WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Feb 5, 2024 – 12:07 PM EST

PDB ID	:	1U5W
Title	:	Crystal structure of hypothetical protein yjjX from Escherichia coli
Authors	:	Zheng, J.; Singh, V.K.; Jia, Z.; Montreal-Kingston Bacterial Structural Genomics Initiative (BSGI)
Deposited on	:	2004-07-28
Resolution	:	2.30 Å(reported)

The following versions of software and data (see references (i)) 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	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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.
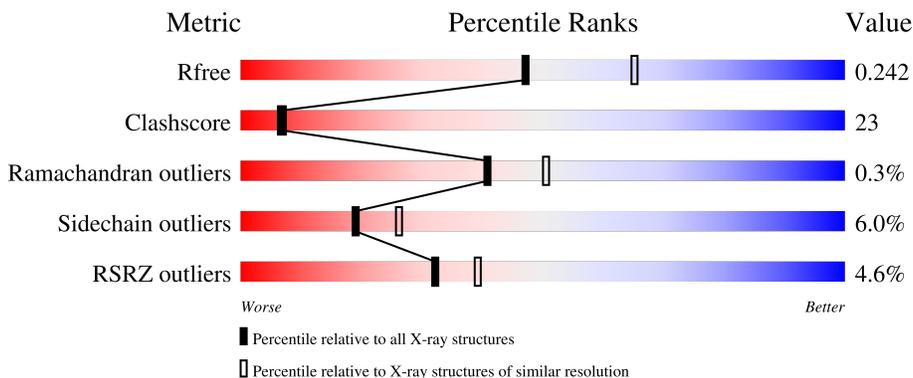
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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 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	184	
1	B	184	
1	C	184	
1	D	184	
1	E	184	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	184	% 61% 29% · 7%
1	G	184	9% 51% 36% · 9%
1	H	184	2% 51% 37% 5% 8%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 11017 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 Hypothetical UPF0244 protein yjjX.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	162	Total	C	N	O	S	0	0	0
			1219	768	218	229	4			
1	B	172	Total	C	N	O	S	0	0	0
			1297	817	232	244	4			
1	C	174	Total	C	N	O	S	0	0	0
			1309	825	234	246	4			
1	D	172	Total	C	N	O	S	0	0	0
			1297	817	232	244	4			
1	E	172	Total	C	N	O	S	0	0	0
			1297	817	232	244	4			
1	F	172	Total	C	N	O	S	0	0	0
			1293	813	232	244	4			
1	G	168	Total	C	N	O	S	0	0	0
			1265	800	225	236	4			
1	H	170	Total	C	N	O	S	0	0	0
			1283	808	230	241	4			

There are 112 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	cloning artifact	UNP P39411
A	2	LEU	-	cloning artifact	UNP P39411
A	3	ILE	-	cloning artifact	UNP P39411
A	174	SER	-	cloning artifact	UNP P39411
A	175	GLY	-	cloning artifact	UNP P39411
A	176	ARG	-	cloning artifact	UNP P39411
A	177	VAL	-	cloning artifact	UNP P39411
A	178	GLU	-	cloning artifact	UNP P39411
A	179	HIS	-	expression tag	UNP P39411
A	180	HIS	-	expression tag	UNP P39411
A	181	HIS	-	expression tag	UNP P39411
A	182	HIS	-	expression tag	UNP P39411
A	183	HIS	-	expression tag	UNP P39411

