Full wwPDB X-ray Structure Validation Report (i)

Jun 15, 2024 – 09:01 AM EDT

PDB ID	:	1T35
Title	:	CRYSTAL STRUCTURE OF A HYPOTHETICAL PROTEIN YVDD- A PUTATIVE LYSINE DECARBOXYLASE
Authors	:	Rajashankar, K.R.; Kniewel, R.; Solorzano, V.; Lima, C.D.; Burley, S.K.; New York SGX Research Center for Structural Genomics (NYSGXRC)
Deposited on	:	2004-04-23
Resolution	:	2.72 Å(reported)

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

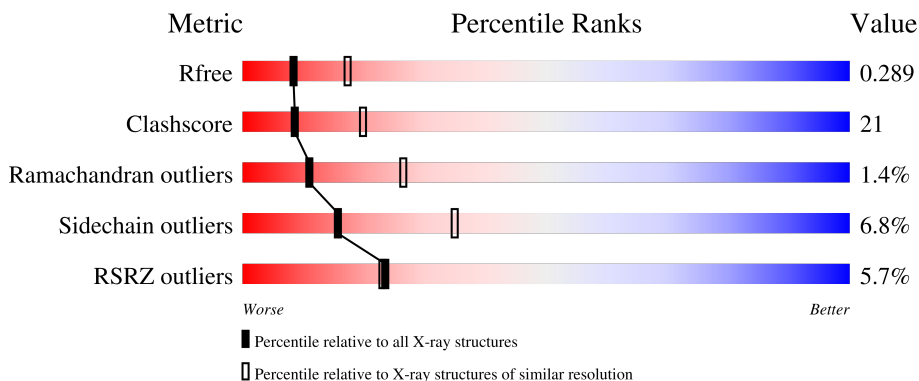|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.72 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.
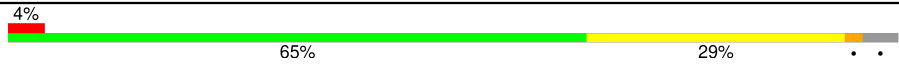
Metric	Percentile Ranks	Value
Rfree		0.289
Clashscore		21
Ramachandran outliers		1.4%
Sidechain outliers		6.8%
RSRZ outliers		5.7%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3359 (2.74-2.70)
Clashscore	141614	3686 (2.74-2.70)
Ramachandran outliers	138981	3622 (2.74-2.70)
Sidechain outliers	138945	3623 (2.74-2.70)
RSRZ outliers	127900	3276 (2.74-2.70)

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	191	3%　63%　28%　•　6%
1	B	191	3%　60%　31%　•　6%
1	C	191	8%　50%　39%　••　6%
1	D	191	10%　52%　38%　••　6%
1	E	191	2%　67%　26%　••

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Mol	Chain	Length	Quality of chain
1	F	191	4% 65% 29%
1	G	191	6% 57% 32% 6%
1	H	191	5% 52% 39% 6%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 11133 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 PROTEIN YVDD, Putative Lysine Decarboxylase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			
1	B	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			
1	C	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			
1	D	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			
1	E	184	Total	C	N	O	S	Se	0	0	0
			1408	895	232	267	2	12			
1	F	184	Total	C	N	O	S	Se	0	0	0
			1408	895	232	267	2	12			
1	G	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			
1	H	179	Total	C	N	O	S	Se	0	0	0
			1367	866	227	260	2	12			

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	MET	modified residue	UNP O06986
A	29	MSE	MET	modified residue	UNP O06986
A	46	MSE	MET	modified residue	UNP O06986
A	54	MSE	MET	modified residue	UNP O06986
A	64	MSE	MET	modified residue	UNP O06986
A	87	MSE	MET	modified residue	UNP O06986
A	94	MSE	MET	modified residue	UNP O06986
A	104	MSE	MET	modified residue	UNP O06986
A	142	MSE	MET	modified residue	UNP O06986
A	143	MSE	MET	modified residue	UNP O06986
A	145	MSE	MET	modified residue	UNP O06986
A	176	MSE	MET	modified residue	UNP O06986

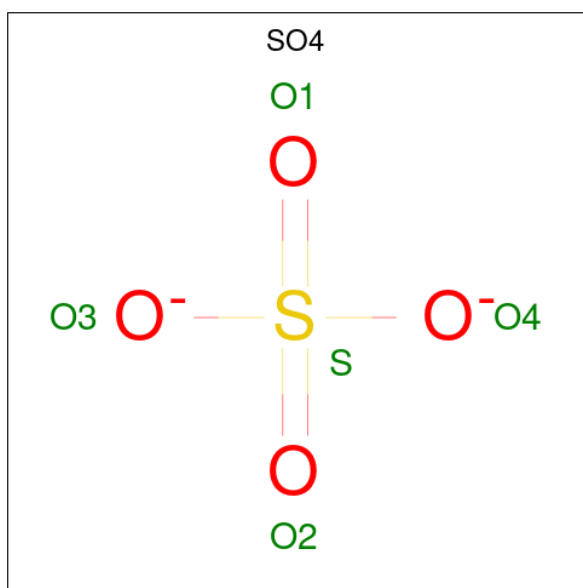*Continued on next page...*

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1	MSE	MET	modified residue	UNP O06986
B	29	MSE	MET	modified residue	UNP O06986
B	46	MSE	MET	modified residue	UNP O06986
B	54	MSE	MET	modified residue	UNP O06986
B	64	MSE	MET	modified residue	UNP O06986
B	87	MSE	MET	modified residue	UNP O06986
B	94	MSE	MET	modified residue	UNP O06986
B	104	MSE	MET	modified residue	UNP O06986
B	142	MSE	MET	modified residue	UNP O06986
B	143	MSE	MET	modified residue	UNP O06986
B	145	MSE	MET	modified residue	UNP O06986
B	176	MSE	MET	modified residue	UNP O06986
C	1	MSE	MET	modified residue	UNP O06986
C	29	MSE	MET	modified residue	UNP O06986
C	46	MSE	MET	modified residue	UNP O06986
C	54	MSE	MET	modified residue	UNP O06986
C	64	MSE	MET	modified residue	UNP O06986
C	87	MSE	MET	modified residue	UNP O06986
C	94	MSE	MET	modified residue	UNP O06986
C	104	MSE	MET	modified residue	UNP O06986
C	142	MSE	MET	modified residue	UNP O06986
C	143	MSE	MET	modified residue	UNP O06986
C	145	MSE	MET	modified residue	UNP O06986
C	176	MSE	MET	modified residue	UNP O06986
D	1	MSE	MET	modified residue	UNP O06986
D	29	MSE	MET	modified residue	UNP O06986
D	46	MSE	MET	modified residue	UNP O06986
D	54	MSE	MET	modified residue	UNP O06986
D	64	MSE	MET	modified residue	UNP O06986
D	87	MSE	MET	modified residue	UNP O06986
D	94	MSE	MET	modified residue	UNP O06986
D	104	MSE	MET	modified residue	UNP O06986
D	142	MSE	MET	modified residue	UNP O06986
D	143	MSE	MET	modified residue	UNP O06986
D	145	MSE	MET	modified residue	UNP O06986
D	176	MSE	MET	modified residue	UNP O06986
E	1	MSE	MET	modified residue	UNP O06986
E	29	MSE	MET	modified residue	UNP O06986
E	46	MSE	MET	modified residue	UNP O06986
E	54	MSE	MET	modified residue	UNP O06986
E	64	MSE	MET	modified residue	UNP O06986
E	87	MSE	MET	modified residue	UNP O06986

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Chain	Residue	Modelled	Actual	Comment	Reference
E	94	MSE	MET	modified residue	UNP O06986
E	104	MSE	MET	modified residue	UNP O06986
E	142	MSE	MET	modified residue	UNP O06986
E	143	MSE	MET	modified residue	UNP O06986
E	145	MSE	MET	modified residue	UNP O06986
E	176	MSE	MET	modified residue	UNP O06986
F	1	MSE	MET	modified residue	UNP O06986
F	29	MSE	MET	modified residue	UNP O06986
F	46	MSE	MET	modified residue	UNP O06986
F	54	MSE	MET	modified residue	UNP O06986
F	64	MSE	MET	modified residue	UNP O06986
F	87	MSE	MET	modified residue	UNP O06986
F	94	MSE	MET	modified residue	UNP O06986
F	104	MSE	MET	modified residue	UNP O06986
F	142	MSE	MET	modified residue	UNP O06986
F	143	MSE	MET	modified residue	UNP O06986
F	145	MSE	MET	modified residue	UNP O06986
F	176	MSE	MET	modified residue	UNP O06986
G	1	MSE	MET	modified residue	UNP O06986
G	29	MSE	MET	modified residue	UNP O06986
G	46	MSE	MET	modified residue	UNP O06986
G	54	MSE	MET	modified residue	UNP O06986
G	64	MSE	MET	modified residue	UNP O06986
G	87	MSE	MET	modified residue	UNP O06986
G	94	MSE	MET	modified residue	UNP O06986
G	104	MSE	MET	modified residue	UNP O06986
G	142	MSE	MET	modified residue	UNP O06986
G	143	MSE	MET	modified residue	UNP O06986
G	145	MSE	MET	modified residue	UNP O06986
G	176	MSE	MET	modified residue	UNP O06986
H	1	MSE	MET	modified residue	UNP O06986
H	29	MSE	MET	modified residue	UNP O06986
H	46	MSE	MET	modified residue	UNP O06986
H	54	MSE	MET	modified residue	UNP O06986
H	64	MSE	MET	modified residue	UNP O06986
H	87	MSE	MET	modified residue	UNP O06986
H	94	MSE	MET	modified residue	UNP O06986
H	104	MSE	MET	modified residue	UNP O06986
H	142	MSE	MET	modified residue	UNP O06986
H	143	MSE	MET	modified residue	UNP O06986
H	145	MSE	MET	modified residue	UNP O06986
H	176	MSE	MET	modified residue	UNP O06986

