



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 28, 2014 – 07:28 AM GMT

PDB ID : 1XQ7
Title : Cyclophilin from Trypanosoma cruzi bound to cyclosporin A
Authors : Caruthers, J.M.; Hol, W.G.J.; Structural Genomics of Pathogenic Protozoa Consortium (SGPP)
Deposited on : 2004-10-11
Resolution : 2.07 Å(reported)

This is a full wwPDB 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/ValidationPDFNotes.html>

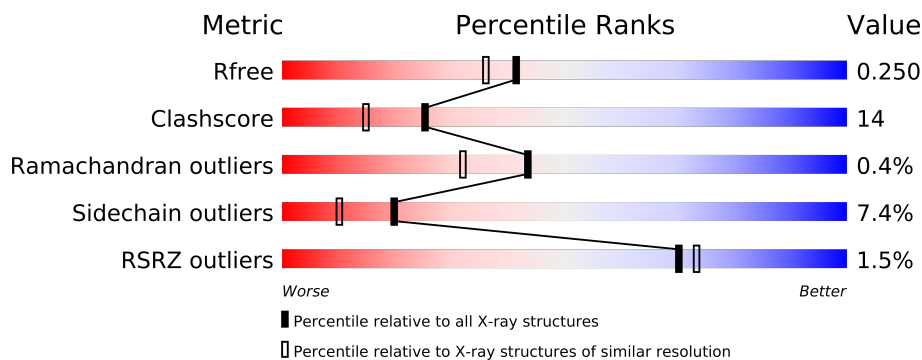
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.07 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}	66092	1224 (2.08-2.04)
Clashscore	79885	1390 (2.08-2.04)
Ramachandran outliers	78287	1381 (2.08-2.04)
Sidechain outliers	78261	1381 (2.08-2.04)
RSRZ outliers	66119	1225 (2.08-2.04)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	166	
1	B	166	
1	C	166	
2	D	11	
2	E	11	
2	F	11	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 4356 atoms, of which 0 are hydrogen and 0 are deuterium.

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 PEPTIDYL-PROLYL CIS-TRANS ISOMERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	166	Total	C	N	O	S	0	0	0
			1271	811	218	237	5			
1	B	166	Total	C	N	O	S	0	0	0
			1271	811	218	237	5			
1	C	166	Total	C	N	O	S	0	0	0
			1271	811	218	237	5			

- Molecule 2 is a protein called CYCLOSPORIN A.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	D	11	Total	C	N	O	0	0	0
			85	62	11	12			
2	E	11	Total	C	N	O	0	0	0
			85	62	11	12			
2	F	11	Total	C	N	O	0	0	0
			85	62	11	12			

- Molecule 3 is water.

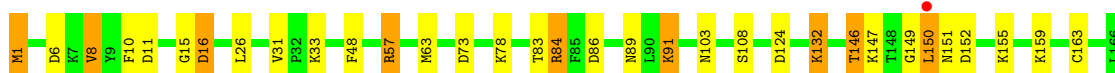
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	96	Total	O	0	0
			96	96		
3	B	87	Total	O	0	0
			87	87		
3	C	97	Total	O	0	0
			97	97		
3	E	2	Total	O	0	0
			2	2		
3	F	6	Total	O	0	0
			6	6		

3 Residue-property plots

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

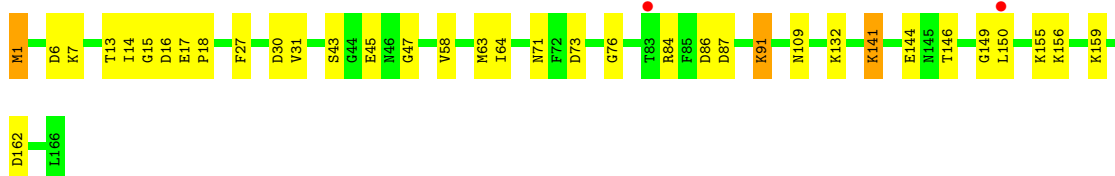
- Molecule 1: PEPTIDYL-PROLYL CIS-TRANS ISOMERASE

Chain A: 



