WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jun 13, 2024 – 08:09 AM EDT

PDB ID	:	4J4S
Title	:	Triple mutant SFTAVN
Authors	:	Jiao, L.; Ouyang, S.; Liang, M.; Niu, F.; Shaw, N.; Wu, W.; Ding, W.; Jin, C.; Zhu, Y.; Zhang, F.; Wang, T.; Li, C.; Zuo, X.; Luan, C.H.; Li, D.; Liu, Z.J.
Deposited on	:	2013-02-07
Resolution	:	2.44 Å(reported)

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

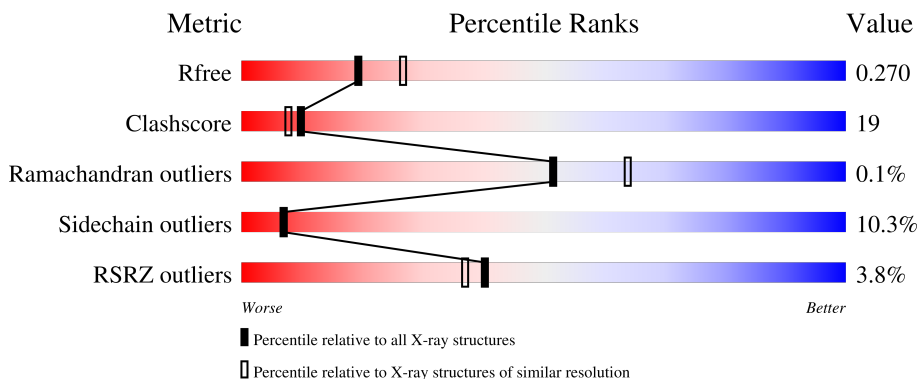|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 2.44 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	Percentile Ranks	Value
Rfree		0.270
Clashscore		19
Ramachandran outliers		0.1%
Sidechain outliers		10.3%
RSRZ outliers		3.8%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1564 (2.46-2.42)
Clashscore	141614	1631 (2.46-2.42)
Ramachandran outliers	138981	1617 (2.46-2.42)
Sidechain outliers	138945	1617 (2.46-2.42)
RSRZ outliers	127900	1547 (2.46-2.42)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	248	% 74% 20% 5% •
1	B	248	% 70% 21% • •
1	C	248	5% 64% 24% 6% 6%
1	D	248	7% 64% 29% 5% •

2   Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 7514 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 Nucleocapsid protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	246	Total	C	N	O	S	0	2	0
			1909	1217	321	360	11			
1	B	238	Total	C	N	O	S	0	0	0
			1836	1171	309	345	11			
1	C	233	Total	C	N	O	S	0	0	0
			1793	1145	299	339	10			
1	D	245	Total	C	N	O	S	0	0	0
			1890	1205	317	357	11			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP I6WJ72
A	-1	ASN	-	expression tag	UNP I6WJ72
A	0	ALA	-	expression tag	UNP I6WJ72
A	64	ASP	ARG	engineered mutation	UNP I6WJ72
A	67	ASP	LYS	engineered mutation	UNP I6WJ72
A	74	ASP	LYS	engineered mutation	UNP I6WJ72
B	-2	SER	-	expression tag	UNP I6WJ72
B	-1	ASN	-	expression tag	UNP I6WJ72
B	0	ALA	-	expression tag	UNP I6WJ72
B	64	ASP	ARG	engineered mutation	UNP I6WJ72
B	67	ASP	LYS	engineered mutation	UNP I6WJ72
B	74	ASP	LYS	engineered mutation	UNP I6WJ72
C	-2	SER	-	expression tag	UNP I6WJ72
C	-1	ASN	-	expression tag	UNP I6WJ72
C	0	ALA	-	expression tag	UNP I6WJ72
C	64	ASP	ARG	engineered mutation	UNP I6WJ72
C	67	ASP	LYS	engineered mutation	UNP I6WJ72
C	74	ASP	LYS	engineered mutation	UNP I6WJ72
D	-2	SER	-	expression tag	UNP I6WJ72
D	-1	ASN	-	expression tag	UNP I6WJ72
D	0	ALA	-	expression tag	UNP I6WJ72

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Chain	Residue	Modelled	Actual	Comment	Reference
D	64	ASP	ARG	engineered mutation	UNP I6WJ72
D	67	ASP	LYS	engineered mutation	UNP I6WJ72
D	74	ASP	LYS	engineered mutation	UNP I6WJ72

• Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	3	Total Na 3 3	0	0
2	B	3	Total Na 3 3	0	0
2	C	1	Total Na 1 1	0	0
2	D	1	Total Na 1 1	0	0

• Molecule 3 is water.

| Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	45	Total O 45 45	0	0
3	B	15	Total O 15 15	0	0
3	C	12	Total O 12 12	0	0
3	D	6	Total O 6 6	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
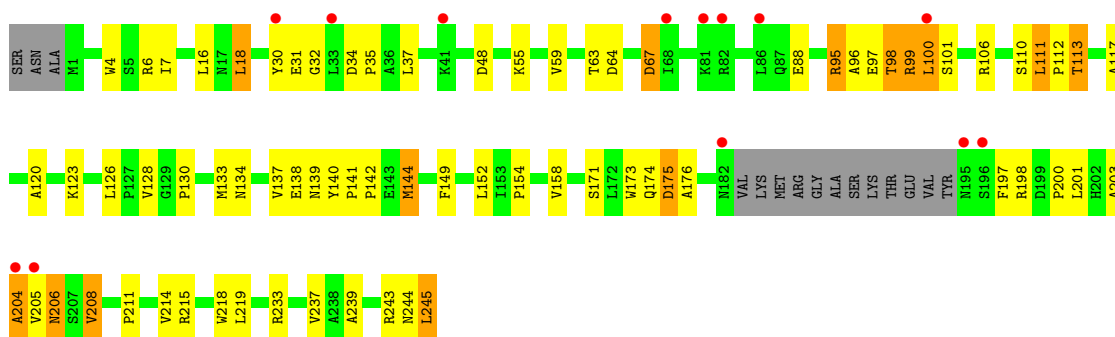
• Molecule 1: Nucleocapsid protein
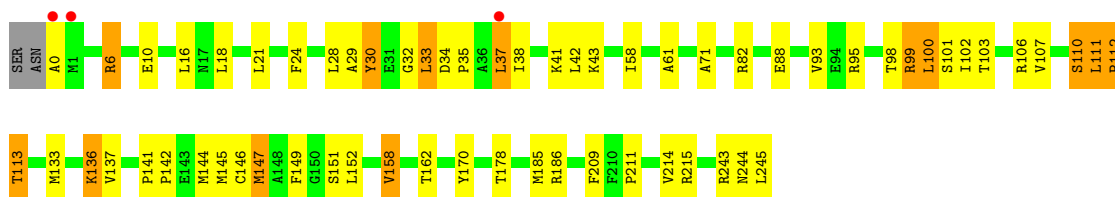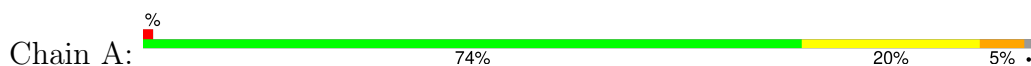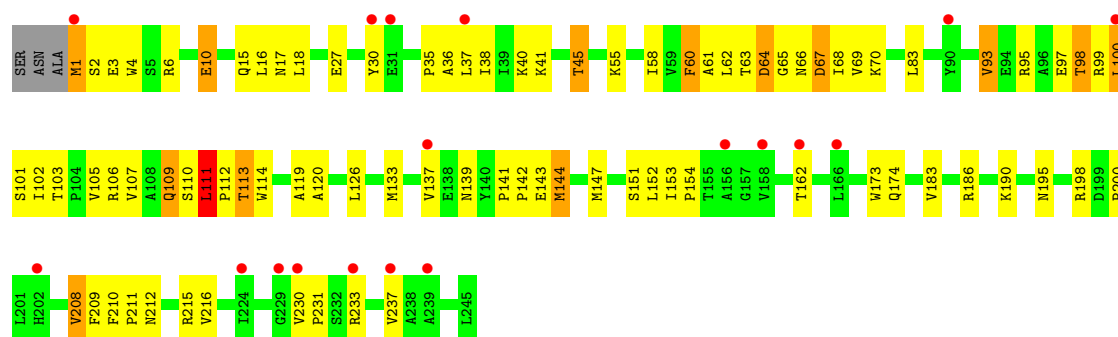

• Molecule 1: Nucleocapsid protein
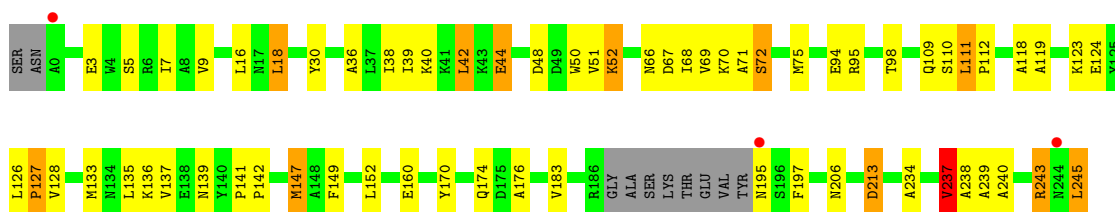
• Molecule 1: Nucleocapsid protein

• Molecule 1: Nucleocapsid protein

Chain D:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	95.49Å　108.48Å　221.41Å 90.00°　90.00°　90.00°	Depositor
Resolution (Å)	43.81　–　2.44 43.84　–　2.44	Depositor EDS
% Data completeness (in resolution range)	97.9 (43.81-2.44) 93.9 (43.84-2.44)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.19 (at 2.45Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.208　,　0.267 0.213　,　0.270	Depositor DCC
R_{free} test set	2000 reflections (4.74%)	wwPDB-VP
Wilson B-factor (Å^2)	43.2	Xtriage
Anisotropy	1.088	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 51.3	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	7514	wwPDB-VP
Average B, all atoms (Å^2)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.55% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: NA

