



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 10:40 PM GMT

PDB ID : 1UPU
Title : STRUCTURE OF THE URACIL PHOSPHORIBOSYLTRANSFERASE,
MUTANT C128V, BOUND TO PRODUCT URIDINE-1-MONOPHOSPHA
TE (UMP)
Authors : Schumacher, M.A.; Carter, D.; Scott, D.; Roos, D.; Ullman, B.; Brennan, R.G.
Deposited on : 1998-04-16
Resolution : 2.50 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 (RC4), CSD as536be (2015)
Xtriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

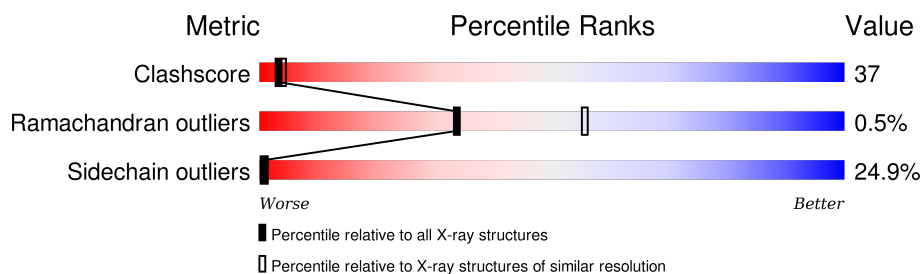
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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))
Clashscore	102246	4242 (2.50-2.50)
Ramachandran outliers	100387	4156 (2.50-2.50)
Sidechain outliers	100360	4158 (2.50-2.50)

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.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	224	
1	B	224	
1	C	224	
1	D	224	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	PO4	D	899	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 7656 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 URACIL PHOSPHORIBOSYLTRANSFERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	D	224	Total	C	N	O	S	0	0	0
			1788	1146	305	324	13			
1	C	224	Total	C	N	O	S	0	0	0
			1788	1146	305	324	13			
1	B	224	Total	C	N	O	S	0	0	0
			1788	1146	305	324	13			
1	A	224	Total	C	N	O	S	0	0	0
			1788	1146	305	324	13			

There are 12 discrepancies between the modelled and reference sequences:

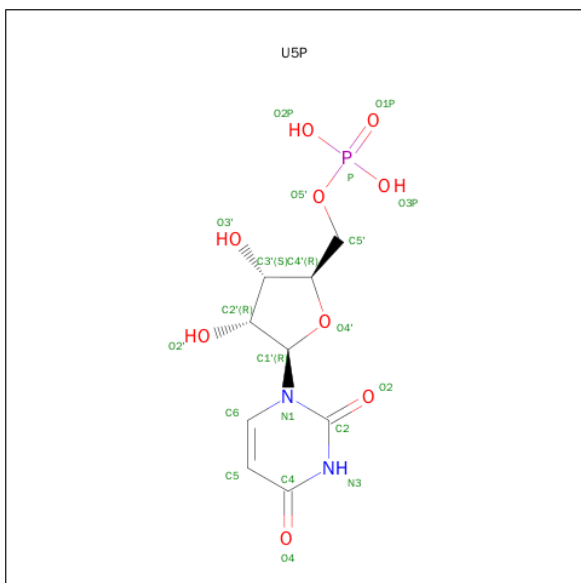
Chain	Residue	Modelled	Actual	Comment	Reference
D	84	GLN	GLU	CONFLICT	UNP Q26998
D	128	VAL	CYS	ENGINEERED	UNP Q26998
D	157	GLU	ASP	CONFLICT	UNP Q26998
C	84	GLN	GLU	CONFLICT	UNP Q26998
C	128	VAL	CYS	ENGINEERED	UNP Q26998
C	157	GLU	ASP	CONFLICT	UNP Q26998
B	84	GLN	GLU	CONFLICT	UNP Q26998
B	128	VAL	CYS	ENGINEERED	UNP Q26998
B	157	GLU	ASP	CONFLICT	UNP Q26998
A	84	GLN	GLU	CONFLICT	UNP Q26998
A	128	VAL	CYS	ENGINEERED	UNP Q26998
A	157	GLU	ASP	CONFLICT	UNP Q26998

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	D	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		
2	A	1	Total	O	P	0	0
			5	4	1		

- Molecule 3 is URIDINE-5'-MONOPHOSPHATE (three-letter code: U5P) (formula: $C_9H_{13}N_2O_9P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	D	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
3	C	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
3	B	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
3	A	1	Total	C	N	O	P	0	0
			21	9	2	9	1		

- Molecule 4 is water.

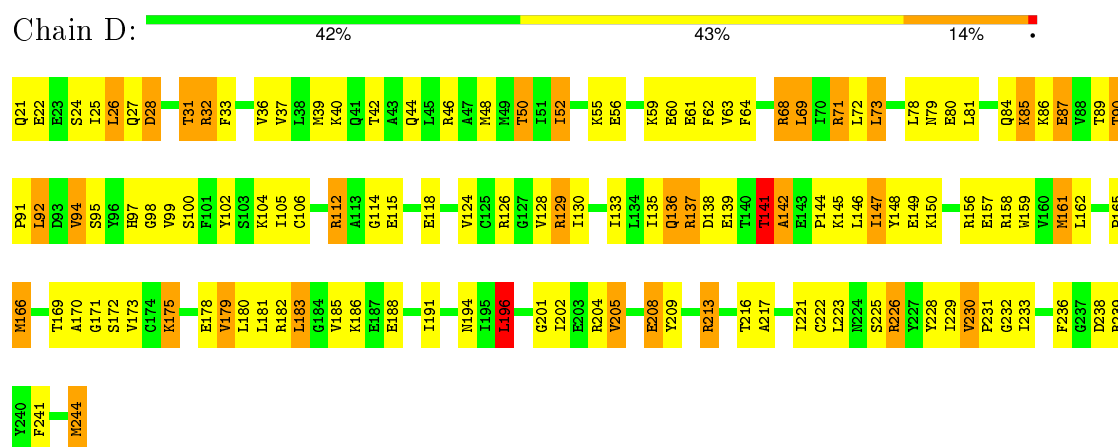
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	101	Total	O	0	0
			101	101		
4	B	94	Total	O	0	0
			94	94		
4	C	126	Total	O	0	0
			126	126		
4	D	79	Total	O	0	0
			79	79		

3 Residue-property plots

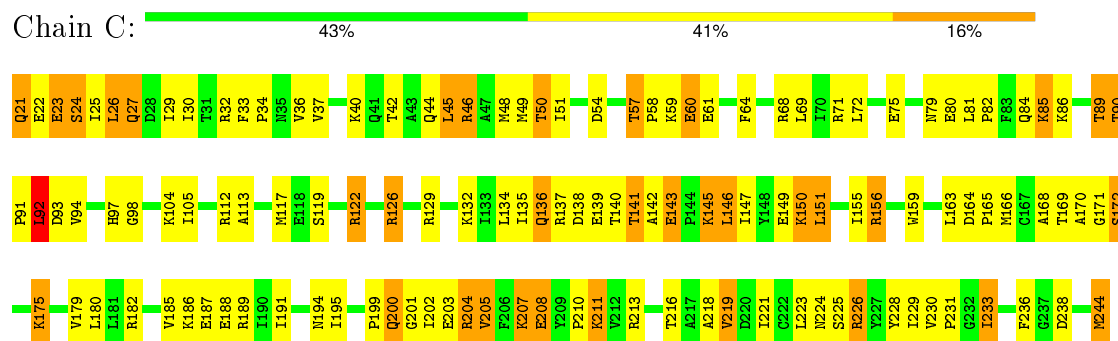
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according 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.

Note EDS was not executed.

