wwPDB X-ray Structure Validation Summary Report (i)

May 18, 2021 – 02:09 PM EDT

PDB ID	:	7L6G
Title	:	MbnP from Methylosinus trichosporium
Authors	:	Manesis, A.C.; Rosenzweig, A.C.
Deposited on	:	2020-12-23
Resolution	:	2.04 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

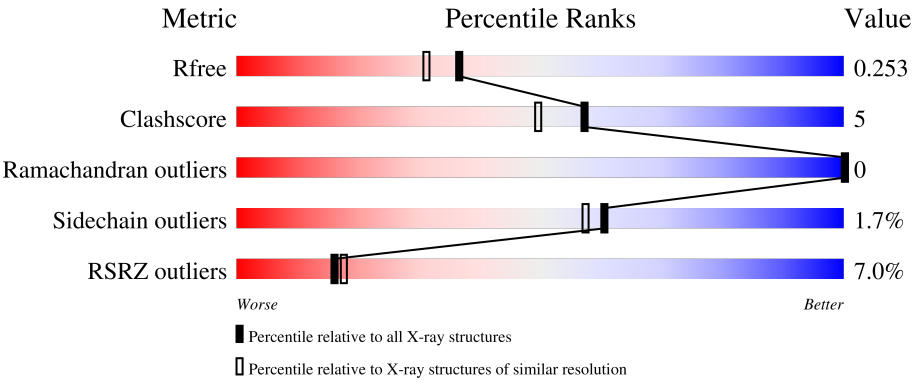
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.18
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.18

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 2.04 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	1692 (2.04-2.04)
Clashscore	141614	1773 (2.04-2.04)
Ramachandran outliers	138981	1752 (2.04-2.04)
Sidechain outliers	138945	1752 (2.04-2.04)
RSRZ outliers	127900	1672 (2.04-2.04)

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 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	299	3% 92% 5% ·
1	B	299	5% 84% 12% · ·
1	C	299	7% 82% 13% · ·
1	D	299	8% 86% 9% · ·
1	E	299	8% 90% 8% ··

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	299	8% 83% 14%

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
5	SO4	A	409	-	-	-	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 13544 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 Metallo-mystery pair system four-Cys motif protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	293	Total	C	N	O	S	0	0	0
			2133	1344	376	404	9			
1	B	289	Total	C	N	O	S	0	0	0
			2109	1330	371	399	9			
1	C	288	Total	C	N	O	S	0	0	0
			2102	1325	370	398	9			
1	D	287	Total	C	N	O	S	0	0	0
			2097	1322	369	397	9			
1	E	295	Total	C	N	O	S	0	0	0
			2146	1352	379	406	9			
1	F	291	Total	C	N	O	S	0	0	0
			2124	1339	374	402	9			

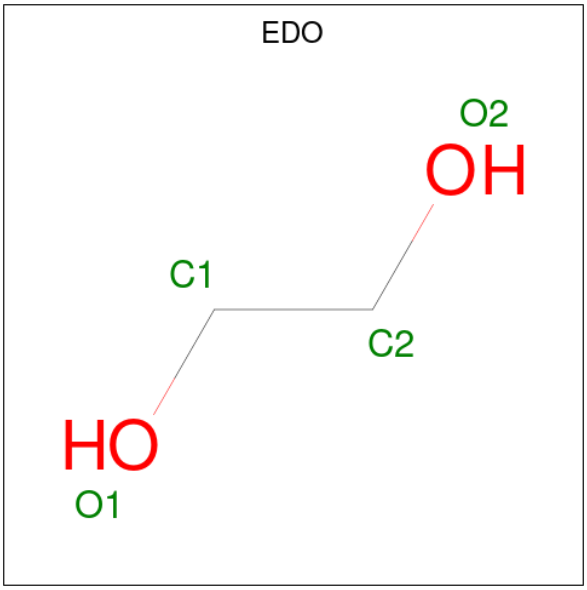
- Molecule 2 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Cu	0	0
			1	1		
2	B	1	Total	Cu	0	0
			1	1		
2	C	1	Total	Cu	0	0
			1	1		
2	D	1	Total	Cu	0	0
			1	1		
2	E	1	Total	Cu	0	0
			1	1		
2	F	1	Total	Cu	0	0
			1	1		

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Ca 1 1	0	0
3	B	1	Total Ca 1 1	0	0
3	C	1	Total Ca 1 1	0	0
3	D	1	Total Ca 1 1	0	0
3	E	1	Total Ca 1 1	0	0
3	F	1	Total Ca 1 1	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

Continued on next page...

