



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 29, 2023 – 02:34 PM EDT

PDB ID : 3PO3
Title : Arrested RNA Polymerase II reactivation intermediate
Authors : Cheung, A.C.M.; Cramer, P.
Deposited on : 2010-11-21
Resolution : 3.30 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35

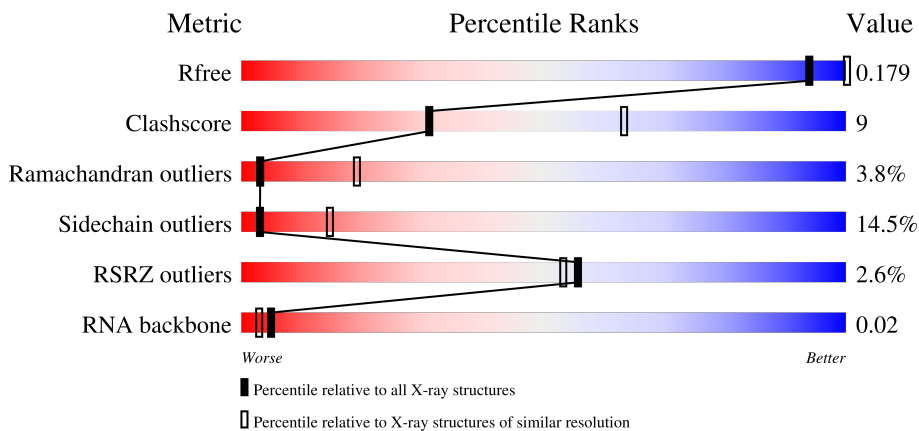
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.30 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)
RNA backbone	3102	1117 (3.70-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1733	<div style="display: flex; align-items: center;"> <div style="width: 10%; text-align: center;">%</div> <div style="flex-grow: 1;"> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> 56% 21% 5% • 18% </div> </div> </div>
2	B	1224	<div style="display: flex; align-items: center;"> <div style="width: 10%; text-align: center;">3%</div> <div style="flex-grow: 1;"> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> 66% 22% • 9% </div> </div> </div>
3	C	318	<div style="display: flex; align-items: center;"> <div style="flex-grow: 1;"> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> 53% 25% 5% 16% </div> </div> </div>
4	D	221	<div style="display: flex; align-items: center;"> <div style="width: 10%; text-align: center;">%</div> <div style="flex-grow: 1;"> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> 53% 20% 6% • 20% </div> </div> </div>

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Mol	Chain	Length	Quality of chain
5	E	215	
6	F	155	
7	G	171	
8	H	146	
9	I	122	
10	J	70	
11	K	120	
12	L	70	
13	N	14	
14	P	5	
15	S	178	
16	T	27	

2 Entry composition [i](#)

There are 21 unique types of molecules in this entry. The entry contains 33008 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 II subunit RPB1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1426	11214	7069	1959	2124	62	0	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase II subunit RPB2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	1108	8810	5580	1541	1634	55	0	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	266	2095	1317	348	417	13	0	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	177	1417	876	252	287	2	0	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	214	1752	1111	309	321	11	0	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	84	679	434	115	127	3	0	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	G	171	1340	861	222	249	8	0	0	0

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	133	1068	673	180	211	4	0	0	0

- Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	I	119	971	596	179	186	10	0	0	0

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	65	532	339	93	94	6	0	0	0

- Molecule 11 is a protein called DNA-directed RNA polymerase II subunit RPB11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	114	919	590	156	171	2	0	0	0

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	46	364	224	72	64	4	0	0	0

- Molecule 13 is a DNA chain called DNA non-template strand.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
13	N	7	144	69	30	39	6	0	0	0

- Molecule 14 is a RNA chain called RNA product strand.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
14	P	5	100	45	15	35	5	0	0	0

- Molecule 15 is a protein called Transcription elongation factor S-II.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	S	164	1294	809	230	247	8	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	290	ALA	ASP	engineered mutation	UNP P07273
S	291	ALA	GLU	engineered mutation	UNP P07273

- Molecule 16 is a DNA chain called DNA template strand.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	Br	C	N	O	P			
16	T	13	266	1	126	44	82	13	0	0	0

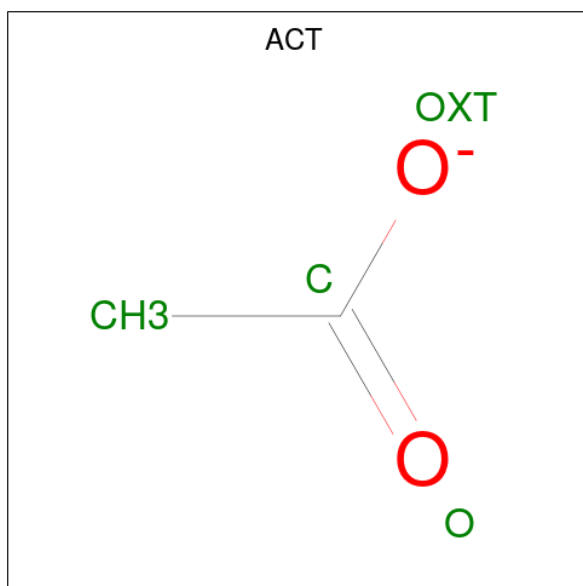
- Molecule 17 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	A	2	Total 2	Zn 2	0	0
17	B	1	Total 1	Zn 1	0	0
17	C	1	Total 1	Zn 1	0	0
17	I	2	Total 2	Zn 2	0	0
17	J	1	Total 1	Zn 1	0	0
17	L	1	Total 1	Zn 1	0	0
17	S	1	Total 1	Zn 1	0	0

- Molecule 18 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

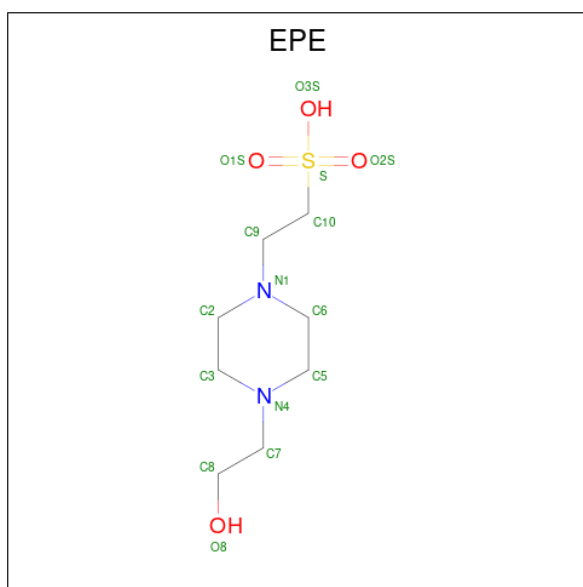
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
18	A	1	Total Mg 1 1	0	0

- Molecule 19 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



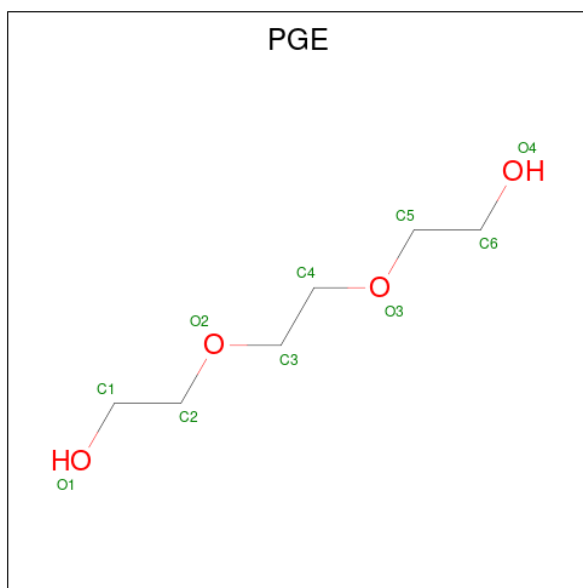
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	A	1	Total C O 4 2 2	0	0
19	B	1	Total C O 4 2 2	0	0

- Molecule 20 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: $C_8H_{18}N_2O_4S$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
20	A	1	15	8	2	4	1	0	0

- Molecule 21 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C₆H₁₄O₄).

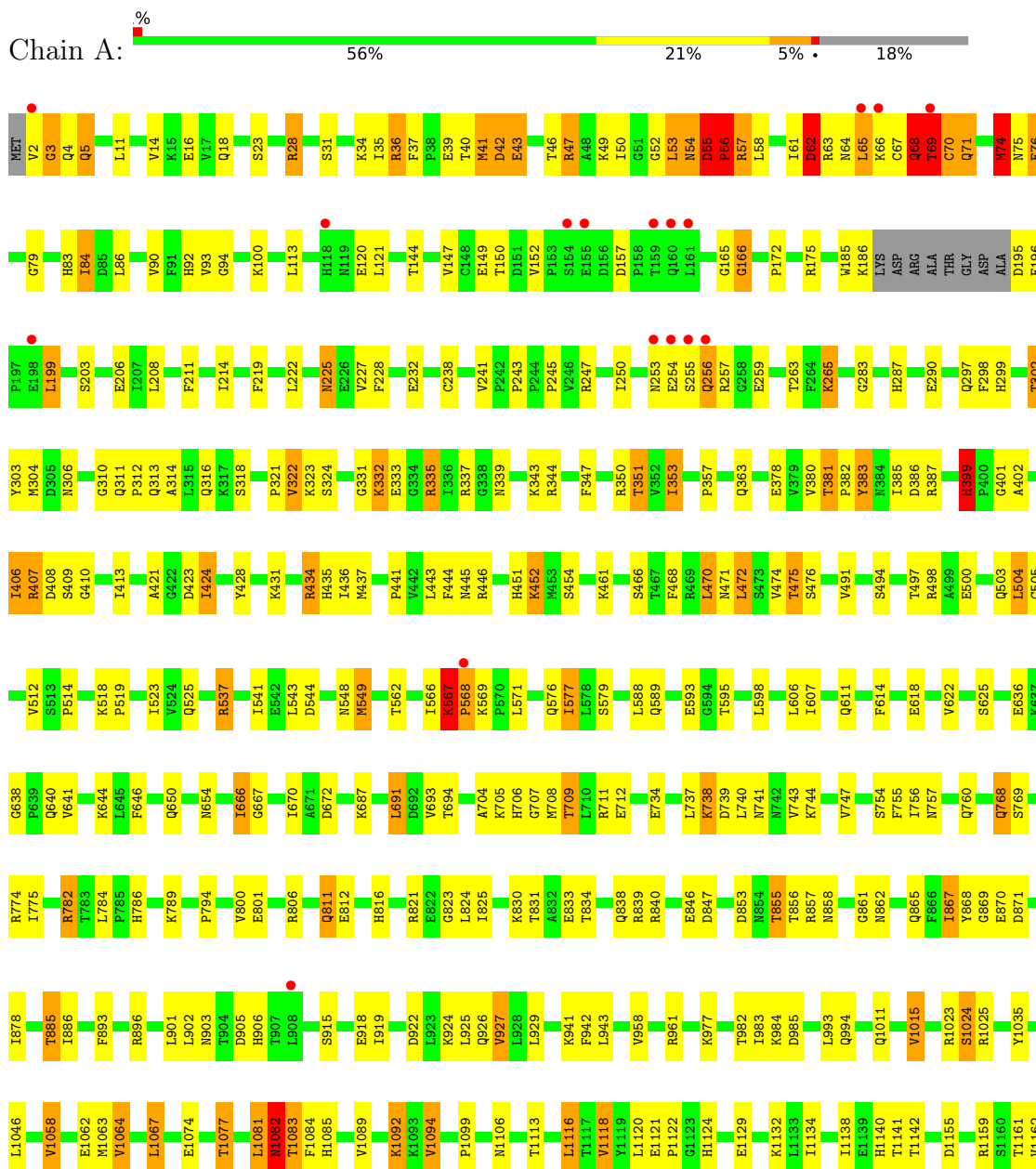


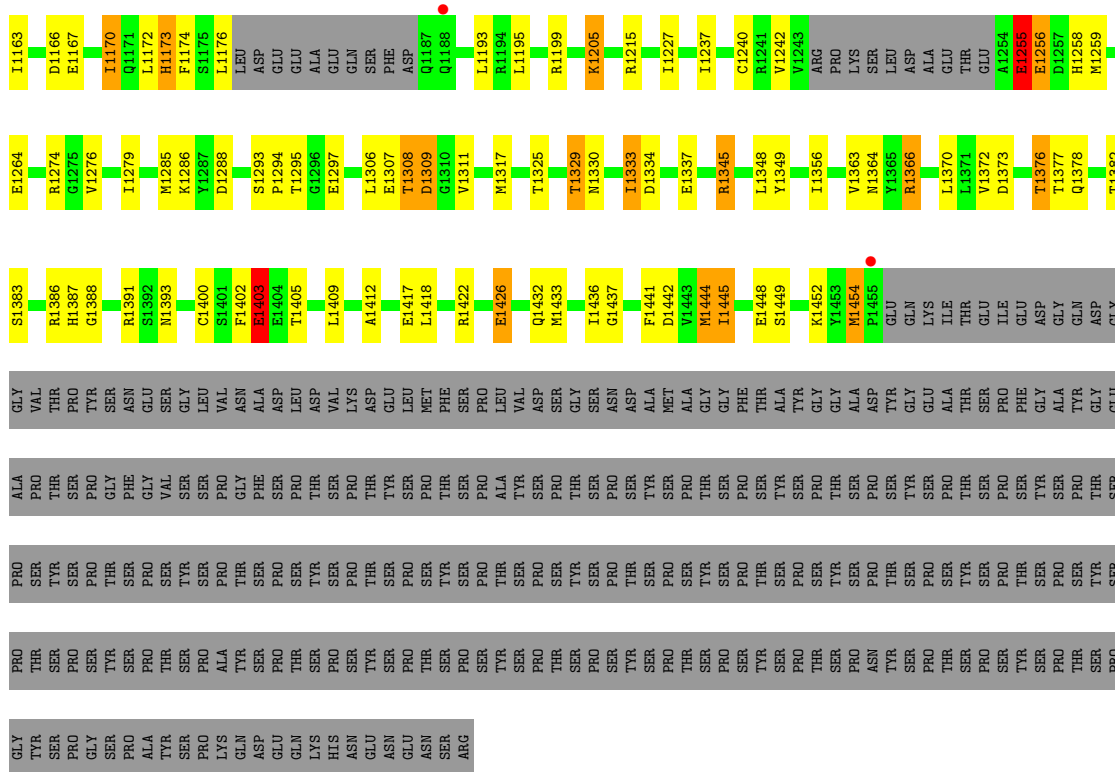
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
21	L	1	10	6	4	0	0

