



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 15, 2017 – 03:21 am GMT

PDB ID : 4ZTZ
Title : Structural basis for processivity and antiviral drug toxicity in human mitochondrial DNA replicase
Authors : Szymanski, M.R.; Yin, Y.W.
Deposited on : 2015-05-15
Resolution : 3.44 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

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

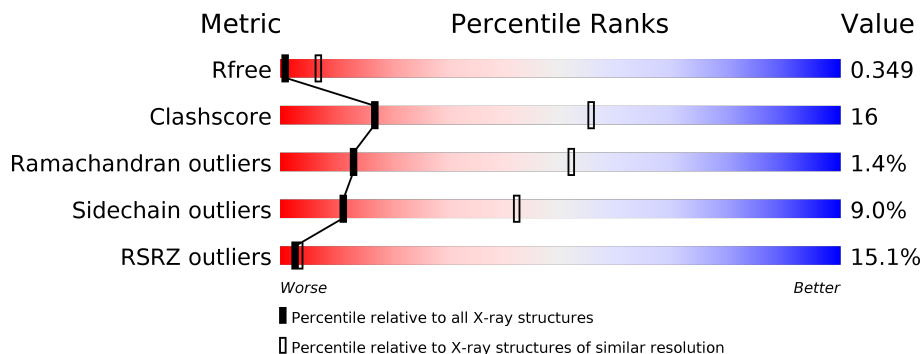
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.44 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}	100719	1082 (3.52-3.36)
Clashscore	112137	1025 (3.50-3.38)
Ramachandran outliers	110173	1155 (3.52-3.36)
Sidechain outliers	110143	1156 (3.52-3.36)
RSRZ outliers	101464	1107 (3.52-3.36)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	1222	<div> <div>12%</div> <div>53%</div> <div>23%</div> <div>•</div> <div>20%</div> </div>
2	B	472	<div> <div>10%</div> <div>58%</div> <div>17%</div> <div>•</div> <div>23%</div> </div>
2	C	472	<div> <div>12%</div> <div>55%</div> <div>17%</div> <div>•</div> <div>24%</div> </div>
3	T	27	<div> <div>22%</div> <div>52%</div> <div>41%</div> <div>7%</div> </div>
4	P	24	<div> <div>33%</div> <div>54%</div> <div>38%</div> <div>8%</div> </div>

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 14651 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 polymerase subunit gamma-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	983	Total	C	N	O	S	0	0	0
			7823	4983	1371	1419	50			

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	29	MET	-	initiating methionine	UNP P54098
A	198	ALA	ASP	conflict	UNP P54098
A	200	ALA	GLU	conflict	UNP P54098
A	1240	ALA	-	expression tag	UNP P54098
A	1241	ALA	-	expression tag	UNP P54098
A	1242	ALA	-	expression tag	UNP P54098
A	1243	LEU	-	expression tag	UNP P54098
A	1244	GLU	-	expression tag	UNP P54098
A	1245	HIS	-	expression tag	UNP P54098
A	1246	HIS	-	expression tag	UNP P54098
A	1247	HIS	-	expression tag	UNP P54098
A	1248	HIS	-	expression tag	UNP P54098
A	1249	HIS	-	expression tag	UNP P54098
A	1250	HIS	-	expression tag	UNP P54098

- Molecule 2 is a protein called DNA polymerase subunit gamma-2, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	363	Total	C	N	O	S	0	0	0
			2942	1885	520	521	16			
2	C	358	Total	C	N	O	S	0	0	0
			2893	1857	509	511	16			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	25	MET	-	initiating methionine	UNP Q9UHN1
B	486	ALA	-	expression tag	UNP Q9UHN1
B	487	ALA	-	expression tag	UNP Q9UHN1
B	488	ALA	-	expression tag	UNP Q9UHN1
B	489	LEU	-	expression tag	UNP Q9UHN1
B	490	GLU	-	expression tag	UNP Q9UHN1
B	491	HIS	-	expression tag	UNP Q9UHN1
B	492	HIS	-	expression tag	UNP Q9UHN1
B	493	HIS	-	expression tag	UNP Q9UHN1
B	494	HIS	-	expression tag	UNP Q9UHN1
B	495	HIS	-	expression tag	UNP Q9UHN1
B	496	HIS	-	expression tag	UNP Q9UHN1
C	25	MET	-	initiating methionine	UNP Q9UHN1
C	486	ALA	-	expression tag	UNP Q9UHN1
C	487	ALA	-	expression tag	UNP Q9UHN1
C	488	ALA	-	expression tag	UNP Q9UHN1
C	489	LEU	-	expression tag	UNP Q9UHN1
C	490	GLU	-	expression tag	UNP Q9UHN1
C	491	HIS	-	expression tag	UNP Q9UHN1
C	492	HIS	-	expression tag	UNP Q9UHN1
C	493	HIS	-	expression tag	UNP Q9UHN1
C	494	HIS	-	expression tag	UNP Q9UHN1
C	495	HIS	-	expression tag	UNP Q9UHN1
C	496	HIS	-	expression tag	UNP Q9UHN1

- Molecule 3 is a DNA chain called DNA (25-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	T	25	Total	C	N	O	P	0	0	0
			508	241	89	153	25			

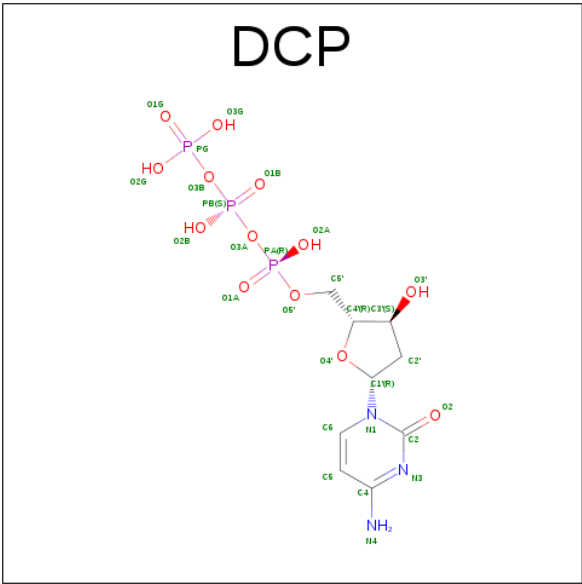
- Molecule 4 is a DNA chain called DNA (5'-D(P*AP*AP*GP*AP*CP*GP*AP*GP*GP*GP*CP*CP*AP*GP*TP*GP*CP*CP*GP*TP*AP*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	P	22	Total	C	N	O	P	0	0	0
			455	214	92	127	22			

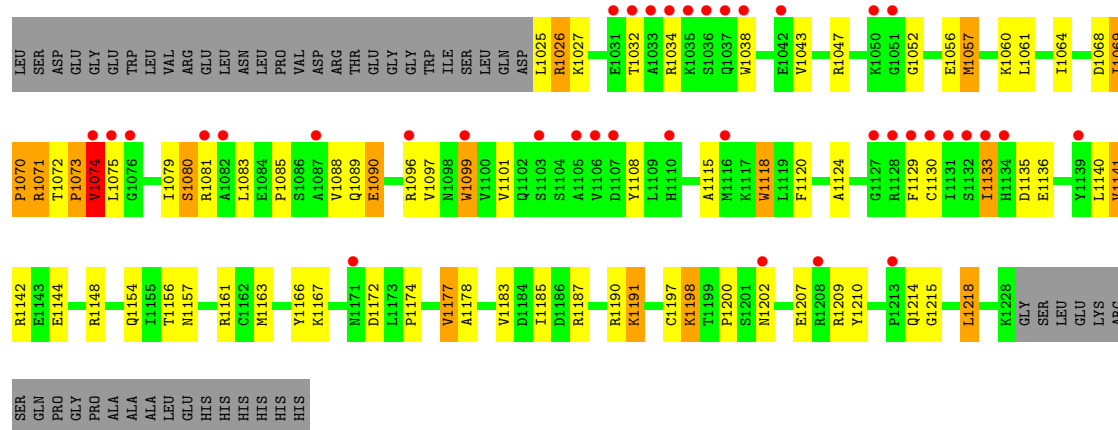
- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	2	Total	Mg	0	0
			2	2		

