



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 13, 2018 – 03:06 pm GMT

PDB ID : 5XN0
Title : HIV-1 reverse transcriptase Q151M:DNA binary complex
Authors : Yasutake, Y.; Tamura, N.; Hayashi, H.; Maeda, K.
Deposited on : 2017-05-17
Resolution : 2.60 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtrriage (Phenix) : 1.13
EDS : trunk31020
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk31020

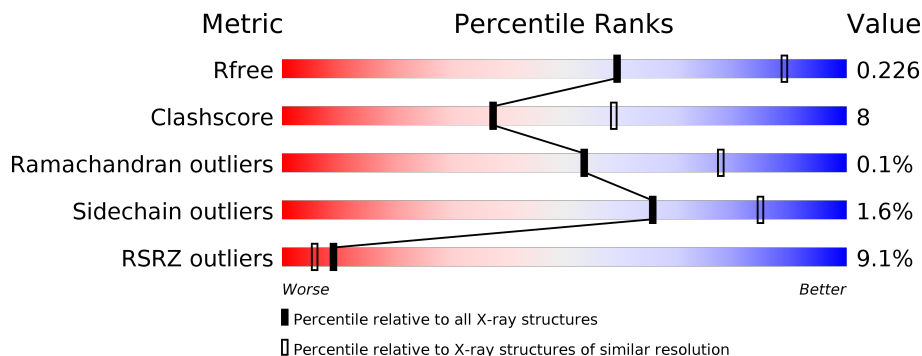
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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}	111664	2767 (2.60-2.60)
Clashscore	122126	3110 (2.60-2.60)
Ramachandran outliers	120053	3062 (2.60-2.60)
Sidechain outliers	120020	3062 (2.60-2.60)
RSRZ outliers	108989	2706 (2.60-2.60)

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	557	<p>2% 85% 14%</p>
1	C	557	<p>14% 73% 24%</p>
2	B	444	<p>11% 75% 16% 8%</p>
2	D	444	<p>7% 75% 17% 8%</p>
3	E	38	<p>3% 68% 24% 8%</p>
3	F	38	<p>8% 66% 34%</p>

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 17318 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 Pol protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	551	4483	2900	748	827	8	0	0	0
1	C	551	4483	2900	748	827	8	0	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	expression tag	UNP D3XFN7
A	0	VAL	-	expression tag	UNP D3XFN7
A	151	MET	GLN	engineered mutation	UNP D3XFN7
A	162	SER	CYS	engineered mutation	UNP D3XFN7
A	280	SER	CYS	engineered mutation	UNP D3XFN7
C	-1	MET	-	expression tag	UNP D3XFN7
C	0	VAL	-	expression tag	UNP D3XFN7
C	151	MET	GLN	engineered mutation	UNP D3XFN7
C	162	SER	CYS	engineered mutation	UNP D3XFN7
C	280	SER	CYS	engineered mutation	UNP D3XFN7

- Molecule 2 is a protein called Pol protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	407	3354	2183	558	607	6	0	0	0
2	D	407	3354	2183	558	607	6	0	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-15	MET	-	expression tag	UNP D3XFN7
B	-14	ALA	-	expression tag	UNP D3XFN7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-13	HIS	-	expression tag	UNP D3XFN7
B	-12	HIS	-	expression tag	UNP D3XFN7
B	-11	HIS	-	expression tag	UNP D3XFN7
B	-10	HIS	-	expression tag	UNP D3XFN7
B	-9	HIS	-	expression tag	UNP D3XFN7
B	-8	HIS	-	expression tag	UNP D3XFN7
B	-7	ALA	-	expression tag	UNP D3XFN7
B	-6	LEU	-	expression tag	UNP D3XFN7
B	-5	GLU	-	expression tag	UNP D3XFN7
B	-4	VAL	-	expression tag	UNP D3XFN7
B	-3	LEU	-	expression tag	UNP D3XFN7
B	-2	PHE	-	expression tag	UNP D3XFN7
B	-1	GLN	-	expression tag	UNP D3XFN7
B	0	GLY	-	expression tag	UNP D3XFN7
B	162	SER	CYS	engineered mutation	UNP D3XFN7
B	280	SER	CYS	engineered mutation	UNP D3XFN7
D	-15	MET	-	expression tag	UNP D3XFN7
D	-14	ALA	-	expression tag	UNP D3XFN7
D	-13	HIS	-	expression tag	UNP D3XFN7
D	-12	HIS	-	expression tag	UNP D3XFN7
D	-11	HIS	-	expression tag	UNP D3XFN7
D	-10	HIS	-	expression tag	UNP D3XFN7
D	-9	HIS	-	expression tag	UNP D3XFN7
D	-8	HIS	-	expression tag	UNP D3XFN7
D	-7	ALA	-	expression tag	UNP D3XFN7
D	-6	LEU	-	expression tag	UNP D3XFN7
D	-5	GLU	-	expression tag	UNP D3XFN7
D	-4	VAL	-	expression tag	UNP D3XFN7
D	-3	LEU	-	expression tag	UNP D3XFN7
D	-2	PHE	-	expression tag	UNP D3XFN7
D	-1	GLN	-	expression tag	UNP D3XFN7
D	0	GLY	-	expression tag	UNP D3XFN7
D	162	SER	CYS	engineered mutation	UNP D3XFN7
D	280	SER	CYS	engineered mutation	UNP D3XFN7

- Molecule 3 is DNA/RNA hybrid called 38-MER DNA aptamer.

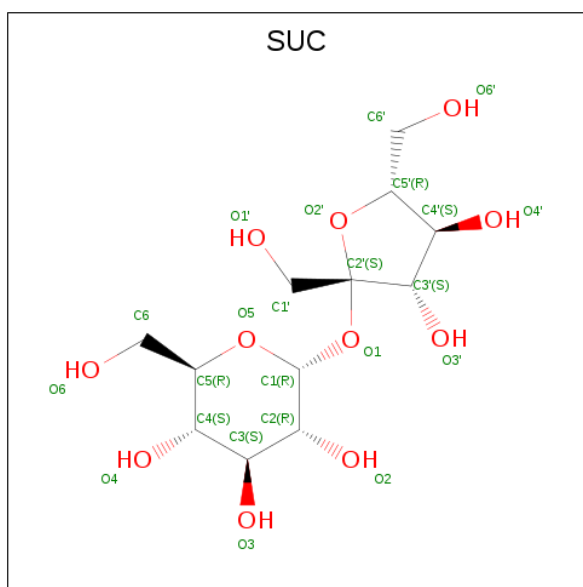
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	E	35	Total	C	N	O	P	0	0	0
			718	339	128	216	35			
3	F	38	Total	C	N	O	P	0	0	0
			777	369	140	231	37			

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	B	1	Total C O 6 3 3	0	0
4	E	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

- Molecule 5 is SUCROSE (three-letter code: SUC) (formula: $C_{12}H_{22}O_{11}$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	C O	0	0
			23	12 11		