3 Residue-property plots [i](#)

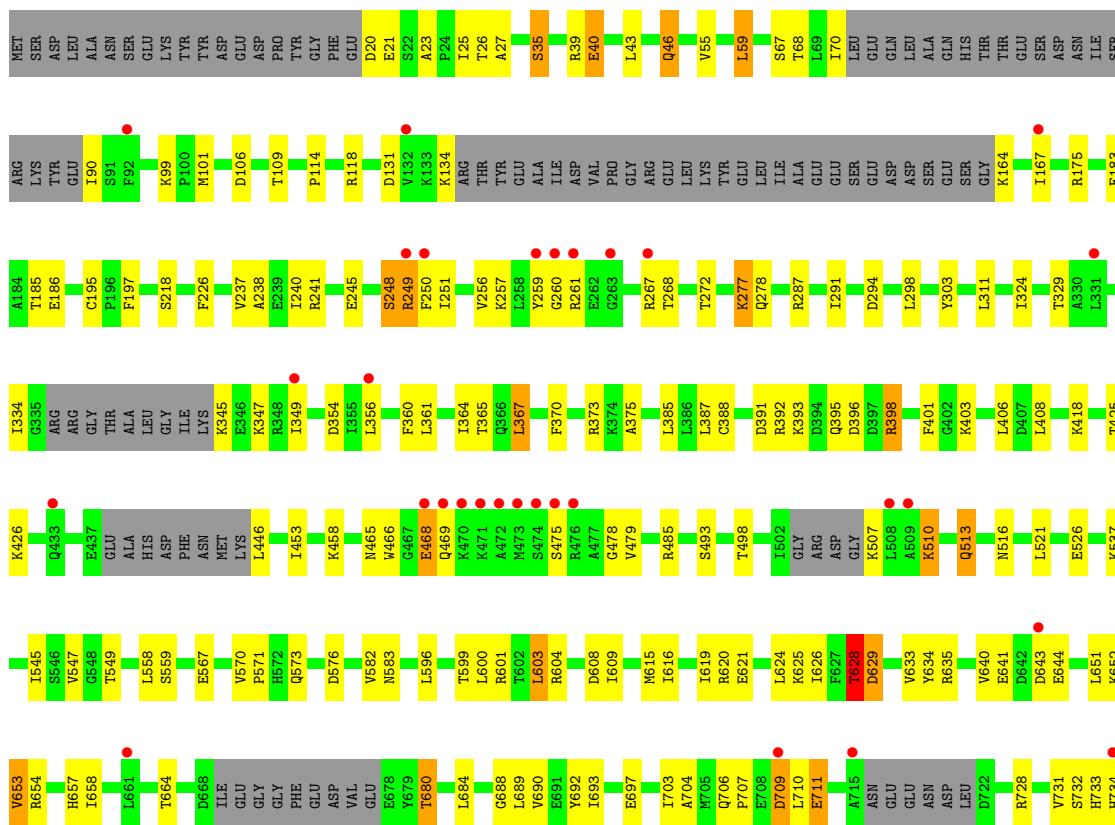
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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 dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

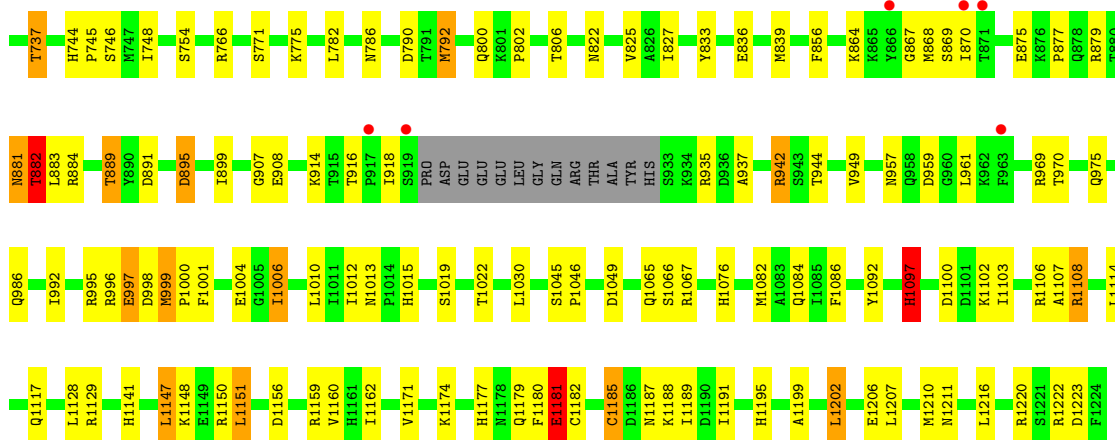
- Molecule 1: DNA-directed RNA polymerase II subunit RPB1





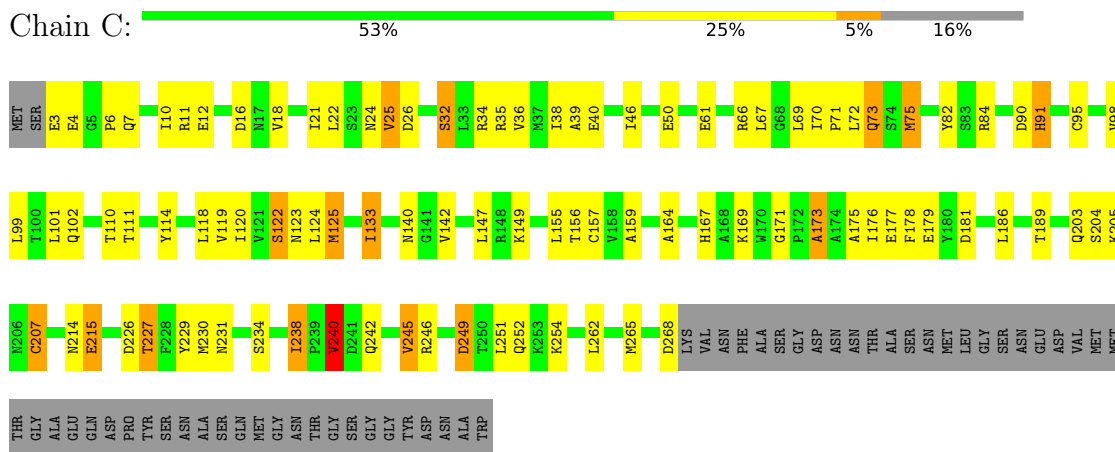
• Molecule 2: DNA-directed RNA polymerase II subunit RPB2





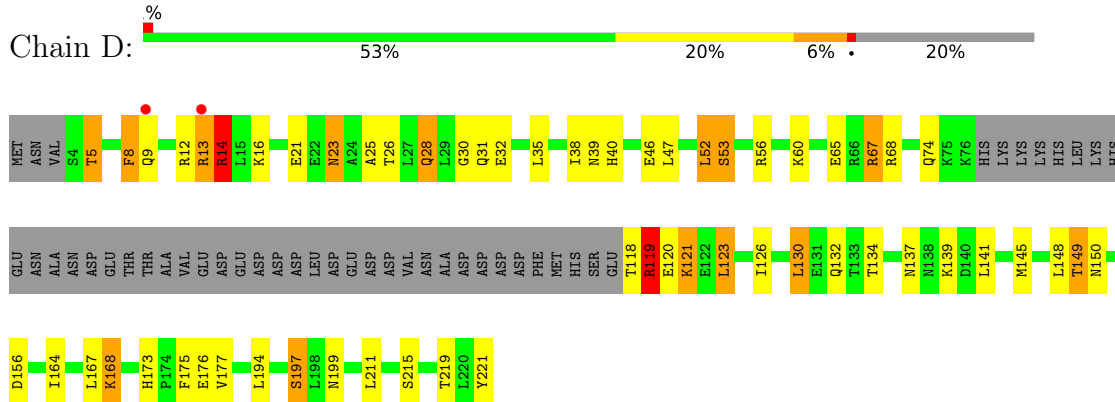
- Molecule 3: DNA-directed RNA polymerase II subunit RPB3

Chain C:



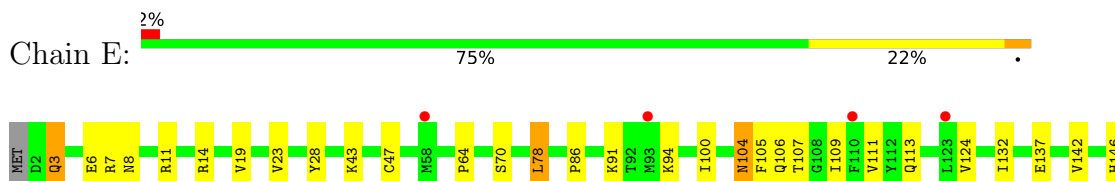
- Molecule 4: DNA-directed RNA polymerase II subunit RPB4

Chain D:



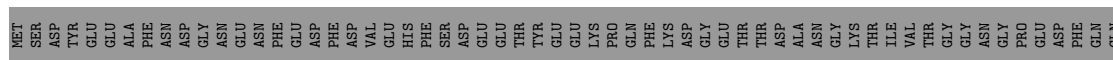
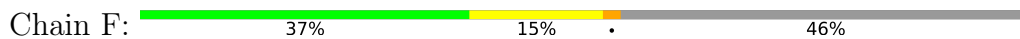
- Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

Chain E:

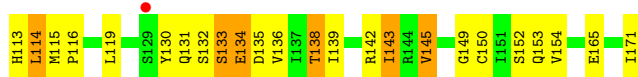




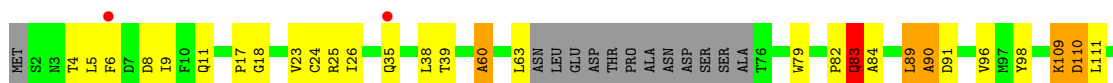
- Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2



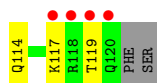
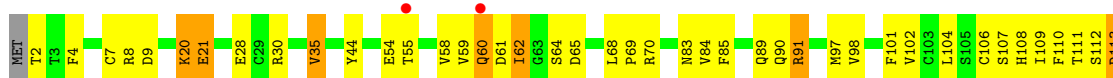
- Molecule 7: DNA-directed RNA polymerase II subunit RPB7



- Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3

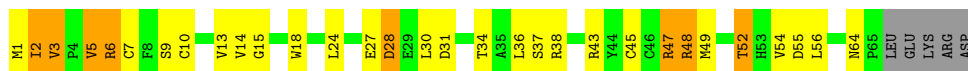


- Molecule 9: DNA-directed RNA polymerase II subunit RPB9

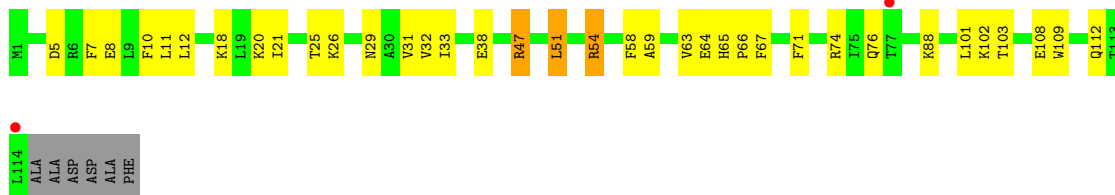


- Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

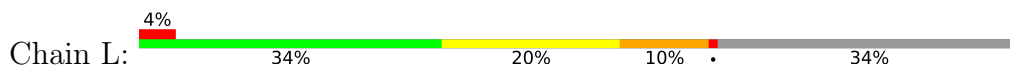




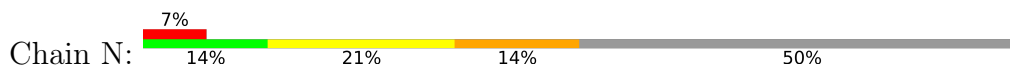
- Molecule 11: DNA-directed RNA polymerase II subunit RPB1



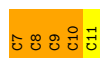
- Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4



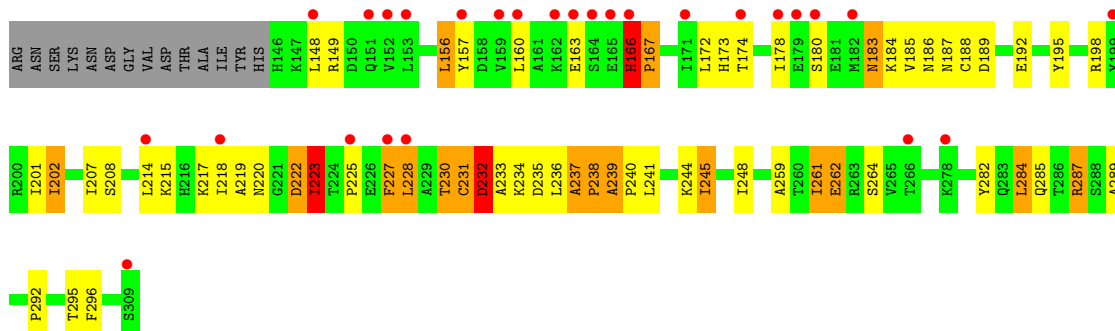
- Molecule 13: DNA non-template strand




- Molecule 14: RNA product strand

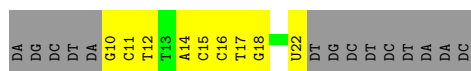


- Molecule 15: Transcription elongation factor S-II



- Molecule 16: DNA template strand

Chain T:  15% 33% 52%



4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	220.02Å 395.07Å 280.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.97 – 3.30 49.97 – 3.30	Depositor EDS
% Data completeness (in resolution range)	(Not available) (49.97-3.30) 99.7 (49.97-3.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.00 (at 3.33Å)	Xtrriage
Refinement program	BUSTER 2.9.2	Depositor
R, R_{free}	0.161 , 0.189 0.181 , 0.179	Depositor DCC
R_{free} test set	3598 reflections (1.98%)	wwPDB-VP
Wilson B-factor (Å ²)	111.5	Xtrriage
Anisotropy	0.234	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 116.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.018 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.026 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	33008	wwPDB-VP
Average B, all atoms (Å ²)	127.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.93% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG, PGE, BRU, EPE, ACT