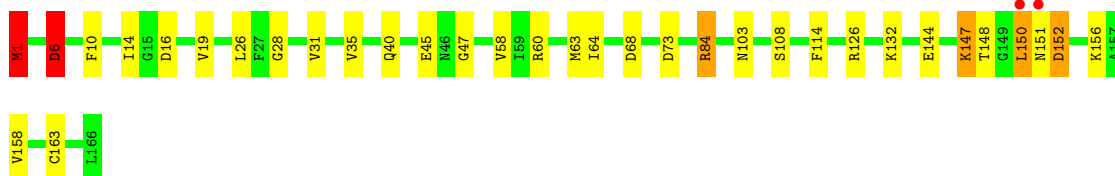
- Molecule 1: PEPTIDYL-PROLYL CIS-TRANS ISOMERASE

Chain B: 



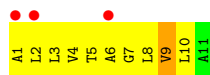
- Molecule 1: PEPTIDYL-PROLYL CIS-TRANS ISOMERASE

Chain C: 



- Molecule 2: CYCLOSPORIN A

Chain D: 



- Molecule 2: CYCLOSPORIN A

Chain E: 



- Molecule 2: CYCLOSPORIN A

Chain F: 

A1	L2	L3	V4	T5	L8	V9	L10	A11
----	----	----	----	----	----	----	-----	-----

4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	52.27Å 57.06Å 58.81Å 110.49° 108.21° 105.40°	Depositor
Resolution (Å)	49.39 – 2.07 15.75 – 2.07	Depositor EDS
% Data completeness (in resolution range)	94.4 (49.39-2.07) 94.6 (15.75-2.07)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 2.07Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.169 , 0.235 0.186 , 0.250	Depositor DCC
R_{free} test set	1590 reflections (5.31%)	DCC
Wilson B-factor (Å ²)	26.0	Xtriage
Anisotropy	0.244	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 28.7	EDS
Estimated twinning fraction	0.023 for -h,-k,h+k+l	Xtriage
L-test for twinning	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 31544 reflections	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	4356	wwPDB-VP
Average B, all atoms (Å ²)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.46% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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: ABA, MLE, DAL, MVA, BMT, SAR

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	1.09	1/1298 (0.1%)	1.09	10/1751 (0.6%)
1	B	1.06	1/1298 (0.1%)	1.06	7/1751 (0.4%)
1	C	1.04	1/1298 (0.1%)	1.06	5/1751 (0.3%)
2	D	0.97	0/10	1.16	0/11
2	E	0.82	0/10	1.68	0/11
2	F	1.15	0/10	1.03	0/11
All	All	1.06	3/3924 (0.1%)	1.07	22/5286 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1
2	E	0	2
All	All	0	3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	1	MET	CG-SD	5.86	1.96	1.81
1	B	27	PHE	CE2-CZ	5.40	1.47	1.37
1	A	132	LYS	CE-NZ	5.33	1.62	1.49

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	6	ASP	CB-CG-OD2	10.20	127.48	118.30
1	A	150	LEU	CA-CB-CG	8.75	135.43	115.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	11	ASP	CB-CG-OD2	8.25	125.73	118.30
1	C	152	ASP	CB-CG-OD2	8.20	125.68	118.30
1	B	162	ASP	CB-CG-OD2	7.82	125.33	118.30
1	B	87	ASP	CB-CG-OD2	7.58	125.12	118.30
1	A	57	ARG	NE-CZ-NH1	7.14	123.87	120.30
1	C	16	ASP	CB-CG-OD2	6.90	124.51	118.30
1	A	57	ARG	NE-CZ-NH2	-6.84	116.88	120.30
1	B	30	ASP	CB-CG-OD2	6.78	124.40	118.30
1	A	124	ASP	CB-CG-OD2	6.32	123.99	118.30
1	B	73	ASP	CB-CG-OD2	6.09	123.78	118.30
1	A	132	LYS	CD-CE-NZ	5.77	124.97	111.70
1	A	152	ASP	CB-CG-OD2	5.76	123.48	118.30
1	A	86	ASP	CB-CG-OD2	5.63	123.37	118.30
1	B	6	ASP	CB-CG-OD2	5.51	123.26	118.30
1	C	73	ASP	CB-CG-OD1	5.44	123.20	118.30
1	A	16	ASP	CB-CG-OD2	5.38	123.14	118.30
1	B	16	ASP	CB-CG-OD2	5.33	123.10	118.30
1	B	86	ASP	CB-CG-OD2	5.30	123.07	118.30
1	A	73	ASP	CB-CG-OD2	5.16	122.94	118.30
1	C	68	ASP	CB-CG-OD2	5.12	122.91	118.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	151	ASN	Peptide
2	E	7	SAR	Peptide
2	E	8	MLE	Peptide

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1271	0	1264	26	0
1	B	1271	0	1264	19	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1271	0	1264	20	0
2	D	85	0	110	15	0
2	E	85	0	110	24	0
2	F	85	0	109	15	0
3	A	96	0	0	8	0
3	B	87	0	0	7	0
3	C	97	0	0	3	0
3	E	2	0	0	2	0
3	F	6	0	0	3	0
All	All	4356	0	4121	112	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 14.