Continued from previous page...

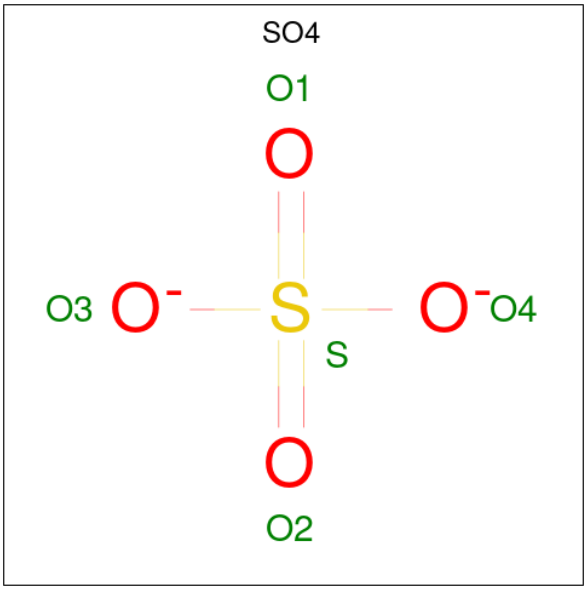
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0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

Continued on next page...

Continued from previous page...

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

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total O S 5 4 1	0	0
5	A	1	Total O S 5 4 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total O S 5 4 1	0	0
5	A	1	Total O S 5 4 1	0	0
5	A	1	Total O S 5 4 1	0	0
5	A	1	Total O S 5 4 1	0	0
5	B	1	Total O S 5 4 1	0	0
5	B	1	Total O S 5 4 1	0	0
5	C	1	Total O S 5 4 1	0	0
5	C	1	Total O S 5 4 1	0	0
5	C	1	Total O S 5 4 1	0	0
5	D	1	Total O S 5 4 1	0	0
5	D	1	Total O S 5 4 1	0	0
5	D	1	Total O S 5 4 1	0	0
5	E	1	Total O S 5 4 1	0	0
5	E	1	Total O S 5 4 1	0	0
5	E	1	Total O S 5 4 1	0	0
5	F	1	Total O S 5 4 1	0	0
5	F	1	Total O S 5 4 1	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	125	Total O 125 125	0	0
6	B	107	Total O 107 107	0	0

Continued on next page...

Continued from previous page...

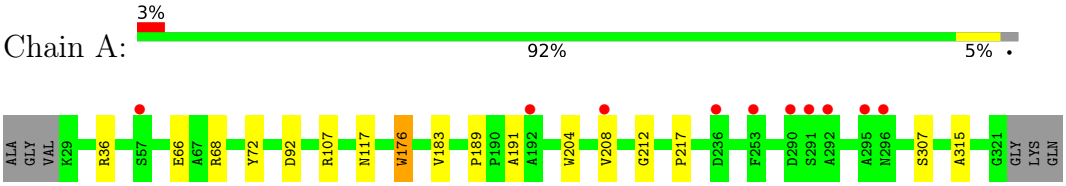
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	104	Total O 104 104	0	0
6	D	83	Total O 83 83	0	0
6	E	88	Total O 88 88	0	0
6	F	75	Total O 75 75	0	0

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.