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	0.54	2/11417 (0.0%)	0.85	7/15442 (0.0%)
2	B	0.51	0/8981	0.79	4/12108 (0.0%)
3	C	0.50	0/2133	0.77	1/2891 (0.0%)
4	D	0.52	0/1427	0.86	2/1914 (0.1%)
5	E	0.44	0/1788	0.71	0/2406
6	F	0.56	0/691	0.77	0/933
7	G	0.55	0/1368	0.82	0/1844
8	H	0.47	0/1086	0.80	0/1470
9	I	0.47	0/989	0.79	0/1331
10	J	0.52	0/541	0.87	1/727 (0.1%)
11	K	0.51	0/937	0.71	0/1265
12	L	0.53	0/366	0.97	1/485 (0.2%)
13	N	0.99	0/162	1.81	6/249 (2.4%)
14	P	1.26	0/109	2.55	10/166 (6.0%)
15	S	0.50	0/1317	0.79	0/1778
16	T	1.16	0/274	1.82	9/421 (2.1%)
All	All	0.53	2/33586 (0.0%)	0.85	41/45430 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	867	ILE	CG1-CD1	5.94	1.91	1.50
1	A	56	PRO	C-N	5.29	1.46	1.34

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	P	8	C	P-O3'-C3'	13.71	136.16	119.70
13	N	6	DA	O4'-C1'-N9	9.07	114.35	108.00
16	T	15	DC	O4'-C1'-N1	8.13	113.69	108.00
14	P	9	C	P-O3'-C3'	7.96	129.25	119.70
16	T	15	DC	O4'-C4'-C3'	-7.65	101.41	106.00
1	A	56	PRO	C-N-CA	7.53	140.53	121.70
13	N	4	DT	O4'-C1'-N1	7.53	113.27	108.00
1	A	3	GLY	C-N-CA	7.33	140.04	121.70
1	A	399	HIS	N-CA-CB	7.27	123.68	110.60
13	N	2	DG	O4'-C1'-N9	7.11	112.98	108.00
4	D	25	ALA	C-N-CA	6.89	138.92	121.70
14	P	7	C	N1-C2-O2	6.55	122.83	118.90
14	P	10	C	P-O3'-C3'	6.47	127.46	119.70
14	P	7	C	C3'-C2'-C1'	6.45	106.66	101.50
16	T	12	DT	P-O3'-C3'	6.34	127.31	119.70
13	N	2	DG	P-O3'-C3'	6.27	127.23	119.70
13	N	3	DG	P-O3'-C3'	6.26	127.21	119.70
16	T	10	DG	P-O3'-C3'	6.25	127.20	119.70
16	T	18	DG	O4'-C1'-N9	6.02	112.22	108.00
1	A	707	GLY	C-N-CA	6.00	136.69	121.70
10	J	5	VAL	N-CA-C	-5.96	94.90	111.00
1	A	451	HIS	CB-CA-C	-5.73	98.93	110.40
14	P	9	C	N1-C2-O2	5.46	122.18	118.90
14	P	7	C	C2-N1-C1'	5.41	124.76	118.80
2	B	882	THR	C-N-CA	5.41	135.23	121.70
16	T	14	DA	O4'-C1'-N9	5.41	111.79	108.00
1	A	568	PRO	N-CA-C	5.40	126.15	112.10
12	L	59	ALA	C-N-CA	5.33	135.03	121.70
4	D	26	THR	N-CA-C	-5.33	96.62	111.00
1	A	1403	GLU	N-CA-C	5.30	125.31	111.00
2	B	628	THR	C-N-CA	5.24	134.79	121.70
2	B	1181	GLU	N-CA-C	5.18	125.00	111.00
16	T	17	DT	C4-C5-C7	5.18	122.11	119.00
13	N	4	DT	P-O3'-C3'	5.18	125.91	119.70
14	P	8	C	N1-C1'-C2'	5.12	120.66	114.00
16	T	16	DC	P-O3'-C3'	5.08	125.80	119.70
16	T	11	DC	P-O3'-C3'	5.06	125.77	119.70
14	P	8	C	C1'-O4'-C4'	-5.02	105.88	109.90
3	C	39	ALA	N-CA-C	5.02	124.55	111.00
14	P	7	C	C6-N1-C2	-5.01	118.30	120.30
2	B	1097	HIS	N-CA-CB	5.00	119.60	110.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	55	ASP	Mainchain

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	11214	0	11281	258	0
2	B	8810	0	8847	133	0
3	C	2095	0	2051	57	0
4	D	1417	0	1429	26	0
5	E	1752	0	1776	30	0
6	F	679	0	701	17	0
7	G	1340	0	1357	38	0
8	H	1068	0	1040	18	0
9	I	971	0	927	17	0
10	J	532	0	542	22	0
11	K	919	0	929	24	0
12	L	364	0	386	9	0
13	N	144	0	80	2	0
14	P	100	0	56	1	0
15	S	1294	0	1295	36	0
16	T	266	0	146	0	0
17	A	2	0	0	0	0
17	B	1	0	0	0	0
17	C	1	0	0	0	0
17	I	2	0	0	0	0
17	J	1	0	0	0	0
17	L	1	0	0	0	0
17	S	1	0	0	0	0
18	A	1	0	0	0	0
19	A	4	0	3	1	0
19	B	4	0	3	1	0
20	A	15	0	17	2	0
21	L	10	0	14	0	0
All	All	33008	0	32880	599	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 9.