- 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	A	1	Total 5	O 4	S 1	0	0
2	B	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	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	E	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	G	1	Total 5	O 4	S 1	0	0

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

- Molecule 3 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	5	Total 5	O 5	0	0
3	B	8	Total 8	O 8	0	0
3	C	4	Total 4	O 4	0	0
3	D	3	Total 3	O 3	0	0
3	E	9	Total 9	O 9	0	0
3	F	12	Total 12	O 12	0	0
3	G	3	Total 3	O 3	0	0
3	H	1	Total 1	O 1	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 PROTEIN YVDD, Putative Lysine Decarboxylase
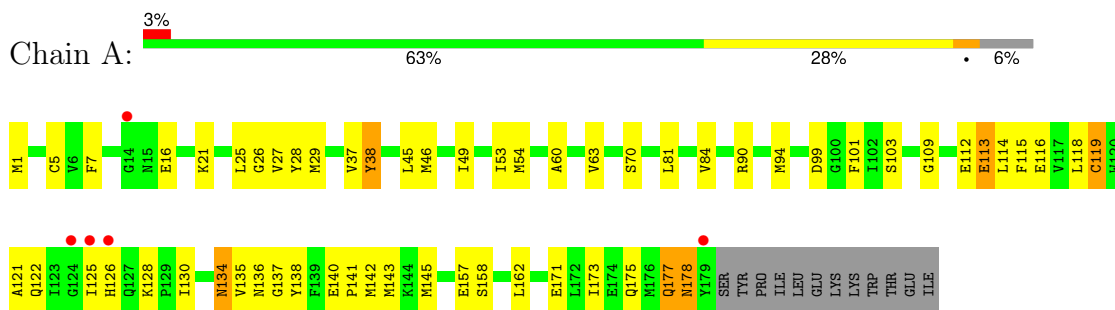
Chain A:

- Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain B:

- Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain C:

- Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain D:
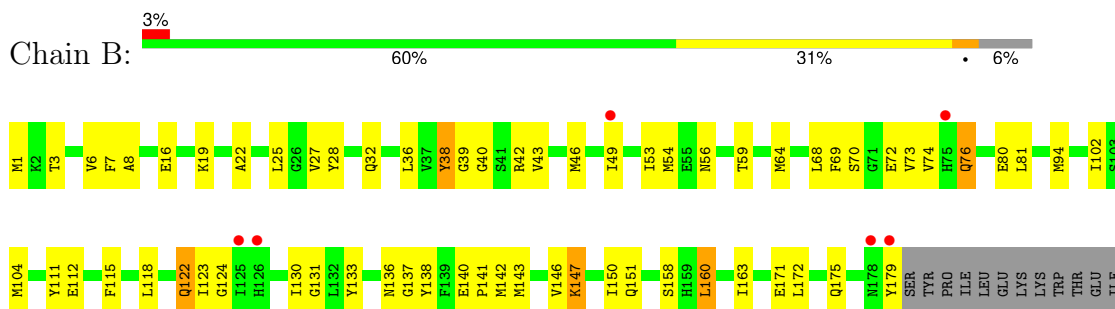
• Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain E:

• Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase
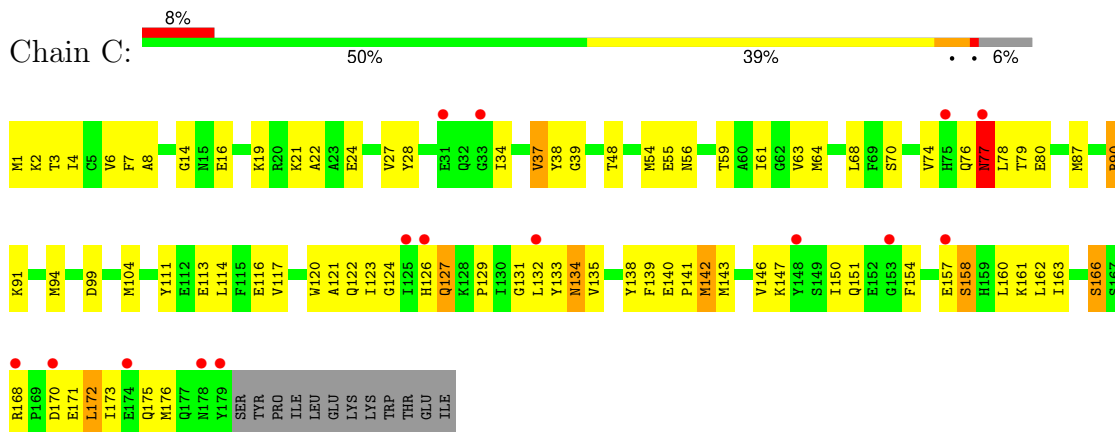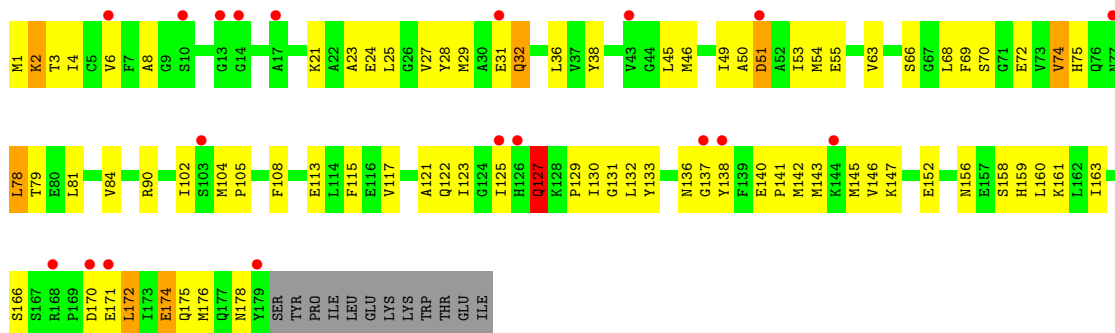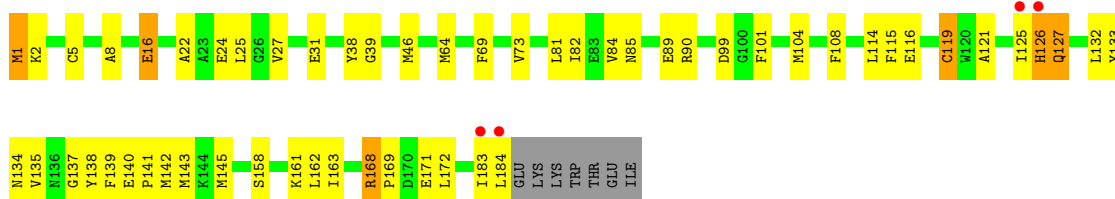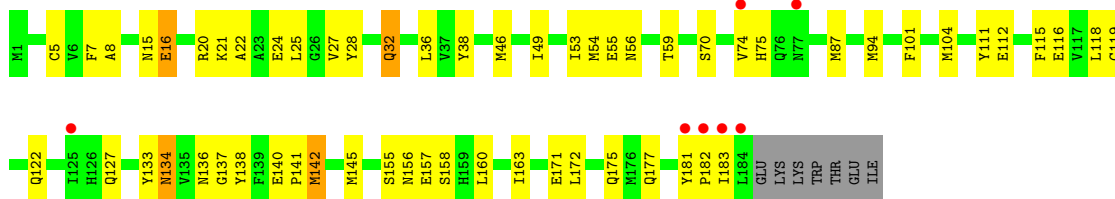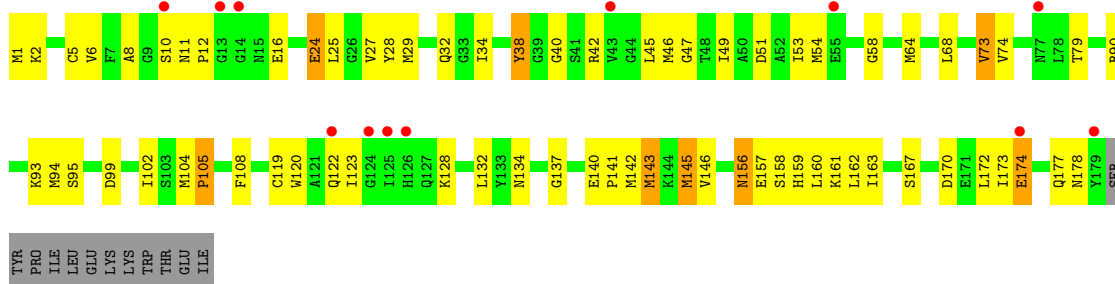
Chain F:

• Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain G:

• Molecule 1: HYPOTHETICAL PROTEIN YVDD, Putative Lysine Decarboxylase

Chain H:
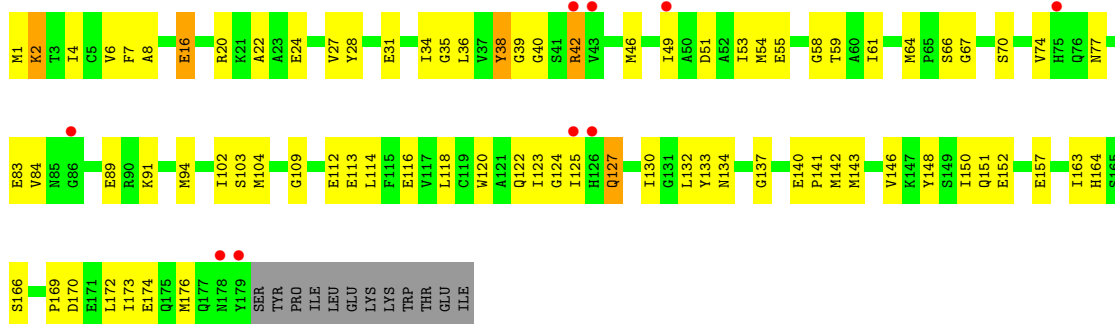
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	117.56Å 170.77Å 89.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.72 20.23 – 2.72	Depositor EDS
% Data completeness (in resolution range)	94.7 (20.00-2.72) 97.7 (20.23-2.72)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$<I/\sigma(I)>$ [1]	1.92 (at 2.71Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.243 , 0.286 0.247 , 0.289	Depositor DCC
R_{free} test set	4514 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å^2)	57.5	Xtriage
Anisotropy	0.390	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 52.6	EDS
L-test for twinning[2]	$<|L|>=0.47$, $<L^2>=0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	11133	wwPDB-VP
Average B, all atoms (Å^2)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.87% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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	0.50	1/1383 (0.1%)	0.60	0/1840
1	B	0.46	0/1383	0.61	0/1840
1	C	0.36	0/1383	0.52	0/1840
1	D	0.37	0/1383	0.52	0/1840
1	E	0.53	1/1426 (0.1%)	0.66	0/1900
1	F	0.48	0/1426	0.63	1/1900 (0.1%)
1	G	0.41	0/1383	0.52	0/1840
1	H	0.40	0/1383	0.52	0/1840
All	All	0.44	2/11150 (0.0%)	0.58	1/14840 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	119	CYS	CB-SG	-6.53	1.71	1.82
1	E	119	CYS	CB-SG	-5.80	1.72	1.81

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	181	TYR	N-CA-C	5.12	124.83	111.00

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	1367	0	1342	53	0
1	B	1367	0	1342	58	0
1	C	1367	0	1342	73	0
1	D	1367	0	1342	75	1
1	E	1408	0	1385	52	0
1	F	1408	0	1385	46	0
1	G	1367	0	1342	67	0
1	H	1367	0	1342	64	0
2	A	10	0	0	0	0
2	B	5	0	0	0	0
2	C	5	0	0	0	0
2	D	15	0	0	0	0
2	E	15	0	0	0	0
2	F	5	0	0	0	0
2	G	10	0	0	1	0
2	H	5	0	0	0	0
3	A	5	0	0	0	0
3	B	8	0	0	1	0
3	C	4	0	0	0	0
3	D	3	0	0	0	0
3	E	9	0	0	2	0
3	F	12	0	0	1	0
3	G	3	0	0	0	0
3	H	1	0	0	0	0
All	All	11133	0	10822	454	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 21.