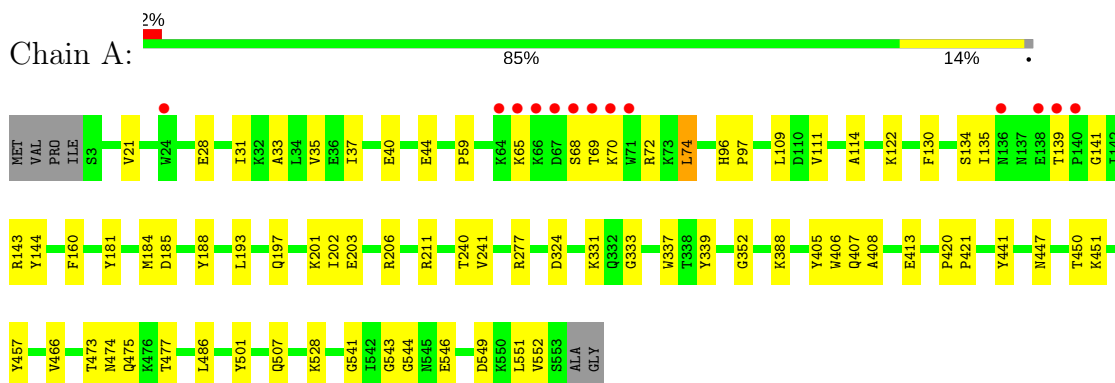
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	33	Total	O	0	0
			33	33		
6	B	13	Total	O	0	0
			13	13		
6	E	18	Total	O	0	0
			18	18		
6	C	19	Total	O	0	0
			19	19		
6	D	7	Total	O	0	0
			7	7		
6	F	6	Total	O	0	0
			6	6		

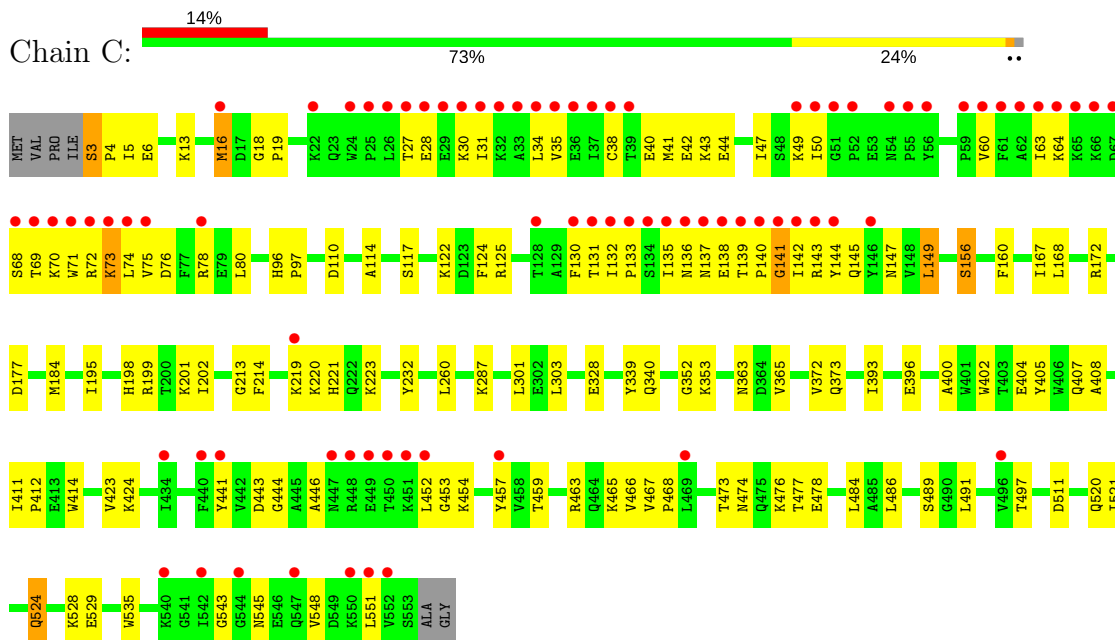
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

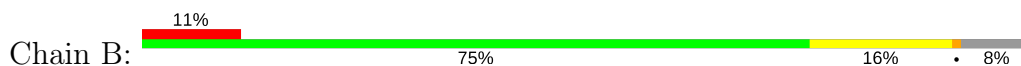
- Molecule 1: Pol protein

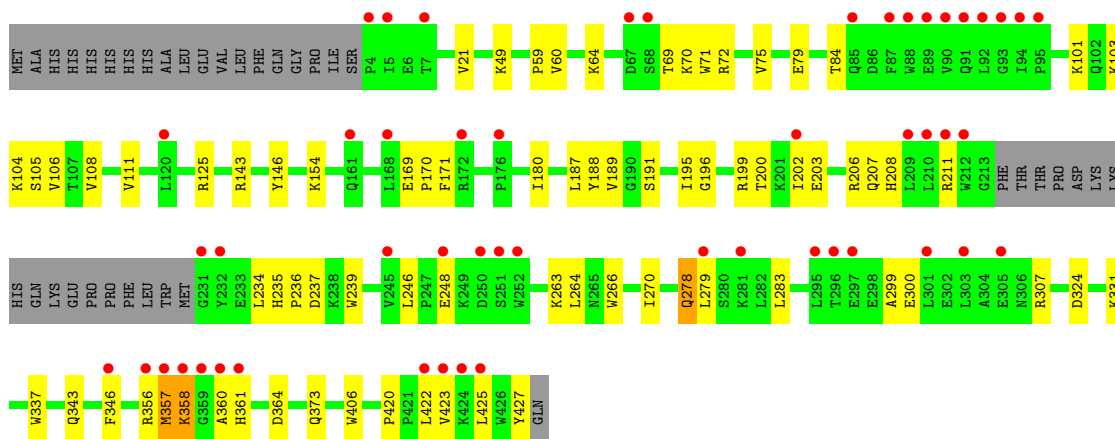


- Molecule 1: Pol protein

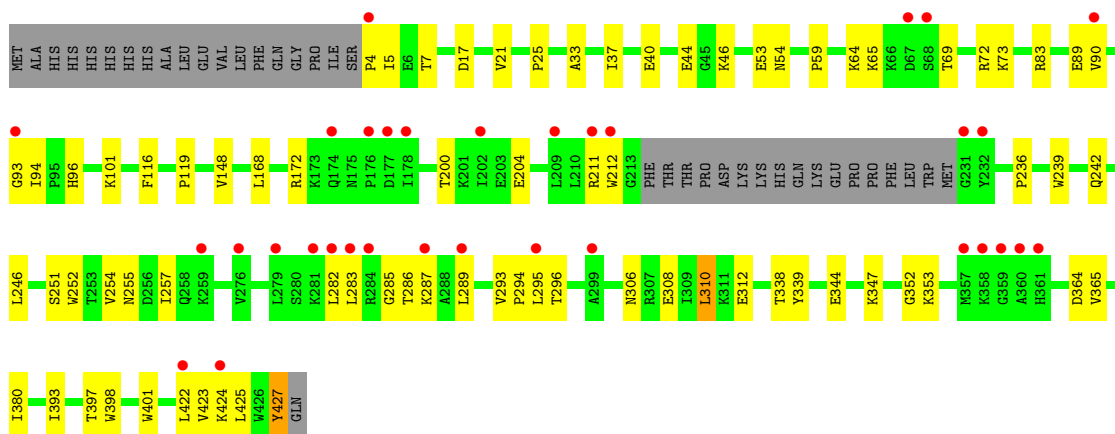
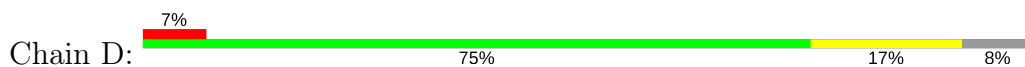