All (599) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:867:ILE:CG1	1:A:867:ILE:CD1	1.91	1.49
6:F:93:ILE:HD11	6:F:134:ILE:HD11	1.41	1.02
1:A:855:THR:HG21	1:A:857:ARG:HE	1.26	0.98
1:A:869:GLY:O	5:E:204:THR:HG21	1.69	0.93
7:G:1:MET:SD	7:G:2:PHE:N	2.44	0.90
1:A:436:ILE:HD11	1:A:491:VAL:HG11	1.53	0.90
1:A:567:LYS:HB3	8:H:96:VAL:H	1.36	0.90
3:C:167:HIS:HD2	3:C:169:LYS:H	1.22	0.87
1:A:61:ILE:HG21	1:A:257:ARG:HH12	1.40	0.87
1:A:902:LEU:HG	1:A:926:GLN:HG3	1.56	0.86
2:B:800:GLN:HB3	10:J:52:THR:HG23	1.57	0.86
4:D:40:HIS:HB3	7:G:73:LYS:NZ	1.90	0.85
8:H:130:ARG:H	8:H:130:ARG:HD3	1.39	0.85
15:S:239:ALA:H	15:S:240:PRO:HD2	1.41	0.83
1:A:14:VAL:H	1:A:1432:GLN:HE22	1.26	0.83
6:F:76:LYS:HA	6:F:79:ARG:HD3	1.61	0.81
1:A:868:TYR:HD2	1:A:1058:VAL:HG21	1.46	0.81
2:B:510:LYS:HE3	2:B:510:LYS:HA	1.63	0.80
15:S:214:LEU:HD13	15:S:237:ALA:HB2	1.61	0.80
2:B:654:ARG:H	2:B:657:HIS:HD2	1.28	0.80
1:A:1116:LEU:H	1:A:1308:THR:HG22	1.46	0.79
1:A:566:ILE:HD11	8:H:98:TYR:HB2	1.64	0.79
8:H:83:GLN:HG2	11:K:54:ARG:HG2	1.64	0.79
12:L:32:ALA:HB3	12:L:55:ILE:HD13	1.65	0.79
1:A:567:LYS:O	1:A:569:LYS:N	2.14	0.78
1:A:407:ARG:HD2	1:A:413:ILE:HD11	1.67	0.77
7:G:111:THR:HG22	7:G:113:HIS:H	1.48	0.75
2:B:957:ASN:HD21	2:B:961:LEU:HB2	1.51	0.75
15:S:230:THR:C	15:S:232:ASP:H	1.87	0.75
3:C:73:GLN:HE22	3:C:75:MET:H	1.33	0.75
4:D:173:HIS:HD2	4:D:175:PHE:H	1.34	0.74
1:A:350:ARG:HB2	2:B:1128:LEU:HD11	1.70	0.74
2:B:510:LYS:HB3	2:B:513:GLN:HB2	1.69	0.74
2:B:1013:ASN:HD22	2:B:1015:HIS:H	1.34	0.73
1:A:1348:LEU:HG	1:A:1372:VAL:HG22	1.71	0.73
2:B:707:PRO:O	2:B:711:GLU:HB2	1.88	0.73
3:C:73:GLN:HE22	3:C:75:MET:HB2	1.53	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:399:HIS:O	1:A:435:HIS:HD2	1.72	0.72
1:A:55:ASP:HB2	1:A:58:LEU:HG	1.71	0.72
4:D:145:MET:O	4:D:149:THR:HG23	1.90	0.71
4:D:40:HIS:HB3	7:G:73:LYS:HZ2	1.57	0.70
1:A:383:TYR:HB3	6:F:115:THR:HG22	1.72	0.70
1:A:57:ARG:HG2	1:A:68:GLN:HB2	1.71	0.70
1:A:1364:ASN:HD21	1:A:1366:ARG:HH11	1.40	0.69
1:A:503:GLN:HE21	6:F:90:ARG:HH21	1.40	0.69
2:B:744:HIS:HD2	2:B:746:SER:H	1.38	0.69
1:A:741:ASN:HD22	1:A:744:LYS:H	1.40	0.69
1:A:871:ASP:OD1	1:A:1366:ARG:NH2	2.26	0.69
1:A:1444:MET:HG2	7:G:58:ARG:HB3	1.74	0.68
1:A:1364:ASN:ND2	1:A:1366:ARG:HD2	2.08	0.68
1:A:1159:ARG:HD2	1:A:1174:PHE:CE2	2.28	0.68
10:J:48:ARG:HE	10:J:49:MET:HE2	1.58	0.67
2:B:26:THR:HG22	2:B:27:ALA:H	1.58	0.67
3:C:167:HIS:HD2	3:C:169:LYS:N	1.90	0.67
2:B:20:ASP:HB3	2:B:23:ALA:HB2	1.77	0.67
1:A:68:GLN:NE2	1:A:70:CYS:HB3	2.09	0.67
3:C:38:ILE:HG13	3:C:176:ILE:HD12	1.75	0.67
3:C:98:VAL:H	3:C:122:SER:HB3	1.58	0.67
4:D:40:HIS:HB3	7:G:73:LYS:HZ3	1.57	0.67
1:A:855:THR:CG2	1:A:857:ARG:HE	2.06	0.67
1:A:1063:MET:SD	1:A:1436:ILE:HG13	2.35	0.67
15:S:183:ASN:O	15:S:186:ASN:HB3	1.96	0.66
1:A:1118:VAL:HG22	1:A:1306:LEU:HB2	1.77	0.66
9:I:7:CYS:SG	9:I:8:ARG:O	2.53	0.66
1:A:67:CYS:SG	1:A:67:CYS:O	2.53	0.66
1:A:68:GLN:O	1:A:70:CYS:N	2.29	0.66
1:A:1433:MET:HE3	7:G:63:PRO:HB3	1.78	0.65
1:A:150:THR:HG23	1:A:166:GLY:HA2	1.76	0.65
1:A:646:PHE:O	1:A:650:GLN:HG2	1.96	0.65
2:B:1180:PHE:HB3	2:B:1191:ILE:HD13	1.78	0.65
4:D:173:HIS:CD2	4:D:175:PHE:H	2.15	0.65
3:C:167:HIS:CD2	3:C:169:LYS:H	2.10	0.65
2:B:311:LEU:HB3	9:I:4:PHE:HE2	1.62	0.64
2:B:999:MET:HG3	2:B:1000:PRO:HD2	1.80	0.64
1:A:55:ASP:OD1	1:A:57:ARG:N	2.30	0.64
1:A:351:THR:HG23	2:B:1103:ILE:HA	1.78	0.64
1:A:55:ASP:HB2	1:A:58:LEU:H	1.62	0.64
1:A:666:ILE:HD11	2:B:1030:LEU:HD13	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:CYS:O	1:A:68:GLN:O	2.15	0.63
7:G:131:GLN:HG2	7:G:136:VAL:HG22	1.80	0.63
3:C:234:SER:HB2	3:C:240:VAL:HG13	1.80	0.63
2:B:570:VAL:HB	2:B:573:GLN:HB2	1.78	0.63
1:A:68:GLN:HE21	1:A:70:CYS:H	1.44	0.62
1:A:61:ILE:HG22	1:A:62:ASP:H	1.63	0.62
1:A:351:THR:HG21	1:A:466:SER:O	1.98	0.62
1:A:811:GLN:HE21	1:A:811:GLN:H	1.46	0.62
1:A:1116:LEU:H	1:A:1308:THR:CG2	2.12	0.62
4:D:176:GLU:OE2	4:D:197:SER:HB2	2.00	0.62
1:A:868:TYR:CD2	1:A:1058:VAL:HG21	2.33	0.62
2:B:640:VAL:HG22	2:B:651:LEU:HG	1.81	0.62
1:A:441:PRO:HG2	1:A:498:ARG:HB2	1.82	0.61
1:A:1074:GLU:O	1:A:1077:THR:HB	1.99	0.61
15:S:239:ALA:H	15:S:240:PRO:CD	2.11	0.61
1:A:870:GLU:HB2	5:E:204:THR:CG2	2.30	0.61
1:A:50:ILE:HG23	1:A:52:GLY:H	1.65	0.61
7:G:62:LEU:O	7:G:65:ASP:O	2.19	0.61
1:A:768:GLN:HG2	1:A:816:HIS:HA	1.83	0.61
2:B:510:LYS:HA	2:B:510:LYS:CE	2.25	0.61
15:S:187:ASN:HD22	15:S:195:TYR:HA	1.66	0.61
1:A:741:ASN:HD21	1:A:743:VAL:HB	1.65	0.61
3:C:66:ARG:NH2	10:J:3:VAL:O	2.33	0.61
9:I:65:ASP:HB3	9:I:68:LEU:HD12	1.83	0.61
11:K:65:HIS:HD2	11:K:67:PHE:H	1.47	0.61
2:B:1013:ASN:HD21	2:B:1015:HIS:CD2	2.19	0.60
14:P:11:C:H3'	15:S:287:ARG:CZ	2.31	0.60
1:A:259:GLU:HG2	1:A:263:THR:HG21	1.83	0.60
1:A:61:ILE:HG21	1:A:257:ARG:NH1	2.14	0.60
1:A:709:THR:HB	1:A:712:GLU:HB2	1.83	0.60
1:A:839:ARG:NH2	1:A:1402:PHE:HA	2.17	0.60
3:C:73:GLN:NE2	3:C:75:MET:H	2.00	0.60
1:A:855:THR:HG23	1:A:857:ARG:HG3	1.83	0.59
2:B:167:ILE:O	2:B:453:ILE:HD13	2.02	0.59
2:B:526:GLU:HG3	2:B:771:SER:HB3	1.84	0.59
7:G:143:ILE:HG22	7:G:145:VAL:HG22	1.83	0.59
1:A:79:GLY:HA3	1:A:243:PRO:HB2	1.83	0.59
1:A:823:GLY:HA3	15:S:285:GLN:HB3	1.85	0.59
2:B:792:MET:HA	2:B:856:PHE:O	2.02	0.59
1:A:855:THR:HG21	1:A:857:ARG:NE	2.08	0.59
1:A:1308:THR:HG23	1:A:1309:ASP:N	2.18	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:704:ALA:HA	2:B:710:LEU:HD12	1.84	0.58
1:A:90:VAL:HG13	1:A:297:GLN:OE1	2.03	0.58
9:I:20:LYS:HE2	9:I:21:GLU:H	1.67	0.58
15:S:188:CYS:SG	15:S:192:GLU:HB2	2.43	0.58
1:A:219:PHE:HA	1:A:222:LEU:HD12	1.85	0.58
3:C:67:LEU:HA	3:C:70:ILE:HD12	1.86	0.58
1:A:853:ASP:OD1	1:A:855:THR:HB	2.04	0.58
15:S:238:PRO:HB2	15:S:240:PRO:HD2	1.84	0.58
1:A:69:THR:O	1:A:71:GLN:HG2	2.04	0.58
1:A:494:SER:O	1:A:498:ARG:HG2	2.04	0.58
1:A:512:VAL:HA	1:A:519:PRO:HA	1.84	0.58
1:A:298:PHE:O	1:A:302:THR:HB	2.03	0.58
1:A:687:LYS:HG3	1:A:794:PRO:HG2	1.86	0.57
7:G:119:LEU:HD12	7:G:130:TYR:HB3	1.86	0.57
8:H:89:LEU:C	8:H:91:ASP:H	2.07	0.57
1:A:1138:ILE:HG22	1:A:1279:ILE:HG21	1.85	0.57
2:B:654:ARG:H	2:B:657:HIS:CD2	2.16	0.57
4:D:175:PHE:HZ	7:G:85:GLU:HG3	1.69	0.57
11:K:51:LEU:HD13	11:K:59:ALA:HB3	1.85	0.57
15:S:156:LEU:O	15:S:160:LEU:HB2	2.04	0.57
4:D:8:PHE:HE2	7:G:73:LYS:HD2	1.69	0.57
2:B:453:ILE:HD12	2:B:453:ILE:H	1.70	0.57
3:C:101:LEU:HB2	3:C:118:LEU:HD23	1.87	0.57
1:A:1255:GLU:O	1:A:1256:GLU:HB2	2.05	0.56
2:B:1013:ASN:HD21	2:B:1015:HIS:HD2	1.53	0.56
1:A:53:LEU:CD2	1:A:54:ASN:H	2.18	0.56
1:A:353:ILE:HG22	1:A:468:PHE:HB2	1.86	0.56
1:A:1409:LEU:HD13	2:B:1207:LEU:HD21	1.86	0.56
2:B:55:VAL:HA	2:B:59:LEU:HD12	1.87	0.56
1:A:79:GLY:HA3	1:A:243:PRO:CB	2.35	0.56
3:C:32:SER:O	3:C:36:VAL:HG23	2.06	0.56
4:D:52:LEU:HB3	4:D:148:LEU:HD23	1.86	0.56
7:G:116:PRO:HG2	7:G:119:LEU:HD23	1.88	0.56
1:A:406:ILE:HG13	1:A:431:LYS:HB2	1.88	0.56
1:A:840:ARG:NH2	1:A:1106:ASN:OD1	2.39	0.56
4:D:118:THR:O	4:D:121:LYS:NZ	2.38	0.56
1:A:924:LYS:O	1:A:927:VAL:HG12	2.06	0.56
4:D:164:ILE:O	4:D:168:LYS:HE3	2.06	0.56
6:F:76:LYS:HA	6:F:79:ARG:CD	2.33	0.56
1:A:68:GLN:HE22	1:A:70:CYS:HB3	1.69	0.56
1:A:332:LYS:O	1:A:333:GLU:HG2	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:73:GLN:NE2	3:C:75:MET:HB2	2.21	0.56
7:G:14:HIS:CD2	7:G:16:SER:H	2.24	0.56
1:A:299:HIS:HA	1:A:302:THR:HG22	1.87	0.56
1:A:1094:VAL:HA	1:A:1113:THR:HG21	1.88	0.55
15:S:282:TYR:HE1	15:S:284:LEU:HD12	1.71	0.55
1:A:339:ASN:HB3	2:B:1117:GLN:HE22	1.71	0.55
10:J:1:MET:HB2	10:J:56:LEU:HD12	1.88	0.55
10:J:3:VAL:HG21	10:J:18:TRP:HB2	1.88	0.55
1:A:825:ILE:HG21	2:B:510:LYS:HD2	1.88	0.55
3:C:164:ALA:HA	3:C:167:HIS:O	2.05	0.55
1:A:16:GLU:HB3	1:A:1418:LEU:HD11	1.88	0.55
1:A:92:HIS:HD2	1:A:94:GLY:H	1.53	0.55
1:A:754:SER:H	1:A:757:ASN:HD22	1.55	0.55
1:A:335:ARG:NH1	2:B:1206:GLU:OE2	2.40	0.54
2:B:226:PHE:HA	2:B:395:GLN:HG3	1.89	0.54
2:B:260:GLY:O	2:B:267:ARG:HD3	2.07	0.54
1:A:5:GLN:O	2:B:1159:ARG:NH2	2.40	0.54
1:A:567:LYS:HB3	8:H:96:VAL:N	2.16	0.54
2:B:303:TYR:HD2	2:B:571:PRO:HB3	1.72	0.54
19:B:1225:ACT:H2	4:D:14:ARG:HH21	1.73	0.54
1:A:472:LEU:O	1:A:475:THR:HB	2.07	0.54
1:A:399:HIS:O	1:A:401:GLY:N	2.41	0.54
15:S:185:VAL:HB	15:S:189:ASP:HA	1.90	0.54
1:A:43:GLU:HB2	1:A:46:THR:HB	1.88	0.54
2:B:291:ILE:HD12	2:B:291:ILE:H	1.73	0.54
8:H:5:LEU:HD22	8:H:134:ASN:HA	1.90	0.54
9:I:58:VAL:HG13	9:I:62:ILE:HG21	1.90	0.54
9:I:102:VAL:HG22	9:I:109:ILE:HG12	1.90	0.54
1:A:1082:ASN:HD22	1:A:1083:THR:H	1.56	0.54
2:B:516:ASN:H	2:B:516:ASN:HD22	1.55	0.53
11:K:63:VAL:HG12	11:K:71:PHE:HB3	1.90	0.53
5:E:14:ARG:HH12	5:E:142:VAL:HG22	1.73	0.53
1:A:640:GLN:HE21	1:A:641:VAL:HG23	1.72	0.53
7:G:112:LYS:O	7:G:115:MET:HG2	2.09	0.53
1:A:494:SER:HB3	1:A:497:THR:H	1.74	0.53
1:A:756:ILE:HG22	1:A:760:GLN:HE21	1.72	0.53
6:F:75:PRO:HG2	6:F:78:GLN:HB2	1.91	0.53
7:G:34:VAL:O	7:G:37:SER:HB3	2.09	0.53
3:C:84:ARG:HD3	11:K:11:LEU:HD21	1.91	0.53
9:I:59:VAL:C	9:I:61:ASP:H	2.11	0.53
5:E:86:PRO:HA	5:E:113:GLN:HB2	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1418:LEU:HD23	2:B:1222:ARG:HD3	1.91	0.52
1:A:211:PHE:HA	1:A:214:ILE:HD12	1.90	0.52
1:A:737:LEU:HB2	1:A:744:LYS:HD2	1.91	0.52
1:A:175:ARG:HH22	1:A:199:LEU:HD21	1.75	0.52
1:A:548:ASN:HD21	11:K:47:ARG:HE	1.56	0.52
1:A:667:GLY:HA2	1:A:670:ILE:HD12	1.91	0.52
1:A:63:ARG:H	1:A:74:MET:HE1	1.75	0.52
1:A:1311:VAL:HG21	1:A:1329:THR:CG2	2.39	0.52
2:B:800:GLN:HB3	10:J:52:THR:CG2	2.36	0.52
1:A:922:ASP:CG	1:A:925:LEU:HD12	2.29	0.52
4:D:119:ARG:HH21	4:D:120:GLU:HB2	1.74	0.52
1:A:811:GLN:H	1:A:811:GLN:NE2	2.08	0.52
1:A:28:ARG:HD3	1:A:238:CYS:SG	2.49	0.52
1:A:306:ASN:ND2	1:A:321:PRO:O	2.43	0.52
1:A:1377:THR:HG22	5:E:176:PRO:HB3	1.91	0.52
2:B:653:VAL:HG22	2:B:689:LEU:HB3	1.90	0.52
2:B:1001:PHE:HE1	3:C:178:PHE:HB3	1.75	0.52
1:A:357:PRO:HD2	2:B:833:TYR:CZ	2.45	0.52
3:C:71:PRO:HB2	3:C:133:ILE:HB	1.91	0.52
1:A:870:GLU:HB2	5:E:204:THR:HG22	1.92	0.52
1:A:1383:SER:O	1:A:1388:GLY:HA3	2.10	0.52
15:S:183:ASN:O	15:S:228:LEU:HG	2.10	0.52
15:S:238:PRO:CD	15:S:241:LEU:HB3	2.40	0.51
4:D:167:LEU:HB3	4:D:177:VAL:HG13	1.91	0.51
10:J:9:SER:HB2	10:J:45:CYS:HB2	1.92	0.51
1:A:1161:THR:HG21	1:A:1166:ASP:HB2	1.92	0.51
1:A:1161:THR:HG22	1:A:1163:ILE:H	1.75	0.51
5:E:202:SER:OG	5:E:204:THR:HG22	2.11	0.51
9:I:111:THR:HG22	9:I:113:ASP:H	1.76	0.51
1:A:839:ARG:HH22	1:A:1402:PHE:HA	1.76	0.51
1:A:1454:MET:O	1:A:1454:MET:HG3	2.08	0.51
1:A:537:ARG:HH12	8:H:25:ARG:HH21	1.58	0.51
12:L:38:LEU:HD11	12:L:49:LYS:H	1.74	0.51
15:S:163:GLU:HG2	15:S:215:LYS:HD3	1.93	0.51
7:G:119:LEU:HD22	7:G:132:SER:HB3	1.93	0.51
1:A:589:GLN:HG3	1:A:606:LEU:HD13	1.93	0.51
1:A:1199:ARG:HD2	15:S:245:ILE:HD11	1.92	0.51
2:B:1181:GLU:H	2:B:1188:LYS:HA	1.76	0.51
2:B:248:SER:H	2:B:418:LYS:HE2	1.76	0.51
2:B:498:THR:HB	2:B:537:LYS:O	2.10	0.51
1:A:37:PHE:HD1	1:A:52:GLY:HA3	1.76	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:65:HIS:CD2	11:K:66:PRO:HD2	2.46	0.50
1:A:256:GLN:HE22	2:B:918:ILE:HD13	1.75	0.50
1:A:1376:THR:HG23	5:E:212:ARG:HH22	1.77	0.50
1:A:503:GLN:NE2	6:F:90:ARG:HH21	2.08	0.50
4:D:40:HIS:HE1	7:G:75:ARG:HH21	1.57	0.50
1:A:378:GLU:OE2	1:A:387:ARG:NH2	2.44	0.50
1:A:1140:HIS:HB2	1:A:1276:VAL:O	2.11	0.50
2:B:1019:SER:HB2	15:S:292:PRO:HG3	1.92	0.50
3:C:11:ARG:HD3	3:C:21:ILE:HD11	1.93	0.50
5:E:23:VAL:HG13	5:E:78:LEU:HD22	1.94	0.50
7:G:111:THR:HB	7:G:114:LEU:HB2	1.93	0.50
1:A:47:ARG:HH11	1:A:255:SER:H	1.58	0.50
1:A:500:GLU:O	1:A:504:LEU:HB2	2.12	0.50
1:A:316:GLN:HE21	1:A:322:VAL:H	1.59	0.50
1:A:862:ASN:HA	5:E:174:GLN:HB3	1.93	0.50
1:A:1092:LYS:HD3	15:S:259:ALA:HB3	1.94	0.50
1:A:304:MET:HG2	2:B:1210:MET:HG2	1.92	0.50
1:A:1356:ILE:HG21	1:A:1363:VAL:HG23	1.94	0.50
2:B:641:GLU:HG3	2:B:652:LYS:NZ	2.26	0.50
3:C:36:VAL:HG21	3:C:251:LEU:HB2	1.94	0.50
7:G:83:LYS:NZ	7:G:150:CYS:H	2.10	0.50
7:G:138:THR:HG22	7:G:139:ILE:H	1.77	0.50
15:S:198:ARG:HA	15:S:201:ILE:HD12	1.94	0.49
3:C:69:LEU:O	10:J:6:ARG:HD2	2.11	0.49
11:K:7:PHE:HB2	11:K:11:LEU:HD22	1.93	0.49
2:B:1004:GLU:OE2	2:B:1006:ILE:HD11	2.11	0.49
1:A:56:PRO:HD2	1:A:57:ARG:HB2	1.93	0.49
1:A:784:LEU:HB3	1:A:786:HIS:HD2	1.78	0.49
1:A:1193:LEU:HB3	1:A:1240:CYS:HB2	1.95	0.49
9:I:28:GLU:HB3	9:I:35:VAL:HG12	1.93	0.49
1:A:53:LEU:HD22	1:A:54:ASN:H	1.76	0.49
1:A:84:ILE:HD11	1:A:86:LEU:HD23	1.95	0.49
1:A:34:LYS:N	20:A:1735:EPE:H101	2.28	0.49
1:A:1116:LEU:HB2	1:A:1308:THR:HG21	1.95	0.49
2:B:1013:ASN:ND2	2:B:1015:HIS:CD2	2.81	0.49
11:K:58:PHE:HB3	11:K:76:GLN:HB3	1.94	0.49
2:B:40:GLU:HG3	2:B:680:THR:HG22	1.95	0.48
2:B:195:CYS:HB3	2:B:782:LEU:HD22	1.94	0.48
2:B:706:GLN:HB2	2:B:709:ASP:HB3	1.94	0.48
3:C:111:THR:HB	3:C:147:LEU:HB2	1.94	0.48
6:F:116:ASP:HB3	6:F:119:ARG:HB2	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:5:ASP:HB2	11:K:8:GLU:HG3	1.94	0.48
1:A:1372:VAL:O	1:A:1376:THR:HB	2.13	0.48
2:B:583:ASN:HD21	2:B:628:THR:HG22	1.77	0.48
2:B:744:HIS:CD2	2:B:745:PRO:HD2	2.48	0.48
12:L:38:LEU:HD11	12:L:49:LYS:HG2	1.95	0.48
2:B:745:PRO:O	2:B:748:ILE:HG12	2.13	0.48
2:B:1182:CYS:SG	2:B:1185:CYS:HB2	2.53	0.48
4:D:23:ASN:HA	4:D:28:GLN:O	2.14	0.48
7:G:83:LYS:CD	7:G:83:LYS:H	2.27	0.48
1:A:31:SER:OG	1:A:83:HIS:HD2	1.97	0.48
1:A:335:ARG:HD2	2:B:1206:GLU:OE1	2.14	0.48
1:A:903:ASN:HD22	1:A:906:HIS:H	1.61	0.48
1:A:706:HIS:CD2	1:A:706:HIS:H	2.30	0.48
2:B:25:ILE:HD11	2:B:658:ILE:HD13	1.96	0.48
2:B:131:ASP:HA	2:B:164:LYS:HB3	1.96	0.48
2:B:237:VAL:HG22	2:B:257:LYS:HG2	1.94	0.48
5:E:28:TYR:HA	5:E:64:PRO:HA	1.95	0.48
15:S:244:LYS:O	15:S:248:ILE:HG12	2.14	0.48
2:B:114:PRO:O	2:B:118:ARG:HG3	2.14	0.48
2:B:356:LEU:HA	2:B:360:PHE:HB3	1.96	0.48
1:A:68:GLN:NE2	1:A:70:CYS:H	2.10	0.48
1:A:243:PRO:HB2	1:A:245:PRO:HD2	1.96	0.48
1:A:335:ARG:HA	1:A:339:ASN:HD22	1.79	0.48
1:A:768:GLN:CG	1:A:816:HIS:HA	2.44	0.48
1:A:421:ALA:HA	1:A:424:ILE:HD11	1.96	0.47