All (454) 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:25:LEU:HD23	1:B:104:MSE:HE3	1.33	1.05
1:E:25:LEU:HD23	1:E:104:MSE:HE3	1.38	1.01
1:D:25:LEU:HD23	1:D:104:MSE:HE2	1.42	1.00
1:C:166:SER:HB3	1:C:172:LEU:HG	1.45	0.98
1:A:53:ILE:HD11	1:A:60:ALA:HB2	1.49	0.94
1:H:142:MSE:HG3	1:H:143:MSE:CE	2.01	0.91
1:D:79:THR:HG23	1:H:125:ILE:HD11	1.58	0.86
1:D:123:ILE:HD12	1:D:123:ILE:H	1.39	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:142:MSE:HG3	1:H:143:MSE:HE3	1.59	0.83
1:A:1:MSE:HE3	1:A:173:ILE:HG23	1.62	0.81
1:D:63:VAL:HG12	1:D:90:ARG:HG3	1.62	0.81
1:C:131:GLY:H	1:C:176:MSE:HE3	1.46	0.79
1:B:42:ARG:HD3	1:B:76:GLN:HA	1.65	0.78
1:B:115:PHE:HA	1:B:118:LEU:HD12	1.66	0.77
1:A:63:VAL:HG12	1:A:90:ARG:HG3	1.68	0.75
1:D:158:SER:O	1:D:161:LYS:HG2	1.86	0.75
1:G:38:TYR:HA	1:G:94:MSE:HE3	1.67	0.75
1:A:5:CYS:SG	1:A:94:MSE:HE2	2.26	0.75
1:B:143:MSE:HE2	1:B:143:MSE:HA	1.67	0.75
1:G:140:GLU:HB2	1:G:141:PRO:HD3	1.67	0.75
1:B:25:LEU:CD2	1:B:104:MSE:HE3	2.15	0.75
1:B:104:MSE:HE2	1:B:133:TYR:CD2	2.22	0.74
1:F:8:ALA:HB2	1:F:104:MSE:HB2	1.69	0.74
1:F:16:GLU:OE2	1:F:20:ARG:HD3	1.87	0.74
1:A:116:GLU:O	1:A:119:CYS:HB3	1.88	0.73
1:B:104:MSE:HE2	1:B:133:TYR:CE2	2.24	0.73
1:H:51:ASP:O	1:H:55:GLU:HG3	1.89	0.73
1:E:104:MSE:HE2	1:E:133:TYR:CE2	2.25	0.72
1:G:8:ALA:HB2	1:G:104:MSE:HB2	1.71	0.72
1:H:22:ALA:HB2	1:H:104:MSE:HE1	1.70	0.72
1:C:59:THR:HG23	1:C:79:THR:HG21	1.71	0.71
1:A:1:MSE:HG3	1:A:177:GLN:HG3	1.73	0.71
1:H:38:TYR:HA	1:H:94:MSE:HE3	1.70	0.71
1:C:113:GLU:O	1:C:117:VAL:HG23	1.91	0.70
1:F:38:TYR:HA	1:F:94:MSE:HE3	1.72	0.70
1:F:32:GLN:HG3	3:F:203:HOH:O	1.90	0.70
1:H:2:LYS:HE3	1:H:2:LYS:HA	1.72	0.70
1:C:22:ALA:HB2	1:C:104:MSE:HE1	1.72	0.70
1:G:156:ASN:HD22	1:G:157:GLU:H	1.38	0.69
1:E:115:PHE:O	1:E:119:CYS:HB2	1.92	0.69
1:C:22:ALA:CB	1:C:104:MSE:HE1	2.23	0.69
1:G:132:LEU:HD11	1:G:163:ILE:HD11	1.74	0.69
1:B:123:ILE:HD11	1:E:73:VAL:HB	1.75	0.69
1:G:142:MSE:HE2	1:G:146:VAL:HG23	1.76	0.68
1:A:143:MSE:HA	1:A:143:MSE:HE2	1.76	0.68
1:A:122:GLN:OE1	1:A:158:SER:HB2	1.94	0.67
1:C:140:GLU:HB2	1:C:141:PRO:HD3	1.76	0.67
1:F:22:ALA:HA	1:F:104:MSE:HE1	1.77	0.67
1:G:156:ASN:HD22	1:G:157:GLU:N	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:6:VAL:HG22	1:D:102:ILE:HB	1.76	0.66
1:E:1:MSE:HE2	3:E:203:HOH:O	1.95	0.66
1:F:104:MSE:HE3	1:F:133:TYR:CD2	2.29	0.66
1:B:38:TYR:CZ	1:B:40:GLY:HA2	2.31	0.66
1:G:158:SER:O	1:G:161:LYS:HG2	1.95	0.66
1:H:142:MSE:HG3	1:H:143:MSE:HE2	1.77	0.65
1:B:68:LEU:HA	1:C:90:ARG:HH21	1.58	0.65
1:B:40:GLY:O	1:B:76:GLN:HG2	1.96	0.65
1:D:129:PRO:C	1:D:130:ILE:HD12	2.18	0.65
1:H:22:ALA:CB	1:H:104:MSE:HE1	2.26	0.64
1:G:5:CYS:SG	1:G:94:MSE:HE2	2.37	0.64
1:G:142:MSE:HE3	1:G:142:MSE:O	1.98	0.64
1:H:122:GLN:C	1:H:123:ILE:HD12	2.18	0.64
1:F:118:LEU:HD21	1:F:163:ILE:HD11	1.79	0.64
1:D:138:TYR:O	1:D:141:PRO:HD2	1.97	0.64
1:E:8:ALA:HB2	1:E:104:MSE:HB2	1.78	0.64
1:D:6:VAL:HG11	1:D:104:MSE:HE3	1.79	0.63
1:A:38:TYR:HA	1:A:94:MSE:HE3	1.81	0.63
1:A:115:PHE:O	1:A:119:CYS:HB2	2.00	0.62
1:D:69:PHE:CE1	1:G:90:ARG:HD3	2.34	0.62
1:B:38:TYR:HA	1:B:94:MSE:HE3	1.79	0.62
1:C:114:LEU:HD21	1:C:132:LEU:HD11	1.80	0.62
1:D:25:LEU:HD23	1:D:104:MSE:CE	2.25	0.62
1:H:8:ALA:HB2	1:H:104:MSE:HB2	1.81	0.62
1:E:168:ARG:HB2	1:E:171:GLU:HB2	1.80	0.61
1:B:8:ALA:HB2	1:B:104:MSE:HB2	1.81	0.61
1:C:120:TRP:HA	1:C:123:ILE:HD12	1.83	0.61
1:G:64:MSE:HE2	1:G:68:LEU:HD11	1.82	0.61
1:B:22:ALA:HA	1:B:104:MSE:HE1	1.82	0.61
1:C:132:LEU:HD23	1:C:163:ILE:HG13	1.81	0.61
1:H:61:ILE:N	1:H:61:ILE:HD12	2.16	0.61
1:D:104:MSE:HB3	1:D:105:PRO:HD2	1.83	0.61
1:E:125:ILE:HG23	1:E:126:HIS:H	1.65	0.61
1:C:168:ARG:HD2	1:C:170:ASP:OD1	2.01	0.61
1:C:4:ILE:O	1:C:37:VAL:HG23	2.01	0.61
1:C:21:LYS:NZ	1:C:24:GLU:OE1	2.34	0.60
1:C:114:LEU:HD23	1:C:142:MSE:HE1	1.83	0.60
1:E:115:PHE:CZ	1:E:145:MSE:HE1	2.36	0.60
1:B:68:LEU:HA	1:C:90:ARG:NH2	2.16	0.60
1:C:133:TYR:HD1	1:C:172:LEU:HD12	1.66	0.60
1:D:54:MSE:HE2	1:D:54:MSE:HA	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:142:MSE:SE	1:B:143:MSE:HE3	2.51	0.60
1:E:138:TYR:O	1:E:141:PRO:HD2	2.00	0.60
1:A:38:TYR:HA	1:A:94:MSE:CE	2.32	0.60
1:E:25:LEU:CD2	1:E:104:MSE:HE3	2.23	0.59
1:E:158:SER:O	1:E:161:LYS:HG2	2.02	0.59
1:G:142:MSE:HE3	1:G:145:MSE:HB2	1.84	0.59
1:E:1:MSE:HG3	1:E:2:LYS:N	2.17	0.59
1:E:104:MSE:HE2	1:E:133:TYR:CD2	2.37	0.59
1:E:27:VAL:O	1:E:31:GLU:HG3	2.03	0.59
1:D:171:GLU:O	1:D:175:GLN:HG3	2.01	0.59
1:H:49:ILE:O	1:H:53:ILE:HG13	2.02	0.59
1:H:133:TYR:OH	1:H:169:PRO:HG3	2.02	0.59
1:C:151:GLN:O	1:C:151:GLN:HG3	2.00	0.59
1:D:46:MSE:HA	1:D:49:ILE:HD12	1.84	0.59
1:D:140:GLU:HB2	1:D:141:PRO:HD3	1.84	0.59
1:H:16:GLU:OE2	1:H:20:ARG:HD3	2.02	0.59
1:H:24:GLU:HG2	1:H:169:PRO:HG2	1.83	0.59
1:E:115:PHE:CE1	1:E:142:MSE:HE1	2.38	0.58
1:F:140:GLU:HB2	1:F:141:PRO:HD3	1.85	0.58
1:C:27:VAL:HG22	1:C:56:ASN:ND2	2.19	0.58
1:D:130:ILE:HD12	1:D:130:ILE:N	2.19	0.58
1:B:74:VAL:HG22	1:D:123:ILE:HD11	1.86	0.58
1:B:73:VAL:HG11	1:B:81:LEU:HD22	1.85	0.57
1:C:146:VAL:O	1:C:150:ILE:HG13	2.04	0.57
1:F:115:PHE:HE1	1:F:142:MSE:HE1	1.67	0.57
1:B:28:TYR:O	1:B:32:GLN:HG2	2.04	0.57
1:F:104:MSE:HE3	1:F:133:TYR:HD2	1.69	0.57
1:A:84:VAL:HG21	1:A:90:ARG:HA	1.86	0.57
1:C:160:LEU:O	1:C:163:ILE:HG22	2.05	0.57
1:C:54:MSE:HE1	1:C:59:THR:HA	1.87	0.57
1:D:21:LYS:HB3	1:D:133:TYR:CE2	2.38	0.57
1:G:134:ASN:O	1:G:167:SER:HB3	2.05	0.57
1:B:171:GLU:O	1:B:175:GLN:HG3	2.05	0.56
1:G:34:ILE:HD12	1:G:173:ILE:HD13	1.87	0.56
1:C:154:PHE:CE2	1:D:105:PRO:HB2	2.41	0.56
1:F:171:GLU:O	1:F:175:GLN:HG3	2.06	0.56
1:F:157:GLU:HG3	1:F:160:LEU:HD12	1.88	0.56
1:D:136:ASN:ND2	1:D:137:GLY:H	2.04	0.56
1:D:36:LEU:HD22	1:D:53:ILE:HD12	1.88	0.56
1:F:54:MSE:HE1	1:F:59:THR:HA	1.86	0.56
1:D:8:ALA:HB2	1:D:104:MSE:HB2	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:22:ALA:HA	1:E:104:MSE:HE1	1.87	0.56
1:G:1:MSE:HG2	1:G:2:LYS:HG3	1.87	0.56
1:H:140:GLU:HB2	1:H:141:PRO:HD3	1.88	0.56
1:A:115:PHE:CZ	1:A:145:MSE:HE1	2.41	0.55
1:E:140:GLU:HB2	1:E:141:PRO:HD3	1.87	0.55
1:G:1:MSE:HE3	1:G:2:LYS:CD	2.36	0.55
1:F:177:GLN:HE21	1:F:177:GLN:HA	1.70	0.55
1:A:7:PHE:CE1	1:A:103:SER:HB2	2.41	0.55
1:F:5:CYS:HB3	1:F:101:PHE:CD1	2.41	0.55
1:H:70:SER:O	1:H:74:VAL:HG23	2.07	0.55
1:A:1:MSE:CB	1:A:177:GLN:HE21	2.19	0.55
1:G:24:GLU:O	1:G:27:VAL:HG22	2.07	0.55
1:H:27:VAL:O	1:H:31:GLU:HG3	2.06	0.55
1:G:142:MSE:CE	1:G:146:VAL:HG23	2.37	0.55
1:H:148:TYR:O	1:H:152:GLU:HB2	2.06	0.55
1:H:36:LEU:HD22	1:H:53:ILE:HD12	1.87	0.55
1:G:1:MSE:HE3	1:G:2:LYS:HE2	1.89	0.55
1:A:140:GLU:HB2	1:A:141:PRO:HD3	1.88	0.55
1:G:134:ASN:HD21	1:G:137:GLY:HA2	1.70	0.55