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	184	HIS	-	expression tag	UNP P39411
B	1	MET	-	cloning artifact	UNP P39411
B	2	LEU	-	cloning artifact	UNP P39411
B	3	ILE	-	cloning artifact	UNP P39411
B	174	SER	-	cloning artifact	UNP P39411
B	175	GLY	-	cloning artifact	UNP P39411
B	176	ARG	-	cloning artifact	UNP P39411
B	177	VAL	-	cloning artifact	UNP P39411
B	178	GLU	-	cloning artifact	UNP P39411
B	179	HIS	-	expression tag	UNP P39411
B	180	HIS	-	expression tag	UNP P39411
B	181	HIS	-	expression tag	UNP P39411
B	182	HIS	-	expression tag	UNP P39411
B	183	HIS	-	expression tag	UNP P39411
B	184	HIS	-	expression tag	UNP P39411
C	1	MET	-	cloning artifact	UNP P39411
C	2	LEU	-	cloning artifact	UNP P39411
C	3	ILE	-	cloning artifact	UNP P39411
C	174	SER	-	cloning artifact	UNP P39411
C	175	GLY	-	cloning artifact	UNP P39411
C	176	ARG	-	cloning artifact	UNP P39411
C	177	VAL	-	cloning artifact	UNP P39411
C	178	GLU	-	cloning artifact	UNP P39411
C	179	HIS	-	expression tag	UNP P39411
C	180	HIS	-	expression tag	UNP P39411
C	181	HIS	-	expression tag	UNP P39411
C	182	HIS	-	expression tag	UNP P39411
C	183	HIS	-	expression tag	UNP P39411
C	184	HIS	-	expression tag	UNP P39411
D	1	MET	-	cloning artifact	UNP P39411
D	2	LEU	-	cloning artifact	UNP P39411
D	3	ILE	-	cloning artifact	UNP P39411
D	174	SER	-	cloning artifact	UNP P39411
D	175	GLY	-	cloning artifact	UNP P39411
D	176	ARG	-	cloning artifact	UNP P39411
D	177	VAL	-	cloning artifact	UNP P39411
D	178	GLU	-	cloning artifact	UNP P39411
D	179	HIS	-	expression tag	UNP P39411
D	180	HIS	-	expression tag	UNP P39411
D	181	HIS	-	expression tag	UNP P39411
D	182	HIS	-	expression tag	UNP P39411
D	183	HIS	-	expression tag	UNP P39411

Continued on next page...
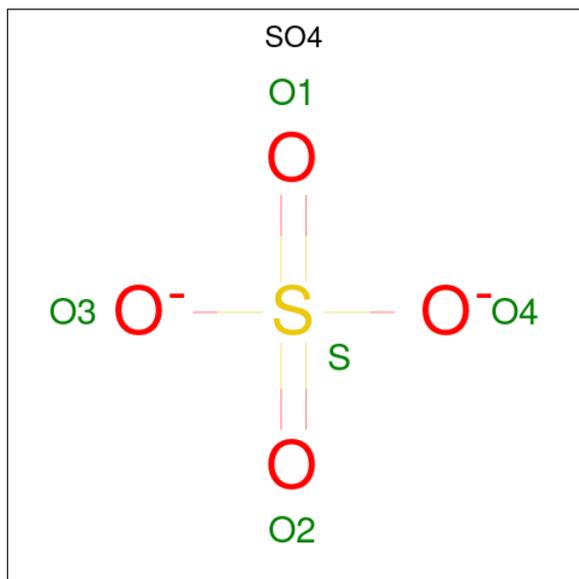
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	184	HIS	-	expression tag	UNP P39411
E	1	MET	-	cloning artifact	UNP P39411
E	2	LEU	-	cloning artifact	UNP P39411
E	3	ILE	-	cloning artifact	UNP P39411
E	174	SER	-	cloning artifact	UNP P39411
E	175	GLY	-	cloning artifact	UNP P39411
E	176	ARG	-	cloning artifact	UNP P39411
E	177	VAL	-	cloning artifact	UNP P39411
E	178	GLU	-	cloning artifact	UNP P39411
E	179	HIS	-	expression tag	UNP P39411
E	180	HIS	-	expression tag	UNP P39411
E	181	HIS	-	expression tag	UNP P39411
E	182	HIS	-	expression tag	UNP P39411
E	183	HIS	-	expression tag	UNP P39411
E	184	HIS	-	expression tag	UNP P39411
F	1	MET	-	cloning artifact	UNP P39411
F	2	LEU	-	cloning artifact	UNP P39411
F	3	ILE	-	cloning artifact	UNP P39411
F	174	SER	-	cloning artifact	UNP P39411
F	175	GLY	-	cloning artifact	UNP P39411
F	176	ARG	-	cloning artifact	UNP P39411
F	177	VAL	-	cloning artifact	UNP P39411
F	178	GLU	-	cloning artifact	UNP P39411
F	179	HIS	-	expression tag	UNP P39411
F	180	HIS	-	expression tag	UNP P39411
F	181	HIS	-	expression tag	UNP P39411
F	182	HIS	-	expression tag	UNP P39411
F	183	HIS	-	expression tag	UNP P39411
F	184	HIS	-	expression tag	UNP P39411
G	1	MET	-	cloning artifact	UNP P39411
G	2	LEU	-	cloning artifact	UNP P39411
G	3	ILE	-	cloning artifact	UNP P39411
G	174	SER	-	cloning artifact	UNP P39411
G	175	GLY	-	cloning artifact	UNP P39411
G	176	ARG	-	cloning artifact	UNP P39411
G	177	VAL	-	cloning artifact	UNP P39411
G	178	GLU	-	cloning artifact	UNP P39411
G	179	HIS	-	expression tag	UNP P39411
G	180	HIS	-	expression tag	UNP P39411
G	181	HIS	-	expression tag	UNP P39411
G	182	HIS	-	expression tag	UNP P39411
G	183	HIS	-	expression tag	UNP P39411

