



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 05:41 PM GMT

PDB ID : 4J4V
Title : Pentameric SFTSVN with Su
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 : 2.30 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<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) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

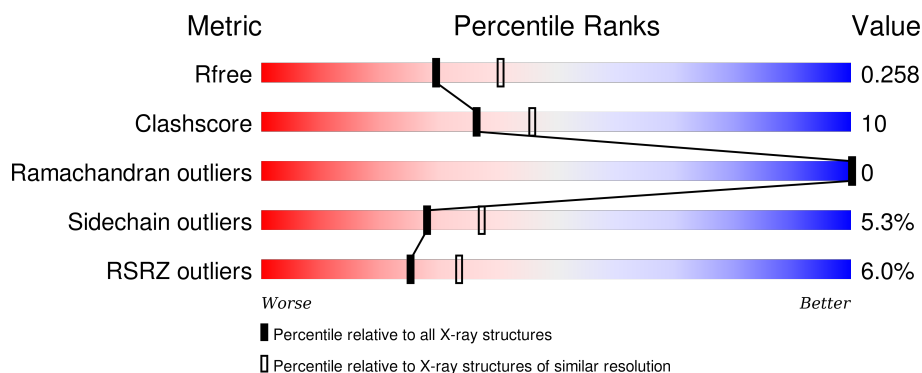
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	3852 (2.30-2.30)
Clashscore	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (2.30-2.30)
RSRZ outliers	91569	3857 (2.30-2.30)

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	248	 2% 81% 15% ..
1	B	248	 8% 74% 21% ..
1	C	248	 7% 74% 21% ..
1	D	248	 6% 79% 19% ..
1	E	248	 7% 77% 19% ..

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	SVR	B	301	-	-	-	X

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 9804 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.

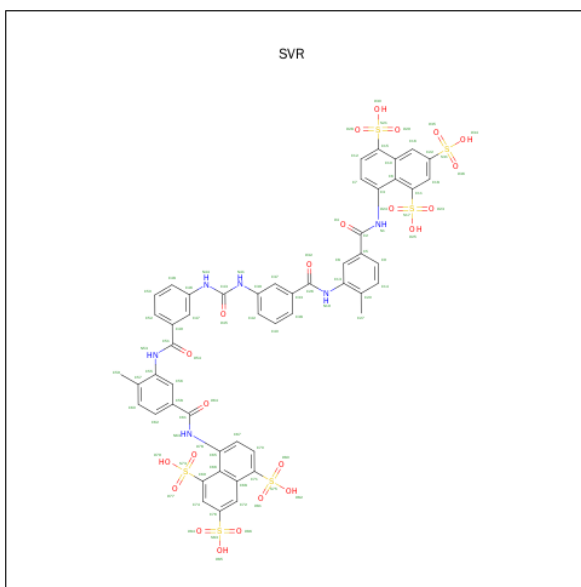
- Molecule 1 is a protein called Nucleocapsid protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	244	Total	C	N	O	S	0	0	0
			1887	1206	321	350	10			
1	B	240	Total	C	N	O	S	0	0	0
			1855	1187	313	346	9			
1	C	245	Total	C	N	O	S	0	0	0
			1895	1211	322	351	11			
1	E	240	Total	C	N	O	S	0	0	0
			1852	1184	313	346	9			
1	D	246	Total	C	N	O	S	0	0	0
			1900	1214	323	352	11			

There are 15 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
B	-2	SER	-	EXPRESSION TAG	UNP I6WJ72
B	-1	ASN	-	EXPRESSION TAG	UNP I6WJ72
B	0	ALA	-	EXPRESSION TAG	UNP I6WJ72
C	-2	SER	-	EXPRESSION TAG	UNP I6WJ72
C	-1	ASN	-	EXPRESSION TAG	UNP I6WJ72
C	0	ALA	-	EXPRESSION TAG	UNP I6WJ72
E	-2	SER	-	EXPRESSION TAG	UNP I6WJ72
E	-1	ASN	-	EXPRESSION TAG	UNP I6WJ72
E	0	ALA	-	EXPRESSION TAG	UNP I6WJ72
D	-2	SER	-	EXPRESSION TAG	UNP I6WJ72
D	-1	ASN	-	EXPRESSION TAG	UNP I6WJ72
D	0	ALA	-	EXPRESSION TAG	UNP I6WJ72

- Molecule 2 is 8,8'-[CARBONYLBIS[IMINO-3,1-PHENYLENECARBONYLIMINO(4-METHYL-3,1-PHENYLENE)CARBONYLIMINO]]BIS-1,3,5-NAPHTHALENETRISULFONIC ACID (three-letter code: SVR) (formula: C₅₁H₄₀N₆O₂₃S₆).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			33	18	2	10	3		
2	B	1	Total	C	N	O	S	0	0
			33	18	2	10	3		
2	C	1	Total	C	N	O	S	0	0
			33	18	2	10	3		
2	E	1	Total	C	N	O	S	0	0
			33	18	2	10	3		
2	D	1	Total	C	N	O	S	0	0
			33	18	2	10	3		