1:A:121:ALA:HB1	1:A:162:LEU:CD1	2.37	0.54
1:G:119:CYS:SG	1:H:109:GLY:HA2	2.47	0.54
1:G:54:MSE:HA	1:G:54:MSE:HE2	1.89	0.54
1:D:84:VAL:HG21	1:D:90:ARG:HA	1.88	0.54
1:F:24:GLU:O	1:F:27:VAL:HG22	2.07	0.54
1:C:138:TYR:O	1:C:141:PRO:HD2	2.07	0.54
1:D:24:GLU:O	1:D:27:VAL:HG22	2.07	0.54
1:G:142:MSE:O	1:G:145:MSE:N	2.41	0.54
1:H:7:PHE:HA	1:H:46:MSE:SE	2.57	0.54
1:B:138:TYR:O	1:B:141:PRO:HD2	2.08	0.54
1:C:111:TYR:HB3	1:D:115:PHE:CE2	2.43	0.54
1:A:115:PHE:CE1	1:A:145:MSE:HE1	2.43	0.54
1:A:99:ASP:O	1:A:128:LYS:HB3	2.07	0.53
1:H:134:ASN:ND2	1:H:137:GLY:HA2	2.23	0.53
1:E:81:LEU:HD12	1:E:82:ILE:N	2.23	0.53
1:D:75:HIS:NE2	1:G:10:SER:HB2	2.24	0.53
1:E:5:CYS:HB3	1:E:101:PHE:CD1	2.43	0.53
1:G:47:GLY:O	1:G:51:ASP:HB2	2.08	0.53
1:E:183:ILE:HG12	1:E:184:LEU:H	1.74	0.53
1:C:28:TYR:CZ	1:C:170:ASP:HA	2.42	0.53
1:B:70:SER:O	1:B:74:VAL:HG23	2.09	0.53
1:D:131:GLY:C	1:D:132:LEU:HD12	2.29	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:177:GLN:HA	1:F:177:GLN:NE2	2.24	0.53
1:A:116:GLU:HG2	1:B:112:GLU:HG3	1.90	0.53
1:A:125:ILE:HG23	1:A:126:HIS:CD2	2.43	0.53
1:C:99:ASP:O	1:C:129:PRO:HD2	2.09	0.53
1:H:1:MSE:HG2	1:H:2:LYS:NZ	2.24	0.53
1:G:160:LEU:O	1:G:160:LEU:HD13	2.09	0.53
1:D:123:ILE:H	1:D:123:ILE:CD1	2.16	0.52
1:E:39:GLY:O	1:E:64:MSE:HG2	2.09	0.52
1:E:142:MSE:HA	1:F:145:MSE:SE	2.59	0.52
1:F:21:LYS:HD3	1:F:24:GLU:OE1	2.09	0.52
1:F:134:ASN:ND2	1:F:137:GLY:HA2	2.24	0.52
1:E:84:VAL:HG21	1:E:90:ARG:HA	1.91	0.52
1:F:104:MSE:HE3	1:F:133:TYR:CE2	2.44	0.52
1:E:132:LEU:HD11	1:E:143:MSE:HE3	1.92	0.52
1:C:114:LEU:HD23	1:C:142:MSE:CE	2.40	0.52
1:D:69:PHE:HE1	1:G:90:ARG:HD3	1.74	0.52
1:D:21:LYS:HB3	1:D:133:TYR:HE2	1.74	0.52
1:E:134:ASN:HD21	1:E:137:GLY:HA2	1.75	0.52
1:D:156:ASN:H	1:D:159:HIS:HD2	1.56	0.52
1:C:166:SER:HB3	1:C:172:LEU:CG	2.31	0.51
1:D:122:GLN:HG2	1:D:159:HIS:HE1	1.75	0.51
1:F:36:LEU:HB2	1:F:53:ILE:HD13	1.91	0.51
1:C:150:ILE:HG21	1:C:157:GLU:HG2	1.92	0.51
1:F:54:MSE:HE2	1:F:54:MSE:HA	1.92	0.51
1:E:24:GLU:HG2	1:E:169:PRO:HG2	1.92	0.51
1:A:171:GLU:O	1:A:175:GLN:HG3	2.11	0.51
1:C:91:LYS:HZ2	1:C:116:GLU:HG2	1.75	0.51
1:G:6:VAL:HG22	1:G:102:ILE:HB	1.91	0.51
1:H:4:ILE:HG21	1:H:102:ILE:CD1	2.41	0.51
1:C:142:MSE:HG3	1:C:143:MSE:N	2.26	0.51
1:A:84:VAL:HG21	1:A:90:ARG:CA	2.40	0.51
1:C:113:GLU:O	1:C:116:GLU:HB3	2.09	0.51
1:G:34:ILE:CD1	1:G:173:ILE:HD13	2.40	0.51
1:C:70:SER:O	1:C:74:VAL:HG23	2.11	0.51
1:F:36:LEU:HD22	1:F:53:ILE:HD12	1.93	0.51
1:B:22:ALA:HA	1:B:104:MSE:CE	2.40	0.51
1:F:177:GLN:HE21	1:F:177:GLN:CA	2.24	0.51
1:C:91:LYS:HZ3	1:C:113:GLU:HG2	1.75	0.51
1:B:27:VAL:HG12	1:B:56:ASN:ND2	2.27	0.50
1:D:170:ASP:O	1:D:174:GLU:HB2	2.11	0.50
1:E:16:GLU:O	1:E:16:GLU:HG2	2.09	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:140:GLU:HB2	1:B:141:PRO:HD3	1.93	0.50
1:B:53:ILE:HG22	1:B:54:MSE:HE2	1.92	0.50
1:D:142:MSE:HE2	1:D:146:VAL:HG23	1.93	0.50
1:D:166:SER:HB2	1:D:172:LEU:HD23	1.92	0.50
1:F:22:ALA:CA	1:F:104:MSE:HE1	2.41	0.50
1:H:91:LYS:HE3	1:H:113:GLU:HG3	1.93	0.50
1:G:159:HIS:HA	1:G:162:LEU:HD13	1.93	0.50
1:E:162:LEU:HD23	1:E:162:LEU:O	2.12	0.50
1:A:116:GLU:HG2	1:B:112:GLU:CG	2.42	0.50
1:D:4:ILE:HG21	1:D:102:ILE:HD12	1.93	0.50
1:G:1:MSE:HG2	1:G:2:LYS:H	1.77	0.50
1:C:158:SER:O	1:C:161:LYS:HG2	2.12	0.49
1:D:49:ILE:O	1:D:53:ILE:HG13	2.11	0.49
1:B:7:PHE:HA	1:B:46:MSE:SE	2.62	0.49
1:B:38:TYR:CE1	1:B:40:GLY:HA2	2.46	0.49
1:G:1:MSE:HG2	1:G:2:LYS:N	2.27	0.49
1:A:134:ASN:OD1	1:A:137:GLY:HA2	2.12	0.49
1:D:142:MSE:HE1	1:D:145:MSE:HE2	1.94	0.49
1:D:160:LEU:HA	1:D:163:ILE:HG22	1.95	0.49
1:E:183:ILE:HG12	1:E:184:LEU:N	2.27	0.49
1:A:81:LEU:C	1:A:81:LEU:HD23	2.33	0.49
1:E:132:LEU:CD1	1:E:143:MSE:HE3	2.43	0.49
1:H:132:LEU:CD1	1:H:163:ILE:HD11	2.42	0.49
1:C:143:MSE:O	1:C:147:LYS:HB2	2.13	0.49
1:C:91:LYS:HD3	1:C:116:GLU:OE2	2.12	0.49
1:D:27:VAL:O	1:D:31:GLU:HG3	2.13	0.49
1:H:112:GLU:O	1:H:116:GLU:HB2	2.13	0.49
1:B:122:GLN:NE2	1:B:158:SER:HB2	2.28	0.49
1:C:111:TYR:HB3	1:D:115:PHE:CD2	2.48	0.49
1:C:124:GLY:HA2	1:G:79:THR:O	2.13	0.49
1:A:145:MSE:HE3	1:B:111:TYR:CE2	2.48	0.48
1:C:111:TYR:CE2	1:D:145:MSE:HE3	2.48	0.48
1:A:25:LEU:O	1:A:29:MSE:HG3	2.13	0.48
1:F:122:GLN:HE22	1:F:158:SER:HB2	1.79	0.48
1:D:74:VAL:HG21	2:G:192:SO4:O1	2.12	0.48
1:G:170:ASP:O	1:G:174:GLU:HB2	2.13	0.48
1:D:129:PRO:HB2	1:D:176:MSE:HE2	1.95	0.48
1:A:109:GLY:O	1:A:113:GLU:HG2	2.13	0.48
1:E:22:ALA:HA	1:E:104:MSE:CE	2.44	0.48
1:A:26:GLY:O	1:A:53:ILE:HG22	2.13	0.48
1:H:22:ALA:CA	1:H:104:MSE:HE1	2.43	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:53:ILE:HG22	1:G:58:GLY:HA3	1.96	0.48
1:H:122:GLN:O	1:H:123:ILE:HD12	2.13	0.48
1:D:32:GLN:HE21	1:D:32:GLN:CA	2.26	0.48
1:D:113:GLU:O	1:D:117:VAL:HG23	2.13	0.48
1:H:118:LEU:HD23	1:H:130:ILE:HD12	1.96	0.48
1:A:27:VAL:HG23	1:A:28:TYR:N	2.29	0.48
1:G:143:MSE:HA	1:G:143:MSE:CE	2.44	0.47
1:D:51:ASP:O	1:D:55:GLU:HB2	2.14	0.47
1:F:111:TYR:CE1	1:F:142:MSE:HE3	2.49	0.47
1:G:134:ASN:ND2	1:G:137:GLY:HA2	2.28	0.47
1:C:134:ASN:ND2	1:C:139:PHE:H	2.13	0.47
1:E:139:PHE:HA	3:E:198:HOH:O	2.15	0.47
1:H:42:ARG:HH11	1:H:42:ARG:HB2	1.80	0.47
1:H:166:SER:HB3	1:H:172:LEU:HB2	1.95	0.47
1:D:23:ALA:O	1:D:27:VAL:HG13	2.15	0.47
1:D:28:TYR:CZ	1:D:32:GLN:HG3	2.49	0.47
1:G:156:ASN:ND2	1:G:157:GLU:N	2.62	0.47
1:H:4:ILE:HG21	1:H:102:ILE:HD12	1.95	0.47
1:H:103:SER:HB3	1:H:132:LEU:HD23	1.97	0.47
1:A:134:ASN:CG	1:A:137:GLY:HA2	2.35	0.47
1:H:28:TYR:CZ	1:H:170:ASP:HA	2.49	0.47
1:C:39:GLY:O	1:C:64:MSE:HG2	2.15	0.46
1:F:74:VAL:HG22	1:G:123:ILE:HD11	1.97	0.46
1:G:28:TYR:CZ	1:G:32:GLN:HG3	2.49	0.46
1:D:4:ILE:HD12	1:D:29:MSE:HE3	1.96	0.46
1:E:116:GLU:O	1:E:119:CYS:HB3	2.15	0.46
1:H:54:MSE:HE1	1:H:59:THR:HA	1.98	0.46
1:A:21:LYS:HG3	1:A:135:VAL:HG13	1.98	0.46
1:F:27:VAL:HG23	1:F:28:TYR:N	2.30	0.46
1:H:35:GLY:HA2	1:H:59:THR:HG23	1.98	0.46
1:A:5:CYS:HA	1:A:37:VAL:HG13	1.97	0.46
1:C:111:TYR:CE1	1:C:142:MSE:HE2	2.51	0.46
1:D:78:LEU:HD12	1:D:81:LEU:HB2	1.98	0.46
1:E:140:GLU:N	1:E:141:PRO:CD	2.79	0.46
1:B:137:GLY:O	1:B:140:GLU:HG2	2.16	0.46
1:C:27:VAL:HG22	1:C:56:ASN:HD21	1.81	0.46
1:C:127:GLN:HE22	1:C:162:LEU:HD11	1.81	0.46
1:D:81:LEU:HD13	1:D:81:LEU:O	2.16	0.46
1:B:123:ILE:HD13	1:E:81:LEU:HD23	1.97	0.46
1:C:8:ALA:HB2	1:C:104:MSE:HB2	1.97	0.46
1:D:142:MSE:HA	1:D:142:MSE:HE3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:8:ALA:CB	1:F:104:MSE:HB2	2.42	0.46
1:G:104:MSE:O	1:G:105:PRO:C	2.54	0.46
1:H:124:GLY:O	1:H:127:GLN:HG3	2.16	0.46
1:A:38:TYR:CD2	1:A:46:MSE:HE2	2.50	0.46
1:A:90:ARG:HD3	1:E:69:PHE:CE1	2.51	0.46
1:A:138:TYR:O	1:A:141:PRO:HD2	2.15	0.46
1:C:14:GLY:N	1:D:152:GLU:O	2.49	0.46
