP:OD1	2.34	0.40
5:X:543:ALA:HB3	5:X:548:ARG:HE	1.85	0.40
5:X:1283:ALA:HA	6:Y:479:GLU:HG2	2.02	0.40
6:Y:1035:VAL:HB	6:Y:1115:ILE:HD13	2.02	0.40
7:L:-7:DG:H2''	7:L:-6:DC:C6	2.56	0.40
3:U:61:ILE:HG23	3:U:142:MET:HB3	2.03	0.40
6:Y:208:THR:HG21	6:Y:213:LYS:HD2	2.03	0.40
6:Y:885:VAL:N	6:Y:1254:GLU:OE2	2.55	0.40
6:Y:1208:ASP:OD1	6:Y:1209:VAL:N	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:20:DC:C2	7:L:21:DC:C4	3.09	0.40
9:R:92:C:H2'	9:R:93:G:H8	1.82	0.40
2:A:239:LYS:NZ	2:A:276:TRP:O	2.42	0.40
4:W:16:ARG:HB3	6:Y:483:LEU:HD11	2.03	0.40
5:X:1319:MET:HG2	6:Y:17:PHE:HE2	1.87	0.40
6:Y:165:TYR:CE1	6:Y:178:ALA:HB3	2.57	0.40
6:Y:518:VAL:HG12	6:Y:547:ARG:HH12	1.85	0.40
6:Y:925:GLU:HB3	6:Y:926:PRO:HD3	2.03	0.40
7:L:23:DT:C4	7:L:24:DT:C4	3.10	0.40
8:K:5:DA:H2''	8:K:6:DG:C8	2.57	0.40
3:V:48:LEU:HD22	6:Y:535:ARG:HG3	2.03	0.40
4:W:16:ARG:NH2	6:Y:910:ASN:OD1	2.54	0.40
5:X:10:ARG:NH1	5:X:793:GLU:OE1	2.54	0.40
5:X:301:TYR:OH	5:X:334:GLU:N	2.52	0.40
5:X:886:LYS:HB2	5:X:886:LYS:HE3	1.85	0.40
6:Y:808:VAL:HG12	6:Y:914:ALA:HB2	2.03	0.40
2:A:248:VAL:HG13	2:A:273:ILE:HB	2.04	0.40
3:V:166:ARG:O	3:V:166:ARG:HD3	2.22	0.40
4:W:53:GLU:HG3	4:W:59:ILE:HG21	2.03	0.40
5:X:150:HIS:CD2	5:X:454:ARG:HH21	2.39	0.40
6:Y:70:CYS:HB2	6:Y:75:TYR:HB2	2.03	0.40
6:Y:247:PRO:HA	6:Y:250:ARG:CZ	2.51	0.40
6:Y:430:HIS:NE2	6:Y:432:LEU:HB2	2.37	0.40
6:Y:972:LYS:HZ2	6:Y:974:VAL:HG12	1.86	0.40
7:L:9:DG:H2''	7:L:10:DC:H5''	2.02	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	415/419 (99%)	406 (98%)	9 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	b	415/419 (99%)	405 (98%)	10 (2%)	0	100	100
1	c	415/419 (99%)	406 (98%)	9 (2%)	0	100	100
1	d	415/419 (99%)	406 (98%)	9 (2%)	0	100	100
1	e	415/419 (99%)	406 (98%)	9 (2%)	0	100	100
1	f	415/419 (99%)	406 (98%)	9 (2%)	0	100	100
2	A	493/497 (99%)	450 (91%)	43 (9%)	0	100	100
3	U	233/329 (71%)	227 (97%)	6 (3%)	0	100	100
3	V	319/329 (97%)	292 (92%)	27 (8%)	0	100	100
4	W	77/91 (85%)	74 (96%)	3 (4%)	0	100	100
5	X	1338/1342 (100%)	1252 (94%)	86 (6%)	0	100	100
6	Y	1339/1416 (95%)	1266 (94%)	72 (5%)	1 (0%)	51	85
All	All	6289/6518 (96%)	5996 (95%)	292 (5%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	Y	1325	PHE

### 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	357/359 (99%)	334 (94%)	23 (6%)	17	45
1	b	357/359 (99%)	334 (94%)	23 (6%)	17	45
1	c	357/359 (99%)	334 (94%)	23 (6%)	17	45
1	d	357/359 (99%)	334 (94%)	23 (6%)	17	45
1	e	357/359 (99%)	334 (94%)	23 (6%)	17	45
1	f	357/359 (99%)	334 (94%)	23 (6%)	17	45
2	A	409/409 (100%)	409 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	U	203/286 (71%)	203 (100%)	0	100	100
3	V	280/286 (98%)	279 (100%)	1 (0%)	91	94
4	W	67/75 (89%)	67 (100%)	0	100	100
5	X	1155/1157 (100%)	1154 (100%)	1 (0%)	93	97
6	Y	1123/1177 (95%)	1123 (100%)	0	100	100
All	All	5379/5544 (97%)	5239 (97%)	140 (3%)	49	67

All (140) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	f	29	MET
1	f	31	LYS
1	f	33	ASP
1	f	60	ASP
1	f	71	SER
1	f	81	VAL
1	f	106	GLU
1	f	164	LEU
1	f	175	LEU
1	f	181	LYS
1	f	217	THR
1	f	265	ASP
1	f	266	SER
1	f	276	THR
1	f	285	LEU
1	f	312	SER
1	f	318	THR
1	f	320	LEU
1	f	342	GLU
1	f	373	THR
1	f	374	GLN
1	f	408	THR
1	f	414	GLU
1	a	29	MET
1	a	31	LYS
1	a	33	ASP
1	a	60	ASP
1	a	71	SER
1	a	81	VAL
1	a	106	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	a	164	LEU
1	a	175	LEU
1	a	181	LYS
1	a	217	THR
1	a	265	ASP
1	a	266	SER
1	a	276	THR
1	a	285	LEU
1	a	312	SER
1	a	318	THR
1	a	320	LEU
1	a	342	GLU
1	a	373	THR
1	a	374	GLN
1	a	408	THR
1	a	414	GLU
1	b	29	MET
1	b	31	LYS
1	b	33	ASP
1	b	60	ASP
1	b	71	SER
1	b	81	VAL
1	b	106	GLU
1	b	164	LEU
1	b	175	LEU
1	b	181	LYS
1	b	217	THR
1	b	265	ASP
1	b	266	SER
1	b	276	THR
1	b	285	LEU
1	b	312	SER
1	b	318	THR
1	b	320	LEU
1	b	342	GLU
1	b	373	THR
1	b	374	GLN
1	b	408	THR
1	b	414	GLU
1	c	29	MET
1	c	31	LYS
1	c	33	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	c	60	ASP
1	c	71	SER
1	c	81	VAL
1	c	106	GLU
1	c	164	LEU
1	c	175	LEU
1	c	181	LYS
1	c	217	THR
1	c	265	ASP
1	c	266	SER
1	c	276	THR
1	c	285	LEU
1	c	312	SER
1	c	318	THR
1	c	320	LEU
1	c	342	GLU
1	c	373	THR
1	c	374	GLN
1	c	408	THR
1	c	414	GLU
1	d	29	MET
1	d	31	LYS
1	d	33	ASP
1	d	60	ASP
1	d	71	SER
1	d	81	VAL
1	d	106	GLU
1	d	164	LEU
1	d	175	LEU
1	d	181	LYS
1	d	217	THR
1	d	265	ASP
1	d	266	SER
1	d	276	THR
1	d	285	LEU
1	d	312	SER
1	d	318	THR
1	d	320	LEU
1	d	342	GLU
1	d	373	THR
1	d	374	GLN
1	d	408	THR