All (112) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:D:4:MVA:C	2:D:5:BMT:H	1.22	1.49
2:E:4:MVA:C	2:E:5:BMT:H	1.27	1.47
2:D:4:MVA:C	2:D:5:BMT:N	1.82	1.39
1:A:132:LYS:HD2	3:B:2027:HOH:O	1.29	1.25
2:E:4:MVA:C	2:E:5:BMT:N	2.10	1.15
1:B:43:SER:OG	1:B:45:GLU:HG3	1.57	1.04
1:A:149:GLY:CA	1:A:155:LYS:HE2	1.88	1.03
2:E:9:VAL:N	2:E:10:MLE:HN1	1.82	0.93
2:E:4:MVA:CA	2:E:5:BMT:H	1.80	0.92
1:A:33:LYS:HD2	3:A:2053:HOH:O	1.74	0.88
1:A:33:LYS:HB2	3:A:2053:HOH:O	1.73	0.87
1:A:33:LYS:CB	3:A:2053:HOH:O	2.23	0.87
1:A:84:ARG:CZ	3:A:2048:HOH:O	2.25	0.84
1:B:149:GLY:HA3	1:B:155:LYS:HE2	1.61	0.83
2:D:5:BMT:O	2:D:5:BMT:HN3	1.79	0.82
2:E:9:VAL:H	2:E:10:MLE:HN1	1.43	0.81
2:F:3:MLE:HB2	2:F:4:MVA:HN1	1.62	0.81
1:C:147:LYS:HE2	1:C:148:THR:H	1.44	0.81
1:A:149:GLY:N	1:A:155:LYS:HE2	1.96	0.80
2:D:4:MVA:C	2:D:5:BMT:CN	2.59	0.80
2:F:3:MLE:HN3	3:F:2001:HOH:O	1.81	0.80
1:A:149:GLY:HA3	1:A:155:LYS:HE2	1.63	0.78
1:C:150:LEU:H	1:C:150:LEU:HD13	1.48	0.78
2:E:4:MVA:HA	2:E:5:BMT:HN1	1.66	0.76
1:B:43:SER:HG	1:B:45:GLU:HG3	1.47	0.76
1:B:141:LYS:HE2	1:B:144:GLU:OE2	1.88	0.73