1:F:7:PHE:HA	1:F:46:MSE:SE	2.66	0.46
1:F:138:TYR:O	1:F:141:PRO:HD2	2.15	0.46
1:G:142:MSE:HE2	1:G:146:VAL:CG2	2.45	0.46
1:B:69:PHE:CD1	1:C:87:MSE:HE1	2.51	0.45
1:C:21:LYS:HD3	1:C:135:VAL:HG22	1.99	0.45
1:E:125:ILE:HG23	1:E:126:HIS:N	2.30	0.45
1:G:173:ILE:O	1:G:177:GLN:HG3	2.16	0.45
1:H:1:MSE:HG2	1:H:2:LYS:HZ1	1.81	0.45
1:H:39:GLY:O	1:H:64:MSE:HG2	2.16	0.45
1:A:49:ILE:O	1:A:53:ILE:HG23	2.16	0.45
1:C:121:ALA:HB1	1:C:162:LEU:CD1	2.47	0.45
1:A:1:MSE:HB3	1:A:177:GLN:HE21	1.82	0.45
1:A:53:ILE:HG13	1:A:54:MSE:N	2.31	0.45
1:C:127:GLN:NE2	1:C:162:LEU:HD11	2.32	0.45
1:D:142:MSE:O	1:D:146:VAL:HG23	2.16	0.45
1:H:22:ALA:HA	1:H:104:MSE:HE1	1.98	0.45
1:F:70:SER:O	1:F:74:VAL:HG23	2.17	0.45
1:D:84:VAL:HG21	1:D:90:ARG:CA	2.47	0.45
1:G:28:TYR:CD2	1:G:173:ILE:HD12	2.52	0.45
1:H:114:LEU:HD21	1:H:132:LEU:HD21	1.99	0.45
1:B:123:ILE:HG22	1:B:124:GLY:N	2.32	0.45
1:A:112:GLU:OE2	1:B:112:GLU:OE2	2.34	0.45
1:E:134:ASN:ND2	1:E:137:GLY:HA2	2.32	0.45
1:F:15:ASN:OD1	1:F:16:GLU:N	2.50	0.45
1:F:27:VAL:HG12	1:F:56:ASN:ND2	2.32	0.45
1:G:29:MSE:HE2	1:G:34:ILE:CG2	2.47	0.45
1:G:38:TYR:CD1	1:G:38:TYR:N	2.85	0.45
1:G:49:ILE:O	1:G:53:ILE:HG13	2.17	0.45
1:C:121:ALA:HB1	1:C:162:LEU:HD13	1.98	0.44
1:G:1:MSE:HE2	1:G:99:ASP:CG	2.37	0.44
1:C:19:LYS:O	1:C:48:THR:HG21	2.17	0.44
1:E:143:MSE:HE2	1:E:143:MSE:HA	1.98	0.44
1:E:1:MSE:HG3	1:E:2:LYS:H	1.82	0.44
1:D:50:ALA:O	1:D:54:MSE:HG2	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:122:GLN:CG	1:D:159:HIS:HE1	2.31	0.44
1:G:140:GLU:N	1:G:141:PRO:CD	2.80	0.44
1:B:54:MSE:HE1	1:B:59:THR:CA	2.48	0.44
1:D:45:LEU:O	1:D:49:ILE:HG13	2.17	0.44
1:D:115:PHE:CZ	1:D:145:MSE:HE1	2.53	0.44
1:B:36:LEU:HD22	1:B:53:ILE:HD12	1.98	0.44
1:D:140:GLU:N	1:D:141:PRO:CD	2.80	0.44
1:B:27:VAL:HG23	1:B:28:TYR:N	2.33	0.44
1:B:42:ARG:HH11	1:B:42:ARG:HG2	1.83	0.44
1:C:90:ARG:O	1:C:94:MSE:HB2	2.17	0.44
1:G:142:MSE:O	1:G:145:MSE:HB2	2.18	0.44
1:H:84:VAL:HG13	1:H:89:GLU:CB	2.47	0.44
1:A:113:GLU:HG2	1:A:113:GLU:H	1.49	0.43
1:B:111:TYR:CD1	1:B:142:MSE:HE2	2.53	0.43
1:B:111:TYR:HD1	1:B:142:MSE:HE2	1.83	0.43
1:E:2:LYS:HA	1:E:2:LYS:HD2	1.82	0.43
1:G:25:LEU:O	1:G:29:MSE:HG3	2.18	0.43
1:H:38:TYR:CE2	1:H:40:GLY:HA2	2.53	0.43
1:D:36:LEU:HB2	1:D:53:ILE:CD1	2.49	0.43
1:C:111:TYR:CZ	1:D:145:MSE:HE3	2.54	0.43
1:C:171:GLU:O	1:C:175:GLN:HG3	2.17	0.43
1:H:53:ILE:HG22	1:H:58:GLY:HA3	2.01	0.43
1:E:121:ALA:O	1:E:127:GLN:HG2	2.19	0.43
1:G:122:GLN:HB2	1:G:159:HIS:NE2	2.34	0.43
1:A:38:TYR:CA	1:A:94:MSE:HE3	2.48	0.43
1:B:39:GLY:O	1:B:64:MSE:HG2	2.19	0.43
1:C:22:ALA:CA	1:C:104:MSE:HE1	2.48	0.43
1:D:136:ASN:CG	1:D:137:GLY:H	2.22	0.43
1:D:32:GLN:HE21	1:D:32:GLN:HA	1.84	0.43
1:F:54:MSE:O	1:F:56:ASN:N	2.52	0.43
1:H:150:ILE:C	1:H:152:GLU:H	2.22	0.43
1:A:121:ALA:HB1	1:A:162:LEU:HD13	2.00	0.43
1:B:53:ILE:HG22	1:B:54:MSE:CE	2.48	0.43
1:C:6:VAL:HG12	1:C:7:PHE:N	2.32	0.43
1:A:53:ILE:HD11	1:A:54:MSE:HE3	1.99	0.43
1:E:143:MSE:HE1	1:E:163:ILE:HD13	2.01	0.43
1:H:120:TRP:HA	1:H:123:ILE:HD13	1.99	0.43
1:C:1:MSE:HG3	1:C:2:LYS:HG3	2.01	0.43
1:C:61:ILE:HG23	1:C:80:GLU:HB3	2.00	0.43
1:C:111:TYR:CD1	1:C:142:MSE:HE2	2.54	0.43
1:F:5:CYS:SG	1:F:94:MSE:HE2	2.59	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:87:MSE:HB2	1:H:67:GLY:HA2	2.00	0.43
1:B:28:TYR:CE2	1:B:32:GLN:HG3	2.54	0.42
1:B:80:GLU:HG2	1:B:81:LEU:N	2.33	0.42
1:D:66:SER:C	1:D:68:LEU:H	2.22	0.42
1:E:183:ILE:O	1:E:184:LEU:HD23	2.18	0.42
1:C:76:GLN:O	1:C:77:ASN:O	2.37	0.42
1:D:143:MSE:HB3	1:D:147:LYS:NZ	2.35	0.42
1:G:1:MSE:HE3	1:G:2:LYS:HG3	2.00	0.42
1:G:45:LEU:O	1:G:49:ILE:HG22	2.19	0.42
1:A:118:LEU:HD23	1:A:130:ILE:HD12	2.00	0.42
1:B:46:MSE:HA	1:B:49:ILE:HG22	2.01	0.42
1:C:34:ILE:CD1	1:C:173:ILE:HD13	2.50	0.42
1:G:93:LYS:HD2	1:G:93:LYS:HA	1.86	0.42
1:H:84:VAL:HG13	1:H:89:GLU:HB3	2.01	0.42
1:C:63:VAL:O	1:C:90:ARG:HD2	2.20	0.42
1:E:145:MSE:HE3	1:F:111:TYR:CZ	2.55	0.42
1:H:151:GLN:O	1:H:151:GLN:HG3	2.18	0.42
1:A:114:LEU:HD21	1:A:142:MSE:HE2	2.01	0.42
1:B:130:ILE:O	1:B:163:ILE:HA	2.20	0.42
1:H:28:TYR:CE2	1:H:173:ILE:HD12	2.55	0.42
1:B:147:LYS:O	1:B:151:GLN:HG3	2.19	0.42
1:G:1:MSE:HE3	1:G:2:LYS:CE	2.48	0.42
1:H:4:ILE:HD12	1:H:34:ILE:HG21	2.02	0.42
1:E:85:ASN:O	1:E:89:GLU:HB2	2.20	0.42
1:G:11:ASN:HB3	1:G:12:PRO:HD2	2.00	0.42
1:C:131:GLY:N	1:C:176:MSE:HE3	2.23	0.42
1:G:137:GLY:O	1:G:140:GLU:HG2	2.20	0.42
1:B:19:LYS:O	1:B:22:ALA:HB3	2.19	0.42
1:G:28:TYR:CZ	1:G:170:ASP:HA	2.55	0.42
1:H:164:HIS:CD2	1:H:176:MSE:HA	2.55	0.42
1:C:146:VAL:HG13	1:D:108:PHE:HE1	1.85	0.41
1:H:132:LEU:HD11	1:H:163:ILE:HD11	2.02	0.41
1:B:102:ILE:HA	1:B:131:GLY:O	2.20	0.41
1:B:160:LEU:HD23	1:B:160:LEU:O	2.20	0.41
1:D:70:SER:C	1:D:72:GLU:H	2.23	0.41
1:E:84:VAL:HG21	1:E:90:ARG:CA	2.50	0.41
1:F:54:MSE:HE1	1:F:59:THR:CA	2.49	0.41
1:A:53:ILE:CD1	1:A:54:MSE:HE3	2.50	0.41
1:C:22:ALA:HA	1:C:104:MSE:HE1	2.01	0.41
1:H:142:MSE:O	1:H:143:MSE:HE2	2.20	0.41
1:F:25:LEU:HD23	1:F:49:ILE:HD12	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:21:LYS:HE3	1:C:21:LYS:HB3	1.94	0.41
1:D:78:LEU:CD1	1:D:81:LEU:HD23	2.50	0.41
1:D:122:GLN:HG2	1:D:159:HIS:CE1	2.54	0.41
1:E:116:GLU:HG2	1:F:112:GLU:HG3	2.02	0.41
1:A:121:ALA:HB1	1:A:162:LEU:HD12	2.03	0.41
1:G:27:VAL:HG23	1:G:28:TYR:N	2.36	0.41
1:A:5:CYS:HB3	1:A:101:PHE:CD1	2.56	0.41
1:A:45:LEU:O	1:A:49:ILE:HG22	2.21	0.41
1:C:123:ILE:HD11	1:G:73:VAL:HG12	2.02	0.41
1:D:2:LYS:HE3	1:D:2:LYS:HA	2.02	0.41
1:H:28:TYR:CE2	1:H:170:ASP:HA	2.55	0.41
1:A:140:GLU:N	1:A:141:PRO:CD	2.83	0.41
1:B:1:MSE:HE3	3:B:194:HOH:O	2.21	0.41
1:G:6:VAL:HG12	1:G:46:MSE:SE	2.70	0.41
1:G:95:SER:O	1:G:128:LYS:HE3	2.21	0.41
1:H:6:VAL:HG22	1:H:102:ILE:HB	2.03	0.41
1:H:118:LEU:HD23	1:H:130:ILE:CD1	2.51	0.41
1:H:134:ASN:CG	1:H:137:GLY:HA2	2.41	0.41
1:C:123:ILE:CD1	1:G:73:VAL:HG12	2.51	0.40
1:D:143:MSE:O	1:D:147:LYS:HG3	2.21	0.40
1:E:1:MSE:HB3	1:E:99:ASP:CB	2.51	0.40
1:H:142:MSE:O	1:H:146:VAL:HG23	2.22	0.40
1:E:108:PHE:CE2	1:F:155:SER:HB3	2.57	0.40
1:F:158:SER:C	1:F:160:LEU:H	2.24	0.40
1:A:70:SER:HB3	1:F:119:CYS:SG	2.61	0.40
1:B:69:PHE:N	1:B:72:GLU:OE1	2.48	0.40
1:E:1:MSE:CG	1:E:2:LYS:N	2.78	0.40
1:B:146:VAL:O	1:B:150:ILE:HG13	2.22	0.40
1:C:104:MSE:HG2	1:C:133:TYR:CD2	2.56	0.40
1:D:121:ALA:O	1:D:127:GLN:NE2	2.55	0.40
1:H:28:TYR:HE2	1:H:173:ILE:HD12	1.86	0.40
1:B:6:VAL:HG12	1:B:7:PHE:N	2.36	0.40
1:B:142:MSE:SE	1:B:143:MSE:CE	3.17	0.40
1:C:140:GLU:OE1	1:C:140:GLU:HA	2.21	0.40
1:G:28:TYR:CE2	1:G:170:ASP:HA	2.57	0.40
1:G:108:PHE:CE1	1:H:118:LEU:HD13	2.56	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:178:ASN:ND2	1:D:178:ASN:ND2[2_655]	2.02	0.18