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	184	HIS	-	expression tag	UNP P39411
H	1	MET	-	cloning artifact	UNP P39411
H	2	LEU	-	cloning artifact	UNP P39411
H	3	ILE	-	cloning artifact	UNP P39411
H	174	SER	-	cloning artifact	UNP P39411
H	175	GLY	-	cloning artifact	UNP P39411
H	176	ARG	-	cloning artifact	UNP P39411
H	177	VAL	-	cloning artifact	UNP P39411
H	178	GLU	-	cloning artifact	UNP P39411
H	179	HIS	-	expression tag	UNP P39411
H	180	HIS	-	expression tag	UNP P39411
H	181	HIS	-	expression tag	UNP P39411
H	182	HIS	-	expression tag	UNP P39411
H	183	HIS	-	expression tag	UNP P39411
H	184	HIS	-	expression tag	UNP P39411

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

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

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	1	Total 5	O 4	S 1	0	0
2	C	1	Total 5	O 4	S 1	0	0
2	D	1	Total 5	O 4	S 1	0	0
2	D	1	Total 5	O 4	S 1	0	0
2	E	1	Total 5	O 4	S 1	0	0
2	E	1	Total 5	O 4	S 1	0	0
2	F	1	Total 5	O 4	S 1	0	0
2	F	1	Total 5	O 4	S 1	0	0
2	G	1	Total 5	O 4	S 1	0	0
2	H	1	Total 5	O 4	S 1	0	0
2	H	1	Total 5	O 4	S 1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	73	Total 73	O 73	0	0
3	B	106	Total 106	O 106	0	0
3	C	92	Total 92	O 92	0	0
3	D	110	Total 110	O 110	0	0
3	E	68	Total 68	O 68	0	0
3	F	92	Total 92	O 92	0	0
3	G	69	Total 69	O 69	0	0
3	H	72	Total 72	O 72	0	0

