Full wwPDB X-ray Structure Validation Report ⓘ

May 17, 2020 – 06:10 am BST

PDB ID	:	3LOR
Title	:	The Crystal Structure of a Thiol-disulfide Isomerase from Corynebacterium glutamicum to 2.2A
Authors	:	Stein, A.J.; Osipiuk, J.; Weger, A.; Cobb, G.; Joachimiak, A.; Midwest Center for Structural Genomics (MCSG)
Deposited on	:	2010-02-04
Resolution	:	2.20 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:

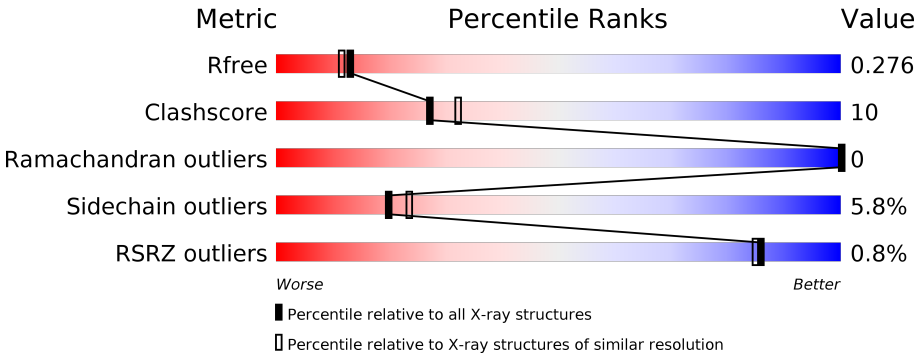
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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}	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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 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	160	79% 16% • •
1	B	160	79% 16% • •
1	C	160	70% 22% • 5%
1	D	160	3% 62% 26% 5% • 6%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 4860 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 Thiol-disulfide isomerase and thioredoxins.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	154	Total	C	N	O	S	Se	0	0	0
			1201	766	212	216	2	5			
1	B	154	Total	C	N	O	S	Se	0	2	0
			1209	773	212	217	2	5			
1	C	152	Total	C	N	O	S	Se	0	1	0
			1172	749	204	211	2	6			
1	D	150	Total	C	N	O	S	Se	0	3	0
			1172	751	204	210	2	5			

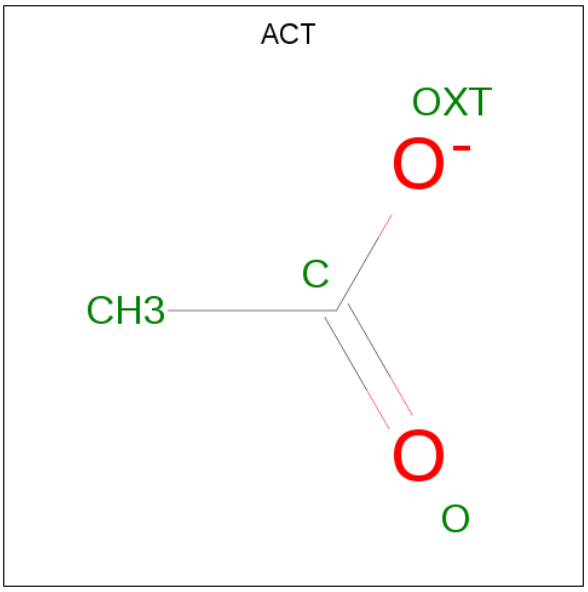
- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

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

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Ca	0	0
			1	1		

- Molecule 4 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 4 2 2	0	0

- Molecule 5 is water.

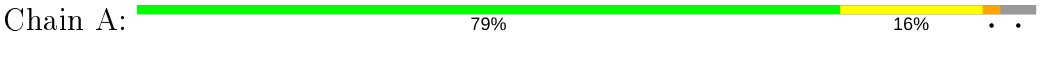
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	42	Total O 42 42	0	0
5	B	29	Total O 29 29	0	0
5	C	17	Total O 17 17	0	0
5	D	8	Total O 8 8	0	0

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: Thiol-disulfide isomerase and thioredoxins

Chain A:

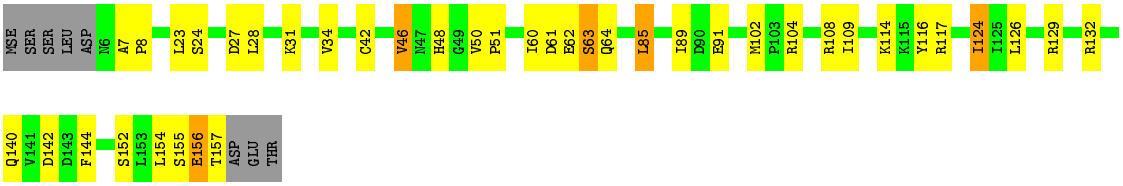


- Molecule 1: Thiol-disulfide isomerase and thioredoxins

Chain B:

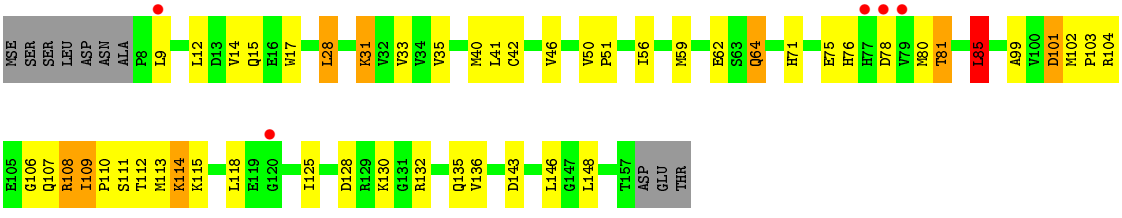
- Molecule 1: Thiol-disulfide isomerase and thioredoxins

Chain C:



- Molecule 1: Thiol-disulfide isomerase and thioredoxins

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	78.19Å 78.89Å 124.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	41.40 – 2.20 41.40 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.4 (41.40-2.20) 99.4 (41.40-2.20)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.05 (at 2.20Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.212 , 0.259 0.229 , 0.276	Depositor DCC
R_{free} test set	1974 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	34.8	Xtriage
Anisotropy	0.032	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 48.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.021 for k,h,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4860	wwPDB-VP
Average B, all atoms (Å^2)	14.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 37.76 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.0815e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: CA, CL, ACT

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	1.66	2/1219 (0.2%)	0.85	3/1642 (0.2%)
1	B	1.66	7/1233 (0.6%)	0.86	1/1661 (0.1%)
1	C	1.60	5/1193 (0.4%)	0.80	0/1611
1	D	1.52	2/1199 (0.2%)	1.02	7/1615 (0.4%)
All	All	1.61	16/4844 (0.3%)	0.89	11/6529 (0.2%)

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	D	0	4

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	124[A]	ILE	N-CA	-8.89	1.28	1.46
1	B	124[B]	ILE	N-CA	-8.89	1.28	1.46
1	B	111[A]	SER	N-CA	-8.55	1.29	1.46
1	B	111[B]	SER	N-CA	-8.55	1.29	1.46
1	C	102[A]	MSE	N-CA	-7.08	1.32	1.46
1	C	102[B]	MSE	N-CA	-7.08	1.32	1.46
1	C	42	CYS	CB-SG	-6.47	1.71	1.82
1	D	42	CYS	CB-SG	-5.98	1.72	1.81
1	C	116	TYR	CD1-CE1	-5.69	1.30	1.39
1	A	116	TYR	CD2-CE2	-5.56	1.31	1.39
1	B	46	VAL	CB-CG1	-5.54	1.41	1.52
1	A	42	CYS	CB-SG	-5.40	1.73	1.81
1	B	18	VAL	CB-CG1	-5.26	1.41	1.52
1	D	46	VAL	CB-CG2	-5.13	1.42	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	45	CYS	CB-SG	-5.04	1.73	1.81
1	C	46	VAL	CB-CG2	-5.01	1.42	1.52

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	101[A]	ASP	CA-C-O	-9.94	99.22	120.10
1	D	101[B]	ASP	CA-C-O	-9.94	99.22	120.10
1	D	101[A]	ASP	CB-CA-C	7.01	124.42	110.40
1	D	101[B]	ASP	CB-CA-C	7.01	124.42	110.40
1	B	110	PRO	C-N-CA	6.60	138.20	121.70
1	D	64[A]	GLN	CA-C-O	-6.07	107.36	120.10
1	D	64[B]	GLN	CA-C-O	-6.07	107.36	120.10
1	A	85	LEU	CB-CG-CD2	5.40	120.18	111.00
1	D	85	LEU	CA-CB-CG	5.20	127.27	115.30
1	A	13	ASP	CB-CG-OD1	5.12	122.91	118.30
1	A	143	ASP	CB-CG-OD1	5.00	122.80	118.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	101[A]	ASP	Mainchain
1	D	101[B]	ASP	Mainchain
1	D	64[A]	GLN	Mainchain
1	D	64[B]	GLN	Mainchain