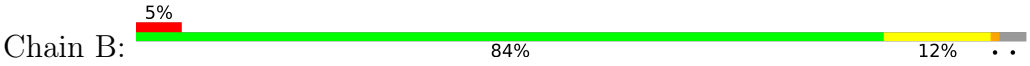
• Molecule 1: Metallo-mystery pair system four-Cys motif protein

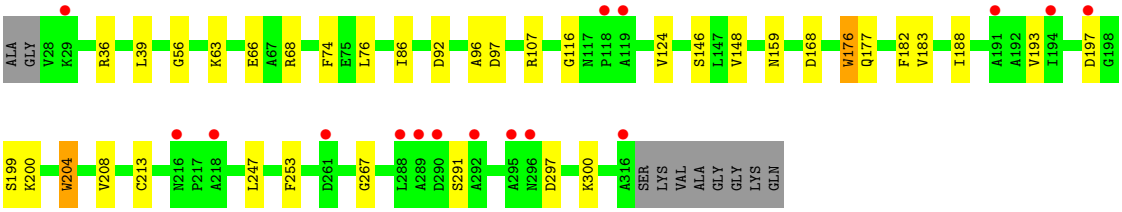
Chain A:



• Molecule 1: Metallo-mystery pair system four-Cys motif protein

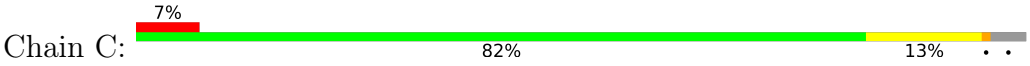
Chain B:

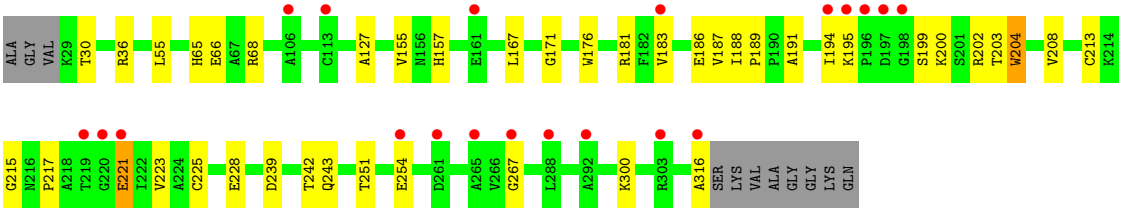




• Molecule 1: Metallo-mystery pair system four-Cys motif protein

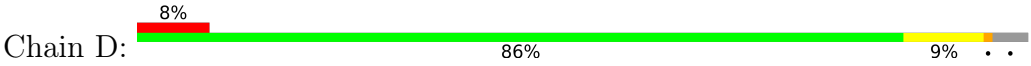
Chain C:

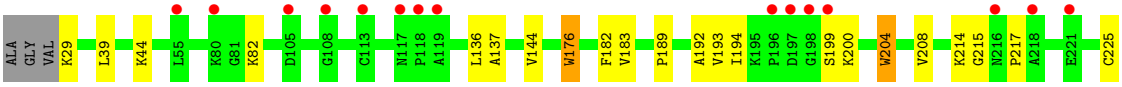


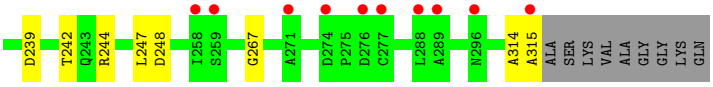


• Molecule 1: Metallo-mystery pair system four-Cys motif protein

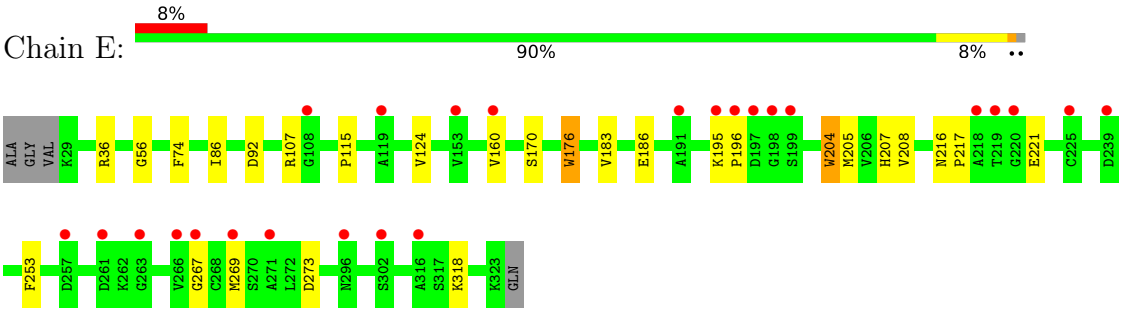
Chain D:



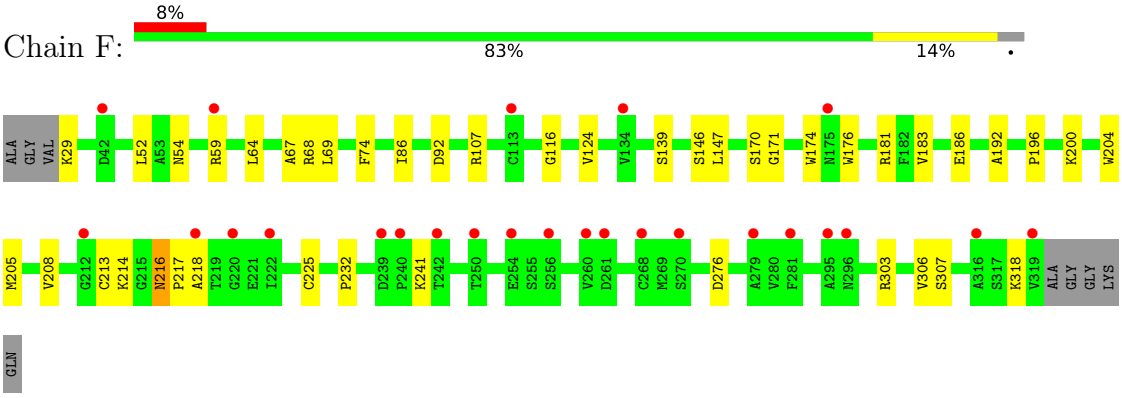




• Molecule 1: Metallo-mystery pair system four-Cys motif protein



• Molecule 1: Metallo-mystery pair system four-Cys motif protein



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 61	Depositor
Cell constants a, b, c, α, β, γ	91.28Å 91.28Å 383.57Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	21.89 – 2.04 79.05 – 1.94	Depositor EDS
% Data completeness (in resolution range)	97.0 (21.89-2.04) 85.9 (79.05-1.94)	Depositor EDS
R_{merge}	0.35	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.98 (at 1.94Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.204 , 0.251 0.206 , 0.253	Depositor DCC
R_{free} test set	5541 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å^2)	40.4	Xtriage
Anisotropy	0.230	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 41.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.058 for h,-h-k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13544	wwPDB-VP
Average B, all atoms (Å^2)	48.0	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 20.41 % 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 8.7483e-03. 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: EDO, KYN, CA, SO4, CU

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	0.27	0/2167	0.49	0/2953
1	B	0.27	0/2143	0.49	0/2922
1	C	0.29	0/2136	0.49	0/2912
1	D	0.28	0/2131	0.49	0/2905
1	E	0.27	0/2180	0.48	0/2969
1	F	0.27	0/2158	0.48	0/2941
All	All	0.28	0/12915	0.49	0/17602

There are no bond length outliers.

There are no bond angle outliers.

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	2133	0	2100	15	0
1	B	2109	0	2074	22	0
1	C	2102	0	2065	28	0
1	D	2097	0	2060	18	0
1	E	2146	0	2116	20	0
1	F	2124	0	2092	30	0
2	A	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
4	A	20	0	30	3	0
4	B	12	0	18	2	0
4	C	12	0	18	2	0
4	D	24	0	36	4	0
4	E	48	0	72	2	0
4	F	28	0	42	2	0
5	A	30	0	0	1	0
5	B	10	0	0	0	0
5	C	15	0	0	0	0
5	D	15	0	0	0	0
5	E	15	0	0	0	0
5	F	10	0	0	0	0
6	A	125	0	0	2	0
6	B	107	0	0	0	0
6	C	104	0	0	0	0
6	D	83	0	0	1	0
6	E	88	0	0	1	0
6	F	75	0	0	2	0
All	All	13544	0	12723	125	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

The worst 5 of 125 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:215:GLY:CA	1:C:221:GLU:OE2	2.29	0.80
1:D:225:CYS:H	4:D:407:EDO:H22	1.46	0.79
1:C:228:GLU:H	1:C:300:LYS:HZ1	1.33	0.77
1:C:215:GLY:HA2	1:C:221:GLU:OE2	1.87	0.74