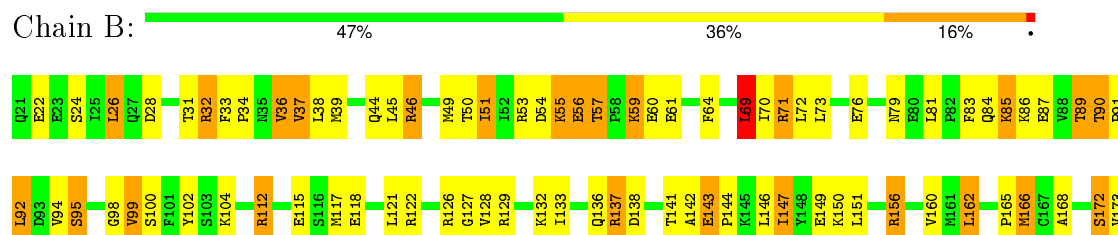
• Molecule 1: URACIL PHOSPHORIBOSYLTRANSFERASE



• Molecule 1: URACIL PHOSPHORIBOSYLTRANSFERASE

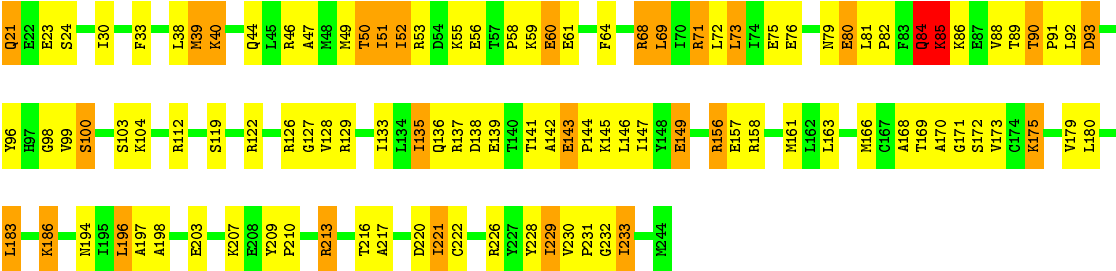


• Molecule 1: URACIL PHOSPHORIBOSYLTRANSFERASE





● Molecule 1: URACIL PHOSPHORIBOSYLTRANSFERASE



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section will therefore be incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	60.28 Å 141.77 Å 71.42 Å 90.00° 114.93° 90.00°	Depositor
Resolution (Å)	10.00 – 2.50	Depositor
% Data completeness (in resolution range)	81.0 (10.00-2.50)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	TNT V. 5-E	Depositor
R, R_{free}	0.148 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	7656	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, U5P

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	0.74	0/1817	0.92	1/2450 (0.0%)
1	B	0.74	0/1817	0.95	3/2450 (0.1%)
1	C	0.73	0/1817	0.89	1/2450 (0.0%)
1	D	0.79	1/1817 (0.1%)	0.92	3/2450 (0.1%)
All	All	0.75	1/7268 (0.0%)	0.92	8/9800 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	129	ARG	CZ-NH1	-8.93	1.21	1.33

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	223	LEU	CA-CB-CG	5.90	128.86	115.30
1	D	196	LEU	CA-CB-CG	5.43	127.80	115.30
1	B	239	ARG	NE-CZ-NH1	-5.43	117.59	120.30
1	C	92	LEU	CA-CB-CG	-5.10	103.58	115.30
1	A	85	LYS	N-CA-C	-5.09	97.27	111.00
1	D	159	TRP	N-CA-C	-5.06	97.34	111.00
1	B	69	LEU	CA-CB-CG	5.04	126.90	115.30
1	D	71	ARG	NE-CZ-NH2	-5.00	117.80	120.30

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	1788	0	1857	154	0
1	B	1788	0	1857	162	0
1	C	1788	0	1857	156	0
1	D	1788	0	1857	145	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
2	C	5	0	0	1	0
2	D	5	0	0	2	0
3	A	21	0	11	1	0
3	B	21	0	11	6	0
3	C	21	0	11	5	0
3	D	21	0	11	4	0
4	A	101	0	0	20	0
4	B	94	0	0	15	0
4	C	126	0	0	13	1
4	D	79	0	0	15	1
All	All	7656	0	7472	552	1

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 37.