3 Residue-property plots ⓘ

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.
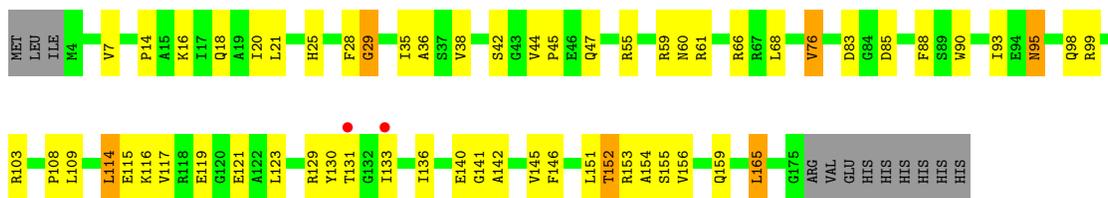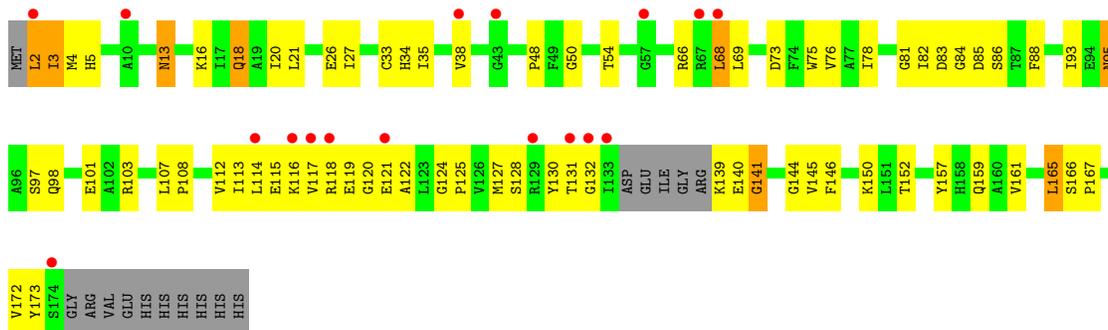
- Molecule 1: Hypothetical UPF0244 protein yjjX

Chain A:

- Molecule 1: Hypothetical UPF0244 protein yjjX

Chain B:

- Molecule 1: Hypothetical UPF0244 protein yjjX

Chain C:

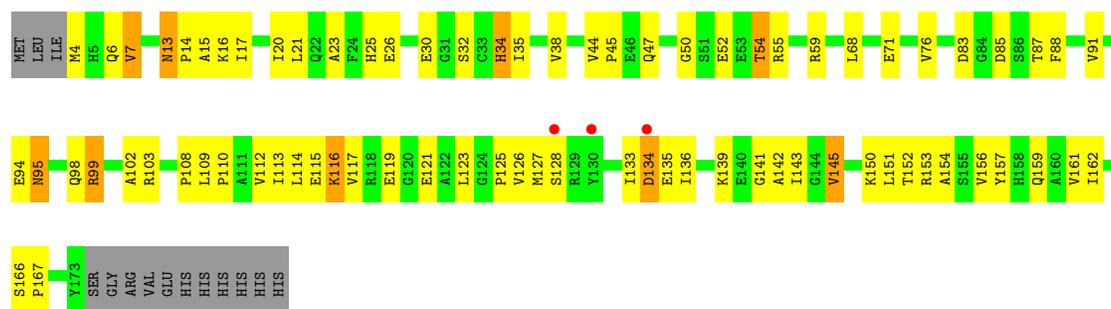- Molecule 1: Hypothetical UPF0244 protein yjjX

Chain D:

• Molecule 1: Hypothetical UPF0244 protein yjjX

Chain E:

• Molecule 1: Hypothetical UPF0244 protein yjjX

Chain F:

• Molecule 1: Hypothetical UPF0244 protein yjjX

Chain G:

• Molecule 1: Hypothetical UPF0244 protein yjjX

Chain H:

4　Data and refinement statistics　ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	71.00Å　129.34Å　85.38Å 90.00°　90.23°　90.00°	Depositor
Resolution (Å)	50.00　–　2.30 29.27　–　2.23	Depositor EDS
% Data completeness (in resolution range)	89.5 (50.00-2.30) 91.0 (29.27-2.23)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.06	Depositor
$<I/\sigma(I)>$ [1]	2.06 (at 2.24Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.200　,　0.255 0.244　,　0.242	Depositor DCC
R_{free} test set	3430 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	29.7	Xtriage
Anisotropy	0.077	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 17.7	EDS
L-test for twinning [2]	$<|L|>$ = 0.47, $<L^2>$ = 0.30	Xtriage
Estimated twinning fraction	0.120 for h,-k,-l	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	11017	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.67% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[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: SO4

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	0.37	0/1243	0.66	1/1688 (0.1%)
1	B	0.35	0/1323	0.59	0/1797
1	C	0.35	0/1335	0.60	0/1813
1	D	0.35	0/1323	0.59	0/1797
1	E	0.34	0/1323	0.56	0/1797
1	F	0.34	0/1319	0.58	0/1791
1	G	0.34	0/1290	0.57	0/1752
1	H	0.34	0/1309	0.56	0/1778
All	All	0.35	0/10465	0.59	1/14213 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	125	PRO	N-CA-CB	5.41	109.79	103.30