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:214:LYS:HD3	1:D:215:GLY:H	1.58	0.68

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	290/299 (97%)	280 (97%)	10 (3%)	0	100	100
1	B	286/299 (96%)	275 (96%)	11 (4%)	0	100	100
1	C	285/299 (95%)	276 (97%)	9 (3%)	0	100	100
1	D	284/299 (95%)	271 (95%)	13 (5%)	0	100	100
1	E	292/299 (98%)	282 (97%)	10 (3%)	0	100	100
1	F	288/299 (96%)	274 (95%)	14 (5%)	0	100	100
All	All	1725/1794 (96%)	1658 (96%)	67 (4%)	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	219/222 (99%)	216 (99%)	3 (1%)	67	65
1	B	217/222 (98%)	213 (98%)	4 (2%)	59	55

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	216/222 (97%)	212 (98%)	4 (2%)	57	53
1	D	216/222 (97%)	212 (98%)	4 (2%)	57	53
1	E	220/222 (99%)	218 (99%)	2 (1%)	78	79
1	F	219/222 (99%)	214 (98%)	5 (2%)	50	44
All	All	1307/1332 (98%)	1285 (98%)	22 (2%)	60	57

5 of 22 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	204	TRP
1	F	69	LEU
1	E	204	TRP
1	F	176	TRP
1	B	291	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	216	ASN
1	F	296	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