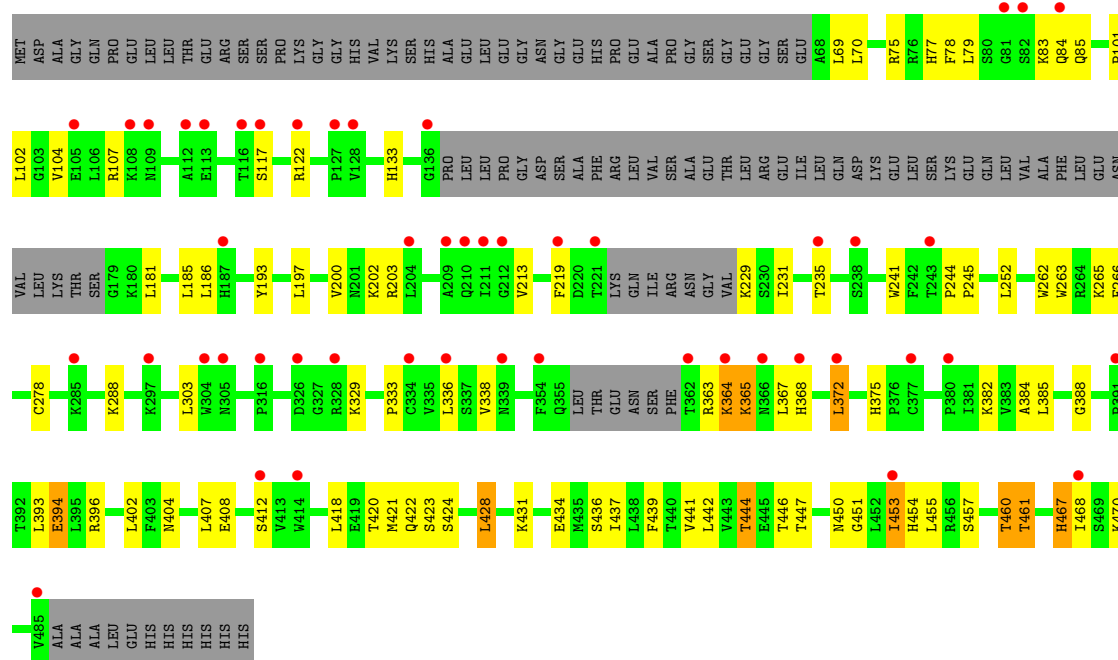
- Molecule 6 is 2'-DEOXYCYTIDINE-5'-TRIPHOSPHATE (three-letter code: DCP) (formula: C₉H₁₆N₃O₁₃P₃).



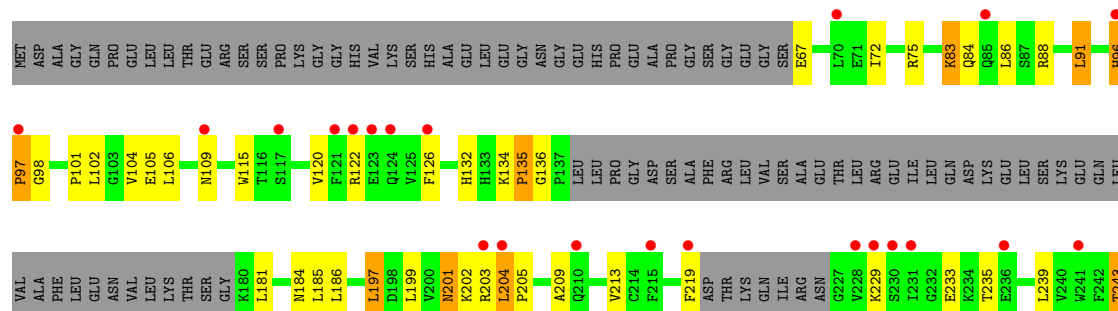
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
6	A	1	28	9	3	13	3	0	0

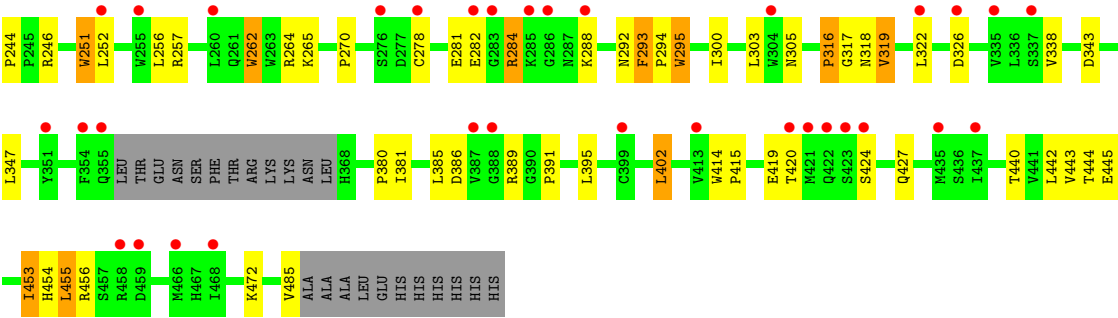


• Molecule 2: DNA polymerase subunit gamma-2, mitochondrial

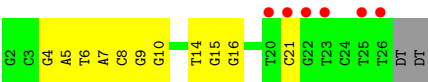


• Molecule 2: DNA polymerase subunit gamma-2, mitochondrial





• Molecule 3: DNA (25-MER)



• Molecule 4: DNA (5'-D(P*AP*AP*GP*AP*CP*GP*AP*GP*GP*GP*CP*CP*AP*GP*TP*GP*CP*CP*GP*TP*AP*C)-3')



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	217.60Å 217.60Å 165.71Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.50 – 3.44 49.25 – 3.45	Depositor EDS
% Data completeness (in resolution range)	91.6 (45.50-3.44) 95.2 (49.25-3.45)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.42 (at 3.48Å)	Xtriage
Refinement program	PHENIX 1.9_1692	Depositor
R, R_{free}	0.280 , 0.320 0.369 , 0.349	Depositor DCC
R_{free} test set	2000 reflections (4.13%)	DCC
Wilson B-factor (Å ²)	140.7	Xtriage
Anisotropy	0.404	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 20.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	14651	wwPDB-VP
Average B, all atoms (Å ²)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.39% 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

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.26	1/8025 (0.0%)	0.48	6/10886 (0.1%)
2	B	0.21	0/3015	0.39	0/4074
2	C	0.23	0/2966	0.45	2/4009 (0.0%)
3	T	0.47	0/567	0.88	0/872
4	P	0.49	0/492	0.77	0/758
All	All	0.27	1/15065 (0.0%)	0.50	8/20599 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	611	PRO	N-CD	-10.82	1.32	1.47

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	611	PRO	N-CA-CB	-11.49	89.52	103.30
2	C	135	PRO	CA-N-CD	-8.60	99.46	111.50
2	C	96	HIS	C-N-CD	-8.37	102.18	120.60
1	A	611	PRO	N-CD-CG	-6.82	92.97	103.20
1	A	752	LEU	C-N-CD	-6.27	106.81	120.60
1	A	611	PRO	CA-N-CD	6.08	120.21	111.70
1	A	610	PHE	N-CA-C	5.65	126.25	111.00
1	A	482	ASP	CB-CG-OD2	5.21	122.99	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7823	0	7729	293	0
2	B	2942	0	2939	58	0
2	C	2893	0	2880	97	0
3	T	508	0	282	15	0
4	P	455	0	245	8	0
5	A	2	0	0	0	0
6	A	28	0	12	4	0
All	All	14651	0	14087	452	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 16.

All (452) 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:610:PHE:CE1	1:A:652:ILE:HD13	1.26	1.70
1:A:610:PHE:CD1	1:A:611:PRO:HG3	1.19	1.67
1:A:610:PHE:CE1	1:A:611:PRO:HG3	1.12	1.64
1:A:610:PHE:CG	1:A:611:PRO:HD3	1.29	1.59
1:A:610:PHE:CD1	1:A:611:PRO:CG	1.80	1.58
1:A:610:PHE:CE1	1:A:611:PRO:CG	1.83	1.53
1:A:634:LEU:CD2	1:A:635:PRO:HD2	1.37	1.50
1:A:634:LEU:HD23	1:A:635:PRO:CD	1.39	1.49
1:A:610:PHE:CD1	1:A:611:PRO:CD	1.98	1.45
1:A:610:PHE:CE1	1:A:652:ILE:CD1	2.14	1.30
1:A:631:LEU:C	1:A:633:LYS:CE	1.95	1.27
1:A:610:PHE:CD1	1:A:611:PRO:HD3	1.66	1.27
1:A:649:TYR:CD2	1:A:750:PHE:CE2	2.25	1.25
1:A:631:LEU:C	1:A:633:LYS:HE2	1.38	1.25
1:A:640:LEU:C	1:A:640:LEU:HD22	1.61	1.20
1:A:632:ALA:C	1:A:633:LYS:HD3	1.62	1.19
1:A:640:LEU:O	1:A:640:LEU:HD22	1.41	1.18
1:A:610:PHE:CG	1:A:611:PRO:CD	2.17	1.16
1:A:610:PHE:CZ	1:A:748:TRP:HB3	1.80	1.15
1:A:610:PHE:CD1	1:A:652:ILE:HD13	1.81	1.14