All (552) 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:C:244:MET:HE2	1:C:244:MET:H	1.12	1.10
1:B:90:THR:HG22	1:B:92:LEU:H	1.18	1.03
1:C:187:GLU:HB3	1:C:211:LYS:HZ3	1.21	1.03
1:C:145:LYS:HE2	1:C:145:LYS:HA	1.44	0.98
1:D:32:ARG:HH11	1:D:32:ARG:HG2	1.29	0.95
1:B:223:LEU:HD11	1:B:227:TYR:HA	1.49	0.95
1:C:187:GLU:HB3	1:C:211:LYS:NZ	1.82	0.94
1:D:90:THR:HG22	1:D:92:LEU:H	1.31	0.94
1:B:141:THR:HG22	1:B:143:GLU:H	1.32	0.94
1:C:64:PHE:CZ	1:B:126:ARG:HD2	2.03	0.93
1:C:166:MET:HE3	3:C:999:U5P:N3	1.84	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:226:ARG:HD2	1:A:228:TYR:CE2	2.04	0.92
1:B:238:ASP:OD1	4:B:1070:HOH:O	1.88	0.92
1:B:223:LEU:CD1	1:B:227:TYR:HA	2.01	0.90
1:B:133:ILE:HD11	1:B:151:LEU:HD21	1.51	0.89
1:C:141:THR:HG22	1:C:143:GLU:H	1.35	0.89
1:C:156:ARG:HH11	1:C:156:ARG:H	0.95	0.89
1:C:156:ARG:H	1:C:156:ARG:NH1	1.69	0.89
1:B:230:VAL:HG23	1:B:231:PRO:HA	1.52	0.89
1:D:39:MET:CE	1:D:73:LEU:HD13	2.05	0.86
1:C:244:MET:HE2	1:C:244:MET:N	1.91	0.85
1:A:21:GLN:HA	1:A:21:GLN:HE21	1.41	0.85
1:D:126:ARG:HD2	1:A:64:PHE:CE1	2.11	0.85
1:C:90:THR:HG23	1:C:92:LEU:H	1.41	0.83
1:C:54:ASP:HB3	1:C:57:THR:CG2	2.09	0.83
1:B:90:THR:CG2	1:B:92:LEU:H	1.90	0.83
1:D:90:THR:CG2	1:D:92:LEU:H	1.92	0.82
1:A:133:ILE:HG22	1:A:135:ILE:HD12	1.63	0.81
1:C:145:LYS:HD3	1:C:146:LEU:N	1.97	0.80
1:D:186:LYS:HE2	1:D:186:LYS:HA	1.64	0.79
1:D:39:MET:HE1	1:D:73:LEU:HD13	1.62	0.78
1:D:149:GLU:HB3	4:D:1050:HOH:O	1.81	0.78
1:D:226:ARG:HH11	1:D:226:ARG:HG3	1.48	0.78
1:B:85:LYS:HD2	1:B:86:LYS:N	1.99	0.78
1:A:186:LYS:N	1:A:186:LYS:HD2	1.97	0.78
1:B:137:ARG:HG2	1:B:142:ALA:O	1.84	0.77
1:C:134:LEU:HD11	1:C:136:GLN:NE2	1.99	0.77
1:B:90:THR:HG22	1:B:92:LEU:N	1.96	0.76
1:A:23:GLU:HB2	4:A:1098:HOH:O	1.85	0.76
1:D:85:LYS:HE2	1:D:86:LYS:N	1.99	0.76
1:A:90:THR:CG2	1:A:92:LEU:H	1.98	0.76
1:C:134:LEU:HD11	1:C:136:GLN:HE22	1.50	0.76
1:D:213:ARG:HG2	4:D:1064:HOH:O	1.86	0.76
1:B:132:LYS:O	1:B:133:ILE:HD13	1.86	0.75
1:C:90:THR:CG2	1:C:92:LEU:H	1.99	0.75
1:B:54:ASP:HB3	1:B:57:THR:CG2	2.16	0.75
1:B:200:GLN:HB3	4:B:1040:HOH:O	1.87	0.75
1:C:37:VAL:HG23	4:C:1121:HOH:O	1.85	0.74
1:D:48:MET:CE	1:D:68:ARG:HB3	2.17	0.74
1:C:201:GLY:O	1:C:205:VAL:HG12	1.87	0.74
1:A:156:ARG:HG2	1:A:156:ARG:HH11	1.51	0.74
1:D:90:THR:HG21	1:A:231:PRO:O	1.87	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:126:ARG:HD2	1:A:64:PHE:CZ	2.23	0.74
1:D:69:LEU:O	1:D:69:LEU:HD12	1.88	0.74
1:C:90:THR:HG21	1:B:231:PRO:O	1.88	0.74
1:C:64:PHE:CE1	1:B:126:ARG:HD2	2.23	0.73
1:D:231:PRO:O	1:A:90:THR:HG21	1.87	0.73
1:C:231:PRO:O	1:B:90:THR:HG21	1.88	0.73
1:C:186:LYS:HB2	1:C:189:ARG:HG3	1.70	0.73
1:C:85:LYS:CE	1:C:97:HIS:HB3	2.18	0.73
1:C:126:ARG:HG2	4:C:1021:HOH:O	1.89	0.72
1:D:137:ARG:NH2	1:D:171:GLY:HA3	2.05	0.72
1:C:156:ARG:HH11	1:C:156:ARG:N	1.79	0.72
1:C:166:MET:HE1	1:C:236:PHE:H	1.55	0.72
1:B:90:THR:CG2	1:B:92:LEU:HB2	2.18	0.71
1:C:30:ILE:HA	4:C:1107:HOH:O	1.88	0.71
1:C:204:ARG:HG2	1:C:207:LYS:HD3	1.72	0.71
1:B:141:THR:CG2	1:B:143:GLU:HB2	2.20	0.71
1:A:141:THR:CG2	1:A:143:GLU:HG3	2.20	0.71
1:C:85:LYS:HD3	1:C:98:GLY:O	1.91	0.71
1:B:117:MET:HE3	1:B:165:PRO:N	2.05	0.71
1:D:40:LYS:HG3	1:D:42:THR:HG23	1.72	0.70
1:B:223:LEU:HD12	1:B:224:ASN:N	2.05	0.70
1:C:180:LEU:O	1:C:185:VAL:HG13	1.91	0.70
1:A:85:LYS:N	1:A:85:LYS:HD3	2.06	0.70
1:B:166:MET:CE	1:B:236:PHE:HB2	2.22	0.70
1:C:51:ILE:O	1:C:57:THR:HG21	1.91	0.69
1:A:85:LYS:N	4:A:1033:HOH:O	2.25	0.69
1:B:32:ARG:HG2	1:B:32:ARG:HH11	1.56	0.69
1:C:226:ARG:O	1:C:226:ARG:NE	2.25	0.69
1:D:92:LEU:HD21	1:A:228:TYR:HB3	1.73	0.69
1:D:40:LYS:HE2	1:A:40:LYS:HE3	1.74	0.69
1:D:166:MET:HE3	3:D:999:U5P:C4	2.21	0.69
1:C:85:LYS:HE2	1:C:97:HIS:HB3	1.74	0.69
1:B:85:LYS:NZ	1:B:87:GLU:HB2	2.06	0.69
1:D:156:ARG:NH1	1:D:157:GLU:HG3	2.06	0.69
1:A:213:ARG:HH11	1:A:213:ARG:HB3	1.58	0.69
1:D:90:THR:HG22	1:D:92:LEU:N	2.08	0.68
4:D:1019:HOH:O	1:A:44:GLN:HG2	1.93	0.68
1:D:226:ARG:HG3	1:D:226:ARG:NH1	2.06	0.68
1:B:22:GLU:HG2	1:B:26:LEU:HD22	1.75	0.68
1:A:52:ILE:CD1	1:A:233:ILE:HD11	2.24	0.68
1:B:126:ARG:HD3	4:B:1055:HOH:O	1.92	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:186:LYS:CA	1:D:186:LYS:HE2	2.23	0.67
1:D:22:GLU:HG2	1:D:26:LEU:HD22	1.77	0.67
1:C:155:ILE:HG22	1:C:156:ARG:HH12	1.58	0.67
1:C:126:ARG:HD3	1:B:64:PHE:CE1	2.29	0.67
1:D:64:PHE:CZ	1:A:126:ARG:HD2	2.30	0.67
1:D:138:ASP:O	1:D:142:ALA:HA	1.94	0.67
1:B:230:VAL:HA	1:B:231:PRO:C	2.15	0.67
1:A:226:ARG:HD2	1:A:228:TYR:HE2	1.55	0.66
1:C:137:ARG:NH2	1:C:171:GLY:HA3	2.10	0.66
1:C:50:THR:HG21	1:B:98:GLY:HA3	1.77	0.66
1:B:141:THR:HG22	1:B:143:GLU:N	2.07	0.66
1:D:40:LYS:HE2	1:A:40:LYS:CE	2.25	0.66
1:D:80:GLU:HB2	1:D:191:ILE:HD13	1.77	0.66
1:B:173:VAL:O	1:B:177:ILE:HG13	1.95	0.66
1:C:126:ARG:NH2	1:B:61:GLU:OE2	2.27	0.66
1:B:176:ALA:O	1:B:180:LEU:HD22	1.95	0.66
1:C:117:MET:HE3	1:C:165:PRO:N	2.11	0.66
1:A:156:ARG:HG2	1:A:156:ARG:NH1	2.09	0.66
1:A:226:ARG:O	1:A:226:ARG:HD3	1.95	0.65
1:D:133:ILE:HG23	4:D:1050:HOH:O	1.95	0.65
1:C:27:GLN:HA	1:C:27:GLN:OE1	1.94	0.65
1:C:166:MET:HE3	3:C:999:U5P:C2	2.26	0.65
1:C:85:LYS:HD3	1:C:86:LYS:H	1.60	0.65
1:A:156:ARG:HB3	4:A:1028:HOH:O	1.95	0.65
1:D:61:GLU:OE2	1:A:126:ARG:NH2	2.30	0.65
1:B:69:LEU:HD12	1:B:69:LEU:O	1.97	0.65
1:A:69:LEU:HD12	1:A:69:LEU:O	1.97	0.65
1:B:39:MET:HE2	1:B:217:ALA:HB2	1.79	0.65
1:B:85:LYS:HZ3	1:B:87:GLU:N	1.95	0.65
1:D:156:ARG:CZ	1:D:157:GLU:HG3	2.27	0.65
1:A:230:VAL:HA	1:A:231:PRO:C	2.17	0.65
1:C:141:THR:CG2	1:C:143:GLU:HB2	2.26	0.64
1:D:146:LEU:HD11	4:D:1050:HOH:O	1.97	0.64
1:A:138:ASP:OD1	1:A:141:THR:N	2.26	0.64
1:A:90:THR:HG22	1:A:92:LEU:H	1.60	0.64
1:D:92:LEU:O	1:D:94:VAL:HG12	1.98	0.64
1:C:138:ASP:OD1	1:C:140:THR:N	2.28	0.64
1:B:85:LYS:HA	1:B:99:VAL:HG12	1.80	0.64
1:B:133:ILE:CD1	1:B:151:LEU:HD21	2.26	0.64
1:A:128:VAL:HA	4:A:1093:HOH:O	1.98	0.64
1:B:89:THR:HG23	4:B:1090:HOH:O	1.96	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:122:ARG:NH2	4:B:1059:HOH:O	2.30	0.64
1:C:137:ARG:HH22	1:C:171:GLY:HA3	1.63	0.63