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	1201	0	1212	14	0
1	B	1209	0	1228	17	0
1	C	1172	0	1167	24	1
1	D	1172	0	1172	50	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	1	0	0	0	0
2	D	2	0	0	0	0
3	B	1	0	0	0	0
4	B	4	0	3	0	0
5	A	42	0	0	3	0
5	B	29	0	0	2	0
5	C	17	0	0	0	0
5	D	8	0	0	0	1
All	All	4860	0	4782	96	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 (96) 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:31:LYS:HE3	1:C:62:GLU:O	1.45	1.16
1:D:40:MSE:HE1	1:D:85:LEU:CA	2.02	0.90
1:D:108:ARG:NE	1:D:108:ARG:H	1.75	0.84
1:A:46:VAL:HG11	1:B:46:VAL:HG11	1.63	0.81
1:A:41:LEU:O	1:B:91:GLU:HG2	1.81	0.81
1:D:40:MSE:HE2	1:D:85:LEU:HD23	1.61	0.81
1:B:124[A]:ILE:HD11	5:B:171:HOH:O	1.83	0.78
1:D:75:GLU:HG3	1:D:76:HIS:CD2	2.21	0.75
1:D:15:GLN:HE21	1:D:103:PRO:HD3	1.54	0.73
1:D:106:GLY:O	1:D:108:ARG:NH2	2.23	0.72
1:D:40:MSE:HE1	1:D:85:LEU:CB	2.21	0.70
1:D:108:ARG:H	1:D:108:ARG:HE	1.39	0.69
1:D:106:GLY:C	1:D:107:GLN:HE21	1.96	0.69
1:D:106:GLY:O	1:D:107:GLN:NE2	2.27	0.66
1:D:40:MSE:HE1	1:D:85:LEU:HA	1.76	0.66
1:D:40:MSE:H	1:D:71:HIS:HE1	1.43	0.66
1:C:50:VAL:HB	1:C:51:PRO:HD3	1.77	0.66
1:B:155:SER:OG	1:C:155:SER:OG	2.14	0.65
1:A:40:MSE:HE3	1:A:88:PHE:HB2	1.79	0.65
1:D:41:LEU:HB2	1:D:80:MSE:HE2	1.80	0.63
1:D:12:LEU:HD22	1:D:112:THR:HG21	1.80	0.63
1:D:28:LEU:HD13	1:D:33:VAL:HG21	1.82	0.62
1:D:40:MSE:HE1	1:D:85:LEU:N	2.16	0.61
1:D:108:ARG:N	1:D:108:ARG:HE	1.98	0.60
1:A:52:GLN:NE2	5:A:162:HOH:O	2.36	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:31:LYS:HE3	1:D:62:GLU:O	2.02	0.59
1:D:12:LEU:CD2	1:D:112:THR:HG21	2.33	0.58
1:C:63:SER:HB2	1:C:64:GLN:OE1	2.04	0.58
1:A:20:HIS:ND1	1:A:21:GLU:O	2.27	0.58
1:A:156:GLU:O	1:A:157:THR:C	2.41	0.58
1:D:71:HIS:CD2	1:D:85:LEU:HG	2.39	0.58
1:C:152:SER:O	1:C:156:GLU:HG2	2.05	0.57
1:B:130:LYS:HD2	1:B:132:ARG:NH2	2.19	0.57
1:D:40:MSE:HE3	1:D:71:HIS:NE2	2.21	0.56
1:A:41:LEU:O	1:B:91:GLU:CG	2.53	0.56
1:B:20:HIS:ND1	1:B:21:GLU:O	2.37	0.56
1:D:15:GLN:NE2	1:D:103:PRO:HD3	2.21	0.55
1:D:40:MSE:CE	1:D:85:LEU:HA	2.35	0.55
1:C:104:ARG:HD3	1:C:109:ILE:O	2.06	0.55
1:C:85:LEU:O	1:C:89:ILE:HG13	2.07	0.54
1:D:40:MSE:H	1:D:71:HIS:CE1	2.25	0.52
1:D:128:ASP:OD2	1:D:132:ARG:HD3	2.10	0.51
1:B:40:MSE:HE1	1:B:84:ALA:HB1	1.93	0.51
1:C:142:ASP:OD2	1:C:144:PHE:HB3	2.11	0.51