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Mol	Chain	Res	Type
1	d	414	GLU
1	e	29	MET
1	e	31	LYS
1	e	33	ASP
1	e	60	ASP
1	e	71	SER
1	e	81	VAL
1	e	106	GLU
1	e	164	LEU
1	e	175	LEU
1	e	181	LYS
1	e	217	THR
1	e	265	ASP
1	e	266	SER
1	e	276	THR
1	e	285	LEU
1	e	312	SER
1	e	318	THR
1	e	320	LEU
1	e	342	GLU
1	e	373	THR
1	e	374	GLN
1	e	408	THR
1	e	414	GLU
3	V	142	MET
5	X	1156	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (57) such sidechains are listed below:

Mol	Chain	Res	Type
1	f	256	HIS
1	f	401	ASN
1	a	256	HIS
1	a	401	ASN
1	b	256	HIS
1	b	401	ASN
1	c	256	HIS
1	c	401	ASN
1	d	256	HIS
1	d	401	ASN
1	e	256	HIS
1	e	401	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	A	70	GLN
2	A	88	ASN
2	A	96	GLN
2	A	157	ASN
2	A	172	ASN
2	A	282	GLN
2	A	313	ASN
2	A	330	GLN
2	A	349	GLN
2	A	412	ASN
2	A	428	ASN
2	A	487	ASN
3	U	147	GLN
3	V	93	GLN
4	W	29	GLN
4	W	43	ASN
5	X	41	GLN
5	X	150	HIS
5	X	214	ASN
5	X	343	HIS
5	X	387	ASN
5	X	604	HIS
5	X	618	GLN
5	X	659	GLN
5	X	760	ASN
5	X	832	HIS
5	X	932	GLN
5	X	1008	GLN
5	X	1010	GLN
5	X	1013	GLN
5	X	1061	GLN
5	X	1256	GLN
5	X	1324	ASN
6	Y	274	ASN
6	Y	300	GLN
6	Y	335	GLN
6	Y	340	GLN
6	Y	365	GLN
6	Y	488	ASN
6	Y	545	HIS
6	Y	739	GLN
6	Y	865	HIS

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Mol	Chain	Res	Type
6	Y	897	HIS
6	Y	1244	GLN
6	Y	1326	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
9	R	30/99 (30%)	12 (40%)	1 (3%)

All (12) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
9	R	23	U
9	R	24	U
9	R	25	C
9	R	26	C
9	R	80	A
9	R	82	C
9	R	86	A
9	R	87	C
9	R	90	G
9	R	91	G
9	R	92	C
9	R	93	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
9	R	23	U

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

Of 18 ligands modelled in this entry, 8 are monoatomic - leaving 10 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	ADP	e	1000	11	24,29,29	0.97	1 (4%)	29,45,45	1.44	4 (13%)
12	BEF	c	1002	-	0,3,3	-	-	-	-	-
12	BEF	a	1002	-	0,3,3	-	-	-	-	-
12	BEF	b	1002	-	0,3,3	-	-	-	-	-
10	ADP	d	1000	11	24,29,29	0.95	1 (4%)	29,45,45	1.42	4 (13%)
10	ADP	c	1000	11	24,29,29	0.95	1 (4%)	29,45,45	1.47	4 (13%)
12	BEF	e	1002	-	0,3,3	-	-	-	-	-
12	BEF	d	1002	-	0,3,3	-	-	-	-	-
10	ADP	a	1000	11	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
10	ADP	b	1000	11	24,29,29	0.96	1 (4%)	29,45,45	1.44	4 (13%)

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	ADP	e	1000	11	-	3/12/32/32	0/3/3/3
10	ADP	d	1000	11	-	2/12/32/32	0/3/3/3
10	ADP	c	1000	11	-	4/12/32/32	0/3/3/3
10	ADP	a	1000	11	-	3/12/32/32	0/3/3/3
10	ADP	b	1000	11	-	3/12/32/32	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	a	1000	ADP	C5-C4	2.52	1.47	1.40
10	d	1000	ADP	C5-C4	2.50	1.47	1.40
10	b	1000	ADP	C5-C4	2.48	1.47	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	c	1000	ADP	C5-C4	2.48	1.47	1.40
10	e	1000	ADP	C5-C4	2.47	1.47	1.40

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	d	1000	ADP	C3'-C2'-C1'	3.54	106.31	100.98
10	c	1000	ADP	C3'-C2'-C1'	3.52	106.28	100.98
10	b	1000	ADP	C3'-C2'-C1'	3.48	106.21	100.98
10	a	1000	ADP	C3'-C2'-C1'	3.46	106.18	100.98
10	e	1000	ADP	C3'-C2'-C1'	3.43	106.15	100.98
10	e	1000	ADP	PA-O3A-PB	-3.25	121.67	132.83
10	c	1000	ADP	PA-O3A-PB	-3.22	121.78	132.83
10	b	1000	ADP	N3-C2-N1	-3.18	123.72	128.68
10	a	1000	ADP	N3-C2-N1	-3.17	123.73	128.68
10	d	1000	ADP	N3-C2-N1	-3.16	123.74	128.68
10	e	1000	ADP	N3-C2-N1	-3.16	123.74	128.68
10	c	1000	ADP	N3-C2-N1	-3.15	123.76	128.68
10	a	1000	ADP	PA-O3A-PB	-3.01	122.48	132.83
10	b	1000	ADP	PA-O3A-PB	-2.99	122.56	132.83
10	d	1000	ADP	PA-O3A-PB	-2.86	123.01	132.83
10	e	1000	ADP	C4-C5-N7	-2.68	106.61	109.40
10	b	1000	ADP	C4-C5-N7	-2.68	106.61	109.40
10	c	1000	ADP	C4-C5-N7	-2.60	106.69	109.40
10	d	1000	ADP	C4-C5-N7	-2.59	106.70	109.40
10	a	1000	ADP	C4-C5-N7	-2.59	106.70	109.40

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	b	1000	ADP	C5'-O5'-PA-O3A
10	c	1000	ADP	C5'-O5'-PA-O1A
10	c	1000	ADP	C5'-O5'-PA-O3A
10	e	1000	ADP	C5'-O5'-PA-O1A
10	a	1000	ADP	C5'-O5'-PA-O3A
10	c	1000	ADP	C5'-O5'-PA-O2A
10	e	1000	ADP	C5'-O5'-PA-O3A
10	a	1000	ADP	O4'-C4'-C5'-O5'
10	a	1000	ADP	C5'-O5'-PA-O1A
10	b	1000	ADP	C5'-O5'-PA-O1A
10	d	1000	ADP	C5'-O5'-PA-O1A