- Molecule 2: Pol protein

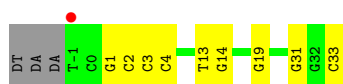




• Molecule 2: Pol protein



• Molecule 3: 38-MER DNA aptamer



• Molecule 3: 38-MER DNA aptamer



4 Data and refinement statistics

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α , β , γ	284.09Å 284.09Å 95.61Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	48.60 – 2.60 48.60 – 2.60	Depositor EDS
% Data completeness (in resolution range)	100.0 (48.60-2.60) 100.0 (48.60-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.22 (at 2.61Å)	Xtrriage
Refinement program	PHENIX (1.11.1_2575)	Depositor
R, R_{free}	0.185 , 0.226 0.185 , 0.226	Depositor DCC
R_{free} test set	4479 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	55.3	Xtrriage
Anisotropy	0.090	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 54.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.016 for h,-h-k,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	17318	wwPDB-VP
Average B, all atoms (Å ²)	71.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.24% 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: OMC, GOL, SUC

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	0.49	0/4600	0.60	2/6246 (0.0%)
1	C	0.46	0/4600	0.62	4/6246 (0.1%)
2	B	0.44	0/3449	0.60	2/4684 (0.0%)
2	D	0.46	0/3449	0.62	1/4684 (0.0%)
3	E	0.93	0/756	1.03	3/1165 (0.3%)
3	F	0.76	0/823	0.95	0/1269
All	All	0.51	0/17677	0.66	12/24294 (0.0%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	19	DG	O5'-P-OP2	-8.69	97.88	105.70
1	C	141	GLY	N-CA-C	7.45	131.71	113.10
1	A	74	LEU	CA-CB-CG	7.29	132.06	115.30
1	A	109	LEU	CA-CB-CG	5.75	128.51	115.30
2	D	257	ILE	CG1-CB-CG2	-5.73	98.80	111.40
3	E	31	DG	C4'-C3'-C2'	-5.30	98.33	103.10
2	B	169	GLU	C-N-CD	5.22	139.36	128.40
1	C	139	THR	C-N-CD	5.17	139.26	128.40
2	B	422	LEU	CA-CB-CG	5.12	127.08	115.30
1	C	3	SER	C-N-CD	5.09	139.09	128.40
1	C	149	LEU	C-N-CD	5.09	139.09	128.40
3	E	31	DG	O4'-C4'-C3'	-5.04	102.48	104.50

There are no chirality outliers.

There are no planarity outliers.

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	4483	0	4532	50	0
1	C	4483	0	4532	123	0
2	B	3354	0	3387	53	0
2	D	3354	0	3387	55	0
3	E	718	0	397	5	0
3	F	777	0	432	10	0
4	A	6	0	8	0	0
4	B	6	0	8	0	0
4	C	6	0	8	0	0
4	D	6	0	8	1	0
4	E	6	0	8	0	0
5	B	23	0	22	1	0
6	A	33	0	0	1	0
6	B	13	0	0	0	0
6	C	19	0	0	0	0
6	D	7	0	0	0	0
6	E	18	0	0	0	0
6	F	6	0	0	0	0
All	All	17318	0	16729	285	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 8.