3:C:171:GLY:C	3:C:173:ALA:H	2.17	0.47
3:C:10:ILE:HD12	11:K:108:GLU:HB3	1.96	0.47
3:C:245:VAL:HG12	11:K:102:LYS:HG3	1.96	0.47
4:D:194:LEU:HD22	7:G:86:VAL:HG11	1.96	0.47
11:K:65:HIS:CD2	11:K:67:PHE:H	2.29	0.47
1:A:885:THR:HG23	1:A:1024:SER:HB2	1.95	0.47
3:C:46:ILE:HG13	3:C:72:LEU:HD11	1.96	0.47
3:C:249:ASP:HA	3:C:252:GLN:HE21	1.79	0.47
1:A:14:VAL:N	1:A:1432:GLN:HE22	2.04	0.47
1:A:824:LEU:HD21	15:S:289:ALA:HB2	1.96	0.47
2:B:996:ARG:NH1	3:C:173:ALA:HB1	2.30	0.47
4:D:56:ARG:HD3	4:D:149:THR:HA	1.96	0.47
15:S:173:HIS:CE1	15:S:219:ALA:HB1	2.50	0.47
15:S:223:ILE:HG22	15:S:225:PRO:HD2	1.97	0.47
1:A:92:HIS:HD2	1:A:94:GLY:N	2.12	0.47
1:A:172:PRO:HB3	1:A:185:TRP:CE2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:856:THR:HB	1:A:865:GLN:HB2	1.97	0.47
1:A:1293:SER:HB2	1:A:1294:PRO:HD2	1.97	0.47
3:C:46:ILE:HA	3:C:159:ALA:HA	1.96	0.47
8:H:4:THR:HA	8:H:60:ALA:HB2	1.95	0.47
15:S:180:SER:O	15:S:184:LYS:HB2	2.14	0.47
15:S:231:CYS:C	15:S:233:ALA:H	2.18	0.47
2:B:238:ALA:HB2	2:B:385:LEU:HB2	1.97	0.47
2:B:684:LEU:HA	2:B:689:LEU:HD12	1.97	0.47
15:S:166:HIS:CD2	15:S:167:PRO:HD3	2.49	0.47
3:C:46:ILE:HG23	3:C:157:CYS:HB3	1.97	0.47
4:D:13:ARG:H	4:D:13:ARG:HE	1.63	0.47
9:I:59:VAL:HG12	9:I:61:ASP:H	1.80	0.47
1:A:382:PRO:HD3	6:F:104:ASN:OD1	2.15	0.47
1:A:1345:ARG:NH1	1:A:1373:ASP:OD1	2.47	0.47
2:B:1100:ASP:HA	2:B:1103:ILE:HG22	1.96	0.47
3:C:181:ASP:OD2	3:C:186:LEU:HB2	2.15	0.47
7:G:49:LEU:HD21	7:G:77:VAL:HG23	1.96	0.47
1:A:435:HIS:O	1:A:437:MET:HG3	2.16	0.46
2:B:599:THR:O	2:B:603:LEU:HB2	2.15	0.46
2:B:1082:MET:HA	3:C:189:THR:HA	1.97	0.46
10:J:1:MET:N	10:J:54:VAL:O	2.48	0.46
10:J:3:VAL:HG21	10:J:18:TRP:CB	2.45	0.46
1:A:1113:THR:HG22	1:A:1113:THR:O	2.15	0.46
1:A:343:LYS:HE2	2:B:1156:ASP:OD2	2.15	0.46
1:A:452:LYS:HG3	2:B:1141:HIS:CE1	2.50	0.46
2:B:693:ILE:HG23	2:B:697:GLU:HB3	1.97	0.46
5:E:43:LYS:O	5:E:47:CYS:HB2	2.16	0.46
10:J:48:ARG:NE	10:J:49:MET:HE2	2.29	0.46
1:A:562:THR:O	1:A:576:GLN:NE2	2.48	0.46
5:E:171:LYS:H	5:E:174:GLN:HG3	1.80	0.46
2:B:641:GLU:HG3	2:B:652:LYS:HZ3	1.79	0.46
3:C:18:VAL:CG2	11:K:109:TRP:HZ3	2.28	0.46
5:E:176:PRO:O	5:E:212:ARG:HA	2.16	0.46
1:A:2:VAL:HG12	2:B:1195:HIS:CD2	2.51	0.46
2:B:827:ILE:HD12	2:B:1086:PHE:HD2	1.81	0.46
1:A:942:PHE:CB	19:A:1734:ACT:H1	2.46	0.46
2:B:1012:ILE:HG21	2:B:1092:TYR:OH	2.16	0.46
6:F:118:LEU:O	6:F:122:MET:HG3	2.16	0.46
1:A:1159:ARG:HD2	1:A:1174:PHE:HE2	1.76	0.46
2:B:583:ASN:HD21	2:B:628:THR:CG2	2.29	0.46
2:B:1147:LEU:HD22	2:B:1151:LEU:HD22	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:6:PRO:HA	3:C:24:ASN:HB3	1.97	0.46
3:C:177:GLU:HB2	3:C:231:ASN:HB3	1.98	0.46
11:K:10:PHE:CD1	11:K:11:LEU:HD13	2.51	0.46
1:A:1378:GLN:HG2	5:E:177:ARG:HH12	1.81	0.45
5:E:147:HIS:CD2	5:E:149:LEU:H	2.33	0.45
1:A:800:VAL:HA	1:A:812:GLU:HG2	1.98	0.45
2:B:619:ILE:HG21	9:I:62:ILE:HA	1.99	0.45
3:C:114:TYR:CG	3:C:140:ASN:HB3	2.52	0.45
3:C:142:VAL:HG21	10:J:5:VAL:HG13	1.99	0.45
10:J:7:CYS:HA	10:J:49:MET:HE3	1.97	0.45
1:A:1173:HIS:HB3	1:A:1227:ILE:HD13	1.97	0.45
1:A:1449:SER:HA	1:A:1452:LYS:HD2	1.98	0.45
1:A:993:LEU:HD22	1:A:1046:LEU:HD22	1.98	0.45
9:I:106:CYS:SG	9:I:108:HIS:HB3	2.57	0.45
1:A:225:ASN:HD22	1:A:227:VAL:H	1.64	0.45
2:B:709:ASP:O	2:B:710:LEU:HD23	2.17	0.45
3:C:18:VAL:HG22	11:K:109:TRP:HZ3	1.81	0.45
3:C:175:ALA:HB2	10:J:10:CYS:HB2	1.98	0.45
6:F:130:ILE:HB	6:F:148:VAL:HG21	1.99	0.45
1:A:1116:LEU:N	1:A:1308:THR:HG22	2.24	0.45
2:B:558:LEU:HD23	2:B:596:LEU:HD11	1.98	0.45
15:S:157:TYR:CE2	15:S:174:THR:HA	2.51	0.45
1:A:75:ASN:O	1:A:76:GLU:HB2	2.17	0.45
1:A:1345:ARG:HG3	1:A:1376:THR:HG21	1.99	0.45
8:H:82:PRO:O	8:H:84:ALA:N	2.50	0.45
1:A:982:THR:HG22	1:A:984:LYS:H	1.82	0.45
12:L:68:GLU:C	12:L:70:ARG:H	2.20	0.45
1:A:65:LEU:O	1:A:67:CYS:N	2.50	0.45
1:A:782:ARG:HD3	1:A:789:LYS:HG3	1.99	0.45
1:A:855:THR:CG2	1:A:857:ARG:HG3	2.47	0.45
1:A:1089:VAL:HG21	15:S:261:ILE:HD11	1.98	0.45
5:E:100:ILE:HG23	5:E:105:PHE:HB2	1.99	0.45
1:A:56:PRO:HB2	1:A:57:ARG:HB2	1.99	0.45
2:B:345:LYS:O	2:B:347:LYS:HG2	2.16	0.45
2:B:603:LEU:HD22	2:B:608:ASP:HB2	1.98	0.45
2:B:986:GLN:OE1	2:B:1022:THR:HG21	2.17	0.45
3:C:204:SER:O	3:C:207:CYS:HB2	2.17	0.45
5:E:181:ALA:HA	5:E:186:LEU:HD21	1.99	0.45
8:H:6:PHE:HD1	8:H:130:ARG:HG2	1.82	0.45
1:A:549:MET:HB3	1:A:577:ILE:CD1	2.47	0.44
2:B:996:ARG:HH12	3:C:173:ALA:HB1	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:73:ALA:HB2	6:F:143:PHE:CZ	2.53	0.44
1:A:41:MET:HB3	1:A:42:ASP:H	1.33	0.44
1:A:421:ALA:HA	1:A:424:ILE:CD1	2.47	0.44
1:A:1011:GLN:O	1:A:1015:VAL:HG23	2.17	0.44
4:D:130:LEU:HD21	4:D:141:LEU:HG	1.99	0.44
5:E:78:LEU:HD11	5:E:109:ILE:HD12	1.99	0.44
1:A:37:PHE:CD1	1:A:52:GLY:HA3	2.52	0.44
2:B:825:VAL:HG22	2:B:1010:LEU:HB3	1.99	0.44
2:B:1107:ALA:O	2:B:1108:ARG:HB2	2.18	0.44
7:G:1:MET:HB3	7:G:1:MET:HE3	1.68	0.44
8:H:79:TRP:CH2	8:H:82:PRO:HD3	2.53	0.44
8:H:129:TYR:CE1	8:H:130:ARG:HG3	2.53	0.44
1:A:69:THR:HB	2:B:1174:LYS:NZ	2.32	0.44
7:G:27:LYS:HE2	7:G:54:ILE:HB	1.99	0.44
12:L:48:CYS:HB3	12:L:51:CYS:O	2.17	0.44
2:B:652:LYS:HD3	2:B:688:GLY:O	2.17	0.44
1:A:55:ASP:HA	1:A:56:PRO:HD3	1.74	0.44
1:A:225:ASN:ND2	1:A:228:PHE:H	2.16	0.44
1:A:1333:ILE:O	1:A:1337:GLU:HG3	2.17	0.44
2:B:600:LEU:HB3	2:B:615:MET:SD	2.57	0.44
5:E:111:VAL:HG12	5:E:137:GLU:HG3	1.98	0.44
1:A:36:ARG:NH2	20:A:1735:EPE:O3S	2.51	0.44
1:A:41:MET:CE	1:A:47:ARG:HG2	2.48	0.44
1:A:868:TYR:HD2	1:A:1058:VAL:CG2	2.23	0.44
5:E:167:ARG:HA	5:E:167:ARG:HD3	1.81	0.44
1:A:1170:ILE:O	1:A:1174:PHE:HB2	2.17	0.44
2:B:195:CYS:SG	2:B:197:PHE:HB2	2.58	0.44
2:B:370:PHE:CD2	2:B:373:ARG:HD2	2.52	0.44
2:B:408:LEU:HD21	2:B:545:ILE:HD13	1.99	0.44
9:I:84:VAL:HG23	9:I:104:LEU:HD11	1.98	0.44
1:A:203:SER:OG	1:A:206:GLU:HB2	2.17	0.44
1:A:381:THR:HG23	1:A:383:TYR:H	1.81	0.44
1:A:1161:THR:HG22	1:A:1163:ILE:N	2.33	0.44
1:A:1285:MET:HG3	1:A:1307:GLU:OE2	2.18	0.44
1:A:1448:GLU:HG3	1:A:1452:LYS:NZ	2.33	0.44
2:B:1001:PHE:CE1	3:C:178:PHE:HB3	2.53	0.44
7:G:83:LYS:HD2	7:G:83:LYS:N	2.32	0.44
1:A:402:ALA:HA	1:A:434:ARG:HA	1.99	0.43
1:A:994:GLN:HE22	1:A:1023:ARG:HE	1.65	0.43
1:A:1035:TYR:N	1:A:1035:TYR:CD2	2.86	0.43
2:B:914:LYS:HE3	2:B:937:ALA:HB1	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1114:LEU:HG	2:B:1202:LEU:HD11	2.00	0.43
6:F:74:ILE:HB	6:F:144:GLU:HG2	1.99	0.43
7:G:9:LEU:HD23	7:G:30:LEU:HD12	1.99	0.43
2:B:895:ASP:OD1	2:B:895:ASP:N	2.49	0.43
9:I:101:PHE:HE1	9:I:112:SER:HB3	1.83	0.43
1:A:265:LYS:HG2	1:A:303:TYR:HB2	2.00	0.43
1:A:638:GLY:HA3	1:A:640:GLN:HE22	1.82	0.43
1:A:738:LYS:HB2	1:A:740:LEU:HG	2.00	0.43
3:C:6:PRO:CB	3:C:25:VAL:HG13	2.48	0.43
10:J:28:ASP:HB3	10:J:30:LEU:HD12	2.00	0.43
12:L:60:ARG:HG2	12:L:61:THR:H	1.83	0.43
1:A:444:PHE:HE2	1:A:470:LEU:HD22	1.83	0.43
1:A:901:LEU:HG	1:A:926:GLN:HE21	1.83	0.43
1:A:1402:PHE:CE2	1:A:1403:GLU:HG3	2.52	0.43
1:A:256:GLN:HE22	2:B:918:ILE:HG21	1.84	0.43
5:E:170:LEU:HD22	5:E:174:GLN:HB2	2.01	0.43
15:S:198:ARG:HH21	15:S:231:CYS:H	1.66	0.43
1:A:55:ASP:CB	1:A:58:LEU:HG	2.44	0.43
1:A:982:THR:HB	1:A:985:ASP:H	1.82	0.43
1:A:1141:THR:OG1	1:A:1205:LYS:HG2	2.18	0.43
3:C:169:LYS:HZ3	12:L:70:ARG:HG3	1.82	0.43
6:F:100:GLN:HE22	7:G:61:ILE:HG12	1.84	0.43
11:K:63:VAL:HG23	11:K:63:VAL:O	2.18	0.43
1:A:55:ASP:HB2	1:A:58:LEU:CG	2.46	0.43
1:A:691:LEU:O	1:A:694:THR:HB	2.18	0.43
1:A:1081:LEU:HD13	1:A:1099:PRO:HD3	2.00	0.43
7:G:83:LYS:HZ2	7:G:150:CYS:H	1.67	0.43
1:A:471:ASN:OD1	1:A:650:GLN:NE2	2.51	0.43
2:B:324:ILE:HG13	2:B:329:THR:HG22	2.01	0.43
2:B:706:GLN:HB2	2:B:709:ASP:CB	2.49	0.43
2:B:889:THR:HG22	2:B:891:ASP:OD2	2.18	0.43
10:J:6:ARG:H	10:J:14:VAL:H	1.66	0.43
1:A:598:LEU:HD21	8:H:39:THR:HG21	2.01	0.43
1:A:1062:GLU:HB3	1:A:1064:VAL:HG23	2.01	0.43
13:N:4:DT:H2'	13:N:5:DA:C8	2.53	0.43
1:A:1387:HIS:HA	1:A:1391:ARG:HD3	2.01	0.42
3:C:262:LEU:HB3	11:K:88:LYS:HE2	2.01	0.42
7:G:90:THR:HG23	7:G:142:ARG:HD3	2.01	0.42
8:H:109:LYS:HB3	8:H:110:ASP:H	1.48	0.42
1:A:225:ASN:HD22	1:A:228:PHE:H	1.66	0.42
1:A:380:VAL:HG12	1:A:428:TYR:HA	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1412:ALA:HA	1:A:1417:GLU:HG3	2.02	0.42
1:A:1444:MET:HE1	6:F:135:ARG:HB2	2.01	0.42
1:A:847:ASP:OD2	1:A:858:ASN:HB2	2.19	0.42
1:A:857:ARG:HD3	1:A:861:GLY:O	2.19	0.42
2:B:918:ILE:HB	2:B:935:ARG:HH21	1.84	0.42
3:C:242:GLN:HB3	3:C:246:ARG:HE	1.84	0.42
4:D:67:ARG:HG3	4:D:68:ARG:N	2.34	0.42
1:A:588:LEU:HB3	1:A:607:ILE:HD12	2.01	0.42
15:S:202:ILE:HD12	15:S:227:PHE:O	2.19	0.42
2:B:238:ALA:HB3	2:B:256:VAL:HB	2.02	0.42
5:E:147:HIS:HB3	5:E:150:VAL:HG23	2.01	0.42
1:A:84:ILE:HG23	1:A:241:VAL:CG2	2.50	0.42
1:A:287:HIS:HA	1:A:290:GLU:CD	2.40	0.42
1:A:670:ILE:HD13	2:B:1067:ARG:CZ	2.49	0.42
2:B:521:LEU:HD22	2:B:633:VAL:HG12	2.02	0.42
2:B:918:ILE:HB	2:B:935:ARG:HE	1.84	0.42
3:C:22:LEU:O	3:C:227:THR:HA	2.19	0.42
12:L:60:ARG:HG2	12:L:61:THR:N	2.35	0.42
1:A:885:THR:HG22	1:A:893:PHE:HE1	1.85	0.42
1:A:1120:LEU:HD11	1:A:1134:ILE:HG13	2.02	0.42
2:B:582:VAL:HG22	2:B:626:ILE:HB	2.02	0.42
2:B:226:PHE:CZ	2:B:398:ARG:HG3	2.54	0.42
2:B:969:ARG:NH1	3:C:61:GLU:OE1	2.53	0.42
2:B:998:ASP:OD1	3:C:35:ARG:NH2	2.47	0.42
3:C:82:TYR:HB3	3:C:84:ARG:HG2	2.02	0.42
3:C:91:HIS:HA	3:C:95:CYS:SG	2.60	0.42
10:J:24:LEU:HD23	10:J:24:LEU:HA	1.89	0.42
1:A:871:ASP:HB3	5:E:204:THR:HG23	2.01	0.42
1:A:1116:LEU:HB2	1:A:1308:THR:CG2	2.50	0.42
1:A:1349:TYR:HA	1:A:1372:VAL:HG21	2.02	0.42
2:B:99:LYS:O	2:B:101:MET:HG2	2.20	0.42
2:B:942:ARG:HH11	2:B:942:ARG:HB3	1.84	0.42
3:C:6:PRO:HB3	3:C:25:VAL:HG13	2.02	0.42
2:B:291:ILE:HD11	2:B:375:ALA:CB	2.49	0.42
4:D:67:ARG:HH12	4:D:132:GLN:CD	2.22	0.42
8:H:23:VAL:HG12	8:H:24:CYS:N	2.35	0.42
9:I:69:PRO:HB2	9:I:85:PHE:CZ	2.55	0.42
10:J:43:ARG:O	10:J:47:ARG:HG3	2.19	0.42
15:S:185:VAL:O	15:S:189:ASP:N	2.53	0.42
11:K:18:LYS:HE3	11:K:38:GLU:OE2	2.20	0.41
1:A:614:PHE:HB3	8:H:122:LEU:HD21	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:5:THR:HG21	7:G:74:TYR:OH	2.20	0.41
5:E:7:ARG:O	5:E:11:ARG:HG3	2.20	0.41
5:E:19:VAL:O	5:E:23:VAL:HG23	2.20	0.41
7:G:81:PRO:HB3	7:G:106:MET:HE2	2.02	0.41
11:K:21:ILE:HG12	11:K:33:ILE:HG12	2.03	0.41
2:B:1013:ASN:ND2	2:B:1015:HIS:HD2	2.18	0.41
11:K:51:LEU:CD1	11:K:59:ALA:HB3	2.49	0.41
15:S:284:LEU:HB2	15:S:296:PHE:HE1	1.86	0.41
1:A:347:PHE:H	2:B:1107:ALA:HA	1.86	0.41
1:A:1426:GLU:H	1:A:1426:GLU:HG2	1.38	0.41
1:A:1445:ILE:HG13	7:G:61:ILE:HD11	2.01	0.41
7:G:14:HIS:HD2	7:G:16:SER:HB2	1.84	0.41
7:G:83:LYS:HG3	7:G:149:GLY:HA2	2.01	0.41
1:A:49:LYS:H	1:A:49:LYS:HG3	1.58	0.41
2:B:46:GLN:H	2:B:46:GLN:HG3	1.70	0.41
3:C:11:ARG:NH1	3:C:229:TYR:HD2	2.18	0.41
1:A:1441:PHE:CZ	6:F:89:GLU:HA	2.56	0.41
2:B:35:SER:O	2:B:39:ARG:HG3	2.20	0.41
2:B:277:LYS:HG2	2:B:278:GLN:H	1.86	0.41
2:B:899:ILE:HG21	2:B:949:VAL:HG21	2.02	0.41
5:E:124:VAL:HG13	5:E:132:ILE:HB	2.02	0.41
10:J:1:MET:H1	10:J:56:LEU:H	1.67	0.41
10:J:1:MET:H2	10:J:55:ASP:HA	1.85	0.41
1:A:886:ILE:HD12	1:A:943:LEU:HB3	2.03	0.41
2:B:992:ILE:HD11	11:K:66:PRO:HB2	2.01	0.41
7:G:9:LEU:HD22	7:G:34:VAL:HG23	2.02	0.41
1:A:92:HIS:CD2	1:A:94:GLY:H	2.36	0.41
1:A:711:ARG:HA	9:I:97:MET:HE1	2.02	0.41
4:D:123:LEU:HD11	4:D:150:ASN:HD21	1.85	0.41
1:A:54:ASN:HA	1:A:247:ARG:HH22	1.86	0.41
1:A:70:CYS:HA	2:B:1174:LYS:HG2	2.02	0.41
1:A:514:PRO:HG2	1:A:1067:LEU:HD21	2.02	0.41
1:A:650:GLN:HB2	1:A:654:ASN:ND2	2.36	0.41
2:B:802:PRO:HA	2:B:822:ASN:HD21	1.85	0.41
3:C:142:VAL:HG22	10:J:15:GLY:HA3	2.01	0.41
3:C:238:ILE:HG23	3:C:242:GLN:HB2	2.02	0.41
11:K:109:TRP:O	11:K:112:GLN:HB2	2.21	0.41
15:S:238:PRO:HD2	15:S:241:LEU:HB3	2.02	0.41
2:B:710:LEU:HD22	2:B:732:SER:O	2.21	0.41
3:C:120:ILE:HD13	3:C:124:LEU:HD11	2.03	0.41
13:N:5:DA:H2''	13:N:6:DA:C8	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:S:232:ASP:CG	15:S:235:ASP:HB3	2.41	0.41
1:A:56:PRO:HG2	1:A:57:ARG:HH21	1.85	0.40
1:A:69:THR:HB	2:B:1174:LYS:HZ1	1.85	0.40
1:A:92:HIS:HE1	2:B:1210:MET:O	2.02	0.40
3:C:123:ASN:ND2	3:C:125:MET:H	2.19	0.40
9:I:59:VAL:C	9:I:61:ASP:N	2.75	0.40
11:K:32:VAL:HG22	11:K:74:ARG:HG3	2.02	0.40
1:A:579:SER:HB3	1:A:611:GLN:HA	2.03	0.40
1:A:961:ARG:HH21	1:A:1025:ARG:HH22	1.69	0.40
1:A:1082:ASN:ND2	1:A:1083:THR:H	2.20	0.40
1:A:1155:ASP:OD1	1:A:1162:VAL:HG23	2.21	0.40
5:E:190:LEU:HD13	5:E:214:CYS:HB2	2.03	0.40
8:H:63:LEU:HB2	8:H:90:ALA:HB2	2.04	0.40
10:J:36:LEU:HD13	10:J:47:ARG:HB3	2.02	0.40
12:L:61:THR:HG21	12:L:63:ARG:HG2	2.04	0.40
1:A:332:LYS:H	1:A:337:ARG:CB	2.35	0.40
2:B:259:TYR:HB2	2:B:268:THR:HG23	2.04	0.40
2:B:277:LYS:H	2:B:277:LYS:HD3	1.87	0.40
2:B:995:ARG:HB3	2:B:997:GLU:OE2	2.21	0.40
4:D:130:LEU:O	4:D:134:THR:HB	2.21	0.40
15:S:262:GLU:H	15:S:262:GLU:HG3	1.62	0.40
1:A:743:VAL:O	1:A:747:VAL:HG23	2.21	0.40
1:A:1121:GLU:HB3	1:A:1124:HIS:CD2	2.56	0.40
2:B:634:TYR:CD1	2:B:692:TYR:HB3	2.57	0.40
2:B:1117:GLN:NE2	2:B:1199:ALA:HB2	2.37	0.40
2:B:875:GLU:O	2:B:877:PRO:HD3	2.20	0.40
5:E:156:LEU:HD11	5:E:197:LYS:HB2	2.03	0.40
5:E:178:ILE:HB	5:E:212:ARG:HD3	2.04	0.40
6:F:83:PRO:HG2	6:F:84:TYR:CD1	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	1418/1733 (82%)	1255 (88%)	105 (7%)	58 (4%)	3	17
2	B	1090/1224 (89%)	963 (88%)	92 (8%)	35 (3%)	4	22
3	C	264/318 (83%)	238 (90%)	17 (6%)	9 (3%)	3	22
4	D	173/221 (78%)	153 (88%)	14 (8%)	6 (4%)	3	21
5	E	212/215 (99%)	202 (95%)	8 (4%)	2 (1%)	17	48
6	F	82/155 (53%)	77 (94%)	4 (5%)	1 (1%)	13	42
7	G	169/171 (99%)	154 (91%)	12 (7%)	3 (2%)	8	35
8	H	129/146 (88%)	101 (78%)	18 (14%)	10 (8%)	1	6
9	I	117/122 (96%)	98 (84%)	16 (14%)	3 (3%)	5	27
10	J	63/70 (90%)	54 (86%)	6 (10%)	3 (5%)	2	14
11	K	112/120 (93%)	107 (96%)	5 (4%)	0	100	100
12	L	44/70 (63%)	27 (61%)	8 (18%)	9 (20%)	0	0
15	S	162/178 (91%)	129 (80%)	20 (12%)	13 (8%)	1	6
All	All	4035/4743 (85%)	3558 (88%)	325 (8%)	152 (4%)	3	19