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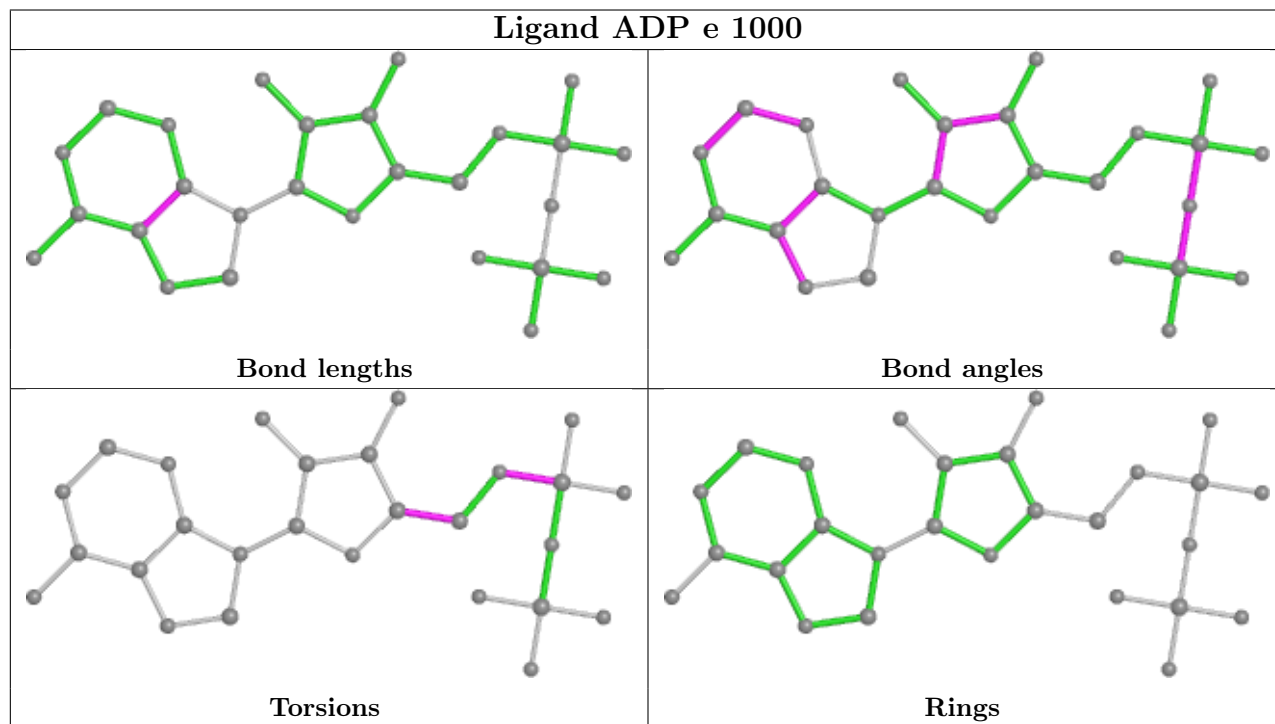
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Mol	Chain	Res	Type	Atoms
10	b	1000	ADP	O4'-C4'-C5'-O5'
10	c	1000	ADP	O4'-C4'-C5'-O5'
10	d	1000	ADP	O4'-C4'-C5'-O5'
10	e	1000	ADP	O4'-C4'-C5'-O5'

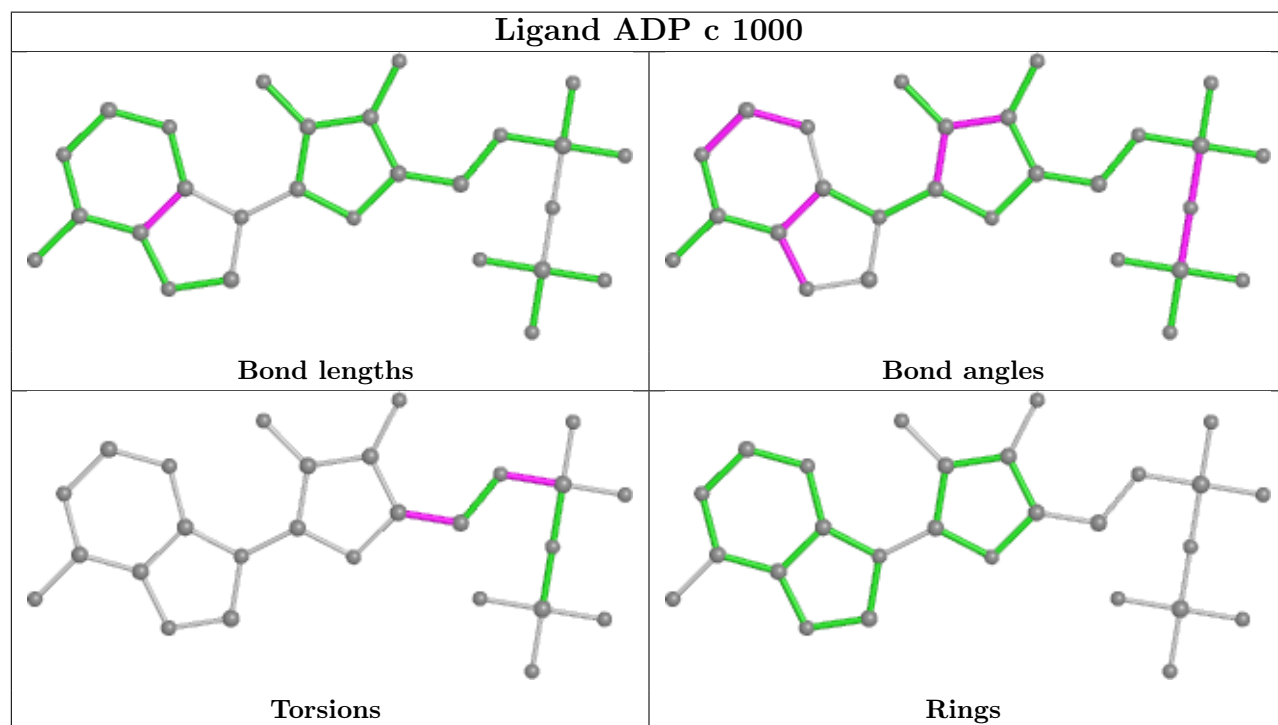
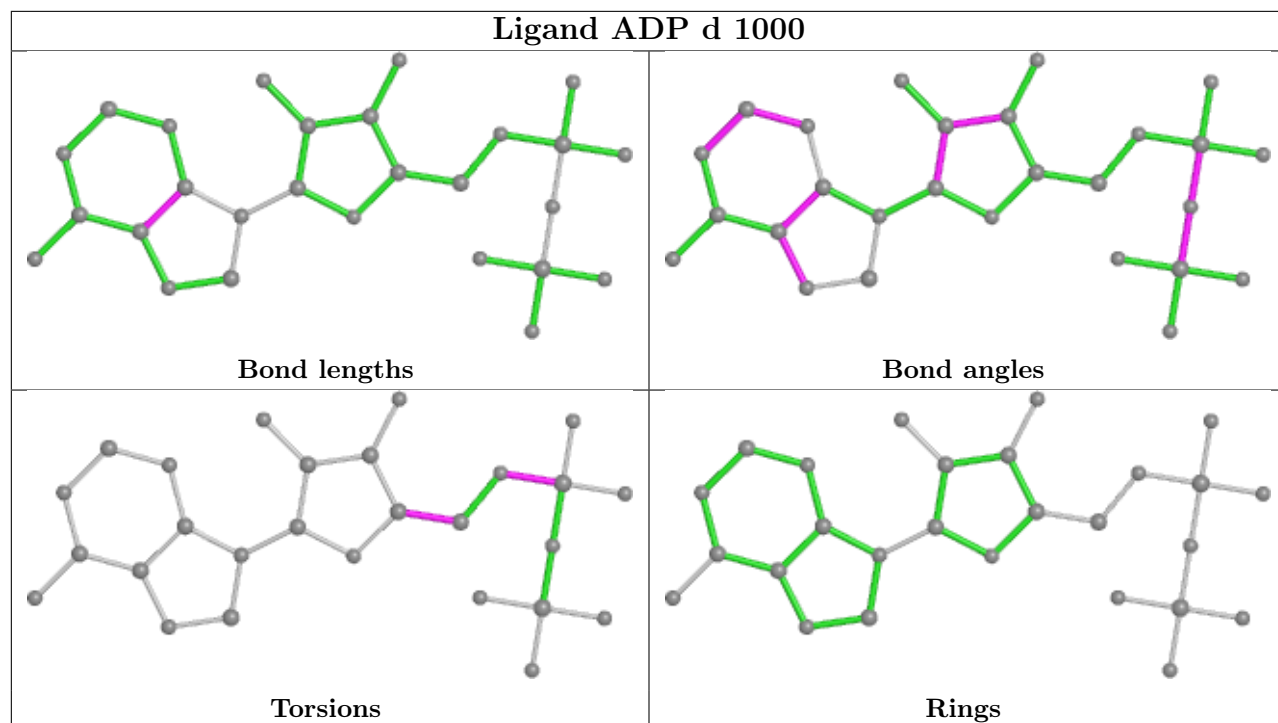
There are no ring outliers.