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:149:GLY:CA	1:B:155:LYS:HE2	2.20	0.71
1:A:84:ARG:NH1	3:A:2048:HOH:O	2.24	0.71
2:F:9:VAL:HB	2:F:10:MLE:HN1	1.74	0.69
2:D:6:ABA:N	2:D:7:SAR:HN1	2.08	0.69
2:F:3:MLE:HB2	2:F:4:MVA:CN	2.24	0.67
2:E:11:ALA:HB1	3:E:2001:HOH:O	1.93	0.67
1:B:58:VAL:HG13	1:B:64:ILE:HG22	1.76	0.66
2:E:4:MVA:O	2:E:5:BMT:N	2.29	0.66
2:E:4:MVA:HA	2:E:5:BMT:CN	2.27	0.64
2:E:4:MVA:CA	2:E:5:BMT:N	2.54	0.64
2:D:5:BMT:O	2:D:5:BMT:CN	2.39	0.64
1:C:6:ASP:HB3	3:C:2008:HOH:O	1.98	0.63
2:F:9:VAL:N	2:F:10:MLE:HN1	2.15	0.62
2:F:10:MLE:HN3	3:F:2005:HOH:O	2.00	0.61
1:C:6:ASP:OD1	1:C:26:LEU:HB2	2.01	0.61
1:A:15:GLY:O	1:A:16:ASP:HB2	1.99	0.61
1:A:132:LYS:CD	3:B:2027:HOH:O	2.08	0.59
2:E:9:VAL:N	2:E:10:MLE:CN	2.62	0.58
2:E:7:SAR:O	2:E:8:MLE:HD22	2.03	0.58
1:A:89:ASN:ND2	1:A:91:LYS:H	2.02	0.57
1:A:1:MET:HE1	3:B:2033:HOH:O	2.05	0.57
2:D:4:MVA:HA	2:D:5:BMT:HN1	1.87	0.57
1:A:1:MET:HB3	1:B:47:GLY:C	2.26	0.56
1:C:150:LEU:HD13	1:C:150:LEU:N	2.17	0.56
1:A:103:ASN:O	2:D:5:BMT:HA	2.06	0.56
2:D:4:MVA:CA	2:D:5:BMT:HN1	2.37	0.55
1:A:1:MET:HB3	1:B:47:GLY:O	2.06	0.55
1:A:33:LYS:CD	3:A:2053:HOH:O	2.42	0.55
1:B:58:VAL:CG1	1:B:144:GLU:HA	2.38	0.54
1:A:8:VAL:HG13	1:A:26:LEU:HD11	1.88	0.54
1:C:14:ILE:HD12	1:C:19:VAL:HG11	1.88	0.54
1:B:13:THR:HG22	1:B:18:PRO:HA	1.89	0.54
2:F:5:BMT:HZ	2:F:8:MLE:O	2.07	0.53
1:C:14:ILE:HG12	1:C:158:VAL:HG22	1.90	0.53
2:E:4:MVA:HA	2:E:5:BMT:N	2.24	0.53
1:A:10:PHE:HD1	1:A:163:CYS:HB3	1.74	0.53
1:A:146:THR:HG22	3:A:2034:HOH:O	2.08	0.52
2:F:9:VAL:CB	2:F:10:MLE:HN1	2.31	0.52
2:D:8:MLE:O	2:D:9:VAL:HB	2.09	0.51
2:E:4:MVA:O	2:E:5:BMT:CA	2.59	0.50
2:F:3:MLE:CB	2:F:4:MVA:HN1	2.28	0.50
1:B:150:LEU:HB2	3:B:2082:HOH:O	2.11	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:84:ARG:HG2	1:C:108:SER:HA	1.94	0.50
2:E:4:MVA:O	2:E:5:BMT:HA	2.11	0.50
1:C:58:VAL:HG13	1:C:64:ILE:HG22	1.93	0.49
1:B:71:ASN:HD22	1:B:76:GLY:HA3	1.77	0.49
2:E:10:MLE:HD22	2:E:10:MLE:HN3	1.95	0.48
1:C:60:ARG:HH11	1:C:60:ARG:HG2	1.77	0.48
1:B:91:LYS:HE3	3:B:2021:HOH:O	2.12	0.48
1:C:156:LYS:HG2	3:C:2045:HOH:O	2.14	0.48
2:E:4:MVA:C	2:E:5:BMT:CA	2.92	0.46
1:B:15:GLY:HA3	1:B:156:LYS:HD2	1.96	0.46
1:B:7:LYS:HE3	3:B:2008:HOH:O	2.15	0.46
2:E:8:MLE:HD12	2:E:9:VAL:H	1.80	0.46
1:B:43:SER:OG	1:B:45:GLU:CG	2.47	0.46
2:F:3:MLE:CB	2:F:4:MVA:CN	2.92	0.45
1:C:1:MET:N	3:C:2002:HOH:O	2.38	0.45
2:D:4:MVA:C	2:D:5:BMT:CA	2.87	0.45
1:B:1:MET:HB3	1:C:47:GLY:HA2	2.00	0.44
1:A:57:ARG:NH2	2:D:4:MVA:HA	2.32	0.44
1:C:28:GLY:HA2	1:C:35:VAL:HG21	1.99	0.44
2:F:9:VAL:O	2:F:10:MLE:HB3	2.18	0.44
1:A:146:THR:CG2	3:A:2034:HOH:O	2.66	0.44
2:E:4:MVA:C	2:E:5:BMT:HD12	2.48	0.43
2:F:10:MLE:HN2	3:F:2002:HOH:O	2.19	0.43
2:D:9:VAL:HA	2:D:10:MLE:HN1	1.39	0.43
1:A:84:ARG:HG2	1:A:108:SER:HA	2.00	0.43
1:A:1:MET:CE	3:B:2033:HOH:O	2.63	0.42
1:C:60:ARG:NH1	1:C:60:ARG:HG2	2.34	0.42
1:B:84:ARG:HA	1:B:109:ASN:O	2.19	0.42
1:C:103:ASN:O	2:F:5:BMT:HA	2.19	0.42
2:E:8:MLE:CB	3:E:2002:HOH:O	2.68	0.42
1:C:40:GLN:HG2	1:C:45:GLU:CD	2.39	0.42
2:E:7:SAR:HA2	2:E:8:MLE:HN1	1.61	0.42
1:B:14:ILE:O	1:B:17:GLU:HB3	2.19	0.42
2:D:1:DAL:HA	2:D:2:MLE:HN1	1.81	0.42
1:C:10:PHE:HD1	1:C:163:CYS:HB3	1.84	0.42
2:F:4:MVA:HA	2:F:5:BMT:HN1	1.65	0.41
1:A:48:PHE:CZ	1:A:78:LYS:HE3	2.55	0.41
2:E:1:DAL:HA	2:E:2:MLE:HN1	1.37	0.41
2:D:2:MLE:HA	2:D:3:MLE:HN1	1.76	0.41
1:C:114:PHE:CD1	2:F:4:MVA:HG11	2.55	0.41
1:C:150:LEU:H	1:C:150:LEU:CD1	2.19	0.41
2:E:4:MVA:CA	2:E:5:BMT:CN	2.97	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:E:6:ABA:HA	2:E:7:SAR:HN1	1.82	0.40
1:A:15:GLY:O	1:A:16:ASP:CB	2.69	0.40