All (285) 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:132:ILE:HG23	1:C:133:PRO:HD2	1.36	1.07
1:C:31:ILE:HG12	1:C:133:PRO:HG2	1.07	1.05
1:C:132:ILE:CG2	1:C:133:PRO:HD2	2.01	0.90
1:C:31:ILE:CG1	1:C:133:PRO:HG2	2.01	0.88
1:C:114:ALA:HB1	1:C:160:PHE:CE1	2.14	0.82
2:B:358:LYS:HG3	2:B:360:ALA:H	1.47	0.79
2:B:195:ILE:O	2:B:199:ARG:HG3	1.82	0.78
1:A:68:SER:O	1:A:69:THR:HB	1.84	0.77
1:A:143:ARG:HH21	1:A:143:ARG:HG2	1.50	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:31:ILE:HG12	1:C:133:PRO:CG	2.02	0.73
2:B:207:GLN:O	2:B:211:ARG:HG2	1.89	0.73
2:B:195:ILE:HG13	2:B:196:GLY:N	2.05	0.72
1:C:5:ILE:HD11	1:C:167:ILE:HD11	1.72	0.72
1:A:33:ALA:O	1:A:37:ILE:HG13	1.92	0.70
1:C:132:ILE:CG2	1:C:133:PRO:CD	2.70	0.69
1:C:132:ILE:HG23	1:C:133:PRO:CD	2.18	0.69
1:C:43:LYS:C	1:C:43:LYS:HD3	2.13	0.69
1:A:139:THR:HG22	1:A:141:GLY:H	1.58	0.68
2:B:356:ARG:HD3	2:B:358:LYS:HG2	1.75	0.68
2:B:263:LYS:HG3	2:B:425:LEU:HD23	1.75	0.68
2:D:353:LYS:NZ	2:D:427:TYR:CD1	2.61	0.68
1:A:28:GLU:HB3	1:A:135:ILE:HG12	1.75	0.67
1:A:68:SER:OG	1:A:70:LYS:HB2	1.95	0.67
1:C:463:ARG:HB2	1:C:463:ARG:HH11	1.60	0.67
2:D:89:GLU:HG2	2:D:90:VAL:N	2.08	0.67
1:C:136:ASN:O	1:C:137:ASN:HB2	1.94	0.66
1:C:452:LEU:C	1:C:452:LEU:HD13	2.16	0.66
2:D:252:TRP:CD1	2:D:295:LEU:HD23	2.31	0.66
1:C:521:ILE:HA	1:C:524:GLN:HG3	1.77	0.66
1:C:27:THR:CG2	1:C:30:LYS:HD2	2.26	0.65
1:C:457:TYR:CE2	1:C:465:LYS:HB3	2.31	0.65
1:C:42:GLU:OE2	1:C:49:LYS:HE3	1.96	0.65
2:B:195:ILE:HG13	2:B:196:GLY:H	1.62	0.65
2:D:353:LYS:NZ	2:D:427:TYR:CE1	2.63	0.64
1:C:27:THR:HG22	1:C:30:LYS:HD2	1.80	0.64
2:B:324:ASP:O	2:B:343:GLN:HG2	1.98	0.64
1:C:135:ILE:O	1:C:138:GLU:HB2	1.98	0.64
1:C:49:LYS:HG2	1:C:144:TYR:CE1	2.33	0.63
1:C:38:CYS:HB3	1:C:144:TYR:CE2	2.33	0.63
1:C:195:ILE:O	1:C:199:ARG:HG3	1.99	0.63
1:C:76:ASP:OD1	1:C:78:ARG:NH1	2.32	0.62
2:B:108:VAL:HG22	2:B:188:TYR:CE2	2.33	0.62
2:B:356:ARG:HD2	2:B:356:ARG:C	2.20	0.62
2:D:422:LEU:O	2:D:425:LEU:HG	1.99	0.62
2:D:89:GLU:O	2:D:93:GLY:HA3	2.00	0.62
1:C:466:VAL:HG12	1:C:467:VAL:N	2.14	0.61
1:C:467:VAL:HG13	1:C:468:PRO:HD2	1.82	0.61
2:D:353:LYS:HZ2	2:D:427:TYR:HE1	1.42	0.61
1:C:3:SER:OG	1:C:213:GLY:HA3	2.00	0.61
1:A:339:TYR:CZ	1:A:352:GLY:HA3	2.35	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:452:LEU:HD13	1:C:453:GLY:N	2.16	0.60
3:F:3:DC:H2'	3:F:4:OMC:C6	2.36	0.60
2:B:248:GLU:HB3	2:B:307:ARG:NH2	2.17	0.59
1:A:65:LYS:HE2	1:A:72:ARG:HD2	1.84	0.59
1:C:131:THR:HG23	1:C:142:ILE:O	2.03	0.59
1:A:40:GLU:O	1:A:44:GLU:HG3	2.03	0.59
2:B:199:ARG:O	2:B:202:ILE:HB	2.01	0.59
1:C:396:GLU:H	1:C:396:GLU:CD	2.06	0.59
2:D:25:PRO:HA	4:D:501:GOL:H31	1.85	0.59
1:C:5:ILE:HG22	1:C:6:GLU:O	2.02	0.58
2:B:200:THR:HA	2:B:203:GLU:HG3	1.86	0.58
1:C:3:SER:HB3	1:C:4:PRO:CD	2.34	0.57
2:D:255:ASN:HB2	2:D:289:LEU:HB3	1.85	0.57
2:B:263:LYS:HB2	2:B:423:VAL:HG11	1.86	0.57
1:C:122:LYS:HA	1:C:125:ARG:HG3	1.86	0.57
2:D:393:ILE:HD13	2:D:398:TRP:HB2	1.87	0.57
1:C:372:VAL:HG11	1:C:411:ILE:HG23	1.86	0.57
1:C:28:GLU:HA	1:C:31:ILE:HD12	1.87	0.56
1:C:63:ILE:CG2	1:C:64:LYS:N	2.68	0.56
2:B:180:ILE:HG12	2:B:189:VAL:HG22	1.88	0.56
2:D:40:GLU:O	2:D:44:GLU:HG3	2.04	0.56
1:C:149:LEU:HB3	1:C:156:SER:HB2	1.88	0.56
1:C:486:LEU:O	1:C:528:LYS:NZ	2.36	0.56
1:C:63:ILE:HG22	1:C:64:LYS:N	2.20	0.56
1:C:64:LYS:HA	1:C:70:LYS:O	2.06	0.55
2:B:202:ILE:O	2:B:206:ARG:HG3	2.06	0.55
1:C:117:SER:HB2	1:C:214:PHE:CE1	2.41	0.55
1:A:143:ARG:HG2	1:A:143:ARG:NH2	2.19	0.55
2:B:108:VAL:HG22	2:B:188:TYR:CD2	2.41	0.55
3:F:17:DT:H5''	3:F:17:DT:H6	1.72	0.55
1:A:68:SER:O	1:A:69:THR:CB	2.51	0.55
1:C:400:ALA:O	1:C:404:GLU:HG3	2.07	0.55
1:A:181:TYR:HB2	1:A:188:TYR:HB3	1.89	0.55
1:C:467:VAL:HG12	1:C:468:PRO:N	2.22	0.54
1:C:117:SER:HB2	1:C:214:PHE:HE1	1.73	0.54
1:C:457:TYR:CZ	1:C:465:LYS:HB3	2.43	0.54
1:A:541:GLY:HA2	1:A:546:GLU:HG3	1.90	0.54
2:D:53:GLU:HG2	2:D:54:ASN:N	2.23	0.54
1:C:114:ALA:HB1	1:C:160:PHE:CZ	2.43	0.53
1:C:68:SER:HB2	1:C:70:LYS:HB2	1.91	0.53
1:C:41:MET:HB2	1:C:47:ILE:HD11	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:3:DC:H2'	3:E:4:OMC:C6	2.43	0.53
3:F:1:DG:H2'	3:F:2:OMC:C6	2.43	0.53
2:B:356:ARG:HD2	2:B:357:MET:N	2.23	0.53
2:B:170:PRO:HG2	2:B:171:PHE:H	1.73	0.53
2:D:17:ASP:O	2:D:83:ARG:HD3	2.09	0.53