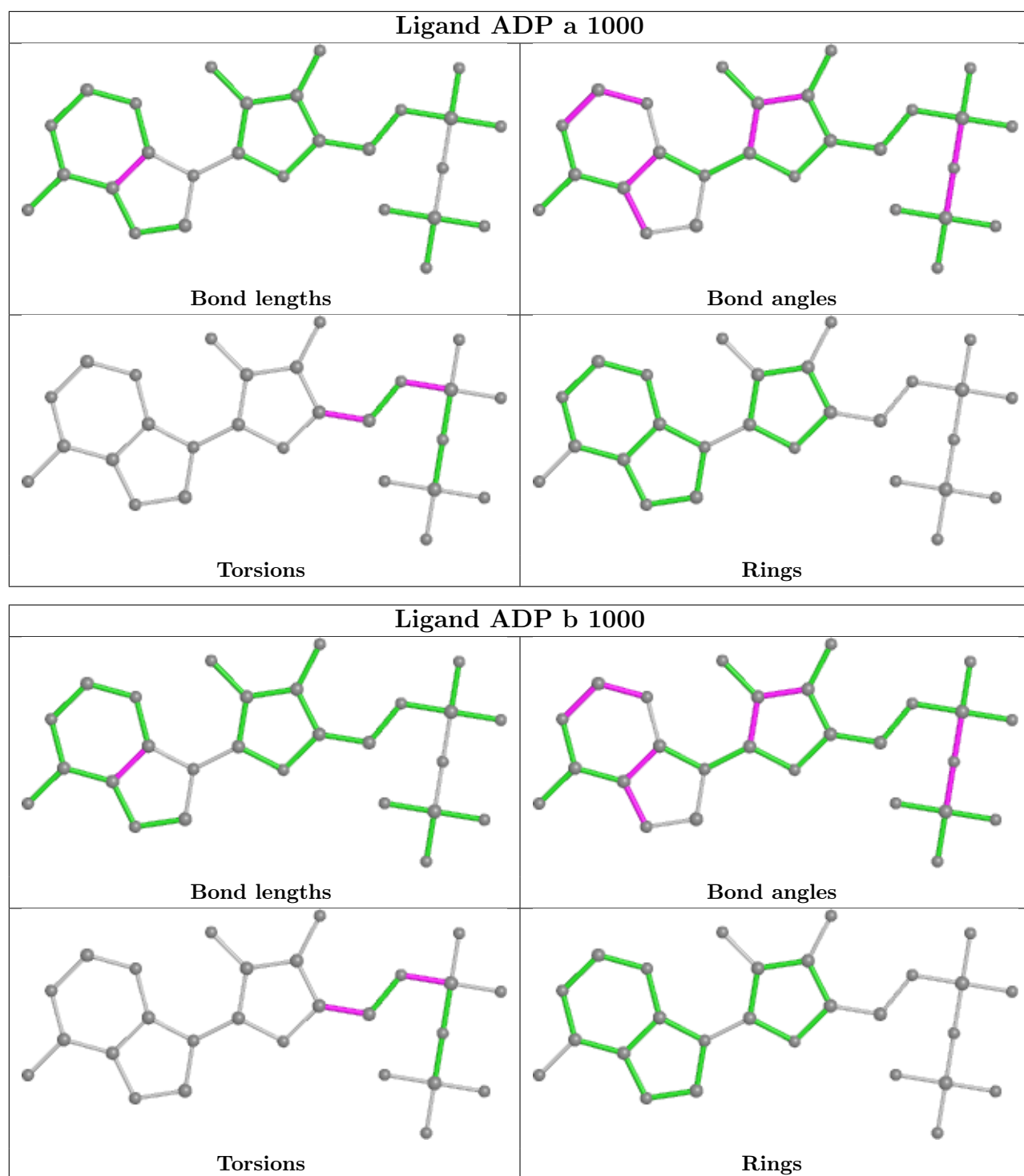
No monomer is involved in short contacts.

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 than 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.









## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

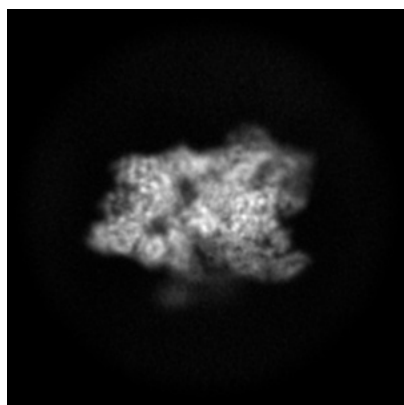
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11725. These allow visual inspection of the internal detail of the map and identification of artifacts.

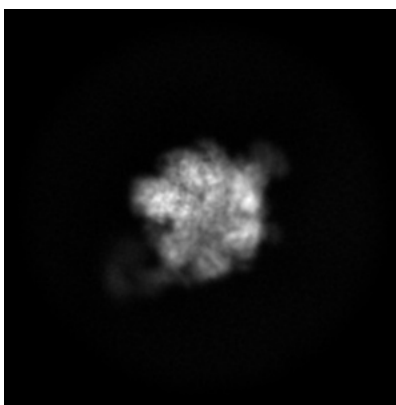
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

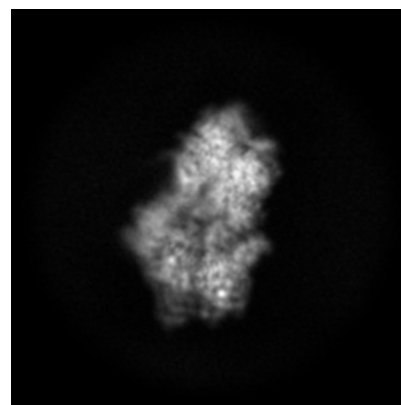
#### 6.1.1 Primary map



X



Y

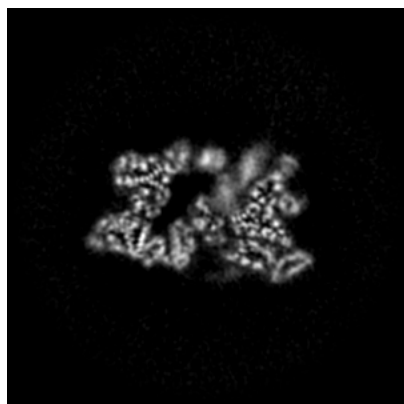


Z

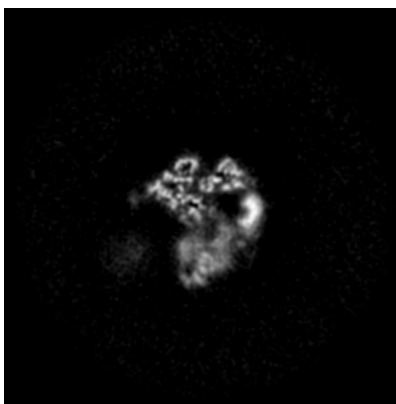
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