There are no symmetry-related clashes.

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	164/166 (99%)	158 (96%)	6 (4%)	0	100	100
1	B	164/166 (99%)	157 (96%)	7 (4%)	0	100	100
1	C	164/166 (99%)	157 (96%)	6 (4%)	1 (1%)	33	20
2	D	1/11 (9%)	0	0	1 (100%)	0	0
2	E	1/11 (9%)	1 (100%)	0	0	100	100
2	F	1/11 (9%)	1 (100%)	0	0	100	100
All	All	495/531 (93%)	474 (96%)	19 (4%)	2 (0%)	43	32

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	152	ASP
2	D	9	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	138/138 (100%)	125 (91%)	13 (9%)	13	5

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	138/138 (100%)	130 (94%)	8 (6%)	28	18
1	C	138/138 (100%)	128 (93%)	10 (7%)	21	11
2	D	1/1 (100%)	1 (100%)	0	100	100
2	E	1/1 (100%)	1 (100%)	0	100	100
2	F	1/1 (100%)	1 (100%)	0	100	100
All	All	417/417 (100%)	386 (93%)	31 (7%)	20	10

All (31) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	6	ASP
1	A	8	VAL
1	A	31	VAL
1	A	63	MET
1	A	83	THR
1	A	84	ARG
1	A	91	LYS
1	A	146	THR
1	A	147	LYS
1	A	150	LEU
1	A	151	ASN
1	A	159	LYS
1	B	1	MET
1	B	31	VAL
1	B	63	MET
1	B	91	LYS
1	B	132	LYS
1	B	141	LYS
1	B	146	THR
1	B	159	LYS
1	C	1	MET
1	C	6	ASP
1	C	31	VAL
1	C	63	MET
1	C	84	ARG
1	C	126	ARG
1	C	132	LYS
1	C	144	GLU
1	C	147	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	150	LEU

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	89	ASN
1	A	145	ASN
1	B	46	ASN
1	B	71	ASN
1	B	145	ASN
1	C	46	ASN
1	C	145	ASN