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	1219	0	1196	60	0
1	B	1297	0	1285	51	1

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1309	0	1299	66	0
1	D	1297	0	1285	48	0
1	E	1297	0	1285	69	3
1	F	1293	0	1277	62	0
1	G	1265	0	1258	74	0
1	H	1283	0	1269	68	0
2	A	5	0	0	0	0
2	B	15	0	0	0	0
2	C	10	0	0	1	0
2	D	10	0	0	0	0
2	E	10	0	0	0	0
2	F	10	0	0	0	0
2	G	5	0	0	0	0
2	H	10	0	0	0	0
3	A	73	0	0	6	0
3	B	106	0	0	3	0
3	C	92	0	0	4	0
3	D	110	0	0	3	3
3	E	68	0	0	6	0
3	F	92	0	0	6	0
3	G	69	0	0	3	1
3	H	72	0	0	8	0
All	All	11017	0	10154	472	4

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 23.

The worst 5 of 472 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:B:44:VAL:HG22	1:B:45:PRO:HD2	1.46	0.96
1:D:152:THR:HG22	1:D:155:SER:H	1.29	0.96
1:G:3:ILE:HD13	1:G:3:ILE:H	1.31	0.94
1:F:152:THR:HG22	1:F:155:SER:H	1.31	0.93
1:A:95:ASN:HD21	1:A:98:GLN:H	1.09	0.93

All (4) 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:E:73:ASP:OD1	3:D:4457:HOH:O[1_455]	1.87	0.33
1:E:95:ASN:OD1	3:D:4409:HOH:O[1_455]	2.10	0.10
1:B:129:ARG:O	3:G:4452:HOH:O[1_656]	2.14	0.06
1:E:73:ASP:OD2	3:D:4444:HOH:O[1_455]	2.14	0.06

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	158/184 (86%)	151 (96%)	7 (4%)	0	100	100
1	B	170/184 (92%)	166 (98%)	4 (2%)	0	100	100
1	C	172/184 (94%)	164 (95%)	8 (5%)	0	100	100
1	D	170/184 (92%)	165 (97%)	5 (3%)	0	100	100
1	E	170/184 (92%)	159 (94%)	11 (6%)	0	100	100
1	F	170/184 (92%)	160 (94%)	8 (5%)	2 (1%)	13	14
1	G	164/184 (89%)	155 (94%)	8 (5%)	1 (1%)	25	31
1	H	168/184 (91%)	161 (96%)	6 (4%)	1 (1%)	25	31
All	All	1342/1472 (91%)	1281 (96%)	57 (4%)	4 (0%)	41	50

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	134	ASP
1	F	29	GLY
1	G	141	GLY
1	F	130	TYR

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	124/144 (86%)	115 (93%)	9 (7%)	14	18
1	B	133/144 (92%)	126 (95%)	7 (5%)	22	31
1	C	134/144 (93%)	126 (94%)	8 (6%)	19	26
1	D	133/144 (92%)	128 (96%)	5 (4%)	33	47
1	E	133/144 (92%)	126 (95%)	7 (5%)	22	31
1	F	132/144 (92%)	124 (94%)	8 (6%)	18	25
1	G	130/144 (90%)	123 (95%)	7 (5%)	22	30
1	H	131/144 (91%)	119 (91%)	12 (9%)	9	11
All	All	1050/1152 (91%)	987 (94%)	63 (6%)	19	26

5 of 63 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	153	ARG
1	H	54	THR
1	E	165	LEU
1	H	52	GLU
1	H	114	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 49 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	47	GLN
1	G	13	ASN
1	F	95	ASN
1	F	170	ASN
1	G	22	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