1:C:44:GLN:H	1:B:79:ASN:ND2	1.96	0.63
1:B:71:ARG:NH1	4:B:1075:HOH:O	2.31	0.63
1:D:135:ILE:HD13	1:D:175:LYS:HB3	1.79	0.63
1:B:221:ILE:HG13	1:B:222:CYS:N	2.12	0.63
1:B:138:ASP:OD1	1:B:141:THR:N	2.29	0.63
1:C:44:GLN:HB2	1:B:79:ASN:HD21	1.64	0.63
1:C:129:ARG:NH1	1:A:59:LYS:HE2	2.14	0.63
4:D:1071:HOH:O	1:A:68:ARG:HG3	1.97	0.63
1:B:201:GLY:O	1:B:205:VAL:HG12	1.97	0.63
1:D:55:LYS:HD2	1:A:90:THR:O	1.99	0.63
1:A:143:GLU:OE2	1:A:145:LYS:HD3	1.97	0.63
1:B:141:THR:HG21	1:B:143:GLU:HB2	1.81	0.63
1:C:166:MET:HE3	3:C:999:U5P:HN3	1.62	0.63
1:A:141:THR:HG22	1:A:143:GLU:HG3	1.81	0.63
1:D:50:THR:HG21	1:A:99:VAL:H	1.62	0.63
1:B:112:ARG:NH2	4:B:1070:HOH:O	2.30	0.62
1:D:126:ARG:NH2	1:A:61:GLU:OE2	2.32	0.62
1:D:230:VAL:HA	1:D:231:PRO:C	2.19	0.62
1:D:105:ILE:HD12	1:D:161:MET:HE1	1.81	0.62
1:B:90:THR:HG21	1:B:92:LEU:HB2	1.81	0.62
1:D:230:VAL:HG23	1:D:231:PRO:HA	1.81	0.62
1:C:202:ILE:O	1:C:205:VAL:HG13	1.99	0.62
1:D:236:PHE:HA	4:D:1072:HOH:O	1.98	0.62
1:B:51:ILE:O	1:B:57:THR:HG21	2.00	0.62
1:C:230:VAL:HA	1:C:231:PRO:C	2.19	0.62
1:A:60:GLU:H	1:A:60:GLU:CD	2.03	0.62
1:D:89:THR:HG23	1:A:55:LYS:HD3	1.80	0.62
1:C:224:ASN:N	1:C:228:TYR:O	2.30	0.61
1:D:79:ASN:ND2	1:A:44:GLN:HB2	2.15	0.61
1:B:86:LYS:O	1:B:98:GLY:N	2.31	0.61
1:C:85:LYS:HD3	1:C:86:LYS:N	2.15	0.61
1:A:84:GLN:NE2	1:A:84:GLN:HA	2.16	0.61
1:C:207:LYS:HG2	1:C:208:GLU:N	2.16	0.61
1:C:49:MET:CE	1:C:69:LEU:HD11	2.31	0.61
1:A:52:ILE:HD11	1:A:233:ILE:HD11	1.82	0.61
1:D:229:ILE:HB	4:D:1035:HOH:O	2.01	0.61
1:B:147:ILE:N	1:B:147:ILE:HD13	2.15	0.60
1:A:49:MET:HE2	1:A:53:ARG:HH11	1.64	0.60
1:B:194:ASN:O	1:B:216:THR:HA	2.00	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:33:PHE:O	1:B:36:VAL:HG13	2.02	0.60
1:D:32:ARG:HH11	1:D:32:ARG:CG	2.09	0.60
1:C:40:LYS:HA	4:C:1010:HOH:O	2.02	0.60
1:B:60:GLU:CD	1:B:60:GLU:H	2.02	0.60
1:C:199:PRO:O	1:C:203:GLU:HG3	2.01	0.60
1:C:61:GLU:OE2	1:B:126:ARG:NH2	2.28	0.60
1:D:99:VAL:H	1:A:50:THR:HG21	1.67	0.60
1:D:79:ASN:ND2	1:A:44:GLN:H	2.00	0.59
1:B:146:LEU:C	1:B:147:ILE:HD13	2.23	0.59
1:C:221:ILE:HD13	1:C:221:ILE:N	2.16	0.59
1:D:81:LEU:N	1:D:81:LEU:HD22	2.17	0.59
1:C:166:MET:CE	1:C:236:PHE:HB2	2.33	0.59
1:D:175:LYS:HE2	1:D:178:GLU:OE1	2.03	0.59
1:C:59:LYS:HE2	1:A:127:GLY:O	2.03	0.59
1:D:52:ILE:HG23	1:D:233:ILE:HD11	1.84	0.58
1:B:132:LYS:C	1:B:133:ILE:HD13	2.23	0.58
1:D:238:ASP:HB3	1:D:244:MET:SD	2.43	0.58
1:D:33:PHE:HB3	4:D:1003:HOH:O	2.02	0.58
1:A:90:THR:HG23	1:A:92:LEU:H	1.69	0.58
1:D:166:MET:CE	3:D:999:U5P:N3	2.66	0.58
1:D:33:PHE:O	1:D:36:VAL:HG13	2.04	0.58
1:D:136:GLN:O	1:D:145:LYS:N	2.30	0.58
1:A:71:ARG:HB3	4:A:1099:HOH:O	2.03	0.58
1:B:166:MET:HE2	1:B:236:PHE:HB2	1.85	0.57
1:D:90:THR:CG2	1:D:92:LEU:HB2	2.34	0.57
1:B:230:VAL:CG2	1:B:231:PRO:HA	2.29	0.57
1:B:196:LEU:HD12	1:B:233:ILE:HG22	1.87	0.57
1:C:145:LYS:HD3	1:C:146:LEU:H	1.67	0.57
1:C:44:GLN:H	1:B:79:ASN:HD21	1.51	0.57
1:B:156:ARG:HH11	1:B:156:ARG:CG	2.18	0.57
1:B:90:THR:HG22	1:B:92:LEU:HB2	1.87	0.57
1:C:200:GLN:H	1:C:200:GLN:CD	2.07	0.57
1:C:49:MET:HE2	1:C:69:LEU:HD11	1.85	0.57
1:D:52:ILE:CG2	1:D:233:ILE:HD11	2.33	0.57
1:D:241:PHE:HE1	4:B:1039:HOH:O	1.88	0.57
1:A:221:ILE:O	1:A:221:ILE:HD12	2.03	0.57
1:B:22:GLU:HG2	1:B:26:LEU:CD2	2.35	0.57
1:C:166:MET:CE	1:C:236:PHE:H	2.16	0.57
1:A:133:ILE:CG2	1:A:135:ILE:HD12	2.35	0.57
1:D:46:ARG:O	1:D:50:THR:HG23	2.04	0.57
1:C:60:GLU:CD	1:C:60:GLU:H	2.08	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:166:MET:HE1	1:C:236:PHE:HB2	1.86	0.57
1:B:137:ARG:HH11	1:B:137:ARG:CG	2.17	0.56
1:D:39:MET:CE	1:D:217:ALA:HB2	2.34	0.56
1:D:60:GLU:H	1:D:60:GLU:CD	2.08	0.56
1:C:71:ARG:HG2	4:C:1054:HOH:O	2.05	0.56
1:B:166:MET:HE3	3:B:999:U5P:C2	2.35	0.56
1:C:50:THR:CG2	1:B:98:GLY:HA3	2.36	0.56
1:B:129:ARG:HG3	4:B:1000:HOH:O	2.05	0.56
1:D:136:GLN:HB2	1:D:147:ILE:HG12	1.87	0.56
1:B:141:THR:HG22	1:B:143:GLU:HB2	1.86	0.56
1:B:156:ARG:HH11	1:B:156:ARG:HG3	1.71	0.56
1:B:226:ARG:HG2	1:B:226:ARG:NH1	2.21	0.56
1:C:54:ASP:HB3	1:C:57:THR:HG22	1.87	0.55
1:D:228:TYR:HD1	3:D:999:U5P:O4	1.88	0.55
1:B:204:ARG:HD3	1:B:208:GLU:OE2	2.06	0.55
1:B:166:MET:HE1	1:B:236:PHE:H	1.72	0.55
1:C:126:ARG:HD3	1:B:64:PHE:CZ	2.41	0.55
1:C:207:LYS:HE2	1:C:208:GLU:OE2	2.06	0.55
1:B:32:ARG:HG2	1:B:32:ARG:NH1	2.19	0.55
1:D:201:GLY:O	1:D:205:VAL:HG12	2.06	0.55
1:B:85:LYS:HZ1	1:B:87:GLU:HB2	1.70	0.55
1:A:196:LEU:HD22	1:A:197:ALA:N	2.22	0.55
1:C:79:ASN:HD21	1:B:44:GLN:H	1.54	0.55
1:A:173:VAL:HG12	4:A:1026:HOH:O	2.07	0.55
1:B:117:MET:HE3	1:B:165:PRO:CD	2.36	0.55
1:D:129:ARG:NH1	2:D:899:PO4:O3	2.39	0.55
1:D:85:LYS:HZ1	1:D:87:GLU:HB2	1.72	0.55
1:B:202:ILE:O	1:B:205:VAL:HG13	2.07	0.55
1:D:61:GLU:CD	1:A:126:ARG:HH22	2.11	0.54
1:D:147:ILE:N	1:D:147:ILE:HD13	2.22	0.54
1:D:94:VAL:HG22	1:A:231:PRO:HB3	1.88	0.54
1:D:55:LYS:HG3	1:A:90:THR:C	2.28	0.54
1:A:21:GLN:CA	1:A:21:GLN:HE21	2.12	0.54
1:B:54:ASP:O	1:B:57:THR:HG23	2.07	0.54
1:A:53:ARG:NH2	1:A:220:ASP:OD2	2.39	0.54
1:A:145:LYS:O	1:A:147:ILE:HD12	2.07	0.54
1:D:166:MET:HE3	3:D:999:U5P:N3	2.22	0.54
1:D:33:PHE:HB2	1:D:36:VAL:CG1	2.38	0.54
1:C:188:GLU:HA	4:C:1118:HOH:O	2.06	0.54
1:D:194:ASN:O	1:D:216:THR:HA	2.09	0.54
1:C:44:GLN:HB3	4:C:1064:HOH:O	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:58:PRO:HB2	1:A:60:GLU:OE2	2.08	0.54
1:C:172:SER:OG	3:C:999:U5P:H5'1	2.08	0.53
1:C:79:ASN:ND2	1:B:44:GLN:H	2.07	0.53
1:C:138:ASP:OD1	1:C:141:THR:N	2.29	0.53
1:C:122:ARG:HD2	4:A:1014:HOH:O	2.08	0.53
1:C:218:ALA:HB2	4:C:1046:HOH:O	2.08	0.53
1:C:54:ASP:O	1:C:57:THR:HG23	2.08	0.53
1:C:149:GLU:OE1	1:C:151:LEU:HD22	2.08	0.53
1:A:90:THR:HG22	1:A:92:LEU:N	2.22	0.53
1:A:40:LYS:HG2	1:A:40:LYS:O	2.09	0.53
1:A:138:ASP:HB3	1:A:143:GLU:OE1	2.07	0.53
1:D:79:ASN:HD21	1:A:44:GLN:HB2	1.74	0.53
1:D:148:TYR:OH	1:D:150:LYS:HG3	2.08	0.53
1:B:137:ARG:HH22	3:B:999:U5P:H5'1	1.73	0.53
1:C:57:THR:HB	4:C:1095:HOH:O	2.08	0.53
1:D:182:ARG:HD3	4:D:1066:HOH:O	2.08	0.53
1:C:59:LYS:HE3	1:A:129:ARG:NH1	2.22	0.52
1:C:119:SER:HA	4:C:1113:HOH:O	2.09	0.52