6 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	$\#\|Z\| > 2$
1	KYN	D	174	1	13,14,15	0.79	0	13,18,20	0.50	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	KYN	C	174	1	13,14,15	0.75	0	13,18,20	0.57	0
1	KYN	A	174	1	13,14,15	0.79	0	13,18,20	0.59	0
1	KYN	E	174	1	13,14,15	0.77	0	13,18,20	0.60	0
1	KYN	F	174	1	13,14,15	0.79	0	13,18,20	0.67	0
1	KYN	B	174	1	13,14,15	0.77	0	13,18,20	0.52	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
1	KYN	D	174	1	-	1/9/10/12	0/1/1/1
1	KYN	C	174	1	-	1/9/10/12	0/1/1/1
1	KYN	A	174	1	-	1/9/10/12	0/1/1/1
1	KYN	E	174	1	-	1/9/10/12	0/1/1/1
1	KYN	F	174	1	-	1/9/10/12	0/1/1/1
1	KYN	B	174	1	-	2/9/10/12	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	B	174	KYN	O2-C1-CD2-CE2
1	A	174	KYN	CB-C1-CD2-CE2
1	B	174	KYN	CB-C1-CD2-CE2
1	C	174	KYN	CB-C1-CD2-CE2
1	D	174	KYN	CB-C1-CD2-CE2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	F	174	KYN	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 67 ligands modelled in this entry, 12 are monoatomic - leaving 55 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	EDO	F	405	-	3,3,3	0.46	0	2,2,2	0.35	0
5	SO4	D	411	-	4,4,4	0.15	0	6,6,6	0.05	0
5	SO4	C	408	-	4,4,4	0.14	0	6,6,6	0.06	0
4	EDO	D	405	-	3,3,3	0.46	0	2,2,2	0.34	0
5	SO4	B	406	-	4,4,4	0.16	0	6,6,6	0.16	0
4	EDO	E	414	-	3,3,3	0.47	0	2,2,2	0.31	0
4	EDO	F	407	-	3,3,3	0.46	0	2,2,2	0.33	0
5	SO4	B	407	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	D	408	-	3,3,3	0.42	0	2,2,2	0.38	0
4	EDO	B	404	-	3,3,3	0.45	0	2,2,2	0.37	0
5	SO4	A	408	-	4,4,4	0.14	0	6,6,6	0.06	0
4	EDO	E	408	-	3,3,3	0.46	0	2,2,2	0.33	0
5	SO4	A	412	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	E	413	-	3,3,3	0.47	0	2,2,2	0.31	0
5	SO4	E	416	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	B	405	-	3,3,3	0.46	0	2,2,2	0.33	0
4	EDO	E	411	-	3,3,3	0.46	0	2,2,2	0.32	0
4	EDO	F	408	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	B	403	-	3,3,3	0.45	0	2,2,2	0.33	0
5	SO4	F	410	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	A	403	-	3,3,3	0.45	0	2,2,2	0.32	0
4	EDO	E	401	-	3,3,3	0.45	0	2,2,2	0.38	0
4	EDO	D	403	-	3,3,3	0.45	0	2,2,2	0.33	0
4	EDO	A	407	-	3,3,3	0.46	0	2,2,2	0.30	0
4	EDO	E	412	-	3,3,3	0.47	0	2,2,2	0.32	0
5	SO4	D	410	-	4,4,4	0.14	0	6,6,6	0.04	0
5	SO4	F	411	-	4,4,4	0.14	0	6,6,6	0.05	0
5	SO4	A	409	-	4,4,4	0.15	0	6,6,6	0.04	0
5	SO4	E	417	-	4,4,4	0.14	0	6,6,6	0.06	0
4	EDO	A	406	-	3,3,3	0.44	0	2,2,2	0.35	0
4	EDO	E	404	-	3,3,3	0.45	0	2,2,2	0.32	0
5	SO4	D	409	-	4,4,4	0.14	0	6,6,6	0.05	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	EDO	F	403	-	3,3,3	0.47	0	2,2,2	0.32	0
4	EDO	C	403	-	3,3,3	0.45	0	2,2,2	0.31	0
5	SO4	A	413	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	F	409	-	3,3,3	0.46	0	2,2,2	0.35	0
4	EDO	A	404	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	C	405	-	3,3,3	0.44	0	2,2,2	0.25	0
4	EDO	E	410	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	D	404	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	E	409	-	3,3,3	0.46	0	2,2,2	0.29	0
4	EDO	F	406	-	3,3,3	0.46	0	2,2,2	0.30	0
5	SO4	C	407	-	4,4,4	0.14	0	6,6,6	0.05	0
4	EDO	E	406	-	3,3,3	0.46	0	2,2,2	0.35	0
5	SO4	E	415	-	4,4,4	0.14	0	6,6,6	0.05	0
5	SO4	A	411	-	4,4,4	0.15	0	6,6,6	0.07	0
5	SO4	C	406	-	4,4,4	0.14	0	6,6,6	0.04	0
4	EDO	E	407	-	3,3,3	0.45	0	2,2,2	0.35	0
4	EDO	D	407	-	3,3,3	0.46	0	2,2,2	0.32	0
5	SO4	A	410	-	4,4,4	0.14	0	6,6,6	0.04	0
4	EDO	E	405	-	3,3,3	0.47	0	2,2,2	0.28	0
4	EDO	F	404	-	3,3,3	0.47	0	2,2,2	0.28	0
4	EDO	C	404	-	3,3,3	0.44	0	2,2,2	0.42	0
4	EDO	D	406	-	3,3,3	0.47	0	2,2,2	0.24	0
4	EDO	A	405	-	3,3,3	0.44	0	2,2,2	0.34	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	F	405	-	-	0/1/1/1	-
4	EDO	D	405	-	-	0/1/1/1	-
4	EDO	E	414	-	-	0/1/1/1	-
4	EDO	F	407	-	-	0/1/1/1	-
4	EDO	D	408	-	-	1/1/1/1	-
4	EDO	B	404	-	-	0/1/1/1	-
4	EDO	E	408	-	-	0/1/1/1	-
4	EDO	E	413	-	-	0/1/1/1	-
4	EDO	B	405	-	-	0/1/1/1	-
4	EDO	E	411	-	-	0/1/1/1	-
4	EDO	F	408	-	-	0/1/1/1	-
4	EDO	B	403	-	-	0/1/1/1	-
4	EDO	A	403	-	-	0/1/1/1	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	E	401	-	-	1/1/1/1	-
4	EDO	D	403	-	-	0/1/1/1	-
4	EDO	A	407	-	-	0/1/1/1	-
4	EDO	E	412	-	-	1/1/1/1	-
4	EDO	A	406	-	-	1/1/1/1	-
4	EDO	E	404	-	-	1/1/1/1	-
4	EDO	F	403	-	-	1/1/1/1	-
4	EDO	C	403	-	-	0/1/1/1	-
4	EDO	F	409	-	-	1/1/1/1	-
4	EDO	A	404	-	-	0/1/1/1	-
4	EDO	C	405	-	-	1/1/1/1	-
4	EDO	E	410	-	-	0/1/1/1	-
4	EDO	D	404	-	-	0/1/1/1	-
4	EDO	E	409	-	-	0/1/1/1	-
4	EDO	F	406	-	-	0/1/1/1	-
4	EDO	E	406	-	-	0/1/1/1	-
4	EDO	E	407	-	-	0/1/1/1	-
4	EDO	D	407	-	-	0/1/1/1	-
4	EDO	E	405	-	-	1/1/1/1	-
4	EDO	F	404	-	-	1/1/1/1	-
4	EDO	C	404	-	-	0/1/1/1	-
4	EDO	D	406	-	-	1/1/1/1	-
4	EDO	A	405	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	405	EDO	O1-C1-C2-O2
4	D	406	EDO	O1-C1-C2-O2
4	E	404	EDO	O1-C1-C2-O2
4	F	409	EDO	O1-C1-C2-O2
4	E	405	EDO	O1-C1-C2-O2