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:631:LEU:O	1:A:633:LYS:HE2	1.44	1.12
2:C:135:PRO:HD2	2:C:136:GLY:H	1.10	1.11
1:A:649:TYR:HB3	1:A:750:PHE:CZ	1.84	1.11
1:A:610:PHE:CZ	1:A:652:ILE:HD13	1.85	1.10
2:C:134:LYS:CD	2:C:135:PRO:HD3	1.79	1.10
1:A:641:GLU:HG3	1:A:642:SER:N	1.57	1.08
1:A:632:ALA:N	1:A:633:LYS:HE2	1.71	1.06
1:A:649:TYR:CG	1:A:750:PHE:CE2	2.47	1.03
1:A:641:GLU:HG3	1:A:642:SER:H	1.09	1.01
1:A:610:PHE:CD1	1:A:652:ILE:CD1	2.40	1.01
1:A:610:PHE:CE1	1:A:611:PRO:HG2	1.96	1.00
2:C:134:LYS:HD2	2:C:135:PRO:CD	1.92	1.00
2:C:102:LEU:O	2:C:105:GLU:CD	2.00	0.99
2:C:134:LYS:HD2	2:C:135:PRO:HD3	1.00	0.99
1:A:610:PHE:CD2	1:A:611:PRO:HD3	1.98	0.97
1:A:632:ALA:O	1:A:633:LYS:HD3	1.66	0.95
1:A:610:PHE:HE1	1:A:611:PRO:HG3	1.21	0.95
1:A:610:PHE:CD1	1:A:652:ILE:CG1	2.52	0.93
2:C:419:GLU:H	2:C:420:THR:HA	1.32	0.92
1:A:610:PHE:CE2	1:A:748:TRP:HB3	2.04	0.92
2:C:101:PRO:O	2:C:105:GLU:HG3	1.69	0.92
1:A:640:LEU:C	1:A:640:LEU:CD2	2.36	0.92
1:A:649:TYR:CB	1:A:750:PHE:CZ	2.53	0.90
1:A:649:TYR:CD2	1:A:750:PHE:HE2	1.84	0.90
1:A:610:PHE:CE2	1:A:748:TRP:CB	2.55	0.89
2:C:135:PRO:HD2	2:C:136:GLY:N	1.87	0.89
1:A:473:LEU:HD22	1:A:482:ASP:OD2	1.73	0.88
1:A:738:PRO:O	1:A:742:VAL:HG21	1.73	0.88
2:C:134:LYS:NZ	2:C:135:PRO:HD2	1.90	0.87
1:A:610:PHE:CD1	1:A:652:ILE:HG12	2.09	0.87
1:A:1068:ASP:HA	1:A:1085:PRO:HG2	1.56	0.86
1:A:632:ALA:N	1:A:633:LYS:CE	2.35	0.86
1:A:649:TYR:CD2	1:A:750:PHE:CD2	2.64	0.85
1:A:610:PHE:HD1	1:A:611:PRO:HG3	1.31	0.85
1:A:649:TYR:CG	1:A:750:PHE:CD2	2.64	0.85
1:A:738:PRO:O	1:A:742:VAL:CG2	2.23	0.85
1:A:632:ALA:C	1:A:633:LYS:CD	2.45	0.84
2:C:67:GLU:HG3	2:C:88:ARG:NH2	1.94	0.83
1:A:849:THR:HG22	1:A:850:ILE:HD13	1.57	0.83
1:A:631:LEU:O	1:A:633:LYS:CE	2.11	0.82
1:A:649:TYR:CB	1:A:750:PHE:CE2	2.64	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:610:PHE:HD1	1:A:611:PRO:CG	1.85	0.81
2:C:134:LYS:CD	2:C:135:PRO:CD	2.54	0.80
1:A:610:PHE:CZ	1:A:748:TRP:CB	2.65	0.79
1:A:641:GLU:CG	1:A:642:SER:N	2.44	0.78
2:C:101:PRO:O	2:C:105:GLU:CG	2.31	0.77
1:A:641:GLU:O	1:A:642:SER:HB3	1.84	0.77
1:A:632:ALA:CA	1:A:633:LYS:HE2	2.14	0.76
1:A:649:TYR:HB3	1:A:750:PHE:CE2	2.19	0.76
2:C:135:PRO:CD	2:C:136:GLY:H	1.93	0.76
2:C:442:LEU:HB3	2:C:454:HIS:HB2	1.67	0.76
1:A:744:ILE:HG23	1:A:745:PRO:HD3	1.68	0.75
2:C:105:GLU:CD	2:C:106:LEU:H	1.90	0.75
2:C:134:LYS:HZ2	2:C:135:PRO:HD2	1.52	0.74
1:A:623:LEU:HA	1:A:760:CYS:SG	2.28	0.73
2:C:102:LEU:C	2:C:105:GLU:CD	2.46	0.73
1:A:473:LEU:CD2	1:A:482:ASP:OD2	2.35	0.73
2:B:444:THR:HG22	2:B:447:THR:HG23	1.71	0.72
1:A:800:PHE:HB2	1:A:869:ARG:HE	1.53	0.72
1:A:640:LEU:O	1:A:640:LEU:CD2	2.30	0.72
1:A:760:CYS:SG	1:A:762:VAL:CG1	2.79	0.71
1:A:610:PHE:CD1	1:A:611:PRO:N	2.58	0.71
1:A:633:LYS:N	1:A:633:LYS:HD3	1.95	0.71
1:A:631:LEU:N	1:A:631:LEU:HD23	2.04	0.71
1:A:634:LEU:HD23	1:A:635:PRO:HD3	1.65	0.71
2:C:134:LYS:NZ	2:C:135:PRO:CD	2.54	0.71
1:A:630:ASN:C	1:A:631:LEU:HD23	2.11	0.70
1:A:487:ASP:OD2	1:A:601:LYS:NZ	2.24	0.70
1:A:243:ASP:HB3	1:A:279:ARG:HE	1.57	0.69
1:A:610:PHE:CE2	1:A:748:TRP:HB2	2.26	0.69
1:A:649:TYR:HD2	1:A:750:PHE:HE2	1.39	0.69
1:A:153:ALA:HB1	1:A:194:ALA:HB2	1.74	0.68
1:A:1057:MET:SD	1:A:1057:MET:N	2.64	0.68
1:A:634:LEU:HD22	1:A:635:PRO:HD2	1.67	0.68
2:C:101:PRO:O	2:C:105:GLU:CD	2.32	0.68
1:A:760:CYS:SG	1:A:762:VAL:HG13	2.35	0.67
1:A:850:ILE:HG22	3:T:6:DT:H4'	1.75	0.67
1:A:463:LEU:HD21	1:A:594:LEU:HD23	1.77	0.67
2:B:197:LEU:HD22	2:B:202:LYS:HA	1.76	0.66
1:A:464:MET:HB2	1:A:589:PRO:HG2	1.78	0.66
1:A:896:LEU:HD21	1:A:931:LEU:HD23	1.77	0.66
1:A:1108:TYR:OH	1:A:1161:ARG:NH1	2.24	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:533:CYS:SG	1:A:534:SER:N	2.68	0.65
1:A:963:GLU:HA	1:A:981:LYS:HE2	1.78	0.65
1:A:1096:ARG:HA	1:A:1099:TRP:HB3	1.79	0.65
2:C:443:VAL:HG22	2:C:453:ILE:HD11	1.79	0.64
1:A:884:TYR:HA	1:A:1142:ARG:HA	1.78	0.64
2:C:201:ASN:CB	2:C:203:ARG:NH1	2.61	0.64
2:C:213:VAL:HG22	2:C:235:THR:HG22	1.77	0.64
2:C:134:LYS:HZ3	2:C:135:PRO:CD	2.11	0.64
2:B:442:LEU:HB3	2:B:454:HIS:HB2	1.80	0.63
1:A:642:SER:OG	1:A:643:ALA:HA	1.98	0.63
1:A:502:LYS:HB3	1:A:503:VAL:HB	1.80	0.62
1:A:606:THR:HG22	1:A:612:LEU:HD22	1.81	0.62
2:C:67:GLU:HG3	2:C:88:ARG:HH22	1.64	0.62
1:A:921:LEU:HD22	1:A:1174:PRO:HG2	1.82	0.62
1:A:632:ALA:N	1:A:633:LYS:NZ	2.42	0.62
1:A:642:SER:OG	1:A:643:ALA:CA	2.47	0.62
1:A:866:ARG:HH21	1:A:869:ARG:HD2	1.64	0.62
1:A:623:LEU:CA	1:A:760:CYS:SG	2.88	0.62
2:C:419:GLU:N	2:C:420:THR:HA	2.05	0.62
1:A:633:LYS:N	1:A:633:LYS:CD	2.56	0.62
2:C:265:LYS:CD	2:C:485:VAL:HG22	2.29	0.62
1:A:649:TYR:O	1:A:649:TYR:CG	2.53	0.61
1:A:953:ARG:HA	1:A:957:ALA:HB2	1.82	0.61
2:C:197:LEU:HD12	2:C:202:LYS:HG2	1.82	0.61
1:A:760:CYS:SG	1:A:762:VAL:HG12	2.39	0.61
2:B:382:LYS:H	2:B:412:SER:HB2	1.65	0.61
2:C:292:ASN:HD21	2:C:294:PRO:HB3	1.65	0.61