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	177/191 (93%)	165 (93%)	10 (6%)	2 (1%)	14	32
1	B	177/191 (93%)	165 (93%)	12 (7%)	0	100	100
1	C	177/191 (93%)	152 (86%)	20 (11%)	5 (3%)	5	10
1	D	177/191 (93%)	153 (86%)	22 (12%)	2 (1%)	14	32
1	E	182/191 (95%)	170 (93%)	9 (5%)	3 (2%)	9	23
1	F	182/191 (95%)	166 (91%)	12 (7%)	4 (2%)	6	15
1	G	177/191 (93%)	155 (88%)	20 (11%)	2 (1%)	14	32
1	H	177/191 (93%)	156 (88%)	19 (11%)	2 (1%)	14	32
All	All	1426/1528 (93%)	1282 (90%)	124 (9%)	20 (1%)	11	26

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	77	ASN
1	E	135	VAL
1	F	183	ILE
1	H	127	GLN
1	A	134	ASN
1	A	178	ASN
1	C	127	GLN
1	D	127	GLN
1	E	127	GLN
1	F	55	GLU
1	F	134	ASN
1	G	40	GLY

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Mol	Chain	Res	Type
1	C	55	GLU
1	F	182	PRO
1	C	166	SER
1	E	126	HIS
1	H	77	ASN
1	C	126	HIS
1	D	125	ILE
1	G	105	PRO

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	144/144 (100%)	137 (95%)	7 (5%)	25	50
1	B	144/144 (100%)	133 (92%)	11 (8%)	13	29
1	C	144/144 (100%)	131 (91%)	13 (9%)	9	21
1	D	144/144 (100%)	133 (92%)	11 (8%)	13	29
1	E	149/144 (104%)	142 (95%)	7 (5%)	26	52
1	F	149/144 (104%)	140 (94%)	9 (6%)	19	40
1	G	144/144 (100%)	131 (91%)	13 (9%)	9	21
1	H	144/144 (100%)	136 (94%)	8 (6%)	21	43
All	All	1162/1152 (101%)	1083 (93%)	79 (7%)	16	35