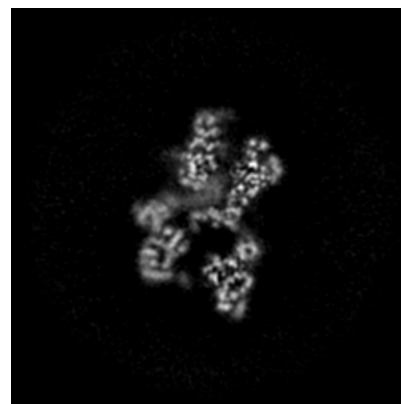
#### 6.2.1 Primary map



X Index: 150



Y Index: 150

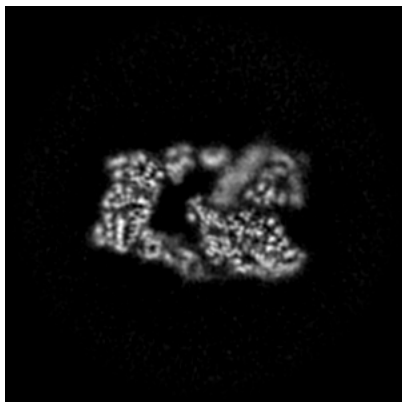


Z Index: 150

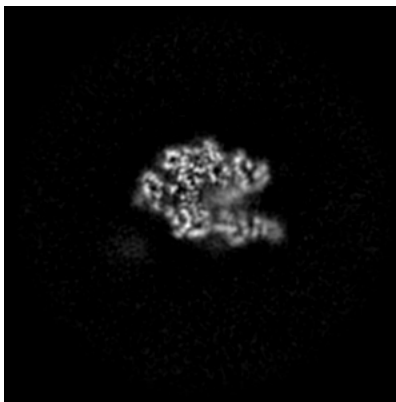
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

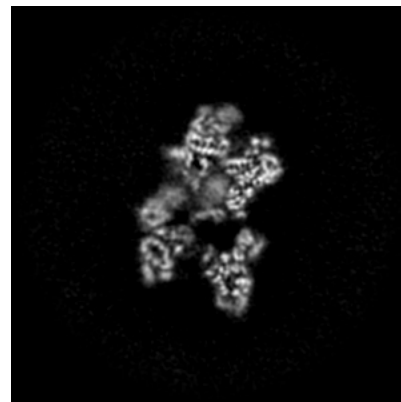
### 6.3.1 Primary map



X Index: 157



Y Index: 171

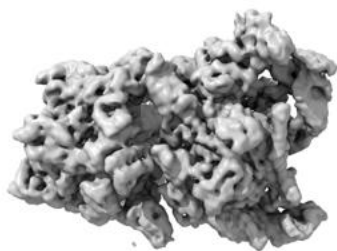


Z Index: 155

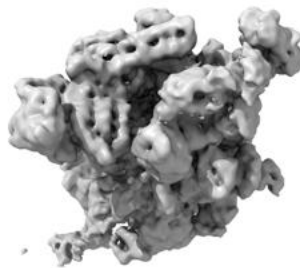
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

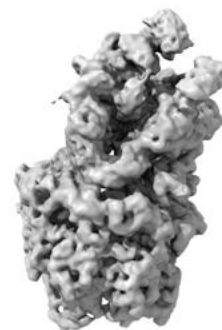
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

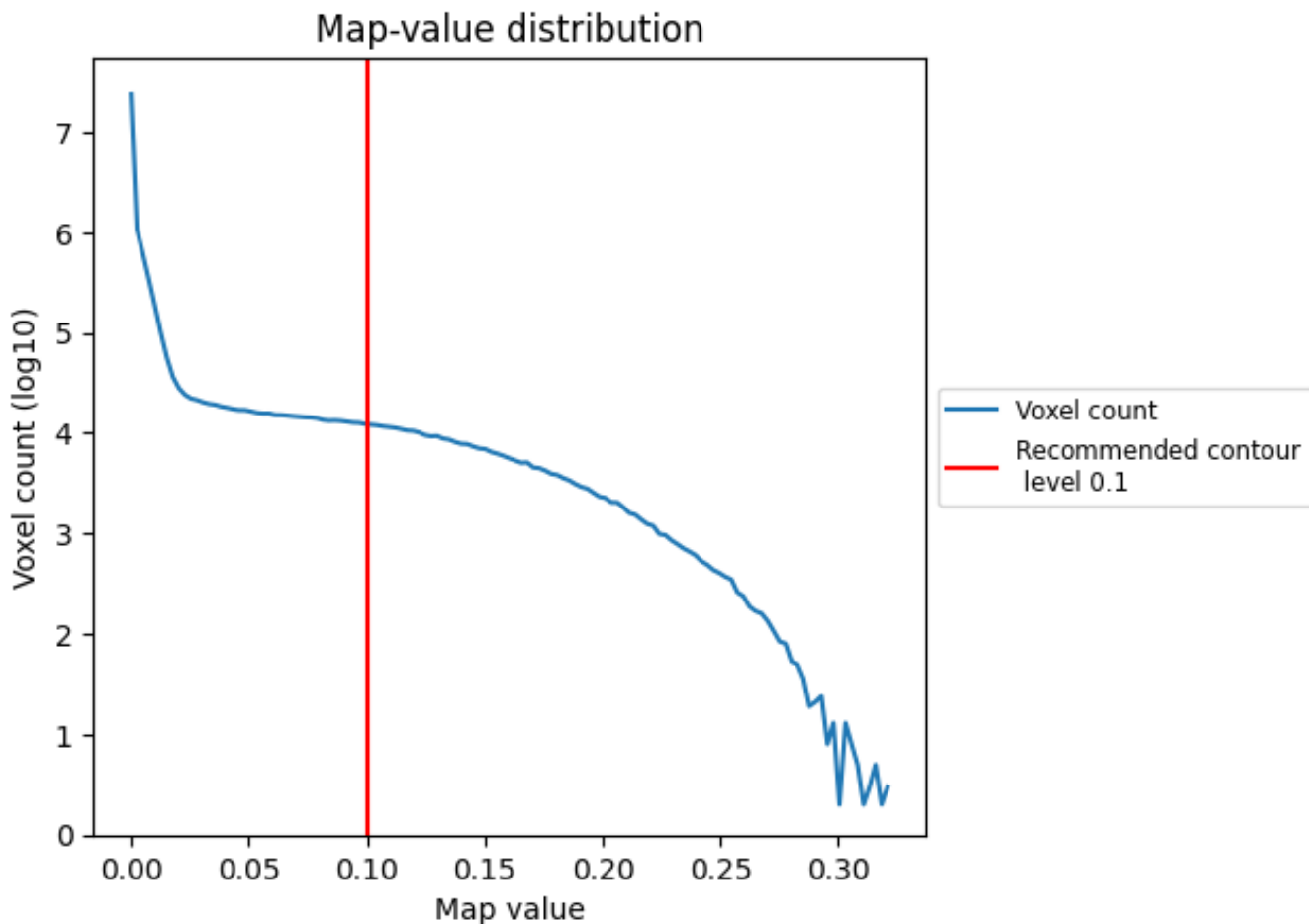
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