1:D:48:MET:HE3	1:D:68:ARG:HB3	1.91	0.52
1:C:139:GLU:N	4:C:1104:HOH:O	2.29	0.52
1:B:39:MET:CE	1:B:217:ALA:HB2	2.38	0.52
1:C:223:LEU:HA	1:C:228:TYR:O	2.10	0.52
1:B:33:PHE:HB2	1:B:36:VAL:CG1	2.40	0.52
1:B:156:ARG:NH1	1:B:156:ARG:HG3	2.22	0.52
1:B:137:ARG:HH11	1:B:137:ARG:CB	2.22	0.52
1:B:233:ILE:C	1:B:233:ILE:HD13	2.30	0.52
1:B:223:LEU:C	1:B:223:LEU:HD12	2.30	0.52
1:A:40:LYS:H	1:A:40:LYS:HD2	1.75	0.52
1:C:85:LYS:NZ	1:C:97:HIS:CD2	2.79	0.51
1:B:90:THR:HG23	1:B:91:PRO:HD2	1.92	0.51
1:B:137:ARG:HH11	1:B:137:ARG:HB2	1.76	0.51
1:A:84:GLN:CA	1:A:84:GLN:HE21	2.22	0.51
1:D:239:ARG:HB2	4:D:1072:HOH:O	2.11	0.51
1:A:100:SER:N	4:A:1033:HOH:O	2.27	0.51
1:C:141:THR:CG2	1:C:143:GLU:H	2.15	0.51
1:D:69:LEU:HD12	1:D:69:LEU:C	2.30	0.51
1:C:48:MET:HG3	4:C:1064:HOH:O	2.10	0.51
1:C:26:LEU:CD1	1:C:219:VAL:HG13	2.40	0.51
1:D:27:GLN:OE1	1:D:31:THR:HG22	2.09	0.51
1:D:112:ARG:O	1:D:115:GLU:HB2	2.09	0.51
1:C:134:LEU:HG	1:C:147:ILE:HB	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:22:GLU:O	1:C:26:LEU:HD22	2.10	0.51
1:D:90:THR:HG23	1:D:91:PRO:HD2	1.92	0.51
1:A:21:GLN:HA	1:A:21:GLN:NE2	2.20	0.51
1:D:79:ASN:HD21	1:A:44:GLN:H	1.58	0.51
1:C:141:THR:O	1:C:142:ALA:HB3	2.11	0.50
1:B:22:GLU:OE1	1:B:46:ARG:NH2	2.37	0.50
1:C:85:LYS:HZ3	1:C:97:HIS:CD2	2.29	0.50
1:D:50:THR:HG21	1:A:98:GLY:HA3	1.92	0.50
1:D:44:GLN:H	1:A:79:ASN:ND2	2.09	0.50
1:C:200:GLN:NE2	1:C:223:LEU:HG	2.26	0.50
1:B:226:ARG:HH11	1:B:226:ARG:HG2	1.76	0.50
1:C:75:GLU:HG3	1:B:72:LEU:HD21	1.93	0.50
1:B:172:SER:OG	3:B:999:U5P:O2P	2.28	0.50
1:A:69:LEU:C	1:A:69:LEU:HD12	2.32	0.50
1:B:39:MET:HG2	1:B:76:GLU:HG2	1.94	0.50
1:A:168:ALA:HB2	3:A:999:U5P:H5	1.94	0.50
1:A:84:GLN:NE2	1:A:85:LYS:HD2	2.26	0.50
1:B:162:LEU:CD1	1:B:173:VAL:HG23	2.42	0.50
1:C:89:THR:O	1:B:55:LYS:HG2	2.12	0.50
1:D:39:MET:HE2	1:D:73:LEU:HD13	1.91	0.49
1:D:55:LYS:CG	1:A:91:PRO:HA	2.42	0.49
1:A:138:ASP:CG	1:A:141:THR:HB	2.31	0.49
1:B:204:ARG:O	1:B:208:GLU:HG3	2.13	0.49
1:C:145:LYS:CA	1:C:145:LYS:HE2	2.29	0.49
1:C:85:LYS:HZ3	1:C:97:HIS:HD2	1.60	0.49
1:A:233:ILE:HG23	1:A:233:ILE:O	2.12	0.49
1:D:138:ASP:OD2	1:D:141:THR:OG1	2.29	0.49
1:D:221:ILE:HG22	1:D:222:CYS:SG	2.52	0.49
1:A:51:ILE:HD13	1:A:51:ILE:N	2.28	0.49
1:A:40:LYS:HG2	4:A:1092:HOH:O	2.13	0.49
1:B:115:GLU:O	1:B:118:GLU:HB2	2.12	0.49
1:B:137:ARG:HA	1:B:144:PRO:HA	1.94	0.49
1:C:156:ARG:NH1	1:C:156:ARG:N	2.51	0.49
1:C:69:LEU:C	1:C:69:LEU:HD23	2.31	0.49
1:A:53:ARG:HH22	1:A:220:ASP:CG	2.16	0.49
1:A:169:THR:HG21	4:A:1038:HOH:O	2.12	0.49
1:D:126:ARG:HD2	1:A:64:PHE:CD1	2.48	0.49
1:B:162:LEU:HD11	1:B:173:VAL:HG23	1.94	0.49
1:A:73:LEU:HD11	1:A:194:ASN:O	2.13	0.49
1:B:102:TYR:CD1	1:B:102:TYR:N	2.79	0.49
1:A:40:LYS:HD3	4:A:1092:HOH:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:156:ARG:HH11	1:B:156:ARG:C	2.15	0.49
1:C:90:THR:HG23	1:C:91:PRO:N	2.28	0.48
1:D:226:ARG:HH11	1:D:226:ARG:CG	2.23	0.48
1:B:54:ASP:HB3	1:B:57:THR:HG22	1.93	0.48
1:C:85:LYS:NZ	1:C:97:HIS:HB3	2.28	0.48
1:D:141:THR:O	1:D:142:ALA:HB2	2.13	0.48
1:D:106:CYS:HB3	1:D:158:ARG:HD3	1.96	0.48
1:A:23:GLU:O	1:A:23:GLU:OE1	2.31	0.48
1:B:226:ARG:HH11	1:B:226:ARG:CG	2.26	0.48
1:D:87:GLU:HB2	1:D:97:HIS:HD2	1.78	0.48
1:B:70:ILE:HD13	1:B:117:MET:HG2	1.95	0.48
1:B:39:MET:CE	1:B:73:LEU:HD13	2.43	0.48
1:A:71:ARG:NE	4:A:1088:HOH:O	2.47	0.48
1:B:83:PHE:CD1	1:B:99:VAL:HB	2.49	0.48
1:A:49:MET:HE2	1:A:53:ARG:HD2	1.95	0.48
1:D:78:LEU:O	1:D:81:LEU:HD23	2.14	0.48
1:A:84:GLN:HA	1:A:84:GLN:HE21	1.77	0.48
1:B:69:LEU:HD12	1:B:69:LEU:C	2.33	0.48
1:B:121:LEU:HG	1:B:128:VAL:HG11	1.95	0.48
1:D:186:LYS:CE	1:D:186:LYS:HA	2.41	0.48
1:B:166:MET:SD	1:B:233:ILE:HG23	2.53	0.47
1:A:194:ASN:O	1:A:216:THR:HA	2.13	0.47
1:C:45:LEU:HD22	1:C:45:LEU:O	2.14	0.47
1:A:229:ILE:O	1:A:232:GLY:HA3	2.13	0.47
1:D:196:LEU:HD11	1:D:232:GLY:HA2	1.96	0.47
1:C:82:PRO:HG3	1:C:159:TRP:CZ2	2.49	0.47
1:A:213:ARG:HH11	1:A:213:ARG:CB	2.26	0.47
1:D:72:LEU:HD21	1:A:75:GLU:HG3	1.96	0.47
1:A:169:THR:O	1:A:170:ALA:HB3	2.15	0.47
1:C:80:GLU:HB2	1:C:191:ILE:HD13	1.96	0.47
1:C:44:GLN:HB2	1:B:79:ASN:ND2	2.29	0.47
1:C:59:LYS:HE3	1:A:129:ARG:HH11	1.80	0.47
1:C:194:ASN:O	1:C:216:THR:HA	2.15	0.47
1:C:138:ASP:HB3	1:C:141:THR:HG22	1.96	0.47
1:A:84:GLN:HE21	1:A:85:LYS:HD2	1.79	0.47
1:C:224:ASN:HB2	1:C:228:TYR:H	1.80	0.47
1:C:64:PHE:CE2	1:B:126:ARG:HD2	2.46	0.47
1:B:141:THR:O	1:B:142:ALA:HB3	2.15	0.46
1:A:39:MET:CE	1:A:76:GLU:HB2	2.45	0.46
1:C:168:ALA:HB2	3:C:999:U5P:H5	1.98	0.46
1:D:44:GLN:H	1:A:79:ASN:HD21	1.62	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:90:THR:HG23	1:D:91:PRO:CD	2.45	0.46
1:C:61:GLU:CD	1:B:126:ARG:HH22	2.15	0.46
1:D:55:LYS:HG3	1:A:91:PRO:N	2.30	0.46
1:A:156:ARG:CG	1:A:156:ARG:HH11	2.24	0.46
1:C:117:MET:HE1	1:C:195:ILE:HG13	1.97	0.46
1:B:39:MET:HE2	1:B:217:ALA:CB	2.44	0.46
1:A:46:ARG:HD3	4:A:1018:HOH:O	2.14	0.46
1:D:169:THR:O	1:D:170:ALA:HB3	2.16	0.46
1:A:221:ILE:O	1:A:222:CYS:HB3	2.16	0.46
1:A:39:MET:HG2	1:A:217:ALA:HA	1.96	0.46
1:A:141:THR:O	1:A:142:ALA:HB3	2.15	0.46
1:A:157:GLU:HB2	4:A:1035:HOH:O	2.15	0.46
1:A:71:ARG:CG	1:A:71:ARG:HH11	2.29	0.46
1:D:81:LEU:HA	1:D:81:LEU:HD13	1.74	0.46
1:A:72:LEU:HA	1:A:72:LEU:HD23	1.53	0.46
1:B:92:LEU:HD12	1:B:92:LEU:HA	1.76	0.46
1:A:33:PHE:CZ	1:A:203:GLU:HG2	2.51	0.46
1:C:21:GLN:N	1:C:24:SER:OG	2.49	0.46
1:D:115:GLU:O	1:D:118:GLU:HG3	2.15	0.46
1:D:146:LEU:HA	1:D:146:LEU:HD12	1.73	0.45
1:A:47:ALA:HA	1:A:50:THR:HG23	1.98	0.45
1:C:49:MET:HE1	1:C:69:LEU:HD11	1.98	0.45
1:B:33:PHE:HB3	4:B:1014:HOH:O	2.15	0.45
1:B:182:ARG:NH2	4:B:1085:HOH:O	2.47	0.45
1:C:33:PHE:HA	1:C:34:PRO:HD2	1.84	0.45
1:B:90:THR:CG2	1:B:91:PRO:N	2.79	0.45
1:D:92:LEU:HD21	1:A:228:TYR:CB	2.42	0.45
1:B:86:LYS:HB2	4:B:1065:HOH:O	2.17	0.45
1:B:230:VAL:HA	1:B:232:GLY:N	2.31	0.45
1:A:71:ARG:CG	1:A:71:ARG:NH1	2.79	0.45
1:A:196:LEU:CD2	1:A:197:ALA:N	2.79	0.45
1:D:129:ARG:C	1:D:130:ILE:HD12	2.36	0.45
1:D:59:LYS:O	1:D:63:VAL:HG23	2.16	0.45
1:B:117:MET:CE	1:B:165:PRO:CA	2.93	0.45
1:D:175:LYS:HA	1:D:175:LYS:HD3	1.76	0.45