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	0.80	2/1953 (0.1%)	0.75	1/2647 (0.0%)
1	B	0.83	0/1872	0.78	2/2537 (0.1%)
1	C	0.87	1/1829 (0.1%)	0.73	1/2481 (0.0%)
1	D	0.56	0/1928	0.61	1/2614 (0.0%)
All	All	0.77	3/7582 (0.0%)	0.72	5/10279 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	146	CYS	CB-SG	-6.67	1.71	1.82
1	C	140	TYR	CE1-CZ	-6.12	1.30	1.38
1	A	30	TYR	CE1-CZ	-5.26	1.31	1.38

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	111	LEU	CA-CB-CG	6.41	130.05	115.30
1	B	111	LEU	CB-CG-CD1	-6.00	100.80	111.00
1	C	204	ALA	N-CA-C	-5.62	95.81	111.00
1	B	237	VAL	CB-CA-C	-5.22	101.49	111.40
1	D	111	LEU	CB-CG-CD1	-5.16	102.23	111.00

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	1909	0	1929	47	0
1	B	1836	0	1854	70	1
1	C	1793	0	1801	85	0
1	D	1890	0	1907	87	1
2	A	3	0	0	0	0
2	B	3	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	45	0	0	3	0
3	B	15	0	0	1	0
3	C	12	0	0	0	0
3	D	6	0	0	6	0
All	All	7514	0	7491	286	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 19.