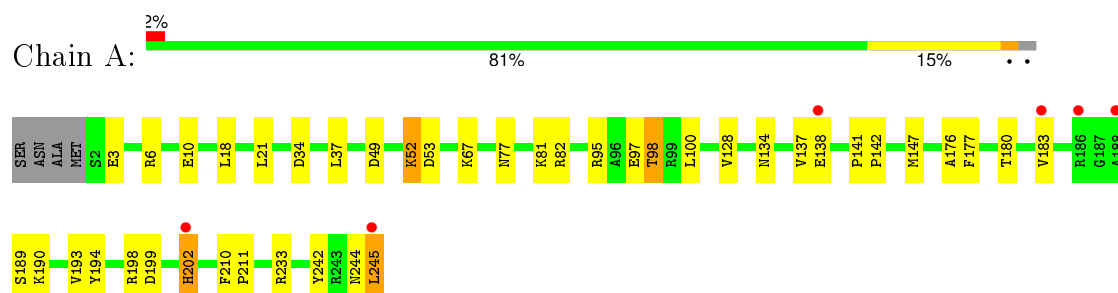
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	65	Total	O	0	0
			65	65		
3	B	38	Total	O	0	0
			38	38		
3	C	31	Total	O	0	0
			31	31		
3	E	47	Total	O	0	0
			47	47		
3	D	69	Total	O	0	0
			69	69		

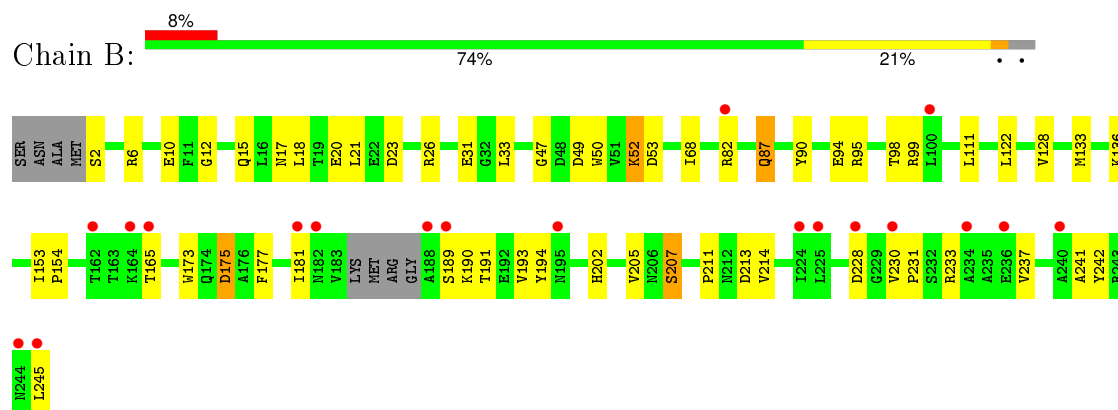
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of 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.