2:D:21:VAL:HB	2:D:59:PRO:HD3	1.90	0.52
1:A:211:ARG:O	1:A:211:ARG:HD2	2.09	0.52
1:C:543:GLY:HA2	2:D:285:GLY:O	2.09	0.52
2:D:282:LEU:HD21	2:D:296:THR:HG23	1.91	0.52
1:A:543:GLY:HA2	2:B:283:LEU:O	2.10	0.52
1:C:551:LEU:H	1:C:551:LEU:HD12	1.73	0.52
1:C:68:SER:O	1:C:69:THR:C	2.47	0.52
2:D:353:LYS:NZ	2:D:427:TYR:HD1	2.05	0.52
2:B:208:HIS:C	2:B:208:HIS:HD1	2.13	0.52
1:C:466:VAL:CG1	1:C:467:VAL:N	2.73	0.51
1:C:31:ILE:O	1:C:35:VAL:HG23	2.10	0.51
2:D:212:TRP:N	2:D:212:TRP:CD1	2.77	0.51
1:C:5:ILE:HG22	1:C:6:GLU:N	2.25	0.51
1:C:198:HIS:O	1:C:202:ILE:HG12	2.11	0.50
2:D:116:PHE:HA	2:D:148:VAL:HG21	1.94	0.50
2:D:242:GLN:HG2	2:D:353:LYS:HE2	1.94	0.50
2:D:211:ARG:HB2	2:D:212:TRP:HD1	1.75	0.50
1:A:450:THR:O	1:A:451:LYS:HB2	2.12	0.50
2:B:143:ARG:HG2	2:B:143:ARG:HH11	1.76	0.49
2:B:105:SER:HA	2:B:234:LEU:O	2.11	0.49
1:C:5:ILE:CG2	1:C:6:GLU:N	2.75	0.49
1:A:413:GLU:HA	6:A:720:HOH:O	2.11	0.49
1:C:96:HIS:CG	1:C:97:PRO:HD2	2.47	0.49
1:A:405:TYR:CE2	1:A:407:GLN:HB2	2.47	0.49
2:B:236:PRO:HA	2:B:239:TRP:CD2	2.48	0.49
2:D:46:LYS:HE2	2:D:116:PHE:HB3	1.94	0.49
2:B:361:HIS:O	2:B:361:HIS:CG	2.66	0.48
1:A:441:TYR:CG	1:A:544:GLY:HA3	2.49	0.48
2:B:331:LYS:HB2	2:B:337:TRP:CZ3	2.48	0.48
1:C:467:VAL:CG1	1:C:468:PRO:HD2	2.43	0.48
2:D:33:ALA:O	2:D:37:ILE:HG13	2.12	0.48
1:C:452:LEU:C	1:C:452:LEU:CD1	2.80	0.48
2:D:365:VAL:HG11	2:D:401:TRP:HB2	1.95	0.48
1:C:63:ILE:O	1:C:72:ARG:N	2.44	0.48
2:B:246:LEU:HD11	2:B:264:LEU:HD21	1.95	0.48
1:C:110:ASP:HB2	1:C:220:LYS:HB3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:221:HIS:CE1	1:C:223:LYS:HG2	2.49	0.48
1:C:13:LYS:O	1:C:16:MET:HG3	2.14	0.47
1:C:260:LEU:HD21	1:C:303:LEU:HD13	1.94	0.47
1:A:475:GLN:HB3	1:A:501:TYR:CE2	2.49	0.47
1:C:405:TYR:CE2	1:C:407:GLN:HB2	2.49	0.47
1:C:131:THR:HG22	1:C:132:ILE:O	2.14	0.47
1:A:447:ASN:HB3	1:A:450:THR:OG1	2.13	0.47
2:B:278:GLN:HG2	2:B:299:ALA:N	2.30	0.47
2:D:96:HIS:HE1	2:D:380:ILE:O	1.97	0.47
1:A:457:TYR:C	1:A:457:TYR:CD1	2.88	0.47
1:C:34:LEU:HD12	1:C:34:LEU:HA	1.74	0.47
1:A:201:LYS:HA	1:A:201:LYS:HD3	1.58	0.46
1:A:193:LEU:HD13	1:A:197:GLN:HG3	1.96	0.46
1:A:408:ALA:HB1	2:B:364:ASP:HB3	1.97	0.46
3:F:27:DG:H2'	3:F:28:DG:C8	2.50	0.46
1:C:328:GLU:O	1:C:339:TYR:HA	2.16	0.46
1:C:441:TYR:O	1:C:457:TYR:HA	2.15	0.46
1:A:96:HIS:CG	1:A:97:PRO:HD2	2.51	0.46
1:C:141:GLY:O	1:C:143:ARG:HG3	2.15	0.46
1:C:520:GLN:O	1:C:524:GLN:HG3	2.15	0.46
2:B:70:LYS:HG3	2:B:71:TRP:N	2.31	0.46
1:C:40:GLU:O	1:C:44:GLU:HG3	2.15	0.46
1:C:41:MET:HB3	1:C:47:ILE:HG12	1.98	0.46
2:D:254:VAL:HG21	2:D:287:LYS:HD2	1.98	0.46
2:B:111:VAL:HG12	2:B:111:VAL:O	2.16	0.46
1:C:63:ILE:O	1:C:71:TRP:HA	2.15	0.46
1:A:203:GLU:HG3	1:A:206:ARG:HD3	1.98	0.46
1:A:111:VAL:HG22	1:A:185:ASP:HB2	1.99	0.45
1:A:473:THR:O	1:A:477:THR:HG23	2.17	0.45
2:B:279:LEU:HD23	2:B:299:ALA:HB1	1.98	0.45
1:C:454:LYS:HA	1:C:467:VAL:O	2.16	0.45
2:D:254:VAL:HG21	2:D:287:LYS:CD	2.46	0.45
2:B:103:LYS:O	2:B:104:LYS:C	2.54	0.45
2:B:237:ASP:N	2:B:237:ASP:OD1	2.50	0.45
1:C:443:ASP:OD1	1:C:444:GLY:N	2.50	0.45
2:D:90:VAL:HG23	2:D:94:ILE:HD12	1.98	0.45
1:A:406:TRP:CZ2	2:B:420:PRO:HG3	2.51	0.45
1:C:520:GLN:O	1:C:524:GLN:CG	2.65	0.45
2:B:356:ARG:CD	2:B:356:ARG:C	2.85	0.45
1:C:339:TYR:CZ	1:C:352:GLY:HA3	2.52	0.45
1:C:373:GLN:NE2	2:D:397:THR:HA	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:254:VAL:HG13	2:D:283:LEU:CD2	2.47	0.45
2:D:236:PRO:HA	2:D:239:TRP:CD2	2.51	0.45
2:D:308:GLU:O	2:D:312:GLU:HG3	2.17	0.45
1:C:473:THR:OG1	1:C:476:LYS:HG3	2.17	0.45
1:A:184:MET:HG3	3:E:33:DC:H1'	1.99	0.45
1:C:353:LYS:NZ	3:F:7:DC:OP1	2.43	0.45
1:C:491:LEU:HB3	1:C:529:GLU:HB2	1.99	0.44
1:C:73:LYS:CE	1:C:75:VAL:HG23	2.48	0.44
1:C:31:ILE:HD13	1:C:133:PRO:O	2.18	0.44
2:D:211:ARG:CB	2:D:212:TRP:HD1	2.30	0.44
2:D:353:LYS:NZ	2:D:427:TYR:HE1	2.09	0.44
1:A:31:ILE:O	1:A:35:VAL:HG23	2.17	0.44
2:B:106:VAL:HA	2:B:189:VAL:O	2.17	0.44
1:C:132:ILE:HG22	1:C:133:PRO:N	2.31	0.44
1:C:38:CYS:O	1:C:47:ILE:HD11	2.16	0.44
2:D:7:THR:HG22	2:D:119:PRO:HG2	1.99	0.44
1:A:466:VAL:CG2	1:A:551:LEU:HG	2.47	0.44
2:D:423:VAL:HG12	2:D:423:VAL:O	2.16	0.44
2:B:111:VAL:HG21	2:B:187:LEU:HB2	2.00	0.44
1:A:406:TRP:HZ3	1:A:507:GLN:HB3	1.83	0.44
1:A:331:LYS:HB2	1:A:337:TRP:CZ3	2.53	0.44
1:C:446:ALA:HA	1:C:452:LEU:O	2.16	0.44