There are no ring outliers.

13 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	405	EDO	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	F	408	EDO	1	0
4	B	403	EDO	1	0
4	A	407	EDO	1	0
4	A	404	EDO	1	0
4	D	404	EDO	1	0
4	E	409	EDO	2	0
4	F	406	EDO	1	0
5	A	411	SO4	1	0
4	D	407	EDO	2	0
4	C	404	EDO	2	0
4	D	406	EDO	1	0
4	A	405	EDO	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	292/299 (97%)	0.44	10 (3%)	45	49	26, 39, 64, 94	0
1	B	288/299 (96%)	0.49	16 (5%)	24	26	31, 44, 73, 98	0
1	C	287/299 (95%)	0.57	20 (6%)	16	18	30, 42, 70, 96	0
1	D	286/299 (95%)	0.59	25 (8%)	10	10	28, 48, 82, 126	0
1	E	294/299 (98%)	0.66	25 (8%)	10	11	33, 47, 74, 85	0
1	F	290/299 (96%)	0.72	25 (8%)	10	11	32, 52, 79, 90	0
All	All	1737/1794 (96%)	0.58	121 (6%)	16	18	26, 45, 74, 126	0

The worst 5 of 121 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	196	PRO	8.5
1	D	196	PRO	7.8
1	D	197	ASP	6.4
1	C	197	ASP	5.7
1	B	218	ALA	5.5