All (286) 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:95:ARG:NH2	1:C:97:GLU:HG2	1.42	1.34
1:A:33:LEU:O	1:A:33:LEU:HD23	1.33	1.22
1:D:110:SER:O	1:D:112:PRO:HD2	1.38	1.19
1:D:110:SER:C	1:D:112:PRO:HD2	1.69	1.13
1:B:110:SER:O	1:B:111:LEU:HD12	1.50	1.11
1:B:245:LEU:O	1:B:245:LEU:HD23	1.52	1.08
1:D:109:GLN:O	1:D:112:PRO:HD3	1.57	1.04
1:B:237:VAL:HG12	1:B:238:ALA:N	1.62	1.04
1:B:110:SER:C	1:B:111:LEU:CD1	2.25	1.03
1:B:110:SER:C	1:B:111:LEU:HD12	1.78	1.02
1:A:33:LEU:HD23	1:A:33:LEU:C	1.68	1.02
1:C:95:ARG:HH22	1:C:97:GLU:CG	1.73	1.00
1:D:110:SER:C	1:D:112:PRO:CD	2.29	1.00
1:B:245:LEU:C	1:B:245:LEU:CD2	2.30	0.99
1:D:109:GLN:CA	1:D:109:GLN:HE21	1.73	0.97
1:B:127:PRO:HG2	1:B:128:VAL:H	1.28	0.96
1:B:111:LEU:CD1	1:B:111:LEU:N	2.29	0.95
1:B:237:VAL:CG1	1:B:238:ALA:N	2.30	0.94
1:B:38:ILE:HG23	1:B:42:LEU:HD11	1.48	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:111:LEU:N	1:D:112:PRO:CD	2.29	0.93
1:C:95:ARG:NH2	1:C:97:GLU:CG	2.30	0.93
1:C:99:ARG:HA	1:C:106:ARG:HH12	1.32	0.92
1:C:95:ARG:HH22	1:C:97:GLU:HG2	1.14	0.92
1:B:127:PRO:HG2	1:B:128:VAL:N	1.81	0.91
1:B:245:LEU:HD23	1:B:245:LEU:C	1.91	0.91
1:D:60:PHE:C	1:D:60:PHE:CD2	2.43	0.90
1:D:109:GLN:HE21	1:D:109:GLN:C	1.76	0.90
1:B:38:ILE:CG2	1:B:42:LEU:HD11	2.02	0.89
1:A:37:LEU:HD11	1:A:100:LEU:HB2	1.54	0.89
1:C:208:VAL:HG22	1:C:208:VAL:O	1.71	0.88
1:A:103:THR:OG1	1:A:106:ARG:HG3	1.75	0.87
1:A:245:LEU:HG	1:B:243:ARG:O	1.75	0.86
1:C:113:THR:HG22	1:C:218:TRP:CD1	2.11	0.85
1:B:128:VAL:HG12	1:B:128:VAL:O	1.76	0.85
1:B:110:SER:C	1:B:111:LEU:HD13	1.97	0.84
1:D:60:PHE:C	1:D:60:PHE:HD2	1.81	0.84
1:C:98:THR:O	1:C:101:SER:HB2	1.79	0.81
1:B:111:LEU:N	1:B:111:LEU:HD13	1.96	0.81
1:D:113:THR:OG1	3:D:403:HOH:O	1.97	0.80
1:B:127:PRO:CG	1:B:128:VAL:H	1.93	0.80
1:C:98:THR:O	1:C:101:SER:CB	2.30	0.80
1:D:109:GLN:O	1:D:112:PRO:CD	2.30	0.79
1:C:35:PRO:HD2	1:C:208:VAL:HG21	1.63	0.79
1:B:110:SER:O	1:B:111:LEU:CD1	2.27	0.78
1:C:245:LEU:HD12	1:C:245:LEU:N	1.99	0.78
1:B:127:PRO:CG	1:B:128:VAL:N	2.45	0.78
1:A:32:GLY:O	1:A:99:ARG:NH1	2.17	0.78
1:C:37:LEU:HD21	1:C:100:LEU:CD2	2.13	0.78
1:C:37:LEU:HD11	1:C:100:LEU:CD2	2.14	0.77
1:B:245:LEU:O	1:B:245:LEU:CD2	2.30	0.76
1:D:109:GLN:HE21	1:D:109:GLN:HA	1.51	0.75
1:D:66:ASN:OD1	1:D:105:VAL:HG23	1.87	0.75
1:A:147:MET:CA	1:A:147:MET:CE	2.64	0.74
1:D:109:GLN:CA	1:D:109:GLN:NE2	2.46	0.74
1:B:40:LYS:O	1:B:44:GLU:HG2	1.88	0.74
1:C:37:LEU:HD11	1:C:100:LEU:HD21	1.70	0.73
1:A:147:MET:CA	1:A:147:MET:HE3	2.19	0.73
1:D:109:GLN:HA	1:D:109:GLN:NE2	2.03	0.73
1:A:33:LEU:C	1:A:33:LEU:CD2	2.45	0.73
1:B:245:LEU:C	1:B:245:LEU:HD22	2.09	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:245:LEU:N	1:C:245:LEU:CD1	2.52	0.72
1:D:110:SER:C	1:D:112:PRO:HD3	2.10	0.72
1:D:60:PHE:CD2	1:D:60:PHE:O	2.43	0.72
1:A:142:PRO:O	1:A:145:MET:HB2	1.90	0.71
1:D:102:ILE:O	3:D:406:HOH:O	2.08	0.71
1:D:63:THR:C	1:D:64:ASP:OD1	2.29	0.70
1:A:147:MET:HE3	1:A:147:MET:HA	1.71	0.70
1:B:243:ARG:HH11	1:B:243:ARG:HB2	1.55	0.70
1:D:111:LEU:N	1:D:112:PRO:HD3	2.06	0.69
1:B:69:VAL:HG12	1:B:70:LYS:N	2.07	0.69
1:B:240:ALA:HA	1:B:243:ARG:NH1	2.07	0.69