1:C:64:LYS:HD2	1:C:69:THR:O	2.18	0.44
1:C:124:PHE:O	1:C:124:PHE:CD2	2.70	0.44
1:C:473:THR:O	1:C:477:THR:HG23	2.17	0.44
2:D:286:THR:HG22	2:D:287:LYS:N	2.33	0.44
1:A:134:SER:OG	1:A:139:THR:HB	2.18	0.44
2:B:270:ILE:HG23	2:B:346:PHE:O	2.18	0.43
2:B:79:GLU:OE1	5:B:502:SUC:O3	2.30	0.43
1:C:125:ARG:NH1	1:C:147:ASN:HB3	2.33	0.43
1:C:465:LYS:O	1:C:466:VAL:HG23	2.17	0.43
2:D:293:VAL:CG1	2:D:294:PRO:HD2	2.47	0.43
2:B:64:LYS:HD2	2:B:69:THR:HG22	2.01	0.43
1:C:489:SER:HB2	1:C:528:LYS:NZ	2.34	0.43
1:C:545:ASN:HA	1:C:548:VAL:HG12	2.01	0.43
2:D:306:ASN:O	2:D:310:LEU:HD22	2.17	0.43
1:C:363:ASN:HA	1:C:511:ASP:OD1	2.17	0.43
2:D:4:PRO:C	2:D:5:ILE:HG13	2.38	0.43
2:B:104:LYS:HB3	2:B:191:SER:O	2.18	0.43
2:B:248:GLU:HB3	2:B:307:ARG:HH22	1.80	0.43
1:C:42:GLU:OE2	1:C:49:LYS:HG3	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:73:LYS:HB3	2:D:73:LYS:HZ2	1.84	0.43
2:D:254:VAL:HG13	2:D:283:LEU:HD22	2.01	0.43
1:A:114:ALA:HB1	1:A:160:PHE:CZ	2.54	0.43
1:A:21:VAL:HB	1:A:59:PRO:HD3	2.01	0.43
2:D:339:TYR:CZ	2:D:352:GLY:HA3	2.54	0.42
1:A:486:LEU:O	1:A:528:LYS:NZ	2.38	0.42
1:C:50:ILE:HG21	1:C:145:GLN:HB3	2.01	0.42
2:B:208:HIS:ND1	2:B:208:HIS:C	2.73	0.42
2:D:168:LEU:O	2:D:172:ARG:HG3	2.19	0.42
2:B:266:TRP:C	2:B:266:TRP:CD1	2.92	0.42
1:C:467:VAL:CG1	1:C:468:PRO:N	2.82	0.42
1:A:333:GLY:HA3	1:C:301:LEU:HD11	2.01	0.42
1:C:457:TYR:HE1	1:C:463:ARG:HG2	1.85	0.42
1:A:420:PRO:HA	1:A:421:PRO:C	2.40	0.42
2:B:125:ARG:HB3	2:B:146:TYR:O	2.20	0.42
1:C:184:MET:HG2	3:F:33:DC:H2''	2.02	0.42
2:D:101:LYS:O	2:D:236:PRO:HB2	2.20	0.42
2:D:40:GLU:OE2	2:D:44:GLU:OE1	2.38	0.42
3:E:4:OMC:H1'	3:E:4:OMC:HM23	1.80	0.42
2:B:180:ILE:HA	2:B:188:TYR:O	2.20	0.42
1:C:412:PRO:O	1:C:414:TRP:HD1	2.03	0.42
3:F:10:DC:H2''	3:F:11:DG:C8	2.54	0.42
2:D:338:THR:HG22	2:D:353:LYS:HG3	2.02	0.42
1:C:60:VAL:HG21	1:C:130:PHE:HD2	1.85	0.41
1:C:97:PRO:HD3	1:C:232:TYR:CE2	2.55	0.41
3:F:17:DT:H5''	3:F:17:DT:C6	2.53	0.41
1:C:408:ALA:HB1	2:D:364:ASP:HB3	2.01	0.41
1:C:393:ILE:HB	1:C:423:VAL:HB	2.01	0.41
3:F:4:OMC:HM23	3:F:4:OMC:H1'	1.93	0.41
1:A:65:LYS:HD3	1:A:65:LYS:HA	1.93	0.41
1:C:60:VAL:CG2	1:C:130:PHE:HB2	2.49	0.41
1:C:19:PRO:HG3	1:C:80:LEU:HB2	2.02	0.41
1:C:365:VAL:HG12	1:C:423:VAL:HG12	2.02	0.41
1:C:459:THR:OG1	1:C:463:ARG:N	2.53	0.41
1:C:474:ASN:O	1:C:478:GLU:HG2	2.21	0.41
2:B:84:THR:HB	2:B:154:LYS:HE2	2.03	0.41
1:C:132:ILE:CG2	1:C:133:PRO:N	2.83	0.41
3:E:13:DT:H2''	3:E:14:DG:C8	2.55	0.41
1:A:130:PHE:CZ	1:A:144:TYR:HB2	2.56	0.41
1:C:132:ILE:HB	1:C:142:ILE:HB	2.02	0.41
1:C:43:LYS:HD3	1:C:43:LYS:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:200:THR:O	2:D:204:GLU:HG3	2.21	0.41
1:A:69:THR:HG22	1:A:69:THR:O	2.21	0.41
1:C:74:LEU:HA	1:C:74:LEU:HD23	1.77	0.41
2:D:344:GLU:CG	2:D:347:LYS:HD2	2.50	0.41
1:A:406:TRP:CZ3	1:A:507:GLN:HB3	2.56	0.41
1:C:463:ARG:NH1	1:C:463:ARG:HB2	2.31	0.41
1:C:463:ARG:NH1	1:C:463:ARG:CB	2.84	0.41
3:F:-2:DA:C8	3:F:-1:DT:H71	2.55	0.41
1:A:549:ASP:O	1:A:552:VAL:HG22	2.21	0.41
1:C:168:LEU:O	1:C:172:ARG:HG3	2.21	0.41
1:C:489:SER:HB2	1:C:528:LYS:HZ2	1.84	0.41
1:C:497:THR:O	1:C:535:TRP:HA	2.21	0.41
2:D:246:LEU:HD11	2:D:310:LEU:CD2	2.51	0.41
1:A:240:THR:HG22	1:A:241:VAL:O	2.20	0.40
3:E:1:DG:H2'	3:E:2:OMC:C6	2.56	0.40
1:A:114:ALA:HB1	1:A:160:PHE:CE1	2.56	0.40
2:B:105:SER:OG	2:B:235:HIS:CE1	2.75	0.40
2:B:60:VAL:HG23	2:B:75:VAL:HG22	2.03	0.40
1:C:130:PHE:CZ	1:C:144:TYR:HB2	2.57	0.40
1:C:201:LYS:HA	1:C:201:LYS:HD3	1.73	0.40
1:A:202:ILE:O	1:A:206:ARG:HG3	2.21	0.40
2:B:373:GLN:HG3	2:B:406:TRP:CZ3	2.56	0.40
1:C:60:VAL:HG21	1:C:130:PHE:CD2	2.56	0.40
2:D:211:ARG:HB2	2:D:212:TRP:CD1	2.56	0.40
2:D:293:VAL:HG13	2:D:294:PRO:HD2	2.03	0.40
2:B:266:TRP:CD1	2:B:425:LEU:HD13	2.56	0.40
1:A:324:ASP:OD2	1:A:388:LYS:NZ	2.49	0.40
2:B:21:VAL:HB	2:B:59:PRO:HD3	2.03	0.40
1:C:402:TRP:HE1	2:D:364:ASP:CG	2.24	0.40
2:D:64:LYS:HE3	2:D:69:THR:O	2.21	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	549/557 (99%)	537 (98%)	12 (2%)	0	100	100
1	C	549/557 (99%)	528 (96%)	19 (4%)	2 (0%)	36	60
2	B	403/444 (91%)	391 (97%)	12 (3%)	0	100	100
2	D	403/444 (91%)	393 (98%)	10 (2%)	0	100	100
All	All	1904/2002 (95%)	1849 (97%)	53 (3%)	2 (0%)	53	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	140	PRO
1	C	18	GLY