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
1	KYN	F	174	14/15	0.84	0.19	27,40,48,48	0
1	KYN	C	174	14/15	0.87	0.20	30,40,51,58	0
1	KYN	A	174	14/15	0.87	0.19	28,30,44,47	0
1	KYN	B	174	14/15	0.89	0.18	32,41,52,63	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
1	KYN	E	174	14/15	0.90	0.21	32,45,50,51	0
1	KYN	D	174	14/15	0.90	0.16	39,44,59,59	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
4	EDO	E	413	4/4	0.38	0.21	62,65,68,70	0
4	EDO	E	411	4/4	0.45	0.35	115,116,118,118	0
4	EDO	B	403	4/4	0.54	0.22	87,87,90,91	0
4	EDO	E	410	4/4	0.54	0.19	66,69,69,70	0
4	EDO	F	404	4/4	0.55	0.18	68,68,71,74	0
4	EDO	D	405	4/4	0.61	0.16	74,77,78,79	0
4	EDO	E	414	4/4	0.62	0.21	51,51,52,53	0
4	EDO	A	404	4/4	0.63	0.22	80,80,81,82	0
5	SO4	A	409	5/5	0.64	0.47	131,135,137,138	0
5	SO4	C	406	5/5	0.64	0.20	123,125,129,130	0
4	EDO	F	406	4/4	0.65	0.18	68,70,74,80	0
4	EDO	E	407	4/4	0.65	0.23	71,72,77,79	0
4	EDO	E	406	4/4	0.65	0.20	56,58,62,71	0
4	EDO	A	406	4/4	0.66	0.23	85,86,86,87	0
4	EDO	C	405	4/4	0.67	0.20	58,59,59,59	0
4	EDO	E	409	4/4	0.67	0.26	81,84,86,87	0
5	SO4	A	412	5/5	0.68	0.36	125,128,129,133	0
4	EDO	F	409	4/4	0.69	0.25	61,64,65,69	0
4	EDO	E	405	4/4	0.71	0.20	53,54,54,55	0
4	EDO	E	412	4/4	0.73	0.26	62,65,69,77	0
4	EDO	E	404	4/4	0.74	0.20	69,69,70,73	0
4	EDO	A	403	4/4	0.74	0.24	79,86,89,90	0
5	SO4	E	417	5/5	0.74	0.32	111,112,114,119	0
5	SO4	E	416	5/5	0.76	0.24	124,130,131,135	0
4	EDO	F	403	4/4	0.77	0.20	49,53,54,56	0
4	EDO	A	407	4/4	0.80	0.13	58,60,60,62	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	EDO	F	407	4/4	0.80	0.14	62,65,69,70	0
5	SO4	D	410	5/5	0.80	0.25	118,122,126,131	0
4	EDO	D	404	4/4	0.80	0.19	76,77,79,79	0
4	EDO	A	405	4/4	0.80	0.19	62,63,67,73	0
5	SO4	C	408	5/5	0.81	0.62	133,133,137,140	0
4	EDO	E	401	4/4	0.82	0.14	53,63,64,64	0
5	SO4	C	407	5/5	0.82	0.20	130,131,132,134	0
4	EDO	D	403	4/4	0.82	0.34	85,86,87,87	0
5	SO4	A	411	5/5	0.83	0.28	101,105,110,112	0
4	EDO	F	408	4/4	0.83	0.18	64,65,68,72	0
5	SO4	A	413	5/5	0.83	0.31	143,146,148,149	0
4	EDO	D	406	4/4	0.84	0.28	57,65,68,77	0
4	EDO	B	405	4/4	0.84	0.19	61,66,70,71	0
5	SO4	D	411	5/5	0.85	0.56	132,136,137,141	0
5	SO4	D	409	5/5	0.85	0.44	135,136,137,139	0
5	SO4	A	410	5/5	0.85	0.34	129,131,134,135	0
5	SO4	F	410	5/5	0.85	0.23	112,113,118,120	0
4	EDO	D	407	4/4	0.86	0.23	59,63,66,69	0
4	EDO	D	408	4/4	0.86	0.25	49,50,64,81	0
4	EDO	C	403	4/4	0.86	0.21	74,75,75,75	0
5	SO4	B	406	5/5	0.88	0.27	74,75,77,82	0
5	SO4	F	411	5/5	0.89	0.16	111,113,117,117	0
4	EDO	E	408	4/4	0.90	0.16	60,66,69,73	0
4	EDO	C	404	4/4	0.91	0.17	63,70,71,72	0
5	SO4	E	415	5/5	0.91	0.16	103,108,112,114	0
4	EDO	B	404	4/4	0.92	0.17	55,56,57,57	0
3	CA	B	402	1/1	0.92	0.08	54,54,54,54	0
2	CU	A	401	1/1	0.93	0.09	44,44,44,44	0
5	SO4	B	407	5/5	0.94	0.24	97,98,102,103	0
3	CA	D	402	1/1	0.94	0.06	52,52,52,52	0
2	CU	B	401	1/1	0.95	0.07	49,49,49,49	0
4	EDO	F	405	4/4	0.95	0.11	54,64,73,80	0
2	CU	E	402	1/1	0.95	0.07	54,54,54,54	0
3	CA	F	402	1/1	0.95	0.11	51,51,51,51	0
2	CU	D	401	1/1	0.96	0.04	52,52,52,52	0
5	SO4	A	408	5/5	0.96	0.16	80,83,84,86	0
2	CU	F	401	1/1	0.96	0.07	54,54,54,54	0
3	CA	E	403	1/1	0.96	0.14	58,58,58,58	0
2	CU	C	401	1/1	0.97	0.06	49,49,49,49	0
3	CA	C	402	1/1	0.97	0.07	43,43,43,43	0
3	CA	A	402	1/1	0.99	0.07	37,37,37,37	0

6.5 Other polymers (i)

There are no such residues in this entry.