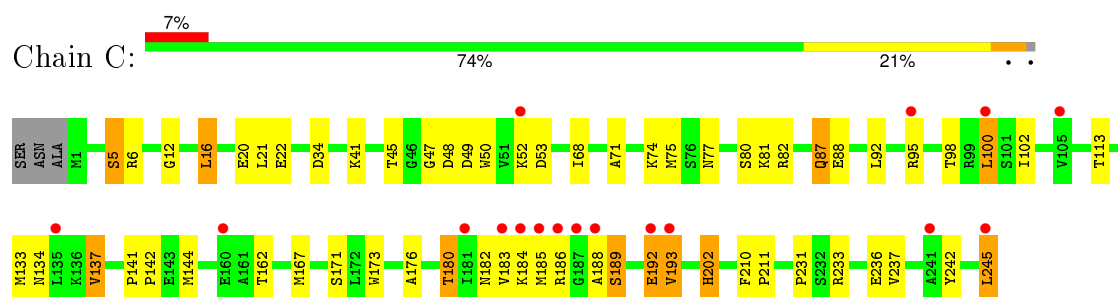
- Molecule 1: Nucleocapsid protein



- Molecule 1: Nucleocapsid protein

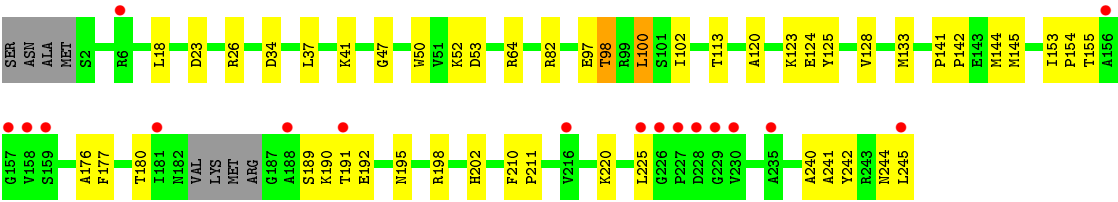


- Molecule 1: Nucleocapsid protein

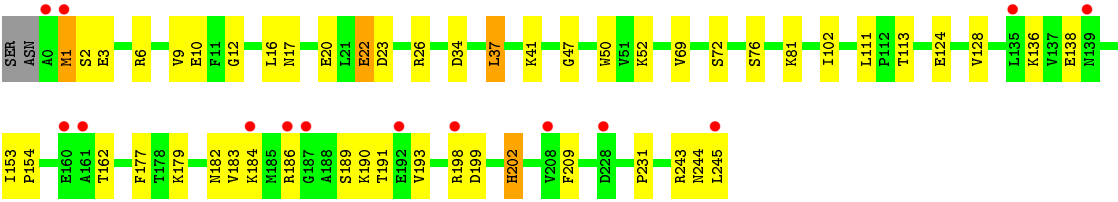
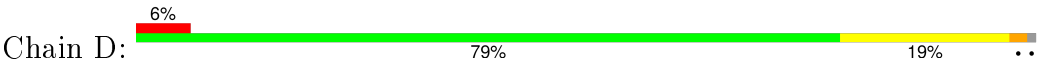


- Molecule 1: Nucleocapsid protein





• Molecule 1: Nucleocapsid protein



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	103.14Å 154.89Å 93.29Å 90.00° 102.12° 90.00°	Depositor
Resolution (Å)	42.72 – 2.30 42.72 – 2.30	Depositor EDS
% Data completeness (in resolution range)	96.1 (42.72-2.30) 92.0 (42.72-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.03 (at 2.32Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.223 , 0.261 0.226 , 0.258	Depositor DCC
R_{free} test set	2000 reflections (3.56%)	DCC
Wilson B-factor (Å ²)	37.3	Xtriage
Anisotropy	0.054	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 46.8	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 60735 reflections	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	9804	wwPDB-VP
Average B, all atoms (Å ²)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.06% 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, 0.375 respectively for untwinned datasets, and 0.333, 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: SVR

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	0.32	0/1925	0.52	0/2607
1	B	0.34	0/1892	0.55	0/2564
1	C	0.41	0/1933	0.62	1/2617 (0.0%)
1	D	0.38	0/1938	0.53	1/2624 (0.0%)
1	E	0.38	0/1889	0.51	0/2559
All	All	0.37	0/9577	0.55	2/12971 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	245	LEU	CA-CB-CG	5.75	128.52	115.30
1	D	37	LEU	CA-CB-CG	5.62	128.23	115.30

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	1887	0	1922	30	0
1	B	1855	0	1883	35	0
1	C	1895	0	1934	49	0
1	D	1900	0	1939	35	1

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	1852	0	1877	34	0
2	A	33	0	11	1	0
2	B	33	0	11	2	0
2	C	33	0	11	2	0
2	D	33	0	11	2	0
2	E	33	0	11	3	0
3	A	65	0	0	6	0
3	B	38	0	0	8	0
3	C	31	0	0	8	1
3	D	69	0	0	8	0
3	E	47	0	0	4	0
All	All	9804	0	9610	182	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 10.

All (182) 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:189:SER:OG	1:C:192:GLU:CD	1.71	1.26
1:C:189:SER:OG	1:C:192:GLU:OE1	1.57	1.22
1:C:182:ASN:OD1	1:C:184:LYS:N	1.92	1.03
1:E:242:TYR:OH	3:E:444:HOH:O	1.73	1.03
1:A:198:ARG:NH2	3:A:401:HOH:O	2.02	0.93
1:C:189:SER:OG	1:C:192:GLU:OE2	1.76	0.92
1:D:202:HIS:ND1	3:D:429:HOH:O	2.04	0.89
1:C:52:LYS:NZ	1:C:53:ASP:OD1	2.06	0.88
1:C:34:ASP:OD2	3:C:419:HOH:O	1.90	0.87
1:E:190:LYS:HD2	1:E:245:LEU:HD13	1.58	0.85
1:E:52:LYS:NZ	1:E:53:ASP:OD1	2.08	0.84
1:C:236:GLU:OE2	3:C:416:HOH:O	1.97	0.82
1:C:6:ARG:NH1	3:C:426:HOH:O	2.10	0.79
1:C:189:SER:CB	1:C:192:GLU:OE1	2.31	0.78
1:B:23:ASP:OD1	1:B:26:ARG:NH2	2.16	0.78
1:D:69:VAL:O	1:D:72:SER:OG	2.03	0.76
1:A:34:ASP:OD1	3:A:451:HOH:O	2.02	0.76
1:C:48:ASP:OD1	3:C:412:HOH:O	2.03	0.76
1:C:242:TYR:OH	3:C:402:HOH:O	2.03	0.75
1:E:23:ASP:OD1	1:E:26:ARG:NH2	2.19	0.75
1:B:241:ALA:O	3:B:435:HOH:O	2.04	0.75
1:B:207:SER:O	3:B:426:HOH:O	2.04	0.74