All (152) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4	GLN
1	A	42	ASP
1	A	65	LEU
1	A	66	LYS
1	A	68	GLN
1	A	69	THR
1	A	74	MET
1	A	254	GLU
1	A	311	GLN
1	A	314	ALA
1	A	410	GLY
1	A	568	PRO
1	A	672	ASP
1	A	708	MET
1	A	709	THR
1	A	1092	LYS
1	A	1122	PRO
1	A	1405	THR
2	B	245	GLU
2	B	249	ARG

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Mol	Chain	Res	Type
2	B	392	ARG
2	B	643	ASP
2	B	731	VAL
2	B	734	HIS
2	B	737	THR
2	B	883	LEU
2	B	1066	SER
2	B	1181	GLU
3	C	90	ASP
3	C	91	HIS
3	C	173	ALA
3	C	215	GLU
4	D	14	ARG
4	D	53	SER
4	D	199	ASN
5	E	104	ASN
7	G	63	PRO
8	H	83	GLN
8	H	139	ASN
9	I	55	THR
9	I	91	ARG
12	L	35	SER
12	L	56	LEU
12	L	59	ALA
12	L	60	ARG
15	S	208	SER
15	S	238	PRO
1	A	43	GLU
1	A	57	ARG
1	A	76	GLU
1	A	166	GLY
1	A	250	ILE
1	A	567	LYS
1	A	593	GLU
1	A	704	ALA
1	A	775	ILE
1	A	1173	HIS
1	A	1256	GLU
2	B	67	SER
2	B	364	ILE
2	B	367	LEU
2	B	629	ASP