1:D:195:ASN:OD1	1:D:198:ARG:NH1	2.25	0.69
1:C:37:LEU:HD21	1:C:100:LEU:HD22	1.73	0.69
1:C:95:ARG:HH21	1:C:97:GLU:HG2	1.54	0.69
1:C:205:VAL:O	1:C:205:VAL:HG22	1.91	0.69
1:B:112:PRO:HB2	1:B:152:LEU:HD21	1.74	0.68
1:C:237:VAL:HG12	1:C:237:VAL:O	1.92	0.68
1:C:111:LEU:N	1:C:112:PRO:HD3	2.10	0.67
1:D:109:GLN:OE1	1:D:151:SER:OG	2.13	0.67
1:D:60:PHE:HE2	1:D:65:GLY:O	1.77	0.67
1:B:42:LEU:H	1:B:42:LEU:HD12	1.60	0.67
1:D:6:ARG:O	1:D:10:GLU:HG2	1.95	0.67
1:C:120:ALA:HB2	1:C:142:PRO:HB2	1.77	0.66
1:B:237:VAL:HG12	1:B:238:ALA:CA	2.25	0.66
1:C:111:LEU:N	1:C:112:PRO:CD	2.59	0.66
1:B:239:ALA:O	1:B:243:ARG:NH1	2.30	0.65
1:D:101:SER:O	1:D:106:ARG:NH1	2.30	0.65
1:D:109:GLN:O	1:D:109:GLN:NE2	2.28	0.65
1:B:237:VAL:O	1:B:240:ALA:HB3	1.97	0.65
1:C:130:PRO:O	1:C:133:MET:N	2.30	0.65
1:C:123:LYS:HA	1:C:126:LEU:HG	1.79	0.64
1:D:17:ASN:OD1	3:D:404:HOH:O	2.15	0.64
1:C:128:VAL:HB	1:C:173:TRP:HE1	1.63	0.63
1:C:198:ARG:NH2	1:C:208:VAL:O	2.29	0.63
1:B:213:ASP:OD1	1:B:213:ASP:N	2.32	0.62
1:D:153:ILE:O	1:D:215:ARG:NH1	2.32	0.62
1:D:2:SER:OG	1:D:6:ARG:NH2	2.32	0.62
1:B:237:VAL:O	1:B:240:ALA:N	2.33	0.61
1:D:93:VAL:O	3:D:406:HOH:O	2.16	0.61
1:B:39:ILE:HA	1:B:42:LEU:HD13	1.83	0.61
1:A:41:LYS:HG2	1:A:102:ILE:HD11	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:62:LEU:CD2	1:D:119:ALA:HB2	2.31	0.60
1:C:120:ALA:O	1:C:123:LYS:HG2	2.01	0.60
1:C:37:LEU:HD11	1:C:100:LEU:HD23	1.84	0.60
1:D:64:ASP:OD1	1:D:64:ASP:N	2.31	0.60
1:B:136:LYS:NZ	1:B:176:ALA:HB2	2.16	0.60
1:C:120:ALA:CB	1:C:142:PRO:HB2	2.32	0.60
1:A:142:PRO:HA	1:A:145:MET:SD	2.42	0.60
1:C:35:PRO:HD2	1:C:208:VAL:CG2	2.31	0.59
1:C:112:PRO:HB2	1:C:152:LEU:HD21	1.86	0.58
1:C:113:THR:CG2	1:C:218:TRP:CD1	2.85	0.58
1:C:239:ALA:O	1:C:243:ARG:HG3	2.03	0.58
1:D:103:THR:HA	3:D:406:HOH:O	2.01	0.58
1:C:110:SER:C	1:C:112:PRO:HD3	2.24	0.58
1:B:72:SER:HA	1:B:75:MET:HG2	1.87	0.57
1:A:147:MET:CE	1:A:147:MET:O	2.52	0.57
1:C:144:MET:HE2	1:C:149:PHE:CE2	2.39	0.57
1:C:204:ALA:C	1:C:206:ASN:H	2.07	0.57
1:C:204:ALA:C	1:C:206:ASN:N	2.56	0.56
1:C:237:VAL:O	1:C:237:VAL:CG1	2.53	0.56
1:D:68:ILE:O	1:D:68:ILE:CG2	2.53	0.56
1:A:152:LEU:O	1:A:215:ARG:HB3	2.06	0.56
1:C:205:VAL:O	1:C:205:VAL:CG2	2.54	0.56
1:C:113:THR:HG22	1:C:218:TRP:NE1	2.20	0.55
1:B:123:LYS:HA	1:B:126:LEU:HG	1.88	0.55
1:C:203:ALA:O	1:C:204:ALA:C	2.40	0.55
1:B:174:GLN:HG2	1:B:197:PHE:CE2	2.42	0.55
1:B:127:PRO:CD	1:B:128:VAL:H	2.20	0.54
1:D:110:SER:O	1:D:112:PRO:CD	2.31	0.54
1:A:16:LEU:HD22	1:A:21:LEU:HD11	1.88	0.54
1:C:201:LEU:HD12	1:C:201:LEU:H	1.71	0.54
1:D:107:VAL:O	1:D:107:VAL:HG12	2.07	0.54
1:D:133:MET:HE3	1:D:173:TRP:CD1	2.42	0.54
1:D:109:GLN:C	1:D:112:PRO:HD3	2.26	0.54
1:D:147:MET:SD	1:D:174:GLN:NE2	2.80	0.53
1:C:95:ARG:NH1	1:C:97:GLU:OE2	2.41	0.53
1:A:6:ARG:HH11	1:A:10:GLU:HG3	1.73	0.53
1:A:244:ASN:OD1	3:A:433:HOH:O	2.19	0.53
1:D:55:LYS:HG2	1:D:114:TRP:CZ2	2.44	0.53
1:A:158:VAL:HG13	1:A:162:THR:HB	1.91	0.52
1:D:66:ASN:OD1	1:D:105:VAL:CG2	2.56	0.52
1:A:29:ALA:O	1:A:30:TYR:C	2.46	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:244:ASN:C	1:C:245:LEU:HD13	2.29	0.52