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:301:SVR:O80	3:E:411:HOH:O	2.04	0.74
1:C:95:ARG:O	3:C:429:HOH:O	2.06	0.72
1:E:244:ASN:O	1:E:245:LEU:HB2	1.90	0.72
1:D:9:VAL:O	3:D:427:HOH:O	2.07	0.71
1:B:68:ILE:HG21	1:B:87:GLN:HG3	1.73	0.70
2:D:301:SVR:O80	3:D:436:HOH:O	2.07	0.70
1:B:205:VAL:O	3:B:426:HOH:O	2.09	0.70
1:B:53:ASP:OD1	1:B:82:ARG:NH2	2.24	0.69
1:B:17:ASN:HB3	1:B:20:GLU:HG2	1.76	0.68
1:B:20:GLU:OE1	3:B:420:HOH:O	2.11	0.68
1:B:165:THR:HG21	1:B:231:PRO:HG2	1.77	0.67
1:C:41:LYS:O	1:C:45:THR:HG22	1.94	0.66
1:C:71:ALA:O	1:C:74:LYS:N	2.28	0.65
1:C:88:GLU:OE1	3:C:421:HOH:O	2.12	0.65
1:C:68:ILE:HG21	1:C:87:GLN:HG3	1.78	0.65
1:C:185:MET:CE	1:C:193:VAL:HG12	2.26	0.65
1:D:3:GLU:CD	1:D:3:GLU:H	2.01	0.65
1:D:23:ASP:OD1	1:D:26:ARG:NH2	2.30	0.64
1:E:195:ASN:HA	1:E:198:ARG:HG2	1.80	0.64
1:E:52:LYS:HD2	1:E:82:ARG:NH2	2.13	0.63
1:E:41:LYS:HG2	1:E:102:ILE:HD11	1.80	0.63
1:D:128:VAL:HG21	1:D:177:PHE:HA	1.81	0.63
1:C:162:THR:HG23	1:C:231:PRO:HD3	1.80	0.63
1:C:182:ASN:OD1	1:C:184:LYS:HB2	1.99	0.62
1:C:176:ALA:O	1:C:180:THR:OG1	2.18	0.61
1:C:20:GLU:OE2	1:D:52:LYS:NZ	2.32	0.61
1:D:3:GLU:OE1	1:D:3:GLU:N	2.23	0.61
1:C:133:MET:HE3	1:C:173:TRP:CD1	2.35	0.60
1:A:98:THR:HG22	1:A:100:LEU:H	1.65	0.60
1:C:185:MET:HE2	1:C:193:VAL:HG12	1.82	0.60
1:C:52:LYS:HD2	1:C:82:ARG:HH22	1.67	0.59
1:D:34:ASP:OD2	3:D:426:HOH:O	2.17	0.59
1:D:198:ARG:NH1	1:D:199:ASP:OD1	2.36	0.59
1:C:189:SER:N	1:C:192:GLU:OE2	2.31	0.59
1:E:190:LYS:HZ2	1:E:245:LEU:HD22	1.68	0.59
1:C:77:ASN:O	1:C:81:LYS:HG2	2.03	0.59
1:D:17:ASN:HB3	1:D:20:GLU:HG2	1.84	0.59
2:E:301:SVR:S73	2:E:301:SVR:N63	2.76	0.58
1:D:190:LYS:HD2	1:D:245:LEU:HD13	1.85	0.58
1:A:3:GLU:OE1	1:A:3:GLU:N	2.36	0.57
1:C:49:ASP:OD1	1:C:52:LYS:HE3	2.03	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:147:MET:HB2	3:A:416:HOH:O	2.03	0.57
1:D:179:LYS:NZ	3:D:441:HOH:O	2.12	0.56
1:D:244:ASN:O	1:D:245:LEU:HB2	2.05	0.56
1:E:120:ALA:O	1:E:123:LYS:HG3	2.06	0.56
1:C:87:GLN:HG2	1:C:92:LEU:HB2	1.86	0.56
1:A:176:ALA:O	1:A:180:THR:HG23	2.06	0.56
1:B:49:ASP:OD1	1:B:52:LYS:HD2	2.06	0.56
1:E:98:THR:HG23	1:E:100:LEU:H	1.71	0.55
1:B:53:ASP:OD2	1:B:90:TYR:OH	2.11	0.55
1:D:182:ASN:OD1	1:D:184:LYS:HB2	2.07	0.55
1:E:176:ALA:O	1:E:180:THR:HG23	2.05	0.55
2:A:301:SVR:N63	2:A:301:SVR:S73	2.81	0.54
1:D:198:ARG:HG3	1:D:199:ASP:N	2.23	0.54
1:B:228:ASP:OD1	1:B:230:VAL:HG22	2.08	0.54
1:B:233:ARG:NE	3:B:427:HOH:O	2.28	0.53
1:A:128:VAL:HG21	1:A:177:PHE:HA	1.90	0.53
1:A:52:LYS:HG3	3:A:435:HOH:O	2.09	0.53
1:A:202:HIS:ND1	3:A:444:HOH:O	2.33	0.52
1:E:34:ASP:OD2	3:E:426:HOH:O	2.19	0.52
1:B:128:VAL:HG21	1:B:177:PHE:HA	1.91	0.52
1:D:136:LYS:HE2	3:D:457:HOH:O	2.10	0.52
1:A:6:ARG:O	1:A:10:GLU:HG3	2.09	0.52
1:C:16:LEU:HG	1:C:21:LEU:HD11	1.91	0.51
1:B:133:MET:HE3	1:B:173:TRP:CD1	2.45	0.51
1:E:211:PRO:HG3	1:D:1:MET:HG2	1.91	0.51
1:E:37:LEU:HD11	1:E:100:LEU:HD12	1.92	0.51
1:C:5:SER:OG	1:D:209:PHE:O	2.26	0.51
1:B:15:GLN:H	1:B:15:GLN:CD	2.12	0.51
1:C:98:THR:HG22	1:C:100:LEU:H	1.76	0.50
1:D:243:ARG:NH1	3:D:418:HOH:O	2.44	0.50
1:E:98:THR:CG2	1:E:100:LEU:H	2.25	0.49
1:A:98:THR:CG2	1:A:100:LEU:H	2.24	0.49
1:A:49:ASP:OD2	1:A:52:LYS:NZ	2.44	0.49
1:B:213:ASP:OD1	1:B:214:VAL:N	2.46	0.49
1:A:190:LYS:NZ	1:A:242:TYR:O	2.45	0.49
1:B:189:SER:O	1:B:193:VAL:HG13	2.12	0.49
1:B:6:ARG:NH1	1:B:10:GLU:HG3	2.28	0.49
1:C:52:LYS:HD2	1:C:82:ARG:NH2	2.28	0.48
1:C:134:ASN:HA	1:C:137:VAL:O	2.13	0.48
1:C:137:VAL:HG22	1:C:237:VAL:HG12	1.95	0.48