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Mol	Chain	Res	Type
2	B	644	GLU
2	B	709	ASP
2	B	867	GLY
2	B	879	ARG
2	B	881	ASN
2	B	1046	PRO
3	C	149	LYS
3	C	227	THR
4	D	16	LYS
4	D	30	GLY
5	E	3	GLN
8	H	18	GLY
10	J	6	ARG
12	L	45	ALA
15	S	166	HIS
15	S	222	ASP
15	S	223	ILE
15	S	237	ALA
15	S	239	ALA
1	A	54	ASN
1	A	332	LYS
1	A	423	ASP
1	A	525	GLN
1	A	543	LEU
1	A	885	THR
1	A	1403	GLU
2	B	468	GLU
2	B	475	SER
2	B	869	SER
2	B	882	THR
2	B	1185	CYS
2	B	1187	ASN
3	C	110	THR
3	C	214	ASN
7	G	133	SER
7	G	134	GLU
8	H	90	ALA
8	H	128	ASN
8	H	131	ASN
12	L	69	ALA
15	S	207	ILE
1	A	5	GLN

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Mol	Chain	Res	Type
1	A	35	ILE
1	A	56	PRO
1	A	62	ASP
1	A	399	HIS
1	A	1255	GLU
1	A	1437	GLY
2	B	478	GLY
6	F	73	ALA
8	H	17	PRO
8	H	60	ALA
8	H	109	LYS
9	I	60	GLN
10	J	2	ILE
12	L	33	GLU
15	S	227	PHE
15	S	295	THR
1	A	71	GLN
1	A	253	ASN
1	A	322	VAL
1	A	331	GLY
1	A	424	ILE
1	A	846	GLU
1	A	1082	ASN
2	B	792	MET
2	B	907	GLY
2	B	1097	HIS
4	D	119	ARG
8	H	35	GLN
10	J	64	ASN
12	L	26	THR
12	L	46	VAL
15	S	167	PRO
15	S	232	ASP
1	A	705	LYS
1	A	958	VAL
2	B	248	SER
2	B	711	GLU
2	B	1108	ARG
15	S	261	ILE
1	A	3	GLY
1	A	283	GLY
2	B	1171	VAL

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Mol	Chain	Res	Type
1	A	55	ASP
2	B	870	ILE
1	A	165	GLY
1	A	310	GLY
3	C	240	VAL
1	A	312	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 X-ray entries followed by that with respect to entries of similar resolution.

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	1246/1520 (82%)	1073 (86%)	173 (14%)	3 16
2	B	962/1061 (91%)	832 (86%)	130 (14%)	4 16
3	C	234/274 (85%)	199 (85%)	35 (15%)	3 13
4	D	157/200 (78%)	120 (76%)	37 (24%)	1 3
5	E	196/197 (100%)	178 (91%)	18 (9%)	9 31
6	F	74/137 (54%)	69 (93%)	5 (7%)	16 44
7	G	152/152 (100%)	125 (82%)	27 (18%)	2 8
8	H	117/128 (91%)	103 (88%)	14 (12%)	5 20
9	I	113/116 (97%)	90 (80%)	23 (20%)	1 4
10	J	60/65 (92%)	48 (80%)	12 (20%)	1 5
11	K	99/102 (97%)	87 (88%)	12 (12%)	5 20
12	L	40/57 (70%)	30 (75%)	10 (25%)	0 2
15	S	141/153 (92%)	117 (83%)	24 (17%)	2 9
All	All	3591/4162 (86%)	3071 (86%)	520 (14%)	3 14

All (520) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	LEU
1	A	18	GLN

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Mol	Chain	Res	Type
1	A	23	SER
1	A	28	ARG
1	A	36	ARG
1	A	39	GLU
1	A	40	THR
1	A	41	MET
1	A	47	ARG
1	A	53	LEU
1	A	55	ASP
1	A	62	ASP
1	A	64	ASN
1	A	68	GLN
1	A	69	THR
1	A	70	CYS
1	A	74	MET
1	A	84	ILE
1	A	93	VAL
1	A	100	LYS
1	A	113	LEU
1	A	120	GLU
1	A	121	LEU
1	A	144	THR
1	A	147	VAL
1	A	149	GLU
1	A	152	VAL
1	A	157	ASP
1	A	186	LYS
1	A	195	ASP
1	A	196	GLU
1	A	199	LEU
1	A	208	LEU
1	A	225	ASN
1	A	232	GLU
1	A	256	GLN
1	A	265	LYS
1	A	302	THR
1	A	313	GLN
1	A	318	SER
1	A	323	LYS
1	A	324	SER
1	A	335	ARG
1	A	344	ARG

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Mol	Chain	Res	Type
1	A	351	THR
1	A	353	ILE
1	A	363	GLN
1	A	381	THR
1	A	383	TYR
1	A	385	ILE
1	A	386	ASP
1	A	406	ILE
1	A	407	ARG
1	A	408	ASP
1	A	409	SER
1	A	434	ARG
1	A	443	LEU
1	A	445	ASN
1	A	446	ARG
1	A	452	LYS
1	A	454	SER
1	A	461	LYS
1	A	470	LEU
1	A	472	LEU
1	A	474	VAL
1	A	475	THR
1	A	476	SER
1	A	504	LEU
1	A	505	CYS
1	A	518	LYS
1	A	523	ILE
1	A	537	ARG
1	A	541	ILE
1	A	544	ASP
1	A	549	MET
1	A	567	LYS
1	A	571	LEU
1	A	577	ILE
1	A	595	THR
1	A	618	GLU
1	A	622	VAL
1	A	625	SER
1	A	636	GLU
1	A	644	LYS
1	A	666	ILE
1	A	691	LEU

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Mol	Chain	Res	Type
1	A	693	VAL
1	A	734	GLU
1	A	738	LYS
1	A	739	ASP
1	A	755	PHE
1	A	768	GLN
1	A	769	SER
1	A	774	ARG
1	A	782	ARG
1	A	801	GLU
1	A	806	ARG
1	A	811	GLN
1	A	821	ARG
1	A	830	LYS
1	A	831	THR
1	A	833	GLU
1	A	834	THR
1	A	838	GLN
1	A	855	THR
1	A	878	ILE
1	A	896	ARG
1	A	905	ASP
1	A	915	SER
1	A	918	GLU
1	A	919	ILE
1	A	927	VAL
1	A	929	LEU
1	A	941	LYS
1	A	977	LYS
1	A	983	ILE
1	A	1015	VAL
1	A	1024	SER
1	A	1058	VAL
1	A	1064	VAL
1	A	1067	LEU
1	A	1077	THR
1	A	1081	LEU
1	A	1082	ASN
1	A	1083	THR
1	A	1084	PHE
1	A	1085	HIS
1	A	1094	VAL

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Mol	Chain	Res	Type
1	A	1116	LEU
1	A	1118	VAL
1	A	1129	GLU
1	A	1132	LYS
1	A	1142	THR
1	A	1167	GLU
1	A	1170	ILE
1	A	1172	LEU
1	A	1176	LEU
1	A	1195	LEU
1	A	1205	LYS
1	A	1215	ARG
1	A	1237	ILE
1	A	1242	VAL
1	A	1255	GLU
1	A	1258	HIS
1	A	1259	MET
1	A	1264	GLU
1	A	1274	ARG
1	A	1286	LYS
1	A	1288	ASP
1	A	1295	THR
1	A	1297	GLU
1	A	1308	THR
1	A	1309	ASP
1	A	1317	MET
1	A	1325	THR
1	A	1329	THR
1	A	1330	ASN
1	A	1333	ILE
1	A	1334	ASP
1	A	1345	ARG
1	A	1366	ARG
1	A	1370	LEU
1	A	1376	THR
1	A	1382	THR
1	A	1386	ARG
1	A	1393	ASN
1	A	1400	CYS
1	A	1422	ARG
1	A	1426	GLU
1	A	1442	ASP

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Mol	Chain	Res	Type
1	A	1444	MET
1	A	1445	ILE
1	A	1454	MET
2	B	21	GLU
2	B	35	SER
2	B	40	GLU
2	B	43	LEU
2	B	46	GLN
2	B	59	LEU
2	B	68	THR
2	B	70	ILE
2	B	90	ILE
2	B	106	ASP
2	B	109	THR
2	B	134	LYS
2	B	175	ARG
2	B	183	GLU
2	B	185	THR
2	B	186	GLU
2	B	218	SER
2	B	240	ILE
2	B	241	ARG
2	B	249	ARG
2	B	250	PHE
2	B	251	ILE
2	B	261	ARG
2	B	272	THR
2	B	277	LYS
2	B	287	ARG
2	B	294	ASP
2	B	298	LEU
2	B	334	ILE
2	B	349	ILE
2	B	354	ASP
2	B	361	LEU
2	B	365	THR
2	B	367	LEU
2	B	387	LEU
2	B	388	CYS
2	B	391	ASP
2	B	393	LYS
2	B	396	ASP

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Mol	Chain	Res	Type
2	B	398	ARG
2	B	401	PHE
2	B	403	LYS
2	B	406	LEU
2	B	425	THR
2	B	426	LYS
2	B	446	LEU
2	B	458	LYS
2	B	465	ASN
2	B	466	TRP
2	B	468	GLU
2	B	469	GLN
2	B	479	VAL
2	B	485	ARG
2	B	493	SER
2	B	507	LYS
2	B	510	LYS
2	B	513	GLN
2	B	547	VAL
2	B	549	THR
2	B	559	SER
2	B	567	GLU
2	B	576	ASP
2	B	601	ARG
2	B	603	LEU
2	B	604	ARG
2	B	609	ILE
2	B	616	ILE
2	B	620	ARG
2	B	621	GLU
2	B	624	LEU
2	B	625	LYS
2	B	628	THR
2	B	629	ASP
2	B	635	ARG
2	B	653	VAL
2	B	664	THR
2	B	680	THR
2	B	690	VAL
2	B	703	ILE
2	B	728	ARG
2	B	733	HIS

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Mol	Chain	Res	Type
2	B	737	THR
2	B	754	SER
2	B	766	ARG
2	B	775	LYS
2	B	786	ASN
2	B	790	ASP
2	B	806	THR
2	B	836	GLU
2	B	839	MET
2	B	864	LYS
2	B	868	MET
2	B	881	ASN
2	B	882	THR
2	B	884	ARG
2	B	889	THR
2	B	895	ASP
2	B	908	GLU
2	B	916	THR
2	B	942	ARG
2	B	944	THR
2	B	959	ASP
2	B	970	THR
2	B	975	GLN
2	B	997	GLU
2	B	999	MET
2	B	1006	ILE
2	B	1045	SER
2	B	1049	ASP
2	B	1065	GLN
2	B	1076	HIS
2	B	1084	GLN
2	B	1097	HIS
2	B	1102	LYS
2	B	1106	ARG
2	B	1129	ARG
2	B	1147	LEU
2	B	1148	LYS
2	B	1150	ARG
2	B	1151	LEU
2	B	1160	VAL
2	B	1162	ILE
2	B	1177	HIS

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Mol	Chain	Res	Type
2	B	1179	GLN
2	B	1189	ILE
2	B	1202	LEU
2	B	1211	ASN
2	B	1216	LEU
2	B	1220	ARG
2	B	1223	ASP
3	C	3	GLU
3	C	4	GLU
3	C	7	GLN
3	C	12	GLU
3	C	16	ASP
3	C	25	VAL
3	C	26	ASP
3	C	32	SER
3	C	34	ARG
3	C	40	GLU
3	C	50	GLU
3	C	73	GLN
3	C	75	MET
3	C	99	LEU
3	C	102	GLN
3	C	119	VAL
3	C	122	SER
3	C	125	MET
3	C	133	ILE
3	C	155	LEU
3	C	156	THR
3	C	179	GLU
3	C	203	GLN
3	C	205	LYS
3	C	207	CYS
3	C	215	GLU
3	C	226	ASP
3	C	230	MET
3	C	238	ILE
3	C	240	VAL
3	C	245	VAL
3	C	249	ASP
3	C	254	LYS
3	C	265	MET
3	C	268	ASP

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Mol	Chain	Res	Type
4	D	5	THR
4	D	8	PHE
4	D	9	GLN
4	D	12	ARG
4	D	13	ARG
4	D	14	ARG
4	D	21	GLU
4	D	23	ASN
4	D	28	GLN
4	D	31	GLN
4	D	32	GLU
4	D	35	LEU
4	D	38	ILE
4	D	39	ASN
4	D	46	GLU
4	D	47	LEU
4	D	52	LEU
4	D	53	SER
4	D	60	LYS
4	D	65	GLU
4	D	67	ARG
4	D	74	GLN
4	D	119	ARG
4	D	121	LYS
4	D	123	LEU
4	D	126	ILE
4	D	130	LEU
4	D	137	ASN
4	D	139	LYS
4	D	149	THR
4	D	156	ASP
4	D	168	LYS
4	D	197	SER
4	D	211	LEU
4	D	215	SER
4	D	219	THR
4	D	221	TYR
5	E	3	GLN
5	E	6	GLU
5	E	8	ASN
5	E	70	SER
5	E	78	LEU

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Mol	Chain	Res	Type
5	E	91	LYS
5	E	94	LYS
5	E	104	ASN
5	E	106	GLN
5	E	107	THR
5	E	146	HIS
5	E	152	LYS
5	E	156	LEU
5	E	161	LYS
5	E	173	SER
5	E	174	GLN
5	E	180	ARG
5	E	204	THR
6	F	79	ARG
6	F	87	LYS
6	F	109	VAL
6	F	111	LEU
6	F	115	THR
7	G	2	PHE
7	G	8	SER
7	G	21	ARG
7	G	34	VAL
7	G	37	SER
7	G	39	THR
7	G	45	ILE
7	G	61	ILE
7	G	65	ASP
7	G	73	LYS
7	G	83	LYS
7	G	90	THR
7	G	92	VAL
7	G	96	GLN
7	G	107	LYS
7	G	114	LEU
7	G	133	SER
7	G	134	GLU
7	G	135	ASP
7	G	138	THR
7	G	143	ILE
7	G	145	VAL
7	G	152	SER
7	G	153	GLN