1:B:68:ILE:HG13	1:B:94:GLU:HG2	1.91	0.52
1:A:211:PRO:HG2	1:A:214:VAL:HG22	1.91	0.52
1:A:243:ARG:NH2	3:A:432:HOH:O	2.41	0.52
1:C:200:PRO:HG3	1:C:215:ARG:NH1	2.25	0.51
1:C:244:ASN:C	1:C:245:LEU:CD1	2.79	0.51
1:C:130:PRO:O	1:C:134:ASN:OD1	2.29	0.51
1:C:67:ASP:N	1:C:67:ASP:OD1	2.43	0.51
1:D:35:PRO:HB2	1:D:209:PHE:CZ	2.45	0.51
1:B:38:ILE:HG22	1:B:42:LEU:HD11	1.88	0.50
1:B:68:ILE:O	1:B:72:SER:OG	2.28	0.50
1:C:144:MET:HE3	1:C:149:PHE:CZ	2.46	0.50
1:C:98:THR:O	1:C:101:SER:OG	2.29	0.50
1:D:60:PHE:HD2	1:D:61:ALA:N	2.10	0.50
1:D:64:ASP:O	1:D:67:ASP:OD2	2.29	0.50
1:C:174:GLN:HG2	1:C:197:PHE:CE1	2.47	0.49
1:A:112:PRO:HG2	1:A:113:THR:N	2.27	0.49
1:A:244:ASN:HB3	1:A:245:LEU:HD13	1.94	0.49
1:A:147:MET:HE3	1:A:147:MET:O	2.13	0.49
1:C:37:LEU:CD1	1:C:100:LEU:HD23	2.41	0.49
1:C:30:TYR:CE2	1:C:32:GLY:HA2	2.47	0.49
1:C:4:TRP:CE3	1:C:7:ILE:HD12	2.48	0.49
1:D:183:VAL:O	1:D:186:ARG:HG2	2.13	0.49
1:B:136:LYS:HZ2	1:B:176:ALA:HB2	1.77	0.49
1:D:109:GLN:O	1:D:112:PRO:CG	2.61	0.49
1:D:113:THR:HG23	1:D:210:PHE:CZ	2.48	0.49
1:A:106:ARG:O	1:A:110:SER:OG	2.29	0.48
1:C:201:LEU:HD12	1:C:201:LEU:N	2.28	0.48
1:B:36:ALA:O	1:B:40:LYS:HB2	2.13	0.48
1:D:1:MET:HB2	1:D:4:TRP:HB2	1.95	0.48
1:D:60:PHE:CD1	1:D:83:LEU:CD1	2.97	0.48
1:C:35:PRO:CD	1:C:208:VAL:CG2	2.91	0.48
1:C:98:THR:O	1:C:101:SER:N	2.46	0.48
1:B:42:LEU:HD12	1:B:42:LEU:N	2.28	0.48
1:D:68:ILE:O	1:D:68:ILE:HG22	2.11	0.48
1:D:62:LEU:HD22	1:D:119:ALA:HB2	1.96	0.47
1:B:39:ILE:CA	1:B:42:LEU:HD13	2.44	0.47
1:A:42:LEU:HD11	1:A:107:VAL:HG13	1.96	0.47
1:B:237:VAL:HG12	1:B:238:ALA:H	1.70	0.47
1:C:144:MET:CE	1:C:149:PHE:CE2	2.97	0.47
1:A:141:PRO:HA	1:A:142:PRO:HD3	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:98:THR:C	1:C:100:LEU:H	2.17	0.47
1:A:112:PRO:HG2	1:A:113:THR:H	1.79	0.47
1:B:67:ASP:O	1:B:71:ALA:CB	2.63	0.47
1:A:0:ALA:HB1	1:A:6:ARG:HD2	1.97	0.47
1:B:127:PRO:CD	1:B:128:VAL:N	2.78	0.47
1:C:133:MET:HE3	1:C:173:TRP:HA	1.97	0.47
1:D:233:ARG:O	1:D:237:VAL:HG23	2.14	0.47
1:C:133:MET:HE3	1:C:173:TRP:CD1	2.51	0.46
1:B:52:LYS:HA	1:B:52:LYS:HD3	1.40	0.46
1:C:138:GLU:O	1:C:139:ASN:HB2	2.15	0.46
1:D:37:LEU:HD13	1:D:100:LEU:HA	1.97	0.46
1:B:66:ASN:O	1:B:68:ILE:N	2.48	0.46
1:C:98:THR:C	1:C:100:LEU:N	2.66	0.46
1:D:60:PHE:HE1	1:D:83:LEU:HD21	1.81	0.46
1:D:120:ALA:HB2	1:D:143:GLU:HG3	1.97	0.46
1:D:37:LEU:HD12	1:D:38:ILE:HG13	1.96	0.46
1:C:99:ARG:H	1:C:99:ARG:HG3	1.23	0.46
1:C:113:THR:HG22	1:C:218:TRP:CG	2.51	0.45
1:C:117:ALA:HB1	1:D:16:LEU:HD11	1.97	0.45
1:D:41:LYS:O	1:D:45:THR:OG1	2.26	0.45
1:C:171:SER:HA	1:C:174:GLN:HB2	1.99	0.45
1:A:178:THR:HG22	1:A:185:MET:HG3	1.97	0.45
1:A:34:ASP:O	1:A:38:ILE:HG12	2.17	0.45
1:B:237:VAL:O	1:B:240:ALA:CB	2.64	0.45
1:C:18:LEU:HD23	1:C:18:LEU:HA	1.79	0.45
1:D:93:VAL:N	3:D:406:HOH:O	2.14	0.45
1:D:58:ILE:O	1:D:62:LEU:HD12	2.17	0.45
1:B:5:SER:O	1:B:9:VAL:HG13	2.17	0.45
1:D:141:PRO:HG2	1:D:144:MET:SD	2.56	0.45
1:C:175:ASP:OD1	1:C:176:ALA:N	2.50	0.45
1:C:139:ASN:O	1:C:141:PRO:HD3	2.16	0.45
1:D:60:PHE:CD1	1:D:83:LEU:HD13	2.52	0.45
1:D:60:PHE:HD1	1:D:83:LEU:HD13	1.81	0.45
1:D:98:THR:OG1	1:D:99:ARG:N	2.50	0.44