15 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	SO4	F	4409	-	4,4,4	1.86	2 (50%)	6,6,6	0.91	0
2	SO4	G	4399	-	4,4,4	1.82	2 (50%)	6,6,6	0.94	0
2	SO4	B	4405	-	4,4,4	1.92	2 (50%)	6,6,6	0.87	0
2	SO4	B	4410	-	4,4,4	1.86	1 (25%)	6,6,6	0.92	0
2	SO4	C	4407	-	4,4,4	1.90	2 (50%)	6,6,6	0.88	0
2	SO4	H	4396	-	4,4,4	1.86	2 (50%)	6,6,6	0.90	0
2	SO4	C	4403	-	4,4,4	1.85	2 (50%)	6,6,6	0.95	0
2	SO4	D	4401	-	4,4,4	1.89	2 (50%)	6,6,6	0.94	0
2	SO4	A	4404	-	4,4,4	1.92	2 (50%)	6,6,6	0.87	0
2	SO4	D	4402	-	4,4,4	1.86	2 (50%)	6,6,6	0.92	0
2	SO4	E	4408	-	4,4,4	1.88	2 (50%)	6,6,6	0.90	0
2	SO4	E	4398	-	4,4,4	1.87	1 (25%)	6,6,6	0.97	0
2	SO4	H	4397	-	4,4,4	1.86	2 (50%)	6,6,6	0.90	0
2	SO4	B	4406	-	4,4,4	1.83	2 (50%)	6,6,6	0.91	0
2	SO4	F	4400	-	4,4,4	1.88	2 (50%)	6,6,6	0.89	0

The worst 5 of 28 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	4404	SO4	O1-S	3.20	1.63	1.46
2	B	4405	SO4	O1-S	3.18	1.63	1.46
2	B	4410	SO4	O1-S	3.18	1.63	1.46
2	C	4407	SO4	O1-S	3.17	1.63	1.46
2	E	4398	SO4	O1-S	3.15	1.63	1.46

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	4403	SO4	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, 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	162/184 (88%)	0.71	9 (5%)	24	30	16, 30, 63, 82	0
1	B	172/184 (93%)	0.20	3 (1%)	70	76	12, 25, 45, 59	0
1	C	174/184 (94%)	0.58	13 (7%)	14	19	12, 28, 45, 66	0
1	D	172/184 (93%)	0.17	5 (2%)	51	58	14, 25, 44, 54	0
1	E	172/184 (93%)	0.68	11 (6%)	19	25	18, 28, 55, 64	0
1	F	172/184 (93%)	0.01	2 (1%)	79	83	18, 28, 51, 60	0
1	G	168/184 (91%)	0.76	17 (10%)	7	9	16, 29, 64, 73	0
1	H	170/184 (92%)	0.11	3 (1%)	68	74	16, 29, 58, 69	0
All	All	1362/1472 (92%)	0.40	63 (4%)	32	39	12, 28, 55, 82	0

The worst 5 of 63 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	3	ILE	5.3
1	C	29	GLY	4.2
1	A	129	ARG	3.8
1	G	174	SER	3.8
1	G	114	LEU	3.6

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	SO4	E	4408	5/5	0.70	0.23	97,98,98,99	0
2	SO4	F	4409	5/5	0.85	0.16	80,81,81,81	0
2	SO4	C	4407	5/5	0.90	0.15	48,48,51,51	0
2	SO4	D	4402	5/5	0.91	0.15	47,48,48,49	0
2	SO4	H	4396	5/5	0.91	0.14	73,73,74,74	0
2	SO4	G	4399	5/5	0.93	0.26	46,46,48,48	0
2	SO4	F	4400	5/5	0.94	0.14	59,60,61,61	0
2	SO4	A	4404	5/5	0.94	0.11	51,52,53,53	0
2	SO4	H	4397	5/5	0.94	0.14	52,52,53,53	0
2	SO4	B	4406	5/5	0.95	0.16	37,37,39,40	0
2	SO4	E	4398	5/5	0.95	0.12	35,36,39,40	0
2	SO4	C	4403	5/5	0.95	0.13	35,36,36,37	0
2	SO4	B	4405	5/5	0.95	0.13	43,44,46,46	0
2	SO4	B	4410	5/5	0.96	0.13	18,19,20,21	0
2	SO4	D	4401	5/5	0.96	0.12	28,29,32,32	0

6.5 Other polymers ⓘ

There are no such residues in this entry.