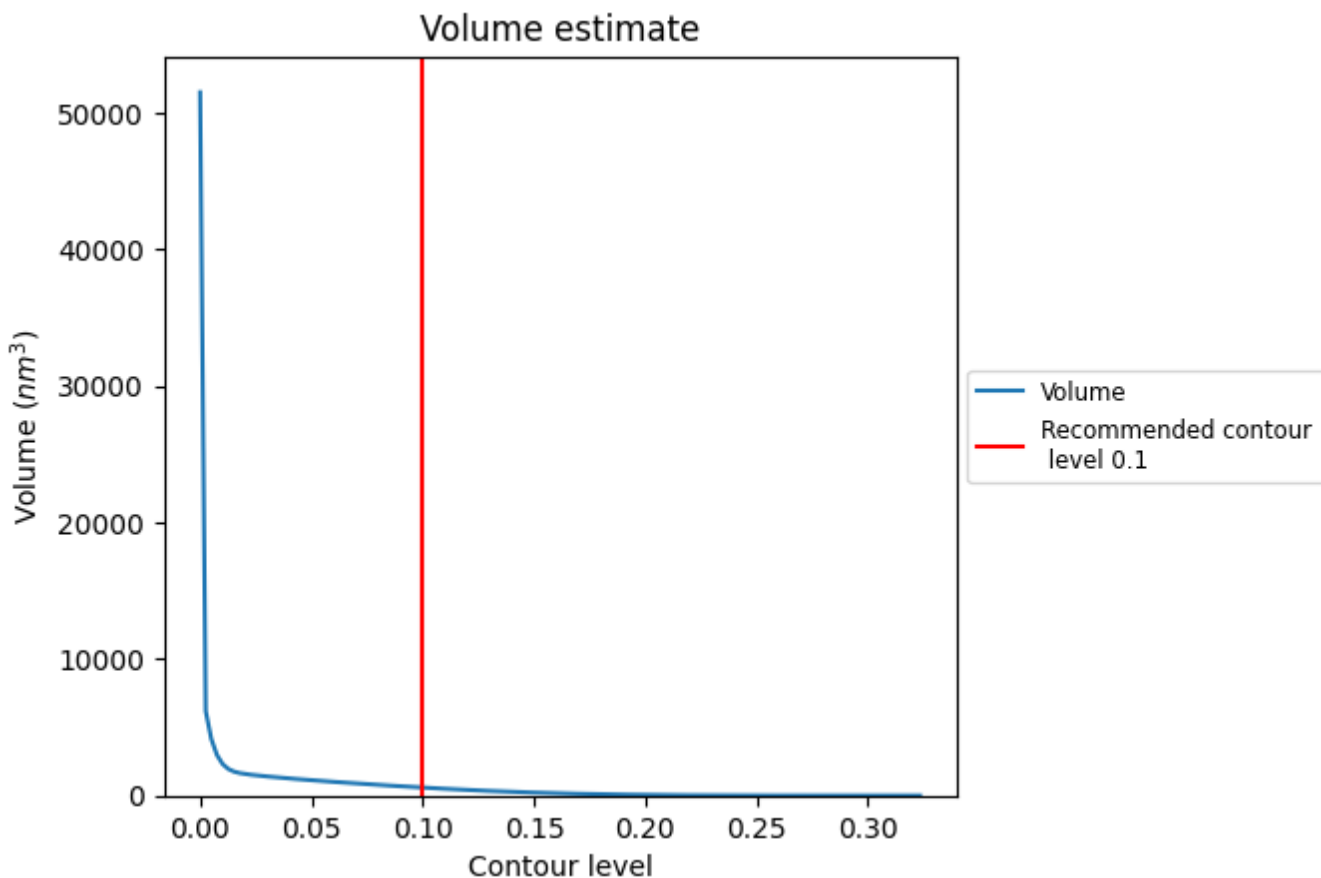
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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](#)

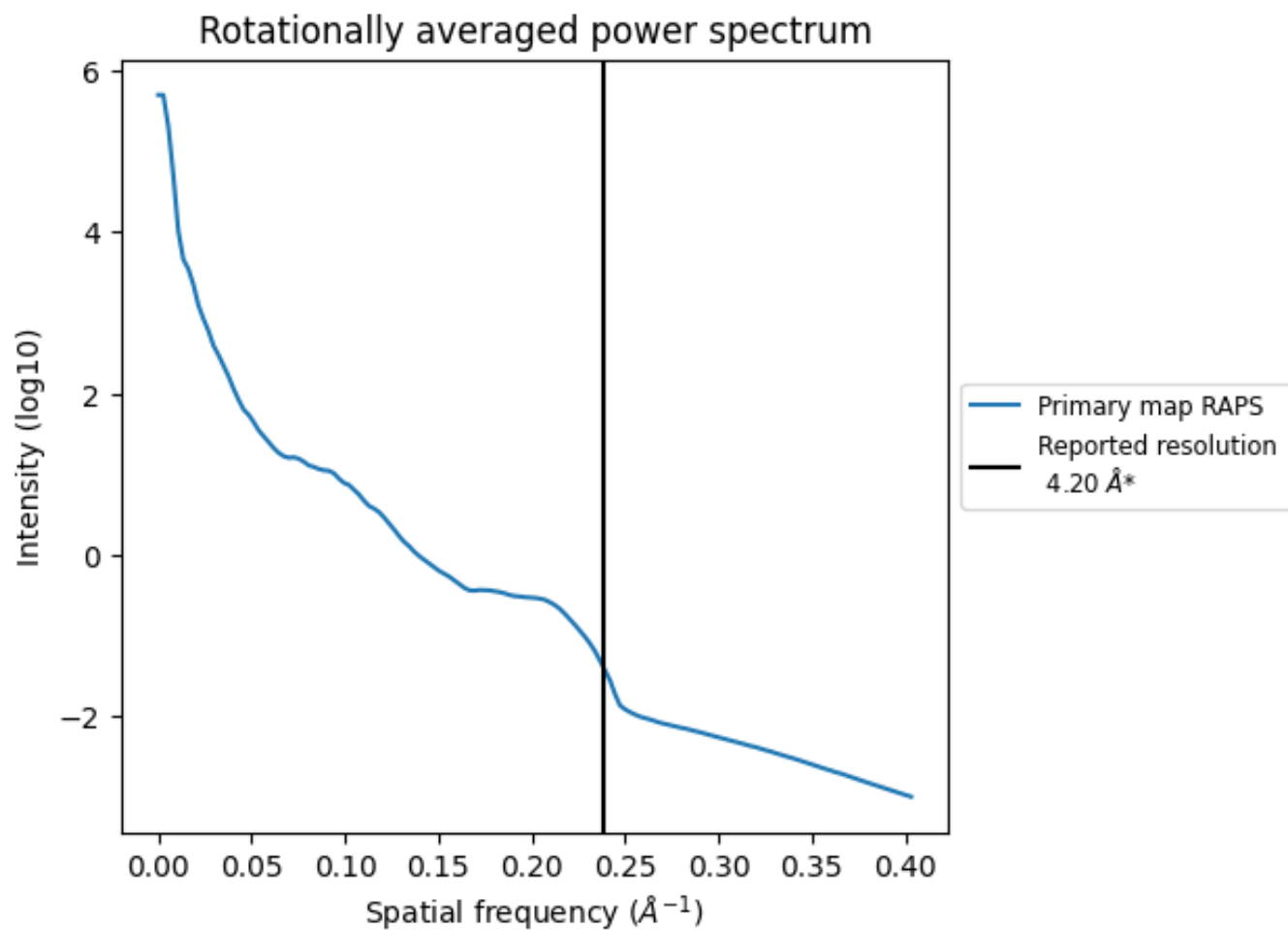


The volume at the recommended contour level is 585  $\text{nm}^3$ ; this corresponds to an approximate mass of 529 kDa.