1:C:47:GLY:O	1:C:50:TRP:HD1	1.97	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:77:ASN:O	1:A:81:LYS:HG2	2.13	0.48
1:E:64:ARG:O	3:E:436:HOH:O	2.20	0.48
1:D:124:GLU:OE2	3:D:431:HOH:O	2.20	0.48
1:A:190:LYS:HZ3	1:A:245:LEU:HD22	1.79	0.47
1:D:41:LYS:HG2	1:D:102:ILE:HD11	1.95	0.47
1:C:95:ARG:HA	2:C:301:SVR:O84	2.13	0.47
1:E:47:GLY:O	1:E:50:TRP:HD1	1.98	0.47
1:E:128:VAL:HG21	1:E:177:PHE:HA	1.97	0.47
1:E:52:LYS:HD2	1:E:82:ARG:HH22	1.79	0.47
1:A:52:LYS:HE2	1:A:82:ARG:NH2	2.30	0.47
1:E:133:MET:HG3	1:E:145:MET:HE3	1.97	0.47
1:A:194:TYR:CZ	1:A:198:ARG:HD3	2.50	0.47
1:B:2:SER:N	3:B:425:HOH:O	2.48	0.46
1:D:1:MET:HE2	1:D:2:SER:H	1.80	0.46
1:A:95:ARG:NH1	1:A:97:GLU:OE1	2.48	0.46
2:C:301:SVR:S73	2:C:301:SVR:N63	2.88	0.46
1:C:141:PRO:HB2	1:C:144:MET:HG3	1.98	0.46
1:B:211:PRO:O	1:B:214:VAL:HG22	2.16	0.46
2:E:301:SVR:H62	2:E:301:SVR:O79	2.16	0.45
1:C:133:MET:HE1	1:C:176:ALA:HB3	1.98	0.45
1:E:153:ILE:HA	1:E:154:PRO:HD3	1.74	0.45
1:C:12:GLY:HA3	1:D:113:THR:OG1	2.16	0.45
1:E:190:LYS:CD	1:E:245:LEU:HD13	2.38	0.45
1:B:12:GLY:HA3	1:C:113:THR:OG1	2.17	0.45
1:A:138:GLU:OE1	1:A:138:GLU:N	2.40	0.45
1:E:133:MET:HG3	1:E:145:MET:CE	2.47	0.45
1:A:37:LEU:HD11	1:A:100:LEU:HD23	1.97	0.45
2:B:301:SVR:N63	2:B:301:SVR:S73	2.90	0.45
2:D:301:SVR:S73	2:D:301:SVR:N63	2.90	0.44
1:B:94:GLU:OE1	3:B:429:HOH:O	2.21	0.44
1:C:41:LYS:HG2	1:C:102:ILE:HD11	1.99	0.44
1:C:233:ARG:O	1:C:237:VAL:HG23	2.18	0.44
1:E:125:TYR:OH	1:D:22:GLU:OE1	2.31	0.44
1:E:141:PRO:HA	1:E:142:PRO:HD3	1.86	0.44
1:C:75:MET:HG3	1:C:80:SER:OG	2.17	0.44
1:C:41:LYS:HG2	1:C:102:ILE:CD1	2.48	0.43
1:E:220:LYS:HA	1:E:225:LEU:O	2.18	0.43
1:C:202:HIS:HB3	3:C:403:HOH:O	2.16	0.43
1:D:198:ARG:HG3	1:D:199:ASP:H	1.83	0.43
1:D:153:ILE:HA	1:D:154:PRO:HD3	1.88	0.43
1:A:244:ASN:O	1:A:245:LEU:HB2	2.18	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:189:SER:OG	1:E:192:GLU:HB2	2.18	0.43
1:D:189:SER:O	1:D:193:VAL:HG13	2.19	0.42
1:A:134:ASN:HA	1:A:137:VAL:O	2.19	0.42
1:A:189:SER:O	1:A:193:VAL:HG13	2.19	0.42
1:A:141:PRO:HA	1:A:142:PRO:HD3	1.83	0.42
1:B:31:GLU:OE1	1:B:99:ARG:NH1	2.52	0.42
1:E:241:ALA:O	1:E:245:LEU:O	2.38	0.42
1:D:3:GLU:N	1:D:3:GLU:CD	2.72	0.42
1:B:233:ARG:O	1:B:237:VAL:HG23	2.20	0.42
1:B:95:ARG:HA	2:B:301:SVR:O86	2.20	0.42
1:B:153:ILE:HA	1:B:154:PRO:HD3	1.92	0.42
1:E:113:THR:OG1	1:D:12:GLY:HA3	2.20	0.41
1:E:240:ALA:O	1:E:244:ASN:HB2	2.20	0.41
1:B:47:GLY:O	1:B:50:TRP:HD1	2.02	0.41
1:D:162:THR:HG23	1:D:231:PRO:HD3	2.02	0.41
1:C:210:PHE:HA	1:C:211:PRO:HD3	1.84	0.41
1:A:210:PHE:HA	1:A:211:PRO:HD3	1.76	0.41
1:D:41:LYS:HG2	1:D:102:ILE:CD1	2.50	0.41
1:E:123:LYS:HE2	1:E:123:LYS:HB2	1.88	0.41
1:B:133:MET:HE3	1:B:173:TRP:HD1	1.85	0.41
1:C:167:MET:O	1:C:171:SER:OG	2.28	0.41
1:B:191:THR:O	1:B:194:TYR:HB3	2.20	0.41
1:A:199:ASP:OD2	3:A:442:HOH:O	2.22	0.41
1:A:52:LYS:CG	1:A:82:ARG:HH22	2.34	0.41
1:A:52:LYS:NZ	1:A:53:ASP:OD1	2.33	0.41
1:D:6:ARG:O	1:D:10:GLU:HG3	2.20	0.41
1:B:20:GLU:OE1	3:B:414:HOH:O	2.21	0.41
1:E:141:PRO:HB2	1:E:144:MET:HG3	2.03	0.41
1:C:188:ALA:HA	1:D:186:ARG:HH21	1.86	0.40
1:D:47:GLY:O	1:D:50:TRP:HD1	2.03	0.40
1:A:52:LYS:HG2	1:A:53:ASP:N	2.34	0.40
1:E:210:PHE:HA	1:E:211:PRO:HD3	1.81	0.40
1:C:141:PRO:HA	1:C:142:PRO:HD3	1.82	0.40
1:B:136:LYS:NZ	1:B:175:ASP:OD2	2.53	0.40
1:B:190:LYS:NZ	1:B:242:TYR:O	2.42	0.40
1:B:52:LYS:HD3	1:B:53:ASP:OD1	2.22	0.40
1:A:21:LEU:HB3	1:B:122:LEU:HD21	2.03	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:D:138:GLU:OE2	3:C:416:HOH:O[2_656]	2.17	0.03