1:C:34:VAL:HG22	1:C:126:LEU:CD2	2.42	0.50
1:D:17:TRP:CZ3	1:D:99:ALA:HB2	2.46	0.50
1:C:23:LEU:HD22	1:C:28:LEU:HD21	1.92	0.50
1:B:24:SER:O	1:B:27:ASP:HB2	2.12	0.50
1:D:35:VAL:HB	1:D:125:ILE:HB	1.94	0.50
1:A:58:ARG:HH11	1:A:58:ARG:HG2	1.76	0.49
1:A:43:PRO:HD3	1:B:91:GLU:HG3	1.93	0.49
1:D:40:MSE:HE1	1:D:85:LEU:HB2	1.93	0.49
1:B:102:MSE:SE	1:B:103:PRO:HD2	2.64	0.48
1:C:7:ALA:HA	1:C:8:PRO:HD3	1.78	0.48
1:D:17:TRP:CE3	1:D:99:ALA:HB2	2.48	0.47
1:B:52:GLN:NE2	5:B:169:HOH:O	2.43	0.47
1:B:78:ASP:OD1	1:B:78:ASP:N	2.46	0.47
1:D:78:ASP:OD1	1:D:78:ASP:N	2.47	0.47
1:A:48:HIS:CD2	1:A:140:GLN:HG2	2.49	0.47
1:D:56:ILE:HD11	1:D:146:LEU:HD21	1.96	0.47
1:A:128:ASP:HB2	5:A:165:HOH:O	2.15	0.47
1:D:130:LYS:HB2	1:D:132:ARG:CD	2.45	0.47
1:D:118:LEU:HD21	1:D:125:ILE:HD11	1.96	0.46
1:D:41:LEU:HB2	1:D:80:MSE:CE	2.46	0.46
1:C:50:VAL:N	1:C:51:PRO:HD2	2.31	0.46
1:D:15:GLN:HE21	1:D:103:PRO:CD	2.25	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:24:SER:OG	1:C:27:ASP:OD1	2.31	0.46
1:C:91:GLU:HG2	1:D:41:LEU:O	2.15	0.46
1:D:109:ILE:HD12	1:D:113:MSE:HB3	1.97	0.45
1:D:81:THR:HG23	1:D:81:THR:H	1.38	0.45
1:D:14:VAL:HG13	1:D:99:ALA:HB1	1.99	0.45
1:B:148:LEU:HD11	1:C:60:ILE:HD11	1.99	0.45
1:C:50:VAL:HB	1:C:51:PRO:CD	2.47	0.44
1:D:78:ASP:O	1:D:81:THR:CG2	2.66	0.44
1:D:130:LYS:HE2	1:D:132:ARG:NH2	2.33	0.44
1:A:50:VAL:HB	1:A:51:PRO:HD3	1.99	0.44
1:C:50:VAL:CB	1:C:51:PRO:HD3	2.46	0.44
1:C:129:ARG:NH2	1:C:154:LEU:HD22	2.33	0.43
1:D:110:PRO:O	1:D:114:LYS:HB2	2.18	0.43
1:A:60:ILE:HD11	1:D:148:LEU:HD11	2.00	0.43
1:C:129:ARG:NH2	1:C:154:LEU:CD2	2.81	0.43
1:B:89:ILE:HG23	1:B:94:ILE:HB	2.00	0.43
1:C:154:LEU:HD23	1:C:154:LEU:HA	1.77	0.43
1:C:124:ILE:O	1:C:124:ILE:HG12	2.17	0.43
1:B:34:VAL:HG22	1:B:126:LEU:HD22	2.00	0.43
1:D:108:ARG:H	1:D:108:ARG:CD	2.30	0.42
1:D:50:VAL:HB	1:D:51:PRO:HD3	2.02	0.41
1:B:157:THR:CG2	1:C:157:THR:OG1	2.69	0.41
1:D:135:GLN:HG3	1:D:136:VAL:N	2.34	0.41
1:D:109:ILE:HD11	1:D:114:LYS:CA	2.51	0.41
1:D:130:LYS:HB2	1:D:132:ARG:HD3	2.02	0.41
1:D:104:ARG:HD2	1:D:111:SER:HA	2.03	0.41
1:C:48:HIS:CD2	1:C:140:GLN:HE21	2.38	0.40
1:C:50:VAL:N	1:C:51:PRO:CD	2.83	0.40
1:A:124:ILE:HD11	5:A:175:HOH:O	2.21	0.40
1:D:40:MSE:CE	1:D:85:LEU:CB	2.97	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:C:108:ARG:NH2	5:D:170:HOH:O[3_454]	2.16	0.04