1:C:40:LYS:HG2	1:C:42:THR:HG22	1.98	0.45
1:C:210:PRO:HD2	4:C:1109:HOH:O	2.16	0.45
1:C:86:LYS:O	1:C:98:GLY:N	2.44	0.45
1:A:40:LYS:H	1:A:40:LYS:CD	2.29	0.45
1:D:40:LYS:HE2	1:A:40:LYS:HE2	1.96	0.45
1:B:168:ALA:HB2	3:B:999:U5P:H5	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:129:ARG:NH1	2:C:899:PO4:O1	2.48	0.45
1:D:104:LYS:HD3	1:D:104:LYS:HA	1.85	0.45
1:D:32:ARG:NH1	1:D:32:ARG:HG2	2.08	0.45
1:D:55:LYS:HG2	1:A:91:PRO:HA	1.99	0.45
1:B:117:MET:HE3	1:B:165:PRO:HD3	1.98	0.45
1:D:144:PRO:HB2	1:D:175:LYS:HG2	1.99	0.45
1:B:166:MET:CE	3:B:999:U5P:C2	2.94	0.45
1:A:71:ARG:NH2	4:A:1010:HOH:O	2.25	0.45
1:B:85:LYS:NZ	1:B:87:GLU:CB	2.79	0.45
1:B:54:ASP:OD1	1:B:56:GLU:HB2	2.17	0.45
1:A:126:ARG:HD3	4:A:1017:HOH:O	2.17	0.45
1:C:233:ILE:C	1:C:233:ILE:HD13	2.37	0.45
1:B:94:VAL:HG23	1:B:95:SER:N	2.31	0.44
1:D:42:THR:HB	1:A:79:ASN:ND2	2.32	0.44
1:D:64:PHE:CE1	1:A:126:ARG:HD2	2.51	0.44
1:C:169:THR:O	1:C:170:ALA:HB3	2.17	0.44
1:A:138:ASP:OD1	1:A:141:THR:HB	2.18	0.44
1:D:50:THR:CG2	1:A:98:GLY:HA3	2.47	0.44
1:B:33:PHE:HA	1:B:34:PRO:HD2	1.88	0.44
1:A:71:ARG:HG3	1:A:71:ARG:NH1	2.33	0.44
1:C:46:ARG:HA	1:C:46:ARG:HD2	1.63	0.44
1:A:137:ARG:HH22	1:A:171:GLY:HA3	1.81	0.44
1:A:99:VAL:HA	4:A:1033:HOH:O	2.18	0.44
1:D:179:VAL:O	1:D:183:LEU:HD22	2.16	0.44
1:D:90:THR:HG21	1:D:92:LEU:HB2	1.98	0.44
1:D:40:LYS:HG3	1:D:42:THR:CG2	2.45	0.44
2:D:899:PO4:O2	1:B:59:LYS:NZ	2.51	0.44
1:A:146:LEU:HD11	1:A:149:GLU:HB3	1.99	0.44
1:B:229:ILE:O	1:B:232:GLY:HA3	2.17	0.44
1:D:87:GLU:HB2	1:D:97:HIS:CD2	2.52	0.44
1:C:117:MET:CE	1:C:165:PRO:HA	2.47	0.44
1:B:233:ILE:O	1:B:233:ILE:HD13	2.17	0.44
1:C:155:ILE:HG22	1:C:156:ARG:NH1	2.28	0.44
1:C:224:ASN:CB	1:C:228:TYR:H	2.31	0.44
1:B:182:ARG:NH1	4:B:1085:HOH:O	2.48	0.44
1:A:80:GLU:CG	1:A:213:ARG:HD3	2.47	0.44
1:D:188:GLU:OE1	1:D:188:GLU:N	2.45	0.44
1:B:84:GLN:O	1:B:99:VAL:HA	2.18	0.43
1:D:86:LYS:O	1:D:98:GLY:N	2.45	0.43
1:D:52:ILE:HD12	1:D:62:PHE:CE2	2.53	0.43
1:D:102:TYR:N	1:D:102:TYR:CD1	2.86	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:145:LYS:CD	1:C:146:LEU:N	2.76	0.43
1:C:105:ILE:HG22	1:C:159:TRP:HB2	2.00	0.43
1:A:209:TYR:HA	1:A:210:PRO:HD2	1.84	0.43
1:C:22:GLU:HG2	1:C:26:LEU:CD2	2.48	0.43
1:C:132:LYS:HD2	1:A:112:ARG:HG2	1.99	0.43
1:D:28:ASP:O	1:D:32:ARG:HB2	2.19	0.43
4:D:1078:HOH:O	1:B:59:LYS:HG2	2.18	0.43
1:B:182:ARG:NE	4:B:1081:HOH:O	2.28	0.43
1:A:183:LEU:HA	1:A:183:LEU:HD12	1.71	0.43
1:C:126:ARG:HH22	1:B:61:GLU:CD	2.19	0.43
1:B:117:MET:CE	1:B:165:PRO:N	2.79	0.43
1:D:229:ILE:N	4:D:1035:HOH:O	2.51	0.43
1:A:198:ALA:HB2	1:A:229:ILE:HD13	2.00	0.43
1:D:114:GLY:HA2	1:D:165:PRO:HD3	1.99	0.43
1:A:137:ARG:HA	1:A:143:GLU:O	2.18	0.43
1:C:113:ALA:HB1	1:C:165:PRO:HG2	2.01	0.43
1:C:57:THR:HA	1:C:58:PRO:HD3	1.72	0.43
1:D:105:ILE:HG13	1:D:106:CYS:N	2.33	0.43
1:C:81:LEU:HB3	1:C:82:PRO:HD2	2.01	0.43
1:D:73:LEU:HD21	1:D:194:ASN:O	2.18	0.42
1:A:21:GLN:NE2	1:A:21:GLN:CA	2.81	0.42
1:D:98:GLY:HA3	1:A:50:THR:HG21	2.01	0.42
1:A:84:GLN:HE21	1:A:85:LYS:CD	2.32	0.42
1:A:71:ARG:NH1	4:A:1086:HOH:O	2.33	0.42
1:C:166:MET:HE1	1:C:236:PHE:N	2.29	0.42
1:B:84:GLN:HG3	1:B:102:TYR:CE1	2.54	0.42
1:A:80:GLU:HG2	1:A:213:ARG:HD3	2.01	0.42
1:D:129:ARG:HA	4:D:1052:HOH:O	2.18	0.42
1:C:145:LYS:CD	1:C:146:LEU:H	2.33	0.42
1:D:133:ILE:HA	4:D:1050:HOH:O	2.19	0.42
1:A:84:GLN:HB3	1:A:85:LYS:H	1.44	0.42
1:B:28:ASP:O	1:B:32:ARG:HB2	2.20	0.42
1:C:150:LYS:C	1:C:151:LEU:HD13	2.39	0.42
1:A:81:LEU:HB3	1:A:82:PRO:HD2	2.00	0.42
1:B:99:VAL:O	1:B:99:VAL:HG23	2.19	0.42
1:B:49:MET:O	1:B:53:ARG:HG3	2.19	0.42
1:B:90:THR:HG23	1:B:91:PRO:CD	2.49	0.42
1:B:235:ASP:HB3	1:B:238:ASP:OD2	2.20	0.42
1:C:50:THR:HG21	1:B:98:GLY:CA	2.47	0.42
1:A:90:THR:HG23	1:A:91:PRO:N	2.34	0.42
1:B:183:LEU:HD13	1:B:183:LEU:HA	1.60	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:137:ARG:HH22	3:B:999:U5P:C5'	2.33	0.42
1:D:85:LYS:HE3	1:D:98:GLY:O	2.19	0.42
1:C:98:GLY:HA3	1:B:50:THR:OG1	2.20	0.42
1:C:21:GLN:O	1:C:25:ILE:HG13	2.20	0.42
1:D:188:GLU:H	1:D:188:GLU:CD	2.23	0.42
1:C:164:ASP:HA	1:C:165:PRO:HD2	1.83	0.42
1:A:166:MET:CE	1:A:196:LEU:HD12	2.49	0.42
1:D:59:LYS:HE2	1:B:127:GLY:O	2.18	0.42
1:B:137:ARG:HG3	1:B:137:ARG:NH1	2.35	0.42
1:D:90:THR:HG23	1:D:91:PRO:N	2.35	0.41
1:A:143:GLU:HA	1:A:144:PRO:HD3	1.72	0.41
1:B:143:GLU:HA	1:B:144:PRO:HD3	1.92	0.41
1:A:141:THR:HG22	1:A:143:GLU:OE1	2.20	0.41
1:B:117:MET:CE	1:B:165:PRO:CD	2.98	0.41
1:D:128:VAL:HG13	1:D:130:ILE:HD11	2.01	0.41
1:A:141:THR:HG22	1:A:143:GLU:H	1.85	0.41
1:C:238:ASP:HB3	1:C:244:MET:HB3	2.02	0.41
1:A:144:PRO:HB2	1:A:175:LYS:HD3	2.02	0.41
1:C:81:LEU:HA	1:C:82:PRO:HD3	1.87	0.41
1:B:179:VAL:HG23	1:B:183:LEU:HD23	2.03	0.41
1:C:72:LEU:HA	1:C:72:LEU:HD23	1.74	0.41
1:B:137:ARG:CG	1:B:137:ARG:NH1	2.79	0.41
1:B:166:MET:HE1	1:B:236:PHE:HB2	2.00	0.41
1:D:162:LEU:HD21	1:D:173:VAL:HG23	2.02	0.41
1:A:49:MET:O	1:A:53:ARG:HG3	2.21	0.41
1:A:221:ILE:HG13	1:A:222:CYS:N	2.36	0.41
1:D:181:LEU:HD23	1:D:185:VAL:O	2.21	0.41
1:A:79:ASN:ND2	4:A:1084:HOH:O	2.54	0.41
1:B:156:ARG:NH1	1:B:186:LYS:NZ	2.69	0.41
1:C:22:GLU:HG2	1:C:26:LEU:HD22	2.03	0.41
1:A:221:ILE:HD12	1:A:221:ILE:C	2.41	0.40
1:C:85:LYS:CD	1:C:86:LYS:N	2.84	0.40
1:C:223:LEU:HD23	1:C:229:ILE:HA	2.04	0.40
1:A:86:LYS:O	1:A:98:GLY:N	2.49	0.40
1:C:117:MET:CE	1:C:165:PRO:CA	2.99	0.40
1:B:36:VAL:HG23	1:B:37:VAL:N	2.36	0.40
1:D:52:ILE:HD12	1:D:62:PHE:CD2	2.55	0.40
1:C:135:ILE:HD13	1:C:175:LYS:HB3	2.03	0.40
1:C:23:GLU:OE1	1:C:23:GLU:HA	2.21	0.40
1:A:221:ILE:HG23	1:A:231:PRO:HD3	2.02	0.40
1:C:156:ARG:HD2	1:C:156:ARG:N	2.36	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:85:LYS:N	1:A:85:LYS:CD	2.79	0.40
1:D:81:LEU:N	1:D:81:LEU:CD2	2.82	0.40
1:A:104:LYS:HA	4:A:1036:HOH:O	2.20	0.40
1:D:208:GLU:HB2	1:D:209:TYR:CD2	2.56	0.40
1:C:231:PRO:HB3	1:B:94:VAL:CG2	2.51	0.40
1:A:91:PRO:C	1:A:93:ASP:H	2.25	0.40
1:B:89:THR:CG2	4:B:1090:HOH:O	2.64	0.40
1:A:88:VAL:O	1:A:96:TYR:N	2.45	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:1035:HOH:O	4:C:1090:HOH:O[2_657]	1.68	0.52