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	242/248 (98%)	240 (99%)	2 (1%)	0	100	100
1	B	236/248 (95%)	234 (99%)	2 (1%)	0	100	100
1	C	243/248 (98%)	240 (99%)	3 (1%)	0	100	100
1	D	244/248 (98%)	242 (99%)	2 (1%)	0	100	100
1	E	236/248 (95%)	234 (99%)	2 (1%)	0	100	100
All	All	1201/1240 (97%)	1190 (99%)	11 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	199/202 (98%)	191 (96%)	8 (4%)	38	52
1	B	196/202 (97%)	184 (94%)	12 (6%)	23	30
1	C	200/202 (99%)	186 (93%)	14 (7%)	19	23
1	D	200/202 (99%)	190 (95%)	10 (5%)	30	41
1	E	195/202 (96%)	187 (96%)	8 (4%)	37	50

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	990/1010 (98%)	938 (95%)	52 (5%)	28	37

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	LEU
1	A	52	LYS
1	A	67	LYS
1	A	98	THR
1	A	183	VAL
1	A	202	HIS
1	A	233	ARG
1	A	245	LEU
1	B	18	LEU
1	B	21	LEU
1	B	33	LEU
1	B	52	LYS
1	B	87	GLN
1	B	98	THR
1	B	111	LEU
1	B	175	ASP
1	B	181	ILE
1	B	202	HIS
1	B	207	SER
1	B	245	LEU
1	C	5	SER
1	C	16	LEU
1	C	22	GLU
1	C	87	GLN
1	C	100	LEU
1	C	137	VAL
1	C	180	THR
1	C	183	VAL
1	C	186	ARG
1	C	189	SER
1	C	192	GLU
1	C	193	VAL
1	C	202	HIS
1	C	245	LEU
1	E	18	LEU
1	E	97	GLU
1	E	98	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	100	LEU
1	E	124	GLU
1	E	155	THR
1	E	191	THR
1	E	202	HIS
1	D	1	MET
1	D	16	LEU
1	D	22	GLU
1	D	37	LEU
1	D	76	SER
1	D	81	LYS
1	D	111	LEU
1	D	183	VAL
1	D	191	THR
1	D	202	HIS