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

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

27 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$
2	DAL	D	1	2	4,4,5	9.72	2 (50%)	3,4,6	35.83	2 (66%)
2	MLE	D	10	2	8,8,9	14.82	2 (25%)	6,9,11	1.50	2 (33%)
2	MLE	D	2	2	8,8,9	15.06	4 (50%)	6,9,11	1.58	2 (33%)
2	MLE	D	3	2	8,8,9	14.23	2 (25%)	6,9,11	1.42	1 (16%)
2	MVA	D	4	2	7,7,8	15.29	2 (28%)	5,8,10	1.26	1 (20%)
2	BMT	D	5	2	12,12,13	4.27	5 (41%)	11,14,16	3.11	7 (63%)
2	ABA	D	6	2	5,5,6	6.17	2 (40%)	3,5,7	6.74	1 (33%)
2	SAR	D	7	2	4,4,5	20.92	2 (50%)	1,3,5	1.54	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	MLE	D	8	2	8,8,9	16.50	2 (25%)	6,9,11	1.29	1 (16%)
2	DAL	E	1	2	4,4,5	10.96	2 (50%)	3,4,6	18.14	2 (66%)
2	MLE	E	10	2	8,8,9	15.14	2 (25%)	6,9,11	1.38	1 (16%)
2	MLE	E	2	2	8,8,9	15.20	3 (37%)	6,9,11	0.96	0
2	MLE	E	3	2	8,8,9	13.52	1 (12%)	6,9,11	0.80	0
2	MVA	E	4	2	7,7,8	16.51	1 (14%)	5,8,10	1.34	1 (20%)
2	BMT	E	5	2	12,12,13	5.22	4 (33%)	11,14,16	1.94	3 (27%)
2	ABA	E	6	2	5,5,6	7.74	2 (40%)	3,5,7	0.90	0
2	SAR	E	7	2	4,4,5	20.48	1 (25%)	1,3,5	4.25	1 (100%)
2	MLE	E	8	2	8,8,9	15.78	2 (25%)	6,9,11	2.62	2 (33%)
2	DAL	F	1	2	4,4,5	10.46	2 (50%)	3,4,6	21.77	2 (66%)
2	MLE	F	10	2	8,8,9	14.91	3 (37%)	6,9,11	1.30	1 (16%)
2	MLE	F	2	2	8,8,9	14.30	3 (37%)	6,9,11	0.82	0
2	MLE	F	3	2	8,8,9	14.12	2 (25%)	6,9,11	1.19	1 (16%)
2	MVA	F	4	2	7,7,8	17.12	2 (28%)	5,8,10	1.13	0
2	BMT	F	5	2	12,12,13	5.81	2 (16%)	11,14,16	1.56	2 (18%)
2	ABA	F	6	2	5,5,6	8.10	2 (40%)	3,5,7	1.19	1 (33%)
2	SAR	F	7	2	4,4,5	22.64	2 (50%)	1,3,5	1.39	0
2	MLE	F	8	2	8,8,9	14.55	2 (25%)	6,9,11	0.97	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
2	DAL	D	1	2	-	0/0/2/4	0/0/0/0
2	MLE	D	10	2	-	0/6/8/10	0/0/0/0
2	MLE	D	2	2	-	0/6/8/10	0/0/0/0
2	MLE	D	3	2	-	0/6/8/10	0/0/0/0
2	MVA	D	4	2	-	0/6/8/10	0/0/0/0
2	BMT	D	5	2	-	0/14/16/18	0/0/0/0
2	ABA	D	6	2	-	0/2/4/6	0/0/0/0
2	SAR	D	7	2	-	0/1/2/3	0/0/0/0
2	MLE	D	8	2	-	0/6/8/10	0/0/0/0
2	DAL	E	1	2	-	0/0/2/4	0/0/0/0
2	MLE	E	10	2	-	0/6/8/10	0/0/0/0
2	MLE	E	2	2	-	0/6/8/10	0/0/0/0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MLE	E	3	2	-	0/6/8/10	0/0/0/0
2	MVA	E	4	2	-	0/6/8/10	0/0/0/0
2	BMT	E	5	2	-	0/14/16/18	0/0/0/0
2	ABA	E	6	2	-	0/2/4/6	0/0/0/0
2	SAR	E	7	2	-	0/1/2/3	0/0/0/0
2	MLE	E	8	2	-	0/6/8/10	0/0/0/0
2	DAL	F	1	2	-	0/0/2/4	0/0/0/0
2	MLE	F	10	2	-	0/6/8/10	0/0/0/0
2	MLE	F	2	2	-	0/6/8/10	0/0/0/0
2	MLE	F	3	2	-	0/6/8/10	0/0/0/0
2	MVA	F	4	2	-	0/6/8/10	0/0/0/0
2	BMT	F	5	2	-	0/14/16/18	0/0/0/0
2	ABA	F	6	2	-	0/2/4/6	0/0/0/0
2	SAR	F	7	2	-	0/1/2/3	0/0/0/0
2	MLE	F	8	2	-	0/6/8/10	0/0/0/0

All (61) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	8	MLE	O-C	46.53	1.43	1.11
2	F	7	SAR	O-C	45.23	1.42	1.11
2	F	4	MVA	O-C	45.15	1.42	1.11
2	E	8	MLE	O-C	44.43	1.42	1.11
2	E	4	MVA	O-C	43.63	1.41	1.11
2	E	2	MLE	O-C	42.77	1.41	1.11
2	E	10	MLE	O-C	42.70	1.41	1.11
2	D	2	MLE	O-C	42.20	1.40	1.11
2	F	10	MLE	O-C	42.01	1.40	1.11
2	D	10	MLE	O-C	41.79	1.40	1.11
2	D	7	SAR	O-C	41.75	1.40	1.11
2	F	8	MLE	O-C	41.08	1.40	1.11
2	E	7	SAR	O-C	40.92	1.39	1.11
2	D	4	MVA	O-C	40.35	1.39	1.11
2	F	2	MLE	O-C	40.19	1.39	1.11
2	D	3	MLE	O-C	40.14	1.39	1.11
2	F	3	MLE	O-C	39.83	1.39	1.11
2	E	3	MLE	O-C	38.20	1.38	1.11
2	E	1	DAL	O-C	21.76	1.26	1.11
2	F	1	DAL	O-C	20.71	1.25	1.11
2	F	5	BMT	O-C	19.80	1.25	1.11
2	D	1	DAL	O-C	19.08	1.24	1.11
2	F	6	ABA	O-C	17.88	1.23	1.11