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	222/224 (99%)	212 (96%)	9 (4%)	1 (0%)	34	55
1	B	222/224 (99%)	212 (96%)	9 (4%)	1 (0%)	34	55
1	C	222/224 (99%)	210 (95%)	12 (5%)	0	100	100
1	D	222/224 (99%)	212 (96%)	8 (4%)	2 (1%)	21	37
All	All	888/896 (99%)	846 (95%)	38 (4%)	4 (0%)	34	55

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	142	ALA
1	A	84	GLN

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Mol	Chain	Res	Type
1	D	141	THR
1	B	99	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	196/196 (100%)	150 (76%)	46 (24%)	1	1
1	B	196/196 (100%)	145 (74%)	51 (26%)	0	1
1	C	196/196 (100%)	146 (74%)	50 (26%)	1	1
1	D	196/196 (100%)	148 (76%)	48 (24%)	1	1
All	All	784/784 (100%)	589 (75%)	195 (25%)	1	1

All (195) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	21	GLN
1	D	24	SER
1	D	25	ILE
1	D	26	LEU
1	D	28	ASP
1	D	31	THR
1	D	32	ARG
1	D	37	VAL
1	D	50	THR
1	D	52	ILE
1	D	56	GLU
1	D	68	ARG
1	D	69	LEU
1	D	71	ARG
1	D	73	LEU
1	D	84	GLN
1	D	85	LYS
1	D	87	GLU
1	D	90	THR