1:A:35:PRO:HB2	1:A:209:PHE:CE2	2.52	0.44
1:A:133:MET:HE1	1:A:136:LYS:HD3	1.99	0.44
1:D:109:GLN:O	1:D:112:PRO:HG3	2.17	0.44
1:D:210:PHE:HA	1:D:211:PRO:HD2	1.70	0.44
1:D:111:LEU:HD12	1:D:111:LEU:HA	1.54	0.44
1:C:37:LEU:CD2	1:C:100:LEU:CD2	2.91	0.44
1:C:154:PRO:HD3	1:C:219:LEU:HD11	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:VAL:HG21	1:A:101:SER:HB3	1.99	0.44
1:D:162:THR:HG23	1:D:231:PRO:HG3	1.99	0.44
1:D:211:PRO:O	1:D:215:ARG:HG3	2.17	0.44
1:C:96:ALA:O	1:C:97:GLU:C	2.53	0.44
1:D:133:MET:HE3	1:D:173:TRP:HD1	1.81	0.44
1:C:128:VAL:HB	1:C:173:TRP:NE1	2.32	0.44
1:C:154:PRO:HG2	1:C:158:VAL:HG21	2.01	0.43
1:D:120:ALA:HA	1:D:142:PRO:HB2	2.00	0.43
1:B:95:ARG:NH2	1:B:195:ASN:HD22	2.15	0.43
1:B:147:MET:HE2	1:B:147:MET:HB3	1.81	0.43
1:B:160:GLU:OE2	3:B:407:HOH:O	2.21	0.43
1:B:67:ASP:O	1:B:71:ALA:HB2	2.19	0.43
1:C:55:LYS:O	1:C:59:VAL:HG23	2.18	0.43
1:D:58:ILE:HG22	1:D:62:LEU:HD11	2.00	0.43
1:D:139:ASN:OD1	1:D:139:ASN:N	2.51	0.43
1:D:30:TYR:HE2	1:D:200:PRO:HA	1.83	0.43
1:A:211:PRO:HG2	1:A:214:VAL:CG2	2.48	0.43
1:D:153:ILE:HA	1:D:154:PRO:HD3	1.71	0.43
1:C:245:LEU:HD12	1:C:245:LEU:H	1.80	0.43
1:B:141:PRO:HA	1:B:142:PRO:HD3	1.59	0.42
1:B:42:LEU:H	1:B:42:LEU:CD1	2.29	0.42
1:B:149:PHE:HB3	1:B:170:TYR:CE1	2.54	0.42
1:B:206:ASN:ND2	1:B:206:ASN:O	2.52	0.42
1:B:240:ALA:HA	1:B:243:ARG:HH12	1.81	0.42
1:C:200:PRO:HG3	1:C:215:ARG:HH12	1.84	0.42
1:C:63:THR:HG22	1:C:64:ASP:OD1	2.19	0.42
1:D:106:ARG:O	1:D:109:GLN:N	2.53	0.42
1:D:62:LEU:HB3	1:D:126:LEU:CD2	2.49	0.42
1:D:141:PRO:HA	1:D:142:PRO:HD3	1.73	0.42
1:B:18:LEU:HD23	1:B:18:LEU:HA	1.71	0.42
1:C:34:ASP:HA	1:C:208:VAL:HG11	2.01	0.42
1:D:69:VAL:O	1:D:69:VAL:HG12	2.17	0.42
1:D:103:THR:O	1:D:107:VAL:HG23	2.20	0.42
1:A:58:ILE:O	1:A:61:ALA:HB3	2.19	0.42
1:B:118:ALA:O	1:B:119:ALA:C	2.56	0.42
1:C:233:ARG:O	1:C:237:VAL:HG23	2.20	0.42
1:B:109:GLN:O	1:B:112:PRO:HD3	2.19	0.41
1:C:204:ALA:O	1:C:206:ASN:N	2.53	0.41
1:A:41:LYS:CG	1:A:102:ILE:HD11	2.50	0.41
1:A:144:MET:HG2	1:A:149:PHE:CD2	2.55	0.41
1:D:3:GLU:HG3	1:D:4:TRP:N	2.34	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:211:PRO:HG2	1:C:214:VAL:HG23	2.03	0.41
1:B:133:MET:HE1	1:B:176:ALA:HB3	2.02	0.41
1:A:98:THR:H	1:A:101:SER:HG	1.67	0.41
1:B:38:ILE:HG22	1:B:42:LEU:CD1	2.50	0.41
1:C:110:SER:C	1:C:112:PRO:CD	2.88	0.41
1:A:71:ALA:HA	1:B:30:TYR:HD1	1.86	0.41
1:A:88:GLU:HB3	3:A:438:HOH:O	2.21	0.41
1:D:60:PHE:CD1	1:D:83:LEU:HD11	2.56	0.41
1:A:24:PHE:O	1:A:28:LEU:HB2	2.21	0.41
1:B:139:ASN:O	1:B:234:ALA:HB1	2.21	0.41
1:D:212:ASN:O	1:D:216:VAL:HG23	2.21	0.41
1:D:36:ALA:HB2	1:D:209:PHE:HE2	1.86	0.41
1:D:112:PRO:HB2	1:D:152:LEU:CD1	2.51	0.41
1:A:35:PRO:HB3	1:A:110:SER:HB3	2.02	0.40
1:A:149:PHE:HB3	1:A:170:TYR:CE1	2.55	0.40
1:B:3:GLU:O	1:B:7:ILE:HG13	2.21	0.40
1:A:147:MET:CE	1:A:147:MET:HA	2.40	0.40
1:D:38:ILE:HG23	1:D:102:ILE:HD12	2.02	0.40
1:A:33:LEU:HD21	1:A:35:PRO:HG3	2.04	0.40
1:C:141:PRO:HA	1:C:142:PRO:HD3	1.63	0.40
1:D:183:VAL:HG13	1:D:186:ARG:CZ	2.51	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)
1:B:48:ASP:OD2	1:D:208:VAL:O[5_455]	1.99	0.21