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	16	GLU
1	A	38	TYR
1	A	113	GLU
1	A	136	ASN
1	A	157	GLU
1	A	177	GLN
1	A	178	ASN

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Mol	Chain	Res	Type
1	B	3	THR
1	B	16	GLU
1	B	38	TYR
1	B	43	VAL
1	B	76	GLN
1	B	122	GLN
1	B	136	ASN
1	B	147	LYS
1	B	160	LEU
1	B	172	LEU
1	B	179	TYR
1	C	3	THR
1	C	16	GLU
1	C	37	VAL
1	C	38	TYR
1	C	68	LEU
1	C	77	ASN
1	C	78	LEU
1	C	90	ARG
1	C	122	GLN
1	C	134	ASN
1	C	142	MSE
1	C	158	SER
1	C	172	LEU
1	D	1	MSE
1	D	2	LYS
1	D	3	THR
1	D	32	GLN
1	D	38	TYR
1	D	51	ASP
1	D	74	VAL
1	D	78	LEU
1	D	127	GLN
1	D	172	LEU
1	D	174	GLU
1	E	1	MSE
1	E	16	GLU
1	E	38	TYR
1	E	46	MSE
1	E	114	LEU
1	E	168	ARG
1	E	172	LEU

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Mol	Chain	Res	Type
1	F	16	GLU
1	F	32	GLN
1	F	75	HIS
1	F	116	GLU
1	F	127	GLN
1	F	136	ASN
1	F	142	MSE
1	F	156	ASN
1	F	172	LEU
1	G	16	GLU
1	G	24	GLU
1	G	38	TYR
1	G	42	ARG
1	G	73	VAL
1	G	74	VAL
1	G	120	TRP
1	G	143	MSE
1	G	145	MSE
1	G	156	ASN
1	G	172	LEU
1	G	174	GLU
1	G	178	ASN
1	H	2	LYS
1	H	16	GLU
1	H	38	TYR
1	H	42	ARG
1	H	66	SER
1	H	83	GLU
1	H	157	GLU
1	H	174	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	ASN
1	A	126	HIS
1	A	175	GLN
1	A	177	GLN
1	A	178	ASN
1	B	32	GLN
1	B	56	ASN
1	B	76	GLN

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Mol	Chain	Res	Type
1	B	122	GLN
1	C	56	ASN
1	C	77	ASN
1	C	122	GLN
1	C	127	GLN
1	C	134	ASN
1	C	151	GLN
1	C	156	ASN
1	C	175	GLN
1	D	32	GLN
1	D	127	GLN
1	D	136	ASN
1	D	159	HIS
1	D	177	GLN
1	E	76	GLN
1	E	122	GLN
1	E	126	HIS
1	E	159	HIS
1	F	32	GLN
1	F	56	ASN
1	F	88	HIS
1	F	122	GLN
1	F	177	GLN
1	G	127	GLN
1	G	156	ASN
1	G	175	GLN
1	G	178	ASN
1	H	75	HIS
1	H	151	GLN
1	H	164	HIS
1	H	177	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 ⓘ

14 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	H	192	-	4,4,4	0.31	0	6,6,6	0.12	0
2	SO4	C	192	-	4,4,4	0.40	0	6,6,6	0.07	0
2	SO4	B	192	-	4,4,4	0.48	0	6,6,6	0.11	0
2	SO4	D	194	-	4,4,4	0.40	0	6,6,6	0.10	0
2	SO4	G	192	-	4,4,4	0.41	0	6,6,6	0.08	0
2	SO4	A	192	-	4,4,4	0.36	0	6,6,6	0.15	0
2	SO4	A	193	-	4,4,4	0.38	0	6,6,6	0.17	0
2	SO4	E	192	-	4,4,4	0.30	0	6,6,6	0.33	0
2	SO4	E	194	-	4,4,4	0.42	0	6,6,6	0.13	0
2	SO4	F	192	-	4,4,4	0.41	0	6,6,6	0.09	0
2	SO4	G	193	-	4,4,4	0.51	0	6,6,6	0.09	0
2	SO4	D	192	-	4,4,4	0.35	0	6,6,6	0.12	0
2	SO4	D	193	-	4,4,4	0.47	0	6,6,6	0.12	0
2	SO4	E	193	-	4,4,4	0.49	0	6,6,6	0.12	0

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.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	192	SO4	1	0

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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	167/191 (87%)	0.10	5 (2%)	50	51	30, 46, 77, 97	0
1	B	167/191 (87%)	0.05	6 (3%)	42	42	29, 46, 71, 82	0
1	C	167/191 (87%)	0.62	15 (8%)	9	8	37, 71, 95, 111	0
1	D	167/191 (87%)	0.73	19 (11%)	5	4	56, 79, 97, 109	0
1	E	172/191 (90%)	-0.02	4 (2%)	60	62	20, 42, 65, 87	0
1	F	172/191 (90%)	0.07	7 (4%)	37	36	28, 45, 71, 95	0
1	G	167/191 (87%)	0.57	12 (7%)	15	14	44, 72, 93, 109	0
1	H	167/191 (87%)	0.50	9 (5%)	25	25	32, 71, 92, 111	0
All	All	1346/1528 (88%)	0.33	77 (5%)	23	23	20, 60, 92, 111	0

All (77) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	179	TYR	8.9
1	D	179	TYR	8.8
1	C	125	ILE	8.7
1	C	179	TYR	7.9
1	A	125	ILE	6.5
1	F	183	ILE	6.1
1	E	125	ILE	5.2
1	H	125	ILE	5.2
1	G	13	GLY	5.1
1	E	183	ILE	5.1
1	H	126	HIS	5.1
1	C	178	ASN	5.0
1	C	33	GLY	4.8
1	A	126	HIS	4.7
1	D	13	GLY	4.7
1	F	182	PRO	4.7

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Mol	Chain	Res	Type	RSRZ
1	D	171	GLU	4.4
1	D	137	GLY	4.3
1	E	184	LEU	4.3
1	F	125	ILE	4.2
1	G	10	SER	4.2
1	F	181	TYR	4.1
1	D	14	GLY	4.0
1	D	170	ASP	3.9
1	G	179	TYR	3.8
1	F	184	LEU	3.8
1	G	126	HIS	3.8
1	C	31	GLU	3.8
1	G	125	ILE	3.7
1	B	179	TYR	3.6
1	C	126	HIS	3.5
1	G	55	GLU	3.5
1	B	178	ASN	3.2
1	C	174	GLU	3.2
1	G	43	VAL	3.2
1	D	103	SER	3.1
1	C	77	ASN	3.1
1	D	126	HIS	3.0
1	C	132	LEU	3.0
1	G	77	ASN	3.0
1	C	153	GLY	2.9
1	G	124	GLY	2.8
1	B	125	ILE	2.8
1	D	138	TYR	2.7
1	D	125	ILE	2.7
1	D	6	VAL	2.6
1	F	74	VAL	2.6
1	G	14	GLY	2.6
1	A	14	GLY	2.5
1	H	42	ARG	2.5
1	E	126	HIS	2.5
1	G	122	GLN	2.5
1	F	77	ASN	2.5
1	H	178	ASN	2.4
1	D	10	SER	2.4
1	D	43	VAL	2.4
1	C	157	GLU	2.4
1	C	168	ARG	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	75	HIS	2.3
1	A	179	TYR	2.3
1	D	77	ASN	2.3
1	D	51	ASP	2.3
1	G	174	GLU	2.3
1	A	124	GLY	2.2
1	H	75	HIS	2.2
1	C	75	HIS	2.2
1	B	49	ILE	2.2
1	D	31	GLU	2.2
1	C	170	ASP	2.1
1	H	43	VAL	2.1
1	B	126	HIS	2.1
1	H	49	ILE	2.1
1	C	148	TYR	2.1
1	D	168	ARG	2.1
1	H	86	GLY	2.1
1	D	144	LYS	2.1
1	D	17	ALA	2.0

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	193	5/5	0.91	0.15	65,66,70,70	0
2	SO4	G	193	5/5	0.91	0.17	85,85,87,87	0
2	SO4	A	193	5/5	0.95	0.13	68,68,69,69	0
2	SO4	D	193	5/5	0.96	0.12	80,80,81,82	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	SO4	D	192	5/5	0.97	0.13	63,63,64,64	0
2	SO4	E	194	5/5	0.97	0.13	74,74,76,76	0
2	SO4	G	192	5/5	0.97	0.14	51,51,53,54	0
2	SO4	D	194	5/5	0.97	0.12	86,87,87,87	0
2	SO4	A	192	5/5	0.98	0.15	30,31,33,35	0
2	SO4	B	192	5/5	0.98	0.10	38,40,40,40	0
2	SO4	C	192	5/5	0.98	0.12	53,53,54,54	0
2	SO4	E	192	5/5	0.98	0.10	20,23,24,24	0
2	SO4	H	192	5/5	0.98	0.11	59,59,59,59	0
2	SO4	F	192	5/5	0.99	0.12	36,36,39,40	0

6.5 Other polymers (i)

There are no such residues in this entry.