2:C:201:ASN:HB3	2:C:203:ARG:NH1	2.16	0.60
2:C:219:PHE:HD1	2:C:229:LYS:HG2	1.66	0.60
2:B:77:HIS:NE2	2:B:434:GLU:OE2	2.35	0.60
2:B:441:VAL:HG23	2:B:453:ILE:HG13	1.84	0.60
2:B:363:ARG:HD3	2:B:364:LYS:H	1.66	0.60
2:B:104:VAL:HG23	2:B:107:ARG:HH21	1.66	0.60
2:C:102:LEU:O	2:C:105:GLU:CG	2.50	0.60
1:A:79:LEU:H	1:A:83:LEU:HG	1.66	0.59
2:C:83:LYS:HG2	2:C:84:GLN:HG2	1.84	0.59
1:A:938:THR:N	1:A:939:VAL:HA	2.16	0.59
1:A:623:LEU:C	1:A:760:CYS:SG	2.81	0.59
1:A:558:LEU:HD13	1:A:559:LEU:HD12	1.85	0.59
1:A:911:HIS:NE2	1:A:1172:ASP:O	2.36	0.59
2:C:105:GLU:CD	2:C:106:LEU:N	2.54	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:135:PRO:CD	2:C:136:GLY:N	2.55	0.59
1:A:978:ALA:HA	1:A:981:LYS:HD2	1.85	0.58
2:B:77:HIS:HE1	2:B:431:LYS:HG3	1.66	0.58
1:A:463:LEU:HB3	1:A:592:LEU:HD12	1.85	0.58
1:A:593:SER:HB2	1:A:596:MET:HB2	1.84	0.58
1:A:887:VAL:HG22	1:A:1185:ILE:HG23	1.84	0.58
2:B:241:TRP:HB3	2:B:336:LEU:HB3	1.84	0.58
1:A:1069:ILE:HB	1:A:1070:PRO:HD2	1.85	0.58
1:A:804:ALA:HB1	1:A:808:ILE:HD11	1.85	0.58
1:A:831:TYR:H	1:A:832:ASP:HA	1.69	0.58
2:B:117:SER:O	2:B:122:ARG:NH1	2.36	0.58
1:A:634:LEU:HD23	1:A:635:PRO:HD2	0.63	0.58
1:A:610:PHE:HE1	1:A:611:PRO:CG	1.90	0.57
1:A:938:THR:H	1:A:939:VAL:HA	1.69	0.57
1:A:1161:ARG:HE	1:A:1177:VAL:HG22	1.69	0.57
1:A:1133:ILE:HG12	1:A:1136:GLU:HB3	1.85	0.57
1:A:299:MET:HE3	1:A:848:GLY:HA2	1.86	0.57
1:A:208:CYS:SG	1:A:227:ARG:NH2	2.78	0.57
1:A:610:PHE:CE1	1:A:611:PRO:CD	2.59	0.57
2:C:246:ARG:NH2	2:C:326:ASP:OD2	2.38	0.57
1:A:196:VAL:HG22	1:A:215:ILE:HG12	1.87	0.56
1:A:230:GLU:OE2	1:A:386:ARG:NH1	2.38	0.56
1:A:262:GLN:HB2	1:A:263:GLU:HG2	1.87	0.56
2:B:444:THR:HG23	2:B:446:THR:H	1.69	0.56
1:A:825:VAL:HG13	1:A:882:PRO:HG2	1.86	0.56
1:A:200:ALA:HB3	1:A:211:LEU:HB2	1.88	0.56
1:A:1073:PRO:HA	1:A:1074:VAL:HG13	1.88	0.56
2:C:381:ILE:HG21	2:C:414:TRP:HB2	1.87	0.56
1:A:647:CYS:SG	1:A:648:PRO:HD2	2.46	0.56
1:A:649:TYR:O	1:A:649:TYR:CD2	2.59	0.56
2:B:252:LEU:HD13	2:B:336:LEU:HD11	1.87	0.56
1:A:851:THR:O	1:A:851:THR:OG1	2.24	0.55
2:C:134:LYS:HG3	2:C:135:PRO:HD2	1.87	0.55
1:A:1089:GLN:N	1:A:1090:GLU:HA	2.21	0.55
1:A:239:LEU:O	1:A:279:ARG:NH1	2.40	0.55
2:C:201:ASN:HB3	2:C:203:ARG:HG3	1.88	0.55
2:B:446:THR:O	2:B:450:ASN:ND2	2.40	0.55
2:C:134:LYS:CG	2:C:135:PRO:CD	2.84	0.55
2:C:235:THR:OG1	2:C:343:ASP:OD1	2.22	0.55
1:A:107:LEU:O	1:A:112:LEU:N	2.35	0.54
1:A:579:ARG:NH1	4:P:12:DG:OP1	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:457:SER:OG	2:B:460:THR:O	2.25	0.54
2:C:201:ASN:HB2	2:C:203:ARG:NH1	2.22	0.54
2:B:428:LEU:HD13	2:B:428:LEU:H	1.72	0.54
1:A:647:CYS:SG	1:A:648:PRO:CD	2.96	0.54
2:C:201:ASN:HB3	2:C:203:ARG:HH11	1.72	0.54
1:A:1124:ALA:O	1:A:1148:ARG:NH2	2.40	0.54
1:A:755:LYS:HD2	1:A:758:ASN:HD22	1.73	0.54
1:A:1142:ARG:NH1	1:A:1144:GLU:OE1	2.37	0.53
2:C:262:TRP:HA	2:C:265:LYS:HE2	1.91	0.53
2:C:444:THR:OG1	2:C:445:GLU:N	2.36	0.53
2:C:319:VAL:HA	2:C:322:LEU:HD13	1.89	0.53
1:A:566:LEU:HD13	1:A:566:LEU:H	1.73	0.53
2:B:262:TRP:HA	2:B:265:LYS:HE2	1.91	0.53
1:A:353:VAL:HG13	1:A:355:SER:H	1.74	0.53
1:A:466:LEU:HB3	1:A:602:LEU:HD21	1.90	0.53
1:A:649:TYR:CE1	1:A:749:PHE:O	2.62	0.53
1:A:864:ASN:O	1:A:872:SER:OG	2.25	0.53
1:A:610:PHE:CG	1:A:652:ILE:CG1	2.83	0.53
2:B:393:LEU:HD12	2:B:394:GLU:HG2	1.90	0.53
2:C:389:ARG:HD3	2:C:395:LEU:HD11	1.91	0.52
2:C:205:PRO:HB3	2:C:244:PRO:HD3	1.92	0.52
1:A:895:GLU:OE1	1:A:955:TYR:OH	2.28	0.52
1:A:1072:THR:OG1	1:A:1072:THR:O	2.20	0.52
1:A:865:ALA:H	1:A:1191:LYS:HD3	1.75	0.52
1:A:639:THR:HG22	1:A:640:LEU:N	2.25	0.52
2:B:185:LEU:H	2:B:185:LEU:HD23	1.74	0.52
1:A:642:SER:OG	1:A:643:ALA:HB2	2.09	0.52
1:A:647:CYS:SG	1:A:648:PRO:N	2.83	0.52
1:A:631:LEU:N	1:A:631:LEU:CD2	2.72	0.51
1:A:894:GLN:HG3	1:A:895:GLU:H	1.75	0.51
1:A:895:GLU:HB2	6:A:4003:DCP:O3'	2.10	0.51
1:A:212:ALA:HB3	1:A:223:TRP:HB3	1.92	0.51
2:B:407:LEU:HD13	2:C:120:VAL:HG12	1.92	0.51
1:A:743:ASP:N	1:A:743:ASP:OD1	2.35	0.51
1:A:1183:VAL:N	1:A:1214:GLN:O	2.44	0.51
1:A:384:ASP:OD1	1:A:384:ASP:N	2.40	0.51
2:C:134:LYS:HG3	2:C:135:PRO:CD	2.41	0.51
1:A:634:LEU:CG	1:A:635:PRO:HD2	2.31	0.51
1:A:272:SER:HB3	1:A:843:GLN:HA	1.93	0.51
1:A:850:ILE:HD12	1:A:851:THR:HA	1.92	0.51
1:A:176:THR:OG1	1:A:222:SER:OG	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:GLU:HA	1:A:94:MET:HB2	1.93	0.51
1:A:162:LEU:HG	1:A:401:TRP:CZ3	2.46	0.50
2:B:278:CYS:SG	2:B:288:LYS:NZ	2.84	0.50
1:A:1069:ILE:O	1:A:1071:ARG:N	2.44	0.50
1:A:175:TRP:CD2	1:A:223:TRP:HB2	2.45	0.50
1:A:211:LEU:HD12	1:A:377:PHE:HZ	1.76	0.50
1:A:861:THR:HG21	3:T:8:DC:H1'	1.92	0.50
2:C:104:VAL:N	2:C:105:GLU:CD	2.64	0.50
1:A:1032:THR:O	1:A:1034:ARG:NH2	2.44	0.50
1:A:296:SER:HB2	1:A:847:ALA:HB3	1.93	0.50
1:A:641:GLU:O	1:A:642:SER:CB	2.55	0.50
3:T:14:DT:H2''	3:T:15:DG:C8	2.47	0.50
1:A:639:THR:HG22	1:A:640:LEU:H	1.77	0.50
1:A:641:GLU:OE1	1:A:642:SER:O	2.30	0.50