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Mol	Chain	Res	Type
7	G	154	VAL
7	G	165	GLU
7	G	171	ILE
8	H	8	ASP
8	H	9	ILE
8	H	11	GLN
8	H	26	ILE
8	H	38	LEU
8	H	83	GLN
8	H	89	LEU
8	H	110	ASP
8	H	111	LEU
8	H	128	ASN
8	H	130	ARG
8	H	135	LEU
8	H	136	LYS
8	H	146	ARG
9	I	2	THR
9	I	9	ASP
9	I	20	LYS
9	I	21	GLU
9	I	30	ARG
9	I	35	VAL
9	I	44	TYR
9	I	54	GLU
9	I	60	GLN
9	I	62	ILE
9	I	64	SER
9	I	70	ARG
9	I	83	ASN
9	I	89	GLN
9	I	90	GLN
9	I	91	ARG
9	I	98	VAL
9	I	107	SER
9	I	110	PHE
9	I	113	ASP
9	I	114	GLN
9	I	117	LYS
9	I	119	THR
10	J	2	ILE
10	J	3	VAL

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Mol	Chain	Res	Type
10	J	13	VAL
10	J	27	GLU
10	J	28	ASP
10	J	31	ASP
10	J	34	THR
10	J	37	SER
10	J	38	ARG
10	J	47	ARG
10	J	48	ARG
10	J	52	THR
11	K	12	LEU
11	K	20	LYS
11	K	25	THR
11	K	26	LYS
11	K	29	ASN
11	K	31	VAL
11	K	47	ARG
11	K	51	LEU
11	K	54	ARG
11	K	64	GLU
11	K	101	LEU
11	K	103	THR
12	L	26	THR
12	L	28	LYS
12	L	38	LEU
12	L	46	VAL
12	L	54	ARG
12	L	55	ILE
12	L	60	ARG
12	L	61	THR
12	L	66	GLN
12	L	68	GLU
15	S	148	LEU
15	S	149	ARG
15	S	156	LEU
15	S	166	HIS
15	S	172	LEU
15	S	178	ILE
15	S	183	ASN
15	S	202	ILE
15	S	217	LYS
15	S	218	ILE

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Mol	Chain	Res	Type
15	S	220	ASN
15	S	222	ASP
15	S	223	ILE
15	S	228	LEU
15	S	230	THR
15	S	231	CYS
15	S	232	ASP
15	S	234	LYS
15	S	236	LEU
15	S	245	ILE
15	S	262	GLU
15	S	264	SER
15	S	284	LEU
15	S	287	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (83) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	68	GLN
1	A	75	ASN
1	A	83	HIS
1	A	92	HIS
1	A	225	ASN
1	A	256	GLN
1	A	299	HIS
1	A	316	GLN
1	A	339	ASN
1	A	358	ASN
1	A	435	HIS
1	A	445	ASN
1	A	471	ASN
1	A	503	GLN
1	A	517	ASN
1	A	545	GLN
1	A	548	ASN
1	A	631	HIS
1	A	640	GLN
1	A	650	GLN
1	A	741	ASN
1	A	757	ASN
1	A	760	GLN

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Mol	Chain	Res	Type
1	A	768	GLN
1	A	811	GLN
1	A	854	ASN
1	A	903	ASN
1	A	906	HIS
1	A	926	GLN
1	A	994	GLN
1	A	1085	HIS
1	A	1124	HIS
1	A	1140	HIS
1	A	1232	ASN
1	A	1364	ASN
1	A	1432	GLN
2	B	121	ASN
2	B	178	ASN
2	B	300	HIS
2	B	357	GLN
2	B	515	HIS
2	B	516	ASN
2	B	587	HIS
2	B	744	HIS
2	B	862	GLN
2	B	881	ASN
2	B	958	GLN
2	B	975	GLN
2	B	1013	ASN
2	B	1015	HIS
2	B	1065	GLN
2	B	1084	GLN
2	B	1117	GLN
2	B	1161	HIS
2	B	1176	ASN
2	B	1179	GLN
2	B	1195	HIS
2	B	1211	ASN
3	C	7	GLN
3	C	65	HIS
3	C	73	GLN
3	C	79	GLN
3	C	112	ASN
3	C	123	ASN
3	C	167	HIS

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Mol	Chain	Res	Type
3	C	252	GLN
4	D	37	GLN
4	D	41	GLN
4	D	150	ASN
4	D	173	HIS
5	E	5	ASN
5	E	32	GLN
5	E	147	HIS
7	G	14	HIS
7	G	96	GLN
7	G	131	GLN
11	K	65	HIS
11	K	76	GLN
15	S	173	HIS
15	S	183	ASN
15	S	187	ASN
15	S	252	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
14	P	5/5 (100%)	3 (60%)	2 (40%)

All (3) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
14	P	8	C
14	P	9	C
14	P	10	C

All (2) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
14	P	7	C
14	P	8	C

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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
16	BRU	T	22	16,14	18,21,22	0.70	0	26,30,33	2.15	9 (34%)

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
16	BRU	T	22	16,14	-	2/7/21/22	0/2/2/2

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	T	22	BRU	C5-C4-N3	4.86	118.93	113.34
16	T	22	BRU	C4-N3-C2	-4.70	121.27	127.35
16	T	22	BRU	N3-C2-N1	4.60	120.99	114.89
16	T	22	BRU	O4-C4-C5	-3.55	121.39	125.84
16	T	22	BRU	O4'-C1'-N1	3.16	113.51	107.86
16	T	22	BRU	BR-C5-C4	2.78	121.26	118.03
16	T	22	BRU	O2-C2-N3	-2.27	117.27	121.50
16	T	22	BRU	C6-C5-C4	-2.21	118.43	120.67
16	T	22	BRU	C6-N1-C2	-2.04	119.23	121.30

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	T	22	BRU	C3'-C4'-C5'-O5'
16	T	22	BRU	O4'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 14 ligands modelled in this entry, 10 are monoatomic - leaving 4 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
19	ACT	A	1734	-	3,3,3	0.69	0	3,3,3	1.19	0
21	PGE	L	71	-	9,9,9	0.48	0	8,8,8	0.32	0
19	ACT	B	1225	-	3,3,3	0.89	0	3,3,3	1.80	1 (33%)
20	EPE	A	1735	-	15,15,15	0.60	0	18,20,20	2.12	7 (38%)

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
21	PGE	L	71	-	-	3/7/7/7	-
20	EPE	A	1735	-	-	3/9/19/19	0/1/1/1

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	A	1735	EPE	C5-N4-C3	4.76	119.54	108.83
20	A	1735	EPE	C7-N4-C3	3.68	120.64	111.23
20	A	1735	EPE	C7-N4-C5	3.30	119.68	111.23
20	A	1735	EPE	C9-N1-C2	-2.83	103.99	111.23
19	B	1225	ACT	OXT-C-CH3	2.35	124.90	115.18
20	A	1735	EPE	O3S-S-C10	2.33	109.54	105.77
20	A	1735	EPE	C3-C2-N1	2.30	115.35	110.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	A	1735	EPE	C5-C6-N1	-2.19	106.14	110.64

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
21	L	71	PGE	O2-C3-C4-O3
21	L	71	PGE	O3-C5-C6-O4
21	L	71	PGE	O1-C1-C2-O2
20	A	1735	EPE	C10-C9-N1-C2
20	A	1735	EPE	C10-C9-N1-C6
20	A	1735	EPE	C8-C7-N4-C5

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
19	A	1734	ACT	1	0
19	B	1225	ACT	1	0
20	A	1735	EPE	2	0

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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	1426/1733 (82%)	-0.02	19 (1%) 77 77	67, 109, 163, 215	0
2	B	1108/1224 (90%)	0.16	36 (3%) 47 46	69, 126, 191, 217	0
3	C	266/318 (83%)	-0.11	0 100 100	86, 116, 160, 193	0
4	D	177/221 (80%)	-0.06	2 (1%) 80 81	81, 118, 183, 202	0
5	E	214/215 (99%)	-0.01	4 (1%) 66 65	88, 141, 188, 203	0
6	F	84/155 (54%)	-0.26	0 100 100	70, 90, 122, 136	0
7	G	171/171 (100%)	0.06	1 (0%) 89 90	82, 105, 148, 171	0
8	H	133/146 (91%)	0.39	4 (3%) 50 49	121, 158, 197, 205	0
9	I	119/122 (97%)	0.25	6 (5%) 28 27	123, 156, 197, 216	0
10	J	65/70 (92%)	-0.06	0 100 100	95, 117, 159, 177	0
11	K	114/120 (95%)	-0.04	2 (1%) 68 67	85, 112, 157, 173	0
12	L	46/70 (65%)	0.07	3 (6%) 18 18	93, 158, 183, 202	0
13	N	7/14 (50%)	1.26	1 (14%) 2 2	217, 222, 231, 234	0
14	P	5/5 (100%)	0.22	0 100 100	238, 239, 244, 247	0
15	S	164/178 (92%)	0.65	27 (16%) 1 2	116, 181, 240, 254	0
16	T	12/27 (44%)	0.57	0 100 100	162, 195, 247, 252	0
All	All	4111/4789 (85%)	0.07	105 (2%) 56 53	67, 119, 191, 254	0

All (105) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
15	S	157	TYR	7.6
1	A	69	THR	6.2
2	B	470	LYS	5.6
9	I	119	THR	5.6
2	B	250	PHE	5.0

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Mol	Chain	Res	Type	RSRZ
1	A	1455	PRO	4.8
12	L	27	LEU	4.6
9	I	118	ARG	4.6
2	B	509	ALA	4.4
2	B	471	LYS	4.3
2	B	715	ALA	4.2
15	S	163	GLU	4.0
2	B	476	ARG	3.9
15	S	162	LYS	3.9
9	I	120	GLN	3.7
15	S	179	GLU	3.7
2	B	474	SER	3.6
12	L	26	THR	3.6
1	A	568	PRO	3.5
2	B	643	ASP	3.5
2	B	709	ASP	3.5
15	S	178	ILE	3.4
12	L	25	ALA	3.2
1	A	256	GLN	3.2
15	S	159	VAL	3.1
1	A	253	ASN	3.1
2	B	263	GLY	3.1
9	I	55	THR	3.0
4	D	13	ARG	3.0
15	S	164	SER	3.0
1	A	255	SER	3.0
2	B	469	GLN	2.9
2	B	356	LEU	2.9
2	B	508	LEU	2.9
15	S	166	HIS	2.9
1	A	254	GLU	2.9
15	S	160	LEU	2.8
2	B	475	SER	2.8
15	S	309	SER	2.8
1	A	66	LYS	2.7
5	E	58	MET	2.7
15	S	152	VAL	2.7
15	S	153	LEU	2.7
1	A	159	THR	2.7
5	E	110	PHE	2.6
2	B	472	ALA	2.6
9	I	60	GLN	2.6

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Mol	Chain	Res	Type	RSRZ
15	S	266	THR	2.5
15	S	174	THR	2.5
15	S	278	LYS	2.5
2	B	473	MET	2.5
2	B	866	TYR	2.5
1	A	65	LEU	2.5
2	B	260	GLY	2.4
2	B	132	VAL	2.4
13	N	2	DG	2.4
1	A	160	GLN	2.4
15	S	218	ILE	2.4
2	B	259	TYR	2.4
8	H	35	GLN	2.4
2	B	249	ARG	2.4
1	A	2	VAL	2.4
4	D	9	GLN	2.4
7	G	129	SER	2.4
15	S	227	PHE	2.4
15	S	165	GLU	2.4
15	S	228	LEU	2.4
5	E	93	MET	2.3
8	H	139	ASN	2.3
1	A	154	SER	2.3
1	A	118	HIS	2.3
11	K	77	THR	2.2
15	S	148	LEU	2.2
2	B	92	PHE	2.2
15	S	214	LEU	2.2
15	S	199	TYR	2.2
5	E	123	LEU	2.2
1	A	1188	GLN	2.2
2	B	331	LEU	2.2
2	B	963	PHE	2.2
2	B	734	HIS	2.2
15	S	180	SER	2.2
2	B	919	SER	2.2
2	B	917	PRO	2.2
2	B	267	ARG	2.2
15	S	182	MET	2.1
2	B	871	THR	2.1
8	H	6	PHE	2.1
2	B	468	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	161	LEU	2.1
2	B	261	ARG	2.1
2	B	433	GLN	2.1
2	B	167	ILE	2.1
2	B	661	LEU	2.1
2	B	870	ILE	2.1
15	S	225	PRO	2.1
11	K	114	LEU	2.1
9	I	117	LYS	2.1
2	B	349	ILE	2.1
15	S	171	ILE	2.1
1	A	198	GLU	2.0
15	S	151	GLN	2.0
1	A	908	LEU	2.0
1	A	155	GLU	2.0
8	H	116	TYR	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
16	BRU	T	22	20/21	0.75	0.24	138,213,293,294	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
21	PGE	L	71	10/10	0.69	0.28	116,149,279,292	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
19	ACT	A	1734	4/4	0.81	0.42	72,95,126,151	0
19	ACT	B	1225	4/4	0.94	0.21	46,51,87,298	0
17	ZN	L	1071	1/1	0.97	0.10	158,158,158,158	0
20	EPE	A	1735	15/15	0.97	0.22	25,77,245,245	0
17	ZN	I	1122	1/1	0.97	0.04	186,186,186,186	0
17	ZN	I	1121	1/1	0.98	0.15	130,130,130,130	0
17	ZN	S	999	1/1	0.98	0.06	215,215,215,215	0
17	ZN	A	2456	1/1	0.98	0.06	145,145,145,145	0
18	MG	A	2458	1/1	0.99	0.19	83,83,83,83	0
17	ZN	B	2225	1/1	0.99	0.23	94,94,94,94	0
17	ZN	J	1066	1/1	0.99	0.24	103,103,103,103	0
17	ZN	C	1269	1/1	0.99	0.14	94,94,94,94	0
17	ZN	A	2457	1/1	0.99	0.18	87,87,87,87	0

6.5 Other polymers [i](#)

There are no such residues in this entry.