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	5	BMT	O-C	17.27	1.23	1.11
2	E	6	ABA	O-C	16.64	1.22	1.11
2	D	6	ABA	O-C	13.43	1.20	1.11
2	D	5	BMT	O-C	13.25	1.20	1.11
2	D	2	MLE	CA-N	4.56	1.52	1.46
2	E	6	ABA	CA-C	4.47	1.56	1.48
2	D	5	BMT	CA-N	4.26	1.51	1.46
2	D	1	DAL	CA-C	3.68	1.55	1.48
2	E	2	MLE	CA-N	3.54	1.51	1.46
2	F	2	MLE	CA-N	3.45	1.51	1.46
2	E	5	BMT	CA-N	3.37	1.50	1.46
2	E	8	MLE	CA-N	3.36	1.50	1.46
2	D	5	BMT	CA-C	3.21	1.54	1.48
2	F	2	MLE	CA-C	3.01	1.54	1.48
2	F	1	DAL	CA-C	2.99	1.53	1.48
2	D	8	MLE	CA-C	2.90	1.53	1.48
2	E	5	BMT	CE-CZ	2.81	1.49	1.29
2	D	2	MLE	CA-C	2.77	1.53	1.48
2	F	3	MLE	CA-C	2.69	1.53	1.48
2	E	2	MLE	CA-C	2.68	1.53	1.48
2	D	5	BMT	CE-CZ	2.66	1.48	1.29
2	F	4	MVA	CA-C	2.59	1.53	1.48
2	D	5	BMT	CG2-CB	2.53	1.58	1.53
2	F	5	BMT	CE-CZ	2.47	1.47	1.29
2	F	6	ABA	CA-C	2.45	1.52	1.48
2	D	7	SAR	CA-C	2.44	1.51	1.48
2	F	8	MLE	CA-C	2.37	1.52	1.48
2	F	10	MLE	CA-N	2.33	1.49	1.46
2	D	6	ABA	CB-CA	-2.33	1.51	1.53
2	E	10	MLE	CA-C	2.32	1.52	1.48
2	D	4	MVA	CA-N	2.32	1.49	1.46
2	D	3	MLE	CA-C	2.27	1.52	1.48
2	E	1	DAL	CA-C	2.25	1.52	1.48
2	D	10	MLE	CA-N	2.23	1.49	1.46
2	D	2	MLE	CB-CA	2.21	1.55	1.53
2	F	10	MLE	CA-C	2.13	1.52	1.48
2	F	7	SAR	CA-C	2.10	1.51	1.48
2	E	5	BMT	CB-CA	2.05	1.56	1.53

All (34) bond angle outliers are listed below:

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1	DAL	C-CA-N	-61.84	106.26	113.27
2	F	1	DAL	C-CA-N	-37.59	109.01	113.27
2	E	1	DAL	C-CA-N	31.18	116.80	113.27
2	D	6	ABA	C-CA-N	11.58	125.40	113.83
2	D	1	DAL	CB-CA-C	5.23	110.79	108.46
2	D	5	BMT	CB-CA-N	-4.96	99.56	111.05
2	D	5	BMT	CN-N-CA	4.84	128.46	114.34
2	E	8	MLE	CN-N-CA	4.74	127.58	113.11
2	D	5	BMT	OG1-CB-CA	-4.27	101.80	109.55
2	E	7	SAR	CN-N-CA	4.25	120.26	112.36
2	E	8	MLE	CB-CA-N	4.06	120.19	110.54
2	E	1	DAL	CB-CA-C	3.86	110.18	108.46
2	D	5	BMT	CD2-CG2-CB	3.72	117.63	110.39
2	E	5	BMT	CG2-CD2-CE	-3.54	108.55	113.84
2	E	5	BMT	OG1-CB-CA	-3.49	103.21	109.55
2	E	5	BMT	CN-N-CA	3.30	123.98	114.34
2	F	5	BMT	CG2-CD2-CE	-3.26	108.96	113.84
2	D	5	BMT	CD1-CG2-CD2	-3.08	106.17	110.87
2	D	5	BMT	CD1-CG2-CB	3.07	117.39	111.44
2	F	1	DAL	CB-CA-C	2.93	109.77	108.46
2	D	10	MLE	CN-N-CA	2.87	121.86	113.11
2	F	10	MLE	CN-N-CA	2.63	121.14	113.11
2	D	4	MVA	CB-CA-N	2.48	115.76	111.12
2	F	3	MLE	CN-N-CA	2.39	120.40	113.11
2	D	2	MLE	CN-N-CA	2.30	120.14	113.11
2	E	10	MLE	CB-CA-N	2.24	115.86	110.54
2	D	5	BMT	CD2-CE-CZ	-2.18	117.95	127.94
2	D	3	MLE	CN-N-CA	2.16	119.69	113.11
2	D	2	MLE	CB-CA-N	2.14	115.62	110.54
2	D	8	MLE	CN-N-CA	2.07	119.43	113.11
2	D	10	MLE	CG-CB-CA	-2.04	109.57	115.45
2	E	4	MVA	CB-CA-N	2.04	114.93	111.12
2	F	6	ABA	C-CA-N	-2.04	111.80	113.83
2	F	5	BMT	CN-N-CA	2.01	120.20	114.34