2:C:264:ARG:HG3	2:C:270:PRO:HB3	1.92	0.50
1:A:1075:LEU:H	1:A:1075:LEU:HD23	1.76	0.50
1:A:617:ARG:HB2	1:A:763:GLY:HA3	1.94	0.50
1:A:610:PHE:CG	1:A:652:ILE:HG12	2.44	0.50
2:C:252:LEU:HD22	2:C:305:ASN:HB2	1.93	0.50
1:A:298:HIS:HD2	1:A:363:TYR:HE1	1.60	0.49
2:C:96:HIS:HB3	2:C:97:PRO:C	2.32	0.49
3:T:4:DG:C2	3:T:5:DA:C4	3.00	0.49
1:A:803:ASN:HA	3:T:10:DG:H4'	1.92	0.49
2:B:418:LEU:HD22	2:C:204:LEU:HD12	1.94	0.49
1:A:488:LEU:H	1:A:488:LEU:HD13	1.77	0.49
2:C:205:PRO:HB3	2:C:243:THR:HA	1.94	0.49
1:A:606:THR:HB	1:A:612:LEU:HD13	1.95	0.49
2:C:134:LYS:HZ3	2:C:135:PRO:HD2	1.70	0.49
1:A:622:TYR:HB2	1:A:770:PHE:HE2	1.76	0.49
1:A:546:ARG:NH2	2:B:408:GLU:OE2	2.45	0.49
1:A:887:VAL:HG13	1:A:1185:ILE:HG12	1.93	0.49
4:P:14:DC:H2'	4:P:15:DA:C8	2.48	0.49
1:A:1108:TYR:HE1	1:A:1161:ARG:HD3	1.77	0.49
1:A:630:ASN:OD1	1:A:630:ASN:O	2.30	0.49
1:A:770:PHE:HB3	1:A:773:LYS:HB3	1.95	0.49
1:A:134:ASN:ND2	1:A:1166:TYR:OH	2.37	0.48
1:A:562:ARG:HD2	1:A:563:PRO:HD2	1.95	0.48
1:A:495:PHE:HB3	1:A:496:LYS:HB2	1.94	0.48
1:A:616:GLU:HB2	1:A:617:ARG:HD3	1.96	0.48
2:B:388:GLY:HA3	2:B:442:LEU:HD11	1.94	0.48
3:T:9:DG:H2'	3:T:10:DG:C8	2.47	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:213:VAL:HA	2:B:235:THR:HA	1.96	0.48
2:C:424:SER:HB3	2:C:427:GLN:HG2	1.95	0.48
3:T:16:DG:H1	4:P:13:DC:H42	1.61	0.48
3:T:21:DC:H42	4:P:8:DG:H1	1.61	0.48
1:A:1187:ARG:HH11	1:A:1209:ARG:HH12	1.61	0.48
1:A:631:LEU:O	1:A:633:LYS:HE3	2.10	0.48
1:A:761:ASN:N	1:A:761:ASN:OD1	2.47	0.48
2:B:219:PHE:HA	2:B:229:LYS:N	2.29	0.48
1:A:357:ALA:HA	1:A:369:LEU:HD21	1.96	0.48
1:A:897:TRP:CD1	1:A:1177:VAL:HG21	2.48	0.48
1:A:1200:PRO:O	1:A:1202:ASN:N	2.43	0.47
1:A:91:GLY:HA2	1:A:92:GLY:HA3	1.58	0.47
2:B:404:ASN:HA	2:B:407:LEU:HG	1.95	0.47
1:A:1214:GLN:HA	1:A:1215:GLY:HA3	1.58	0.47
1:A:645:VAL:CG1	1:A:645:VAL:O	2.60	0.47
2:C:201:ASN:CB	2:C:203:ARG:HH11	2.27	0.47
1:A:1068:ASP:N	1:A:1068:ASP:OD2	2.46	0.47
2:B:428:LEU:HA	2:B:431:LYS:HB3	1.95	0.47
2:C:293:PHE:HB3	2:C:295:TRP:H	1.79	0.47
1:A:939:VAL:HA	1:A:940:GLY:HA3	1.71	0.47
1:A:491:ASP:HB2	1:A:574:ARG:HH12	1.80	0.47
2:B:420:THR:HG23	2:B:421:MET:HG2	1.97	0.47
1:A:955:TYR:CE1	1:A:1101:VAL:HG11	2.49	0.47
1:A:135:LEU:H	1:A:135:LEU:HD23	1.80	0.47
1:A:480:LYS:HD3	1:A:646:VAL:HG11	1.97	0.47
1:A:649:TYR:HD2	1:A:750:PHE:CE2	2.08	0.47
1:A:1069:ILE:CB	1:A:1070:PRO:HD2	2.45	0.47
1:A:304:LEU:HD13	1:A:309:ARG:HG2	1.96	0.47
1:A:612:LEU:HA	1:A:612:LEU:HD12	1.83	0.47
1:A:976:GLN:O	1:A:980:GLU:HG2	2.15	0.47
2:C:303:LEU:HD22	2:C:338:VAL:HG22	1.97	0.47
1:A:1115:ALA:HB3	1:A:1156:THR:HG23	1.97	0.46
1:A:782:GLY:HA2	1:A:784:GLY:HA2	1.98	0.46
2:C:265:LYS:HD2	2:C:485:VAL:HG22	1.97	0.46
1:A:1163:MET:SD	1:A:1167:LYS:HE2	2.55	0.46
1:A:1135:ASP:HB2	6:A:4003:DCP:H5'2	1.97	0.46
1:A:642:SER:OG	1:A:643:ALA:CB	2.64	0.46
1:A:869:ARG:NH1	4:P:22:DT:OP1	2.48	0.46
1:A:955:TYR:CE2	3:T:4:DG:N2	2.83	0.46
2:B:363:ARG:O	2:B:364:LYS:HG3	2.15	0.46
4:P:22:DT:H2'	4:P:23:DA:C8	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:178:TYR:O	1:A:219:ALA:HB1	2.16	0.46
2:C:91:LEU:HD12	2:C:347:LEU:HD21	1.97	0.46
2:B:402:LEU:HD13	2:B:468:ILE:HG23	1.98	0.46
2:C:67:GLU:N	2:C:88:ARG:HH21	2.13	0.46
1:A:640:LEU:HD22	1:A:641:GLU:N	2.24	0.46
1:A:942:SER:HA	1:A:943:ARG:HA	1.59	0.46
2:B:78:PHE:HD2	2:C:199:LEU:HD13	1.79	0.46
1:A:778:THR:HA	1:A:779:LEU:HA	1.60	0.46
1:A:1060:LYS:O	1:A:1064:ILE:HG12	2.16	0.46
1:A:1079:ILE:HG12	1:A:1099:TRP:CZ3	2.51	0.46
1:A:634:LEU:CD2	1:A:635:PRO:CD	2.30	0.46
1:A:272:SER:OG	1:A:844:VAL:O	2.34	0.46
1:A:1061:LEU:HB3	1:A:1097:VAL:HG13	1.98	0.45
1:A:298:HIS:HB2	1:A:410:GLN:HE22	1.79	0.45
2:B:133:HIS:ND1	2:C:233:GLU:OE2	2.48	0.45
1:A:599:THR:HA	1:A:602:LEU:HB3	1.99	0.45
1:A:562:ARG:HH11	1:A:563:PRO:HD2	1.81	0.45
2:B:193:TYR:OH	2:B:333:PRO:HG3	2.16	0.45
2:C:239:LEU:HB3	2:C:338:VAL:HB	1.98	0.45
1:A:741:ASP:HB3	1:A:745:PRO:HB2	1.98	0.45
1:A:765:PRO:HA	1:A:766:PHE:HA	1.58	0.45
1:A:869:ARG:HB2	1:A:872:SER:HB2	1.98	0.45
2:C:72:ILE:HA	2:C:75:ARG:HG2	1.97	0.45
2:C:316:PRO:HA	2:C:317:GLY:HA2	1.48	0.45
2:C:105:GLU:O	2:C:109:ASN:ND2	2.47	0.45
1:A:1157:ASN:ND2	1:A:1178:ALA:O	2.49	0.45
1:A:594:LEU:N	1:A:596:MET:H	2.15	0.45
2:C:440:THR:OG1	2:C:456:ARG:HB3	2.16	0.45
1:A:309:ARG:NH2	1:A:849:THR:OG1	2.49	0.45
2:B:75:ARG:NH1	2:B:84:GLN:OE1	2.50	0.45
2:C:414:TRP:HA	2:C:415:PRO:HD3	1.88	0.45
1:A:495:PHE:HB3	1:A:496:LYS:HD3	1.98	0.45
1:A:570:PRO:HB2	1:A:572:TRP:CD1	2.52	0.45
2:B:181:LEU:HD21	2:C:181:LEU:HD21	1.99	0.45
1:A:586:THR:OG1	1:A:590:SER:OG	2.30	0.44
2:B:200:VAL:HG13	2:B:203:ARG:H	1.82	0.44
1:A:991:GLY:HA2	1:A:1052:GLY:HA2	1.99	0.44
1:A:608:ASP:OD1	1:A:778:THR:OG1	2.26	0.44
2:C:317:GLY:HA3	2:C:318:ASN:HA	1.61	0.44
1:A:556:THR:HA	1:A:559:LEU:HD13	1.99	0.44
1:A:649:TYR:HE1	1:A:749:PHE:O	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:421:MET:HA	2:B:422:GLN:HB3	2.00	0.44