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

Mol	Chain	Res	Type
1	A	14	GLN
1	A	202	HIS
1	A	244	ASN
1	E	14	GLN
1	D	244	ASN

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

5 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	SVR	A	301	-	35,35,93	1.13	3 (8%)	50,56,145	1.94	8 (16%)
2	SVR	B	301	-	35,35,93	1.15	3 (8%)	50,56,145	2.02	11 (22%)
2	SVR	C	301	-	35,35,93	1.11	3 (8%)	50,56,145	1.87	9 (18%)
2	SVR	D	301	-	35,35,93	1.12	3 (8%)	50,56,145	1.96	11 (22%)
2	SVR	E	301	-	35,35,93	1.13	3 (8%)	50,56,145	1.88	8 (16%)

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	SVR	A	301	-	-	0/26/26/76	0/3/3/8
2	SVR	B	301	-	-	0/26/26/76	0/3/3/8
2	SVR	C	301	-	-	0/26/26/76	0/3/3/8
2	SVR	D	301	-	-	0/26/26/76	0/3/3/8
2	SVR	E	301	-	-	0/26/26/76	0/3/3/8

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	301	SVR	C71-C68	-2.55	1.39	1.43
2	D	301	SVR	C71-C68	-2.38	1.39	1.43
2	A	301	SVR	C71-C68	-2.28	1.39	1.43
2	C	301	SVR	C71-C68	-2.27	1.40	1.43
2	E	301	SVR	C71-C68	-2.15	1.40	1.43
2	D	301	SVR	C55-N53	2.54	1.46	1.38
2	A	301	SVR	C55-N53	2.57	1.46	1.38
2	C	301	SVR	C55-N53	2.58	1.46	1.38
2	B	301	SVR	C55-N53	2.59	1.46	1.38

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	301	SVR	C55-N53	2.62	1.46	1.38
2	C	301	SVR	C61-N63	4.31	1.46	1.35
2	D	301	SVR	C61-N63	4.36	1.46	1.35
2	B	301	SVR	C61-N63	4.38	1.46	1.35
2	A	301	SVR	C61-N63	4.38	1.46	1.35
2	E	301	SVR	C61-N63	4.40	1.46	1.35

All (47) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	301	SVR	C72-C68-C71	-3.79	118.86	123.23
2	D	301	SVR	C72-C68-C71	-3.05	119.72	123.23
2	A	301	SVR	C72-C68-C71	-2.65	120.18	123.23
2	C	301	SVR	C72-C68-C71	-2.60	120.23	123.23
2	D	301	SVR	C67-C65-N63	-2.38	116.36	123.10
2	B	301	SVR	C67-C65-N63	-2.25	116.73	123.10
2	E	301	SVR	C72-C68-C71	-2.21	120.69	123.23
2	E	301	SVR	O84-S83-O86	-2.18	100.68	112.46
2	B	301	SVR	O84-S83-O86	-2.14	100.95	112.46
2	A	301	SVR	O84-S83-O86	-2.13	100.97	112.46
2	C	301	SVR	O81-S75-O80	-2.10	101.11	112.46
2	C	301	SVR	C67-C65-N63	-2.09	117.20	123.10
2	D	301	SVR	O84-S83-O86	-2.09	101.20	112.46
2	D	301	SVR	O81-S75-O80	-2.05	101.42	112.46
2	A	301	SVR	O81-S75-O80	-2.04	101.48	112.46
2	E	301	SVR	O81-S75-O80	-2.03	101.52	112.46
2	B	301	SVR	O81-S75-O80	-2.02	101.55	112.46
2	C	301	SVR	O78-S73-O77	-2.02	101.56	112.46
2	C	301	SVR	O86-S83-C76	2.09	111.77	106.63
2	B	301	SVR	O86-S83-C76	2.15	111.91	106.63
2	A	301	SVR	O86-S83-C76	2.19	112.00	106.63
2	E	301	SVR	O86-S83-C76	2.27	112.20	106.63
2	D	301	SVR	C71-C68-C66	2.28	120.87	118.11
2	B	301	SVR	C66-C65-N63	2.36	124.24	120.58
2	D	301	SVR	O86-S83-C76	2.56	112.90	106.63
2	D	301	SVR	C66-C65-N63	2.57	124.56	120.58
2	B	301	SVR	C71-C68-C66	2.59	121.25	118.11
2	E	301	SVR	O80-S75-C71	3.81	110.52	106.20
2	B	301	SVR	O78-S73-C69	3.95	110.68	106.20
2	A	301	SVR	O80-S75-C71	3.99	110.72	106.20
2	D	301	SVR	O78-S73-C69	3.99	110.73	106.20
2	B	301	SVR	O80-S75-C71	4.22	110.98	106.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	301	SVR	O78-S73-C69	4.47	111.26	106.20
2	E	301	SVR	O78-S73-C69	4.57	111.38	106.20
2	D	301	SVR	O80-S75-C71	4.65	111.47	106.20
2	C	301	SVR	O78-S73-C69	4.72	111.55	106.20
2	C	301	SVR	O80-S75-C71	4.72	111.55	106.20
2	C	301	SVR	O77-S73-C69	5.34	112.25	106.20
2	D	301	SVR	O77-S73-C69	5.36	112.27	106.20
2	A	301	SVR	O77-S73-C69	5.58	112.53	106.20
2	E	301	SVR	O77-S73-C69	6.17	113.19	106.20
2	B	301	SVR	O77-S73-C69	6.18	113.20	106.20
2	C	301	SVR	O81-S75-C71	6.47	113.54	106.20
2	E	301	SVR	O81-S75-C71	6.86	113.98	106.20
2	D	301	SVR	O81-S75-C71	7.34	114.52	106.20
2	B	301	SVR	O81-S75-C71	7.36	114.54	106.20
2	A	301	SVR	O81-S75-C71	7.80	115.04	106.20