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	246/248 (99%)	241 (98%)	5 (2%)	0	100	100
1	B	234/248 (94%)	229 (98%)	5 (2%)	0	100	100
1	C	229/248 (92%)	222 (97%)	7 (3%)	0	100	100
1	D	243/248 (98%)	233 (96%)	9 (4%)	1 (0%)	34	41
All	All	952/992 (96%)	925 (97%)	26 (3%)	1 (0%)	51	64

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	111	LEU

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	202/202 (100%)	182 (90%)	20 (10%)	8	7
1	B	194/202 (96%)	175 (90%)	19 (10%)	8	8
1	C	189/202 (94%)	170 (90%)	19 (10%)	7	7
1	D	200/202 (99%)	176 (88%)	24 (12%)	5	4
All	All	785/808 (97%)	703 (90%)	82 (10%)	7	7

All (82) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	ARG
1	A	18	LEU
1	A	33	LEU
1	A	37	LEU
1	A	43	LYS
1	A	82[A]	ARG
1	A	82[B]	ARG
1	A	95	ARG
1	A	99	ARG
1	A	100	LEU

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Mol	Chain	Res	Type
1	A	110	SER
1	A	111	LEU
1	A	112	PRO
1	A	113	THR
1	A	136	LYS
1	A	137	VAL
1	A	147	MET
1	A	151	SER
1	A	158	VAL
1	A	186	ARG
1	B	16	LEU
1	B	18	LEU
1	B	42	LEU
1	B	44	GLU
1	B	50	TRP
1	B	51	VAL
1	B	52	LYS
1	B	72	SER
1	B	98	THR
1	B	124	GLU
1	B	127	PRO
1	B	135	LEU
1	B	137	VAL
1	B	147	MET
1	B	183	VAL
1	B	213	ASP
1	B	237	VAL
1	B	243	ARG
1	B	245	LEU
1	C	6	ARG
1	C	16	LEU
1	C	18	LEU
1	C	31	GLU
1	C	48	ASP
1	C	67	ASP
1	C	88	GLU
1	C	95	ARG
1	C	98	THR
1	C	99	ARG
1	C	100	LEU
1	C	111	LEU
1	C	113	THR

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Mol	Chain	Res	Type
1	C	137	VAL
1	C	144	MET
1	C	175	ASP
1	C	206	ASN
1	C	208	VAL
1	C	245	LEU
1	D	1	MET
1	D	10	GLU
1	D	15	GLN
1	D	18	LEU
1	D	27	GLU
1	D	40	LYS
1	D	45	THR
1	D	60	PHE
1	D	64	ASP
1	D	67	ASP
1	D	70	LYS
1	D	93	VAL
1	D	95	ARG
1	D	97	GLU
1	D	98	THR
1	D	100	LEU
1	D	109	GLN
1	D	111	LEU
1	D	113	THR
1	D	137	VAL
1	D	144	MET
1	D	190	LYS
1	D	208	VAL
1	D	230	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	206	ASN
1	C	206	ASN
1	D	109	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 8 are monoatomic - leaving 0 for Mogul analysis.

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.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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(Å²)	Q<0.9
1	A	246/248 (99%)	-0.00	3 (1%)	79	77	34, 51, 82, 120	0
1	B	238/248 (95%)	0.03	3 (1%)	77	75	41, 62, 98, 127	0
1	C	233/248 (93%)	0.24	13 (5%)	24	20	41, 72, 112, 137	0
1	D	245/248 (98%)	0.45	18 (7%)	15	11	51, 85, 111, 146	0
All	All	962/992 (96%)	0.18	37 (3%)	40	37	34, 67, 107, 146	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	182	ASN	7.2
1	D	1	MET	6.0
1	D	166	LEU	5.9
1	C	195	ASN	4.1
1	D	30	TYR	3.9
1	D	137	VAL	3.7
1	A	0	ALA	3.6
1	D	156	ALA	3.6
1	D	158	VAL	3.4
1	D	237	VAL	3.3
1	C	205	VAL	3.3
1	C	100	LEU	3.2
1	C	196	SER	2.9
1	D	100	LEU	2.9
1	C	81	LYS	2.7
1	D	239	ALA	2.7
1	C	41	LYS	2.7
1	D	90	TYR	2.6
1	B	0	ALA	2.5
1	C	86	LEU	2.5
1	A	37	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	224	ILE	2.3
1	C	68	ILE	2.3
1	D	229	GLY	2.3
1	D	31	GLU	2.3
1	D	233	ARG	2.3
1	D	37	LEU	2.3
1	D	202	HIS	2.3
1	B	195	ASN	2.2
1	C	204	ALA	2.2
1	D	230	VAL	2.2
1	B	244	ASN	2.1
1	C	30	TYR	2.1
1	C	82	ARG	2.1
1	C	33	LEU	2.0
1	A	1	MET	2.0
1	D	162	THR	2.0

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

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

6.3　Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4　Ligands ⓘ

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
2	NA	A	303	1/1	0.68	0.22	83,83,83,83	0
2	NA	B	303	1/1	0.81	0.23	79,79,79,79	0
2	NA	D	301	1/1	0.84	0.21	80,80,80,80	0
2	NA	B	302	1/1	0.89	0.37	86,86,86,86	0
2	NA	A	301	1/1	0.92	0.17	53,53,53,53	0
2	NA	B	301	1/1	0.94	0.17	68,68,68,68	0
2	NA	A	302	1/1	0.97	0.24	41,41,41,41	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	NA	C	301	1/1	0.98	0.14	44,44,44,44	0

6.5 Other polymers ⓘ

There are no such residues in this entry.