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

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(Å ²)	Q<0.9
1	A	166/166 (100%)	-0.18	1 (0%) 86 90	14, 22, 31, 36	0
1	B	166/166 (100%)	-0.20	2 (1%) 75 78	13, 21, 31, 39	0
1	C	166/166 (100%)	-0.17	2 (1%) 75 78	13, 22, 31, 38	0
2	D	11/11 (100%)	1.11	3 (27%) 1 1	31, 44, 50, 50	0
2	E	11/11 (100%)	0.25	0 100 100	33, 41, 55, 57	0
2	F	11/11 (100%)	0.07	0 100 100	34, 40, 50, 51	0
All	All	531/531 (100%)	-0.14	8 (1%) 70 73	13, 22, 38, 57	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	150	LEU	4.6
1	A	150	LEU	4.1
1	C	151	ASN	2.7
2	D	2	MLE	2.5
1	B	83	THR	2.4
2	D	1	DAL	2.4
1	B	150	LEU	2.4
2	D	6	ABA	2.2

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

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

Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
2	MVA	D	4	8/9	0.20	7.45	29,30,31,32	0
2	ABA	D	6	6/7	0.17	5.43	37,39,40,41	0
2	MVA	E	4	8/9	0.14	4.05	31,35,36,36	0
2	DAL	D	1	5/6	0.23	3.32	49,49,50,50	0
2	MLE	D	2	9/10	0.20	2.94	40,44,48,51	0
2	MVA	F	4	8/9	0.13	2.38	31,34,35,36	0
2	BMT	D	5	13/14	0.15	2.24	31,33,39,41	0
2	MLE	D	8	9/10	0.18	1.96	46,47,50,50	0
2	BMT	F	5	13/14	0.13	1.96	32,35,45,48	0
2	DAL	E	1	5/6	0.17	1.71	51,51,53,55	0
2	ABA	F	6	6/7	0.14	1.60	35,35,36,36	0
2	MLE	E	8	9/10	0.17	1.29	45,47,54,55	0
2	MLE	F	3	9/10	0.14	1.13	36,38,41,43	0
2	SAR	E	7	5/6	0.12	1.13	36,37,43,45	0
2	MLE	E	3	9/10	0.14	1.06	36,39,41,42	0
2	MLE	E	2	9/10	0.13	0.88	40,44,47,48	0
2	MLE	F	8	9/10	0.11	0.86	36,41,42,42	0
2	BMT	E	5	13/14	0.12	0.55	26,30,42,44	0
2	MLE	F	2	9/10	0.13	0.34	39,44,46,48	0
2	SAR	D	7	5/6	0.11	0.27	41,42,45,45	0
2	SAR	F	7	5/6	0.11	0.25	35,36,40,41	0
2	MLE	D	3	9/10	0.12	0.22	32,36,38,39	0
2	ABA	E	6	6/7	0.09	-0.21	32,35,36,36	0
2	MLE	F	10	9/10	0.13	-0.67	47,49,55,57	0
2	MLE	E	10	9/10	0.12	-1.13	54,55,56,56	0
2	MLE	D	10	9/10	0.14	-2.12	45,46,48,49	0
2	DAL	F	1	5/6	0.10	-2.33	47,48,49,49	0

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.