1:A:593:SER:C	1:A:596:MET:H	2.21	0.44
1:A:239:LEU:HD13	1:A:239:LEU:HA	1.85	0.44
2:C:102:LEU:O	2:C:105:GLU:HG2	2.17	0.44
1:A:642:SER:CB	1:A:643:ALA:HA	2.43	0.44
1:A:645:VAL:O	1:A:645:VAL:HG12	2.17	0.44
2:B:101:PRO:HB3	2:C:126:PHE:HB3	1.99	0.44
2:C:134:LYS:HZ2	2:C:136:GLY:H	1.66	0.44
1:A:646:VAL:CG2	1:A:647:CYS:N	2.79	0.44
2:B:467:HIS:HB3	2:B:470:LYS:HB2	1.99	0.44
1:A:79:LEU:HD13	1:A:80:SER:H	1.83	0.44
1:A:973:LEU:HD22	1:A:976:GLN:H	1.83	0.44
2:B:372:LEU:HD13	2:B:436:SER:HB2	1.99	0.44
2:C:265:LYS:HD3	2:C:485:VAL:HG22	1.98	0.44
1:A:497:GLN:NE2	1:A:559:LEU:HB3	2.32	0.44
1:A:987:ALA:HB1	1:A:1056:GLU:HG2	2.00	0.44
2:B:365:LYS:HG2	2:B:367:LEU:H	1.83	0.44
4:P:22:DT:H2'	4:P:23:DA:H8	1.83	0.44
1:A:1079:ILE:HG13	1:A:1079:ILE:H	1.70	0.43
1:A:475:SER:HA	1:A:476:GLY:HA2	1.50	0.43
1:A:632:ALA:C	1:A:633:LYS:CE	2.87	0.43
2:B:79:LEU:HG	2:B:102:LEU:HB2	2.00	0.43
3:T:4:DG:N3	3:T:5:DA:C8	2.85	0.43
2:C:134:LYS:CE	2:C:135:PRO:HD3	2.47	0.43
2:B:365:LYS:H	2:B:365:LYS:HD2	1.83	0.43
2:B:447:THR:HG21	2:B:453:ILE:HA	2.00	0.43
1:A:1079:ILE:HG12	1:A:1099:TRP:CE3	2.53	0.43
1:A:1154:GLN:HG3	1:A:1218:LEU:HD21	2.00	0.43
1:A:856:GLU:N	1:A:860:LEU:HD12	2.33	0.43
1:A:963:GLU:HG3	1:A:981:LYS:NZ	2.33	0.43
1:A:1080:SER:OG	1:A:1083:LEU:HB2	2.19	0.43
1:A:299:MET:HG3	1:A:849:THR:HG23	2.01	0.43
3:T:6:DT:H2'	3:T:7:DA:O4'	2.18	0.43
6:A:4003:DCP:N3	3:T:4:DG:N1	2.58	0.43
2:B:197:LEU:HD23	2:B:197:LEU:HA	1.88	0.43
2:B:266:PHE:HA	2:B:375:HIS:CD2	2.53	0.43
2:C:292:ASN:ND2	2:C:294:PRO:HB3	2.32	0.43
2:C:209:ALA:HB2	2:C:239:LEU:HD13	1.99	0.43
1:A:298:HIS:CD2	1:A:363:TYR:HE1	2.36	0.43
1:A:950:ASN:O	1:A:954:ILE:HG13	2.18	0.43
2:C:67:GLU:HG3	2:C:88:ARG:HH21	1.77	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1088:VAL:HG12	1:A:1090:GLU:HA	2.00	0.43
1:A:856:GLU:OE1	1:A:859:TRP:N	2.36	0.43
2:C:105:GLU:HG2	2:C:380:PRO:HB3	2.00	0.43
1:A:891:VAL:HG13	1:A:1161:ARG:HH12	1.83	0.42
1:A:865:ALA:HB2	1:A:1191:LYS:HZ2	1.84	0.42
2:B:303:LEU:HG	2:B:338:VAL:HB	2.01	0.42
1:A:536:GLU:HG3	2:C:257:ARG:HH12	1.84	0.42
1:A:567:PRO:HA	1:A:574:ARG:HE	1.84	0.42
1:A:892:ASP:HA	1:A:893:SER:HA	1.66	0.42
2:B:213:VAL:HG11	2:C:132:HIS:CE1	2.53	0.42
2:C:265:LYS:HD3	2:C:485:VAL:CG2	2.48	0.42
1:A:1108:TYR:CE1	1:A:1161:ARG:HD3	2.54	0.42
1:A:151:LEU:HA	1:A:151:LEU:HD23	1.90	0.42
2:B:83:LYS:HG2	2:B:85:GLN:H	1.85	0.42
2:C:134:LYS:HZ3	2:C:135:PRO:CG	2.32	0.42
4:P:20:DC:H2''	4:P:21:DG:C8	2.54	0.42
1:A:594:LEU:HA	1:A:595:GLN:HA	1.85	0.42
1:A:749:PHE:HB2	1:A:750:PHE:H	1.59	0.42
1:A:807:ARG:HD3	3:T:9:DG:H4'	2.00	0.42
1:A:622:TYR:HB2	1:A:770:PHE:CE2	2.54	0.42
1:A:850:ILE:CG1	1:A:851:THR:HA	2.49	0.42
2:C:134:LYS:HZ3	2:C:135:PRO:HG2	1.85	0.42
2:C:184:ASN:OD1	2:C:185:LEU:N	2.44	0.42
2:C:455:LEU:HA	2:C:455:LEU:HD23	1.90	0.42
1:A:586:THR:HG1	1:A:590:SER:HG	1.60	0.42
1:A:955:TYR:CD2	3:T:4:DG:N2	2.88	0.42
1:A:977:GLU:HB3	1:A:981:LYS:NZ	2.35	0.42
2:C:126:PHE:CE2	2:C:199:LEU:HB3	2.55	0.42
2:B:423:SER:OG	2:B:424:SER:N	2.53	0.42
2:B:439:PHE:HB3	2:B:455:LEU:HD11	2.01	0.42
1:A:649:TYR:HB2	1:A:750:PHE:CE1	2.55	0.41
2:C:243:THR:HG1	2:C:251:TRP:HE3	1.66	0.41
2:C:293:PHE:N	2:C:294:PRO:HA	2.35	0.41
1:A:531:GLY:HA2	1:A:532:PRO:HD3	1.84	0.41
2:B:364:LYS:HB2	2:B:364:LYS:HE2	1.63	0.41
2:C:278:CYS:SG	2:C:288:LYS:NZ	2.92	0.41
1:A:505:LYS:HD3	1:A:505:LYS:HA	1.76	0.41
2:C:134:LYS:CE	2:C:135:PRO:CD	2.98	0.41
1:A:298:HIS:HB2	1:A:410:GLN:NE2	2.35	0.41
1:A:856:GLU:HA	1:A:857:PRO:HD3	1.88	0.41
2:B:384:ALA:HB2	2:B:437:ILE:HD13	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:607:TRP:HA	1:A:778:THR:HG23	2.01	0.41
1:A:860:LEU:HD23	1:A:1133:ILE:HG22	2.02	0.41
1:A:170:ALA:HB3	1:A:176:THR:HG21	2.03	0.41
1:A:953:ARG:HG3	1:A:957:ALA:HB2	2.02	0.41
2:C:472:LYS:HE2	2:C:472:LYS:HB3	1.91	0.41
1:A:110:HIS:HB3	1:A:111:GLY:HA2	2.01	0.41
1:A:1198:LYS:HB3	1:A:1198:LYS:HE3	1.84	0.41
1:A:606:THR:HG21	1:A:612:LEU:N	2.36	0.41
1:A:961:PHE:O	1:A:964:ARG:HD2	2.20	0.41
2:B:385:LEU:HA	2:B:441:VAL:HG13	2.03	0.41
1:A:828:HIS:CG	1:A:829:PRO:HD2	2.55	0.41
2:B:393:LEU:HA	2:B:394:GLU:HA	1.65	0.41
1:A:142:LEU:HD22	1:A:1118:TRP:HB2	2.02	0.41
1:A:356:LEU:HA	1:A:359:VAL:HG12	2.02	0.41
1:A:641:GLU:CG	1:A:642:SER:H	2.01	0.40
1:A:97:GLU:HA	1:A:100:VAL:HG22	2.03	0.40
1:A:1025:LEU:HB3	1:A:1026:ARG:H	1.68	0.40
2:C:385:LEU:HD22	2:C:402:LEU:HD13	2.03	0.40
2:C:284:ARG:CZ	2:C:284:ARG:HA	2.51	0.40
2:B:244:PRO:HA	2:B:245:PRO:HD3	1.87	0.40
2:B:70:LEU:HD23	2:B:70:LEU:H	1.86	0.40
6:A:4003:DCP:N4	3:T:4:DG:O6	2.55	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 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	969/1222 (79%)	846 (87%)	106 (11%)	17 (2%)	10	47
2	B	355/472 (75%)	326 (92%)	27 (8%)	2 (1%)	28	69
2	C	350/472 (74%)	327 (93%)	18 (5%)	5 (1%)	13	52