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	490/494 (99%)	486 (99%)	4 (1%)	83	93
1	C	490/494 (99%)	480 (98%)	10 (2%)	58	81
2	B	366/400 (92%)	358 (98%)	8 (2%)	55	79
2	D	366/400 (92%)	360 (98%)	6 (2%)	65	85
All	All	1712/1788 (96%)	1684 (98%)	28 (2%)	65	85

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	LEU
1	A	122	LYS
1	A	277	ARG
1	A	474	ASN
2	B	49	LYS
2	B	72	ARG

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Mol	Chain	Res	Type
2	B	101	LYS
2	B	278	GLN
2	B	300	GLU
2	B	357	MET
2	B	358	LYS
2	B	427	TYR
1	C	16	MET
1	C	73	LYS
1	C	156	SER
1	C	177	ASP
1	C	219	LYS
1	C	287	LYS
1	C	340	GLN
1	C	424	LYS
1	C	484	LEU
1	C	524	GLN
2	D	65	LYS
2	D	72	ARG
2	D	251	SER
2	D	310	LEU
2	D	424	LYS
2	D	427	TYR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	265	ASN
2	B	137	ASN
2	B	161	GLN
1	C	340	GLN
1	C	373	GLN
1	C	447	ASN
2	D	242	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues 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
3	OMC	E	2	3	15,22,23	2.92	5 (33%)	19,31,34	0.67	0
3	OMC	E	4	3	15,22,23	2.90	5 (33%)	19,31,34	0.80	1 (5%)
3	OMC	F	2	3	15,22,23	3.16	5 (33%)	19,31,34	0.78	0
3	OMC	F	4	3	15,22,23	3.18	7 (46%)	19,31,34	0.79	1 (5%)

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
3	OMC	E	2	3	-	0/5/27/28	0/2/2/2
3	OMC	E	4	3	-	0/5/27/28	0/2/2/2
3	OMC	F	2	3	-	0/5/27/28	0/2/2/2
3	OMC	F	4	3	-	0/5/27/28	0/2/2/2

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	4	OMC	O5'-C5'	-2.03	1.42	1.44
3	F	4	OMC	C4-N4	2.06	1.41	1.35
3	E	4	OMC	C5-C4	2.71	1.47	1.41
3	F	4	OMC	C5-C4	3.15	1.49	1.41
3	E	2	OMC	C5-C4	3.20	1.49	1.41
3	F	2	OMC	C5-C4	3.29	1.49	1.41
3	E	2	OMC	C2-N3	4.07	1.46	1.38
3	E	4	OMC	C6-C5	4.39	1.47	1.38
3	E	4	OMC	C2-N3	4.66	1.47	1.38
3	E	2	OMC	C4-N3	4.68	1.43	1.35
3	E	4	OMC	C4-N3	4.72	1.43	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	4	OMC	C6-C5	4.83	1.48	1.38
3	E	2	OMC	C6-C5	4.87	1.48	1.38
3	F	2	OMC	C6-C5	4.87	1.48	1.38
3	F	2	OMC	C2-N3	5.03	1.48	1.38
3	F	4	OMC	C2-N3	5.41	1.48	1.38
3	F	2	OMC	C4-N3	5.46	1.44	1.35
3	F	4	OMC	C4-N3	5.58	1.44	1.35
3	F	4	OMC	C6-N1	6.93	1.45	1.35
3	E	4	OMC	C6-N1	6.99	1.45	1.35
3	E	2	OMC	C6-N1	7.08	1.45	1.35
3	F	2	OMC	C6-N1	7.20	1.45	1.35

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	4	OMC	N4-C4-N3	2.17	120.11	116.56
3	F	4	OMC	N4-C4-N3	2.36	120.41	116.56

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	2	OMC	1	0
3	E	4	OMC	2	0
3	F	2	OMC	1	0
3	F	4	OMC	2	0

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

6 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
4	GOL	A	601	-	5,5,5	0.47	0	5,5,5	0.69	0
4	GOL	B	501	-	5,5,5	0.46	0	5,5,5	0.44	0
5	SUC	B	502	-	24,24,24	0.44	0	36,36,36	0.85	1 (2%)
4	GOL	C	601	-	5,5,5	0.18	0	5,5,5	0.72	0
4	GOL	D	501	-	5,5,5	0.29	0	5,5,5	0.42	0
4	GOL	E	101	-	5,5,5	0.04	0	5,5,5	0.50	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	GOL	A	601	-	-	0/4/4/4	0/0/0/0
4	GOL	B	501	-	-	0/4/4/4	0/0/0/0
5	SUC	B	502	-	-	0/12/51/51	0/2/2/2
4	GOL	C	601	-	-	0/4/4/4	0/0/0/0
4	GOL	D	501	-	-	0/4/4/4	0/0/0/0
4	GOL	E	101	-	-	0/4/4/4	0/0/0/0

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	502	SUC	C1-O5-C5	3.21	120.04	113.71

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	502	SUC	1	0
4	D	501	GOL	1	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	551/557 (98%)	0.21	13 (2%) 59 52	31, 55, 90, 172	0
1	C	551/557 (98%)	0.78	80 (14%) 2 1	36, 71, 138, 195	0
2	B	407/444 (91%)	0.74	51 (12%) 4 2	36, 73, 127, 199	0
2	D	407/444 (91%)	0.50	33 (8%) 12 8	42, 71, 116, 174	0
3	E	33/38 (86%)	0.08	1 (3%) 50 43	35, 50, 104, 127	0
3	F	36/38 (94%)	0.18	3 (8%) 11 7	43, 69, 145, 175	0
All	All	1985/2078 (95%)	0.53	181 (9%) 9 6	31, 65, 125, 199	0