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	152/160 (95%)	150 (99%)	2 (1%)	0	100	100
1	B	154/160 (96%)	152 (99%)	2 (1%)	0	100	100
1	C	151/160 (94%)	150 (99%)	1 (1%)	0	100	100
1	D	151/160 (94%)	149 (99%)	2 (1%)	0	100	100
All	All	608/640 (95%)	601 (99%)	7 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	133/137 (97%)	125 (94%)	8 (6%)	19	22
1	B	135/137 (98%)	134 (99%)	1 (1%)	84	91
1	C	128/137 (93%)	119 (93%)	9 (7%)	15	16
1	D	129/137 (94%)	117 (91%)	12 (9%)	9	8
All	All	525/548 (96%)	495 (94%)	30 (6%)	20	24

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LEU
1	A	42	CYS

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Mol	Chain	Res	Type
1	A	85	LEU
1	A	108	ARG
1	A	114	LYS
1	A	130	LYS
1	A	132	ARG
1	A	157	THR
1	B	31	LYS
1	C	46	VAL
1	C	61	ASP
1	C	63	SER
1	C	85	LEU
1	C	114	LYS
1	C	117	ARG
1	C	124	ILE
1	C	132	ARG
1	C	156	GLU
1	D	9	LEU
1	D	28	LEU
1	D	31	LYS
1	D	59	MSE
1	D	81	THR
1	D	85	LEU
1	D	102	MSE
1	D	108	ARG
1	D	109	ILE
1	D	114	LYS
1	D	115	LYS
1	D	143	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	48	HIS
1	A	54	GLN
1	A	76	HIS
1	A	77	HIS
1	B	52	GLN
1	C	48	HIS
1	C	54	GLN
1	D	15	GLN
1	D	66	GLN
1	D	71	HIS

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Mol	Chain	Res	Type
1	D	76	HIS
1	D	77	HIS
1	D	107	GLN
1	D	140	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)

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

5.5 Carbohydrates (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 7 ligands modelled in this entry, 6 are monoatomic - leaving 1 for Mogul analysis.

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	ACT	B	163	-	1,3,3	1.89	0	0,3,3	0.00	-

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, 95^{th} 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	149/160 (93%)	-0.54	0	100	100	8, 13, 19, 27	0
1	B	149/160 (93%)	-0.46	0	100	100	5, 13, 21, 24	0
1	C	147/160 (91%)	-0.44	0	100	100	6, 14, 20, 25	0
1	D	145/160 (90%)	-0.09	5 (3%)	45	43	8, 16, 26, 28	0
All	All	590/640 (92%)	-0.38	5 (0%)	86	85	5, 14, 22, 28	0

All (5) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	120	GLY	5.9
1	D	79	VAL	3.5
1	D	78	ASP	2.5
1	D	77	HIS	2.3
1	D	9	LEU	2.2

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 carbohydrates 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, 95^{th} 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	CL	D	162	1/1	0.90	0.12	59,59,59,59	0
4	ACT	B	163	4/4	0.90	0.27	64,64,64,64	0
3	CA	B	162	1/1	0.92	0.07	57,57,57,57	0
2	CL	C	161	1/1	0.94	0.08	50,50,50,50	0
2	CL	A	161	1/1	0.99	0.11	31,31,31,31	0
2	CL	D	161	1/1	0.99	0.12	33,33,33,33	0
2	CL	B	161	1/1	1.00	0.05	29,29,29,29	0

6.5 Other polymers

There are no such residues in this entry.