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1674/2166 (77%)	1499 (90%)	151 (9%)	24 (1%)	13	52

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	752	LEU
1	A	1070	PRO
2	C	97	PRO
1	A	648	PRO
1	A	767	ALA
1	A	811	GLN
1	A	1073	PRO
1	A	1080	SER
1	A	1177	VAL
2	C	98	GLY
1	A	95	PRO
1	A	749	PHE
1	A	927	ARG
2	B	461	THR
1	A	642	SER
1	A	765	PRO
1	A	1074	VAL
1	A	1207	GLU
2	C	319	VAL
2	C	391	PRO
1	A	755	LYS
2	C	316	PRO
2	B	451	GLY
1	A	1141	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	830/1029 (81%)	737 (89%)	93 (11%)	7	31

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	325/415 (78%)	308 (95%)	17 (5%)	27	64
2	C	318/415 (77%)	295 (93%)	23 (7%)	17	53
All	All	1473/1859 (79%)	1340 (91%)	133 (9%)	11	42

All (133) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	79	LEU
1	A	93	GLU
1	A	101	ARG
1	A	118	VAL
1	A	130	LEU
1	A	177	ARG
1	A	195	LEU
1	A	197	PHE
1	A	227	ARG
1	A	236	THR
1	A	245	ILE
1	A	247	LEU
1	A	264	GLN
1	A	277	HIS
1	A	292	LEU
1	A	304	LEU
1	A	311	LEU
1	A	316	LYS
1	A	346	ASP
1	A	424	LEU
1	A	488	LEU
1	A	499	LYS
1	A	542	ASP
1	A	548	CYS
1	A	558	LEU
1	A	565	HIS
1	A	566	LEU
1	A	595	GLN
1	A	612	LEU
1	A	613	HIS
1	A	617	ARG
1	A	631	LEU
1	A	633	LYS
1	A	634	LEU

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Mol	Chain	Res	Type
1	A	636	THR
1	A	638	THR
1	A	640	LEU
1	A	641	GLU
1	A	645	VAL
1	A	646	VAL
1	A	650	ARG
1	A	655	LEU
1	A	743	ASP
1	A	744	ILE
1	A	748	TRP
1	A	750	PHE
1	A	751	LYS
1	A	752	LEU
1	A	761	ASN
1	A	762	VAL
1	A	768	LYS
1	A	774	MET
1	A	779	LEU
1	A	808	ILE
1	A	816	LEU
1	A	818	ARG
1	A	821	LEU
1	A	841	LEU
1	A	851	THR
1	A	914	THR
1	A	927	ARG
1	A	941	ILE
1	A	964	ARG
1	A	970	ASN
1	A	973	LEU
1	A	977	GLU
1	A	986	TYR
1	A	989	THR
1	A	1026	ARG
1	A	1027	LYS
1	A	1038	TRP
1	A	1043	VAL
1	A	1047	ARG
1	A	1057	MET
1	A	1069	ILE
1	A	1071	ARG

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Mol	Chain	Res	Type
1	A	1074	VAL
1	A	1081	ARG
1	A	1090	GLU
1	A	1099	TRP
1	A	1118	TRP
1	A	1120	PHE
1	A	1129	PHE
1	A	1130	CYS
1	A	1133	ILE
1	A	1140	LEU
1	A	1141	VAL
1	A	1190	ARG
1	A	1191	LYS
1	A	1197	CYS
1	A	1198	LYS
1	A	1210	TYR
1	A	1218	LEU
2	B	69	LEU
2	B	186	LEU
2	B	231	ILE
2	B	263	TRP
2	B	329	LYS
2	B	364	LYS
2	B	365	LYS
2	B	368	HIS
2	B	372	LEU
2	B	394	GLU
2	B	396	ARG
2	B	428	LEU
2	B	444	THR
2	B	453	ILE
2	B	460	THR
2	B	461	THR
2	B	467	HIS
2	C	83	LYS
2	C	86	LEU
2	C	91	LEU
2	C	115	TRP
2	C	122	ARG
2	C	186	LEU
2	C	197	LEU
2	C	201	ASN

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Mol	Chain	Res	Type
2	C	204	LEU
2	C	243	THR
2	C	251	TRP
2	C	256	LEU
2	C	262	TRP
2	C	281	GLU
2	C	282	GLU
2	C	284	ARG
2	C	293	PHE
2	C	295	TRP
2	C	300	ILE
2	C	386	ASP
2	C	402	LEU
2	C	453	ILE
2	C	455	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	298	HIS
1	A	354	ASN
1	A	497	GLN
1	A	1134	HIS
2	C	427	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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
4	DOC	P	24	3,4	13,19,20	0.89	0	12,26,29	0.45	0

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
4	DOC	P	24	3,4	-	0/3/18/19	0/2/2/2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	DCP	A	4003	5	23,29,29	1.25	3 (13%)	25,45,45	1.16	3 (12%)

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
6	DCP	A	4003	5	-	0/18/34/34	0/2/2/2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	4003	DCP	C2-N3	-3.11	1.32	1.38
6	A	4003	DCP	PB-O1B	2.11	1.58	1.50
6	A	4003	DCP	C4-N4	2.26	1.42	1.35

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	4003	DCP	C2'-C1'-N1	-2.11	109.25	114.23
6	A	4003	DCP	O3'-C3'-C4'	2.59	120.36	110.13
6	A	4003	DCP	O3'-C3'-C2'	2.65	120.47	110.83

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	4003	DCP	4	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	983/1222 (80%)	0.92	147 (14%) 3 3	32, 70, 86, 91	0
2	B	363/472 (76%)	0.93	49 (13%) 3 5	44, 67, 83, 90	0
2	C	358/472 (75%)	0.92	55 (15%) 2 3	41, 69, 83, 90	0
3	T	25/27 (92%)	1.22	6 (24%) 1 1	74, 84, 99, 102	0
4	P	21/24 (87%)	1.44	8 (38%) 0 0	71, 85, 99, 104	0
All	All	1750/2217 (78%)	0.93	265 (15%) 3 3	32, 70, 86, 104	0

All (265) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	746	GLY	13.1
1	A	610	PHE	11.2
1	A	759	SER	10.7
1	A	747	CYS	9.6
1	A	745	PRO	8.7
1	A	510	ALA	6.8
1	A	835	GLY	6.7
1	A	622	TYR	6.5
1	A	760	CYS	6.2
2	C	124	GLN	5.9
2	C	121	PHE	5.6
1	A	563	PRO	5.6
2	C	423	SER	5.5
1	A	632	ALA	5.5
1	A	630	ASN	5.2
2	B	221	THR	5.1
1	A	741	ASP	5.1
1	A	744	ILE	4.9
1	A	1082	ALA	4.9
1	A	611	PRO	4.8