All (181) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	360	ALA	11.5
2	B	88	TRP	9.8
1	C	61	PHE	9.7
2	B	4	PRO	8.6
1	C	34	LEU	8.3
2	B	92	LEU	8.1
1	C	136	ASN	8.0
1	C	68	SER	7.6
2	D	4	PRO	7.3
1	C	60	VAL	7.2
2	B	91	GLN	7.1
2	B	212	TRP	7.0
2	D	67	ASP	7.0
1	C	27	THR	6.8
1	C	71	TRP	6.8
1	C	26	LEU	6.7
1	C	67	ASP	6.3
1	C	142	ILE	6.3
2	B	357	MET	6.0

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Mol	Chain	Res	Type	RSRZ
1	C	32	LYS	5.9
1	C	63	ILE	5.9
1	C	452	LEU	5.8
2	B	361	HIS	5.7
1	A	66	LYS	5.6
1	C	542	ILE	5.6
2	D	283	LEU	5.4
1	C	50	ILE	5.4
1	C	62	ALA	5.4
1	A	67	ASP	5.4
2	B	209	LEU	5.4
2	B	359	GLY	5.3
1	C	144	TYR	5.3
1	C	74	LEU	5.3
2	B	231	GLY	5.3
1	C	134	SER	5.3
2	B	423	VAL	5.3
1	C	31	ILE	5.3
2	B	301	LEU	5.3
1	C	66	LYS	5.2
1	C	135	ILE	5.2
2	B	90	VAL	5.1
1	C	69	THR	5.0
1	C	141	GLY	4.9
2	B	67	ASP	4.9
2	D	358	LYS	4.8
1	A	69	THR	4.8
1	C	24	TRP	4.8
1	A	65	LYS	4.8
1	C	35	VAL	4.7
1	C	132	ILE	4.7
1	C	28	GLU	4.7
1	C	36	GLU	4.6
1	C	72	ARG	4.6
1	C	140	PRO	4.6
2	B	252	TRP	4.5
1	A	24	TRP	4.5
1	C	133	PRO	4.5
1	A	136	ASN	4.4
1	C	39	THR	4.4
2	B	5	ILE	4.3
2	B	95	PRO	4.3

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Mol	Chain	Res	Type	RSRZ
1	A	140	PRO	4.3
2	D	231	GLY	4.3
2	D	212	TRP	4.2
1	A	138	GLU	4.2
2	D	360	ALA	4.2
2	D	232	TYR	4.2
1	A	68	SER	4.2
1	C	73	LYS	4.0
1	C	59	PRO	4.0
2	B	94	ILE	4.0
2	B	93	GLY	4.0
2	D	284	ARG	3.9
1	C	448	ARG	3.9
1	C	51	GLY	3.8
1	C	75	VAL	3.8
2	D	361	HIS	3.7
2	B	87	PHE	3.6
1	C	70	LYS	3.6
1	C	131	THR	3.6
1	C	38	CYS	3.6
1	C	29	GLU	3.5
1	C	457	TYR	3.5
2	D	276	VAL	3.5
2	D	279	LEU	3.4
1	C	65	LYS	3.3
1	A	139	THR	3.3
2	D	357	MET	3.3
1	C	25	PRO	3.2
1	C	139	THR	3.2
2	B	232	TYR	3.2
2	B	245	VAL	3.2
1	C	37	ILE	3.2
1	C	130	PHE	3.2
2	B	248	GLU	3.2
2	B	168	LEU	3.2
2	D	299	ALA	3.1
2	D	282	LEU	3.1
2	B	279	LEU	3.1
2	B	211	ARG	3.0
2	B	250	ASP	3.0
1	C	550	LYS	3.0
2	D	211	ARG	3.0

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Mol	Chain	Res	Type	RSRZ
1	C	33	ALA	3.0
2	D	295	LEU	3.0
2	B	251	SER	3.0
2	B	89	GLU	2.9
2	B	68	SER	2.9
1	A	70	LYS	2.9
3	F	-2	DA	2.8
3	F	-3	DA	2.8
2	D	424	LYS	2.8
1	C	551	LEU	2.8
2	D	177	ASP	2.8
1	C	49	LYS	2.7
2	B	305	GLU	2.7
1	A	64	LYS	2.7
1	C	52	PRO	2.7
1	C	128	THR	2.7
2	D	90	VAL	2.6
1	C	22	LYS	2.6
2	D	68	SER	2.6
3	F	-1	DT	2.6
1	C	55	PRO	2.6
2	D	178	ILE	2.6
1	C	146	TYR	2.6
1	C	143	ARG	2.5
2	D	259	LYS	2.5
1	C	434	ILE	2.5
2	D	281	LYS	2.5
1	C	544	GLY	2.5
1	C	540	LYS	2.5
1	C	552	VAL	2.5
1	C	449	GLU	2.5
2	B	120	LEU	2.5
1	C	451	LYS	2.5
1	C	137	ASN	2.5
1	C	440	PHE	2.5
2	B	172	ARG	2.4
2	B	422	LEU	2.4
1	C	441	TYR	2.4
2	D	174	GLN	2.4
1	C	219	LYS	2.4
1	C	450	THR	2.4
2	D	209	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
2	D	422	LEU	2.4
2	B	297	GLU	2.4
2	B	425	LEU	2.3
1	C	496	VAL	2.3
1	C	447	ASN	2.3
2	D	93	GLY	2.3
1	C	469	LEU	2.3
2	B	424	LYS	2.3
1	A	71	TRP	2.3
1	C	16	MET	2.3
2	B	202	ILE	2.3
2	B	295	LEU	2.3
2	B	303	LEU	2.2
2	B	85	GLN	2.2
2	B	281	LYS	2.2
1	C	78	ARG	2.2
2	D	359	GLY	2.2
2	B	161	GLN	2.2
2	B	176	PRO	2.2
2	B	296	THR	2.2
1	C	547	GLN	2.2
1	C	30	LYS	2.2
1	C	138	GLU	2.2
1	C	54	ASN	2.2
2	B	210	LEU	2.2
1	C	56	TYR	2.1
2	D	289	LEU	2.1
2	D	176	PRO	2.1
2	B	346	PHE	2.1
2	B	356	ARG	2.1
2	B	7	THR	2.1
3	E	-1	DT	2.1
2	D	287	LYS	2.1
2	B	358	LYS	2.1
1	C	64	LYS	2.0
2	D	202	ILE	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. 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
3	OMC	F	2	21/22	0.97	0.17	59,63,72,77	0
3	OMC	F	4	21/22	0.98	0.19	37,46,53,55	0
3	OMC	E	4	21/22	0.98	0.19	30,37,43,44	0
3	OMC	E	2	21/22	0.98	0.20	38,44,52,70	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. 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
5	SUC	B	502	23/23	0.77	0.28	65,100,126,130	0
4	GOL	A	601	6/6	0.78	0.28	60,71,73,79	0
4	GOL	C	601	6/6	0.84	0.38	82,91,106,113	0
4	GOL	E	101	6/6	0.87	0.34	72,85,89,96	0
4	GOL	D	501	6/6	0.88	0.26	51,61,63,65	0
4	GOL	B	501	6/6	0.95	0.23	48,55,59,59	0

6.5 Other polymers [i](#)

There are no such residues in this entry.