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	301	SVR	1	0
2	B	301	SVR	2	0
2	C	301	SVR	2	0
2	D	301	SVR	2	0
2	E	301	SVR	3	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	244/248 (98%)	0.40	6 (2%) 61 70	25, 39, 71, 90	0
1	B	240/248 (96%)	0.66	19 (7%) 15 22	31, 58, 86, 100	0
1	C	245/248 (98%)	0.64	17 (6%) 20 27	33, 54, 81, 94	0
1	D	246/248 (99%)	0.43	14 (5%) 27 36	27, 42, 75, 94	0
1	E	240/248 (96%)	0.54	17 (7%) 19 26	27, 48, 80, 98	0
All	All	1215/1240 (97%)	0.53	73 (6%) 25 33	25, 48, 81, 100	0

All (73) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	186	ARG	6.3
1	A	183	VAL	5.5
1	C	245	LEU	5.5
1	B	225	LEU	5.3
1	E	191	THR	5.1
1	E	229	GLY	5.0
1	D	1	MET	4.8
1	E	188	ALA	4.6
1	C	184	LYS	4.5
1	D	135	LEU	4.4
1	E	226	GLY	4.3
1	B	245	LEU	4.1
1	E	225	LEU	4.1
1	E	227	PRO	4.1
1	D	0	ALA	3.9
1	B	182	ASN	3.9
1	B	195	ASN	3.8
1	D	161	ALA	3.7
1	E	228	ASP	3.5
1	B	230	VAL	3.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	183	VAL	3.4
1	A	245	LEU	3.4
1	B	236	GLU	3.3
1	C	187	GLY	2.9
1	A	202	HIS	2.9
1	D	186	ARG	2.8
1	B	100	LEU	2.7
1	B	188	ALA	2.7
1	D	184	LYS	2.7
1	E	157	GLY	2.7
1	D	187	GLY	2.7
1	A	186	ARG	2.6
1	C	160	GLU	2.5
1	B	181	ILE	2.5
1	C	135	LEU	2.5
1	D	245	LEU	2.5
1	C	193	VAL	2.5
1	C	188	ALA	2.4
1	E	245	LEU	2.4
1	D	208	VAL	2.4
1	E	6	ARG	2.4
1	E	159	SER	2.4
1	C	100	LEU	2.4
1	C	95	ARG	2.3
1	C	241	ALA	2.3
1	A	138	GLU	2.3
1	D	228	ASP	2.3
1	B	165	THR	2.3
1	B	82	ARG	2.3
1	B	162	THR	2.3
1	D	192	GLU	2.3
1	B	234	ALA	2.2
1	C	105	VAL	2.2
1	E	158	VAL	2.2
1	E	216	VAL	2.2
1	D	139	ASN	2.2
1	D	198	ARG	2.2
1	A	188	ALA	2.2
1	E	230	VAL	2.2
1	C	52	LYS	2.2
1	D	160	GLU	2.1
1	B	244	ASN	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	240	ALA	2.1
1	E	156	ALA	2.1
1	B	164	LYS	2.1
1	E	181	ILE	2.1
1	B	228	ASP	2.1
1	C	185	MET	2.1
1	E	235	ALA	2.1
1	C	181	ILE	2.1
1	C	192	GLU	2.0
1	B	224	ILE	2.0
1	B	189	SER	2.0

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
2	SVR	B	301	33/86	0.85	0.27	2.39	62,80,108,112	0
2	SVR	E	301	33/86	0.86	0.21	1.49	59,70,97,99	0
2	SVR	C	301	33/86	0.81	0.22	0.56	81,86,131,132	0
2	SVR	A	301	33/86	0.90	0.17	0.03	42,63,97,102	0
2	SVR	D	301	33/86	0.93	0.14	-0.41	41,53,76,85	0

6.5 Other polymers [i](#)

There are no such residues in this entry.