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Mol	Chain	Res	Type	RSRZ
1	A	1132	SER	4.7
1	A	1033	ALA	4.7
1	A	1031	GLU	4.6
2	C	122	ARG	4.6
1	A	756	ASP	4.6
2	C	278	CYS	4.6
2	C	420	THR	4.5
1	A	304	LEU	4.5
2	C	466	MET	4.4
1	A	758	ASN	4.4
2	C	219	PHE	4.3
1	A	832	ASP	4.2
1	A	1081	ARG	4.2
1	A	105	GLU	4.2
1	A	109	LYS	4.2
2	C	123	GLU	4.1
1	A	501	LYS	4.1
2	C	421	MET	4.1
1	A	636	THR	4.0
1	A	1130	CYS	4.0
1	A	785	GLY	4.0
1	A	1035	LYS	3.9
1	A	1131	ILE	3.9
2	B	109	ASN	3.9
1	A	230	GLU	3.9
4	P	10	DG	3.9
1	A	752	LEU	3.8
1	A	865	ALA	3.8
1	A	503	VAL	3.8
1	A	640	LEU	3.8
1	A	1134	HIS	3.8
1	A	1202	ASN	3.7
1	A	1042	GLU	3.7
2	B	81	GLY	3.7
2	C	288	LYS	3.7
2	B	108	LYS	3.7
2	C	285	LYS	3.7
2	C	468	ILE	3.7
2	C	351	TYR	3.6
2	C	236	GLU	3.6
4	P	3	DA	3.6
2	C	355	GLN	3.6

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Mol	Chain	Res	Type	RSRZ
1	A	345	TRP	3.5
2	C	388	GLY	3.5
1	A	1171	ASN	3.5
4	P	5	DG	3.5
1	A	492	LEU	3.5
2	B	316	PRO	3.5
2	C	282	GLU	3.5
2	B	112	ALA	3.5
1	A	827	ARG	3.4
1	A	506	GLU	3.4
1	A	1037	GLN	3.4
1	A	639	THR	3.4
4	P	6	DA	3.3
1	A	108	GLN	3.3
1	A	631	LEU	3.3
1	A	348	LEU	3.3
2	B	366	ASN	3.3
3	T	22	DG	3.3
1	A	634	LEU	3.3
1	A	1075	LEU	3.3
2	C	422	GLN	3.2
1	A	836	LEU	3.2
1	A	755	LYS	3.2
1	A	508	ALA	3.2
1	A	1050	LYS	3.2
2	C	322	LEU	3.2
1	A	287	SER	3.2
1	A	1213	PRO	3.1
2	C	109	ASN	3.1
2	B	105	GLU	3.1
2	C	228	VAL	3.1
1	A	389	PHE	3.1
1	A	607	TRP	3.1
2	C	97	PRO	3.1
1	A	173	GLU	3.1
2	B	219	PHE	3.0
3	T	25	DT	3.0
3	T	21	DC	3.0
1	A	376	LEU	3.0
1	A	595	GLN	3.0
1	A	652	ILE	3.0
2	B	368	HIS	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	753	PRO	3.0
1	A	912	GLY	3.0
1	A	1106	VAL	3.0
2	B	328	ARG	3.0
1	A	1110	HIS	3.0
2	B	364	LYS	3.0
1	A	742	VAL	3.0
2	B	82	SER	3.0
1	A	110	HIS	3.0
1	A	161	GLN	3.0
1	A	342	ILE	3.0
2	B	354	PHE	3.0
4	P	7	DC	2.9
2	B	235	THR	2.9
2	B	468	ILE	2.9
2	C	326	ASP	2.9
2	C	203	ARG	2.9
1	A	642	SER	2.9
1	A	633	LYS	2.9
2	B	210	GLN	2.9
2	C	85	GLN	2.9
1	A	915	ALA	2.9
2	B	211	ILE	2.9
1	A	1034	ARG	2.9
1	A	596	MET	2.9
2	B	297	LYS	2.9
1	A	101	ARG	2.8
2	C	458	ARG	2.8
1	A	426	GLY	2.8
1	A	986	TYR	2.8
3	T	23	DT	2.8
1	A	94	MET	2.8
2	C	399	CYS	2.8
1	A	430	MET	2.8
2	C	413	VAL	2.8
2	B	391	PRO	2.8
2	C	126	PHE	2.8
1	A	507	PRO	2.7
1	A	597	ARG	2.7
2	C	286	GLY	2.7
1	A	572	TRP	2.7
2	C	230	SER	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	609	GLY	2.7
2	C	354	PHE	2.7
1	A	851	THR	2.7
4	P	4	DA	2.7
1	A	431	GLY	2.7
1	A	649	TYR	2.6
2	C	117	SER	2.6
2	C	231	ILE	2.6
2	C	96	HIS	2.6
3	T	26	DT	2.6
1	A	1036	SER	2.6
1	A	1087	ALA	2.6
2	B	212	GLY	2.6
2	B	485	VAL	2.6
4	P	9	DA	2.6
1	A	227	ARG	2.6
2	C	437	ILE	2.6
1	A	90	GLN	2.5
1	A	1038	TRP	2.5
2	C	210	GLN	2.5
2	B	336	LEU	2.5
2	B	117	SER	2.5
1	A	169	TRP	2.5
1	A	423	THR	2.5
2	C	260	LEU	2.5
1	A	124	GLU	2.5
2	C	70	LEU	2.5
2	C	304	TRP	2.5
1	A	635	PRO	2.5
1	A	404	HIS	2.5
2	B	187	HIS	2.5
1	A	661	LEU	2.4
1	A	754	HIS	2.4
1	A	889	ALA	2.4
1	A	505	LYS	2.4
2	C	424	SER	2.4
1	A	235	TRP	2.4
2	C	435	MET	2.4
2	B	304	TRP	2.4
2	B	128	VAL	2.4
2	C	276	SER	2.4
2	B	334	CYS	2.4

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Mol	Chain	Res	Type	RSRZ
4	P	8	DG	2.4
2	B	116	THR	2.4
1	A	286	GLY	2.3
1	A	197	PHE	2.3
2	C	387	VAL	2.3
1	A	601	LYS	2.3
2	B	136	GLY	2.3
3	T	20	DT	2.3
1	A	1107	ASP	2.3
1	A	1032	THR	2.3
2	C	459	ASP	2.3
1	A	1074	VAL	2.3
1	A	166	PRO	2.3
2	B	380	PRO	2.3
2	B	209	ALA	2.3
1	A	847	ALA	2.3
1	A	939	VAL	2.3
2	B	84	GLN	2.3
1	A	347	TRP	2.3
1	A	1129	PHE	2.3
1	A	1105	ALA	2.3
1	A	1139	TYR	2.3
2	B	305	ASN	2.2
2	B	377	CYS	2.2
1	A	433	SER	2.2
2	C	204	LEU	2.2
1	A	89	GLY	2.2
1	A	1103	SER	2.2
2	B	204	LEU	2.2
2	C	241	TRP	2.2
1	A	482	ASP	2.2
2	B	412	SER	2.2
1	A	890	ASP	2.2
1	A	429	GLU	2.2
1	A	907	PHE	2.2
1	A	1208	ARG	2.2
1	A	231	GLU	2.2
1	A	1051	GLY	2.2
2	B	243	THR	2.2
1	A	641	GLU	2.2
1	A	781	ALA	2.1
2	C	215	PHE	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	843	GLN	2.1
2	B	372	LEU	2.1
1	A	1076	GLY	2.1
2	C	337	SER	2.1
1	A	363	TYR	2.1
1	A	1116	MET	2.1
1	A	1128	ARG	2.1
1	A	748	TRP	2.1
1	A	849	THR	2.1
1	A	945	HIS	2.1
1	A	116	PRO	2.1
1	A	1133	ILE	2.1
2	B	339	ASN	2.1
2	C	335	VAL	2.1
2	B	453	ILE	2.1
2	B	326	ASP	2.1
2	B	414	TRP	2.1
1	A	803	ASN	2.1
1	A	1127	GLY	2.1
2	C	283	GLY	2.1
1	A	1096	ARG	2.0
2	B	113	GLU	2.0
2	C	252	LEU	2.0
2	B	238	SER	2.0
1	A	1099	TRP	2.0
1	A	434	TYR	2.0
1	A	102	ARG	2.0
2	B	127	PRO	2.0
2	C	229	LYS	2.0
2	B	285	LYS	2.0
2	C	255	TRP	2.0
1	A	165	LYS	2.0
1	A	210	THR	2.0
2	B	362	THR	2.0
2	B	122	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(\AA^2)	Q<0.9
4	DOC	P	24	18/19	0.92	0.34	-	51,77,117,118	0

6.3 Carbohydrates [i](#)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(\AA^2)	Q<0.9
6	DCP	A	4003	28/28	0.91	0.31	-0.46	42,81,115,118	0
5	MG	A	4001	1/1	0.91	0.24	-	73,73,73,73	0
5	MG	A	4002	1/1	0.89	0.27	-	35,35,35,35	0

6.5 Other polymers [i](#)

There are no such residues in this entry.