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Mol	Chain	Res	Type
1	D	92	LEU
1	D	94	VAL
1	D	95	SER
1	D	100	SER
1	D	112	ARG
1	D	124	VAL
1	D	136	GLN
1	D	137	ARG
1	D	139	GLU
1	D	141	THR
1	D	147	ILE
1	D	161	MET
1	D	166	MET
1	D	172	SER
1	D	175	LYS
1	D	179	VAL
1	D	180	LEU
1	D	183	LEU
1	D	196	LEU
1	D	202	ILE
1	D	204	ARG
1	D	205	VAL
1	D	208	GLU
1	D	213	ARG
1	D	223	LEU
1	D	225	SER
1	D	226	ARG
1	D	230	VAL
1	D	244	MET
1	C	21	GLN
1	C	23	GLU
1	C	24	SER
1	C	26	LEU
1	C	27	GLN
1	C	29	ILE
1	C	32	ARG
1	C	36	VAL
1	C	45	LEU
1	C	46	ARG
1	C	50	THR
1	C	57	THR
1	C	60	GLU

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Mol	Chain	Res	Type
1	C	68	ARG
1	C	84	GLN
1	C	85	LYS
1	C	89	THR
1	C	90	THR
1	C	92	LEU
1	C	93	ASP
1	C	94	VAL
1	C	104	LYS
1	C	112	ARG
1	C	122	ARG
1	C	126	ARG
1	C	136	GLN
1	C	141	THR
1	C	143	GLU
1	C	145	LYS
1	C	146	LEU
1	C	150	LYS
1	C	151	LEU
1	C	156	ARG
1	C	163	LEU
1	C	172	SER
1	C	175	LYS
1	C	179	VAL
1	C	182	ARG
1	C	200	GLN
1	C	204	ARG
1	C	205	VAL
1	C	207	LYS
1	C	208	GLU
1	C	211	LYS
1	C	213	ARG
1	C	219	VAL
1	C	225	SER
1	C	226	ARG
1	C	233	ILE
1	C	244	MET
1	B	24	SER
1	B	26	LEU
1	B	31	THR
1	B	32	ARG
1	B	36	VAL

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Mol	Chain	Res	Type
1	B	37	VAL
1	B	38	LEU
1	B	45	LEU
1	B	46	ARG
1	B	51	ILE
1	B	55	LYS
1	B	56	GLU
1	B	57	THR
1	B	59	LYS
1	B	69	LEU
1	B	71	ARG
1	B	81	LEU
1	B	85	LYS
1	B	89	THR
1	B	90	THR
1	B	92	LEU
1	B	95	SER
1	B	100	SER
1	B	104	LYS
1	B	112	ARG
1	B	136	GLN
1	B	137	ARG
1	B	143	GLU
1	B	147	ILE
1	B	149	GLU
1	B	150	LYS
1	B	156	ARG
1	B	160	VAL
1	B	162	LEU
1	B	166	MET
1	B	172	SER
1	B	175	LYS
1	B	179	VAL
1	B	180	LEU
1	B	183	LEU
1	B	196	LEU
1	B	200	GLN
1	B	204	ARG
1	B	205	VAL
1	B	213	ARG
1	B	221	ILE
1	B	223	LEU

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Mol	Chain	Res	Type
1	B	226	ARG
1	B	233	ILE
1	B	238	ASP
1	B	244	MET
1	A	21	GLN
1	A	24	SER
1	A	30	ILE
1	A	38	LEU
1	A	39	MET
1	A	40	LYS
1	A	50	THR
1	A	51	ILE
1	A	52	ILE
1	A	56	GLU
1	A	60	GLU
1	A	68	ARG
1	A	69	LEU
1	A	71	ARG
1	A	73	LEU
1	A	80	GLU
1	A	84	GLN
1	A	85	LYS
1	A	89	THR
1	A	90	THR
1	A	93	ASP
1	A	100	SER
1	A	103	SER
1	A	119	SER
1	A	122	ARG
1	A	135	ILE
1	A	136	GLN
1	A	139	GLU
1	A	143	GLU
1	A	149	GLU
1	A	156	ARG
1	A	158	ARG
1	A	161	MET
1	A	163	LEU
1	A	172	SER
1	A	175	LYS
1	A	179	VAL
1	A	180	LEU

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Mol	Chain	Res	Type
1	A	183	LEU
1	A	186	LYS
1	A	196	LEU
1	A	207	LYS
1	A	213	ARG
1	A	221	ILE
1	A	229	ILE
1	A	233	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	21	GLN
1	D	79	ASN
1	D	97	HIS
1	C	79	ASN
1	C	97	HIS
1	C	136	GLN
1	B	35	ASN
1	B	41	GLN
1	B	79	ASN
1	B	136	GLN
1	B	200	GLN
1	A	21	GLN
1	A	35	ASN
1	A	44	GLN
1	A	79	ASN
1	A	84	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry

8 ligands are 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
2	PO4	A	899	-	4,4,4	1.10	0	6,6,6	0.27	0
3	U5P	A	999	-	16,22,22	1.35	2 (12%)	21,33,33	3.17	5 (23%)
2	PO4	B	899	-	4,4,4	1.68	1 (25%)	6,6,6	0.27	0
3	U5P	B	999	-	16,22,22	1.28	2 (12%)	21,33,33	3.21	5 (23%)
2	PO4	C	899	-	4,4,4	1.48	1 (25%)	6,6,6	0.28	0
3	U5P	C	999	-	16,22,22	1.25	2 (12%)	21,33,33	3.32	5 (23%)
2	PO4	D	899	-	4,4,4	2.04	2 (50%)	6,6,6	0.35	0
3	U5P	D	999	-	16,22,22	1.34	2 (12%)	21,33,33	3.22	5 (23%)

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
2	PO4	A	899	-	-	0/0/0/0	0/0/0/0
3	U5P	A	999	-	-	0/6/26/26	0/2/2/2
2	PO4	B	899	-	-	0/0/0/0	0/0/0/0
3	U5P	B	999	-	-	0/6/26/26	0/2/2/2
2	PO4	C	899	-	-	0/0/0/0	0/0/0/0
3	U5P	C	999	-	-	0/6/26/26	0/2/2/2
2	PO4	D	899	-	-	0/0/0/0	0/0/0/0
3	U5P	D	999	-	-	0/6/26/26	0/2/2/2

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	899	PO4	P-O1	-3.49	1.37	1.52
2	B	899	PO4	P-O4	-2.47	1.44	1.53
2	C	899	PO4	P-O2	-2.43	1.44	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	999	U5P	C6-C5	-2.15	1.33	1.38
2	D	899	PO4	P-O2	-2.10	1.45	1.53
3	B	999	U5P	C6-N1	2.06	1.38	1.35
3	A	999	U5P	C6-N1	2.26	1.39	1.35
3	C	999	U5P	C6-N1	2.39	1.39	1.35
3	C	999	U5P	C4-N3	2.88	1.38	1.33
3	B	999	U5P	C4-N3	3.34	1.39	1.33
3	A	999	U5P	C4-N3	3.54	1.39	1.33
3	D	999	U5P	C4-N3	3.63	1.39	1.33

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	999	U5P	O3P-P-O2P	-3.97	92.26	107.38
3	D	999	U5P	O3P-P-O2P	-3.97	92.27	107.38
3	A	999	U5P	O3P-P-O2P	-3.76	93.05	107.38
3	B	999	U5P	O3P-P-O2P	-3.62	93.61	107.38
3	C	999	U5P	C5-C4-N3	-3.29	114.69	123.12
3	B	999	U5P	C5-C4-N3	-3.27	114.74	123.12
3	D	999	U5P	C5-C4-N3	-3.21	114.88	123.12
3	A	999	U5P	C5-C4-N3	-3.17	115.00	123.12
3	B	999	U5P	O2P-P-O1P	2.59	118.93	110.58
3	A	999	U5P	O3P-P-O1P	2.65	119.12	110.58
3	B	999	U5P	O3P-P-O1P	2.66	119.14	110.58
3	D	999	U5P	O3P-P-O1P	2.70	119.26	110.58
3	A	999	U5P	O2P-P-O1P	2.80	119.60	110.58
3	C	999	U5P	O3P-P-O1P	2.90	119.92	110.58
3	D	999	U5P	O2P-P-O1P	2.95	120.08	110.58
3	C	999	U5P	O2P-P-O1P	3.01	120.26	110.58
3	A	999	U5P	C4-N3-C2	12.82	126.84	114.14
3	D	999	U5P	C4-N3-C2	12.85	126.86	114.14
3	B	999	U5P	C4-N3-C2	13.12	127.14	114.14
3	C	999	U5P	C4-N3-C2	13.48	127.49	114.14

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	999	U5P	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	999	U5P	6	0
2	C	899	PO4	1	0
3	C	999	U5P	5	0
2	D	899	PO4	2	0
3	D	999	U5P	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section will therefore be empty.

6.4 Ligands [i](#)

EDS was not executed - this section will therefore be empty.

6.5 Other polymers [i](#)

EDS was not executed - this section will therefore be empty.