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

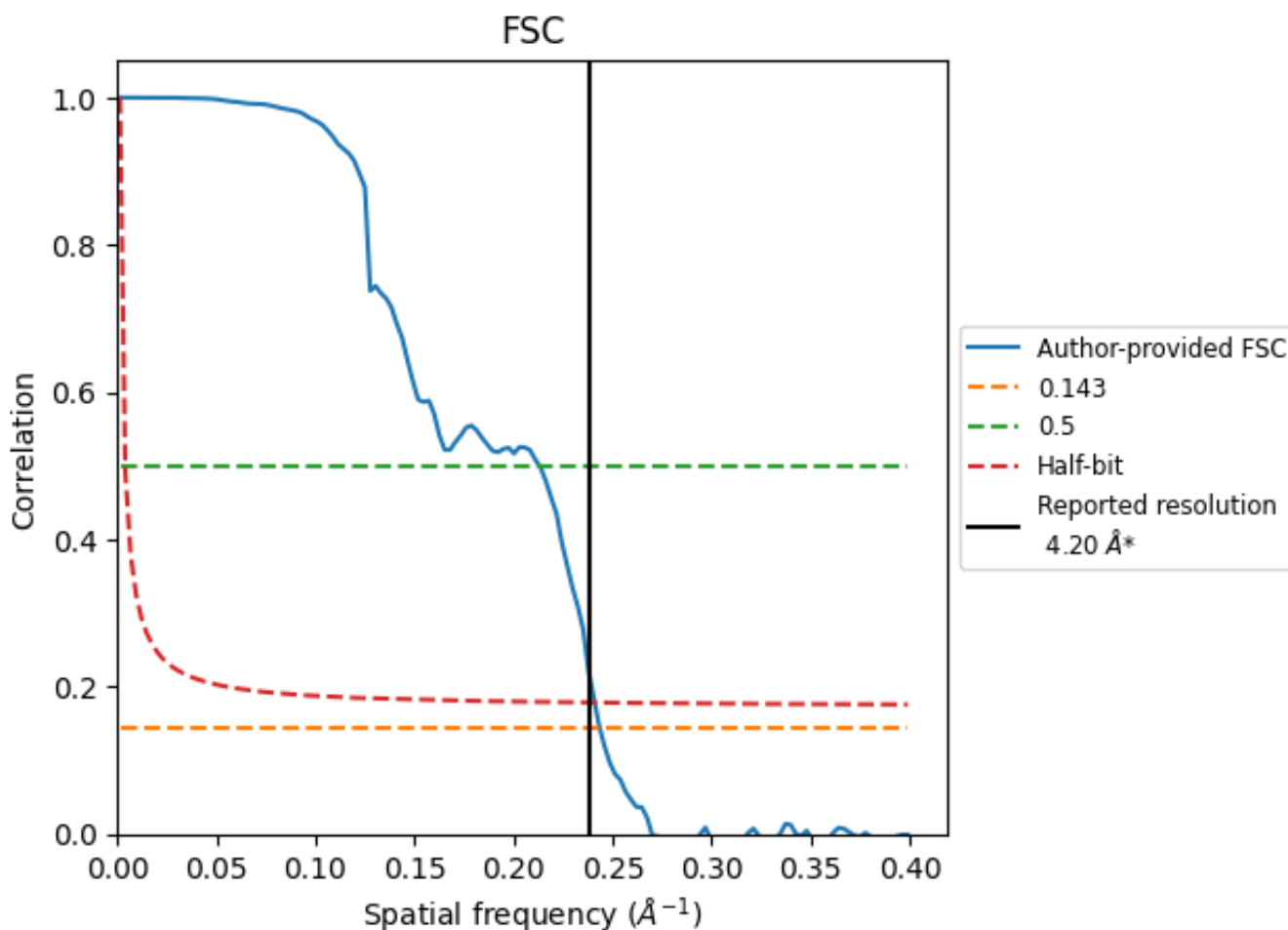


\*Reported resolution corresponds to spatial frequency of 0.238 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [\(i\)](#)

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 [\(i\)](#)



\*Reported resolution corresponds to spatial frequency of 0.238 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

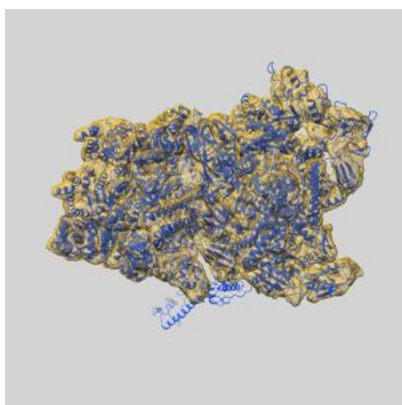
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.20	-	-
Author-provided FSC curve	4.11	4.69	4.15
Unmasked-calculated*	-	-	-

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

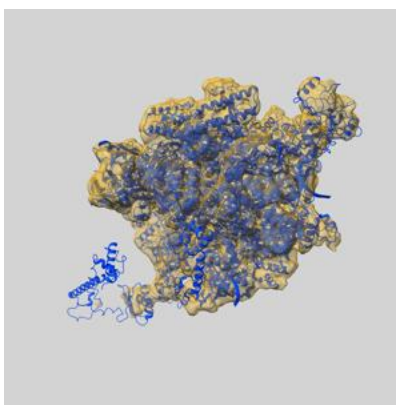
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-11725 and PDB model 7ADE. Per-residue inclusion information can be found in section 3 on page 9.

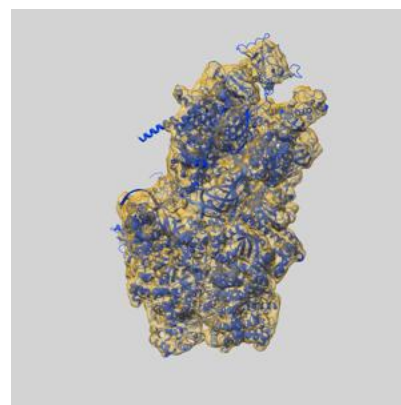
### 9.1 Map-model overlay [i](#)



X



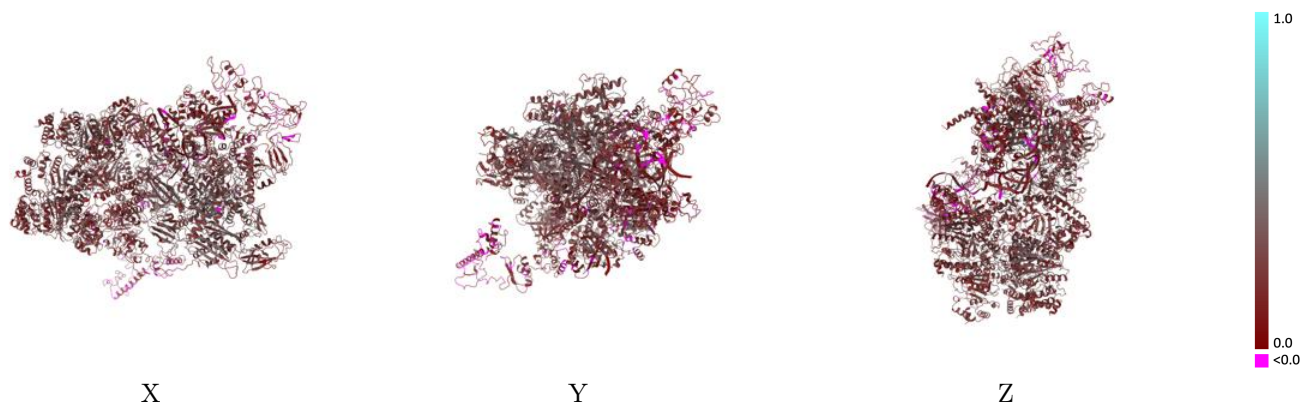
Y



Z

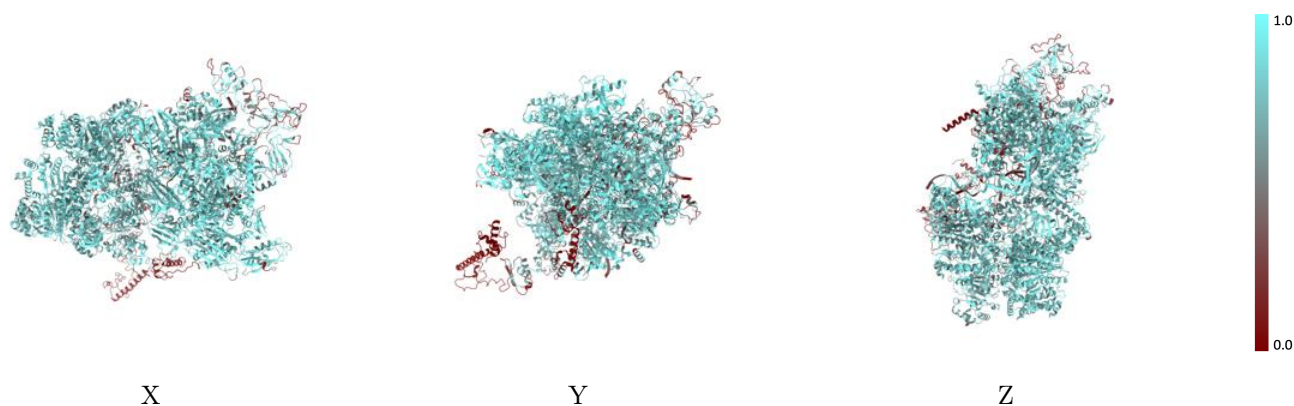
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



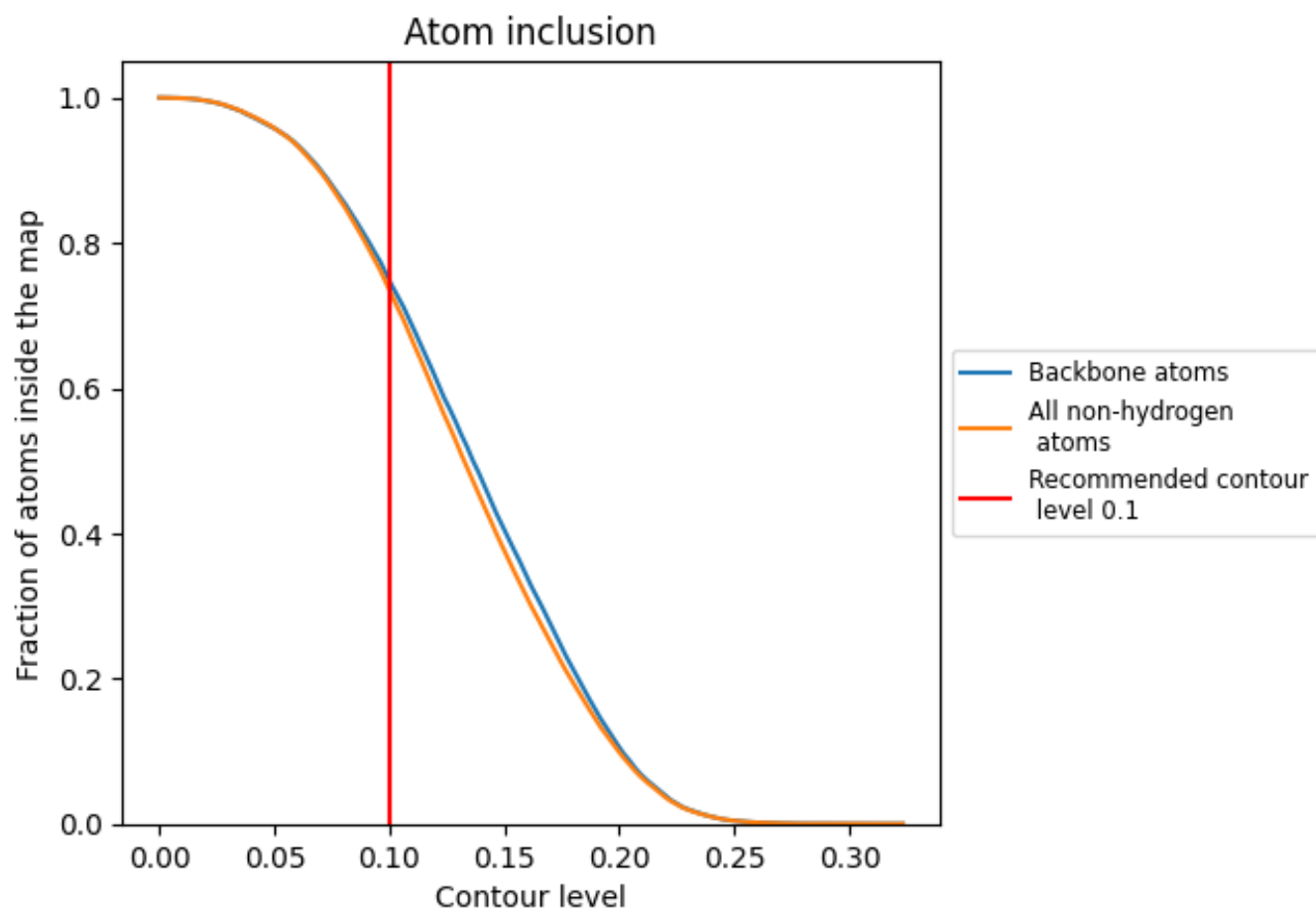
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).

































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 75% of all backbone atoms, 73% 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 (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7349	 0.2350
A	 0.4219	 0.1450
K	 0.7806	 0.1130
L	 0.7139	 0.0770
R	 0.7507	 0.1610
U	 0.8022	 0.3050
V	 0.7541	 0.2480
W	 0.1391	 0.2090
X	 0.8063	 0.2790
Y	 0.7279	 0.2230
a	 0.7924	 0.2420
b	 0.8262	 0.2670
c	 0.8226	 0.2620
d	 0.8096	 0.2550
e	 0.7523	 0.2120
f	 0.7355	 0.2000

