WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Oct 22, 2023 – 01:00 PM JST

PDB ID	:	8J53
Title	:	Crystal structure of Bacteroides salyersiae GH31 alpha-galactosidase
Authors	:	Ikegaya, M.; Miyazaki, T.
Deposited on	:	2023-04-21
Resolution	:	3.50 Å(reported)

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

|		
MolProbity	:	4.02b-467
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 3.50 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		0.320
Clashscore		9
Ramachandran outliers		0.5%
Sidechain outliers		3.3%
RSRZ outliers		1.5%

■ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution
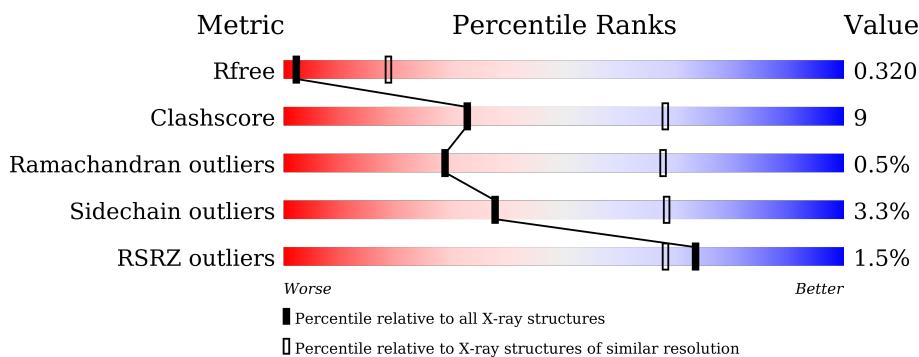
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	532	72% 22% • 5%
1	B	532	% 76% 18% • 5%
1	C	532	% 74% 20% • 5%
1	D	532	3% 74% 20% •• •
1	E	532	% 76% 18% • •

2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 40710 atoms, of which 20099 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 GH31 alpha-galactosidase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	507	Total	C	H	N	O	S	96	0	0
			8136	2654	4019	686	748	29			
1	B	503	Total	C	H	N	O	S	96	0	0
			8064	2632	3980	681	742	29			
1	C	508	Total	C	H	N	O	S	96	0	0
			8150	2658	4025	688	750	29			
1	D	510	Total	C	H	N	O	S	97	0	0
			8178	2666	4038	691	754	29			
1	E	511	Total	C	H	N	O	S	100	0	0
			8182	2668	4037	692	755	30			

There are 140 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP A0A7J4XIY8
A	2	GLY	-	expression tag	UNP A0A7J4XIY8
A	3	SER	-	expression tag	UNP A0A7J4XIY8
A	4	SER	-	expression tag	UNP A0A7J4XIY8
A	5	HIS	-	expression tag	UNP A0A7J4XIY8
A	6	HIS	-	expression tag	UNP A0A7J4XIY8
A	7	HIS	-	expression tag	UNP A0A7J4XIY8
A	8	HIS	-	expression tag	UNP A0A7J4XIY8
A	9	HIS	-	expression tag	UNP A0A7J4XIY8
A	10	HIS	-	expression tag	UNP A0A7J4XIY8
A	11	SER	-	expression tag	UNP A0A7J4XIY8
A	12	SER	-	expression tag	UNP A0A7J4XIY8
A	13	GLY	-	expression tag	UNP A0A7J4XIY8
A	14	LEU	-	expression tag	UNP A0A7J4XIY8
A	15	VAL	-	expression tag	UNP A0A7J4XIY8
A	16	PRO	-	expression tag	UNP A0A7J4XIY8
A	17	ARG	-	expression tag	UNP A0A7J4XIY8
A	18	GLY	-	expression tag	UNP A0A7J4XIY8
A	19	SER	-	expression tag	UNP A0A7J4XIY8

Continued on next page...

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	20	HIS	-	expression tag	UNP A0A7J4XIY8
A	21	MET	-	expression tag	UNP A0A7J4XIY8
A	22	ALA	-	expression tag	UNP A0A7J4XIY8
A	23	SER	-	expression tag	UNP A0A7J4XIY8
A	24	GLN	-	expression tag	UNP A0A7J4XIY8
A	25	ASN	-	expression tag	UNP A0A7J4XIY8
A	26	VAL	-	expression tag	UNP A0A7J4XIY8
A	27	PHE	-	expression tag	UNP A0A7J4XIY8
A	28	THR	-	expression tag	UNP A0A7J4XIY8
B	1	MET	-	initiating methionine	UNP A0A7J4XIY8
B	2	GLY	-	expression tag	UNP A0A7J4XIY8
B	3	SER	-	expression tag	UNP A0A7J4XIY8
B	4	SER	-	expression tag	UNP A0A7J4XIY8
B	5	HIS	-	expression tag	UNP A0A7J4XIY8
B	6	HIS	-	expression tag	UNP A0A7J4XIY8
B	7	HIS	-	expression tag	UNP A0A7J4XIY8
B	8	HIS	-	expression tag	UNP A0A7J4XIY8
B	9	HIS	-	expression tag	UNP A0A7J4XIY8
B	10	HIS	-	expression tag	UNP A0A7J4XIY8
B	11	SER	-	expression tag	UNP A0A7J4XIY8
B	12	SER	-	expression tag	UNP A0A7J4XIY8
B	13	GLY	-	expression tag	UNP A0A7J4XIY8
B	14	LEU	-	expression tag	UNP A0A7J4XIY8
B	15	VAL	-	expression tag	UNP A0A7J4XIY8
B	16	PRO	-	expression tag	UNP A0A7J4XIY8
B	17	ARG	-	expression tag	UNP A0A7J4XIY8
B	18	GLY	-	expression tag	UNP A0A7J4XIY8
B	19	SER	-	expression tag	UNP A0A7J4XIY8
B	20	HIS	-	expression tag	UNP A0A7J4XIY8
B	21	MET	-	expression tag	UNP A0A7J4XIY8
B	22	ALA	-	expression tag	UNP A0A7J4XIY8
B	23	SER	-	expression tag	UNP A0A7J4XIY8
B	24	GLN	-	expression tag	UNP A0A7J4XIY8
B	25	ASN	-	expression tag	UNP A0A7J4XIY8
B	26	VAL	-	expression tag	UNP A0A7J4XIY8
B	27	PHE	-	expression tag	UNP A0A7J4XIY8
B	28	THR	-	expression tag	UNP A0A7J4XIY8
C	1	MET	-	initiating methionine	UNP A0A7J4XIY8
C	2	GLY	-	expression tag	UNP A0A7J4XIY8
C	3	SER	-	expression tag	UNP A0A7J4XIY8
C	4	SER	-	expression tag	UNP A0A7J4XIY8
C	5	HIS	-	expression tag	UNP A0A7J4XIY8

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
C	6	HIS	-	expression tag	UNP A0A7J4XIY8
C	7	HIS	-	expression tag	UNP A0A7J4XIY8
C	8	HIS	-	expression tag	UNP A0A7J4XIY8
C	9	HIS	-	expression tag	UNP A0A7J4XIY8
C	10	HIS	-	expression tag	UNP A0A7J4XIY8
C	11	SER	-	expression tag	UNP A0A7J4XIY8
C	12	SER	-	expression tag	UNP A0A7J4XIY8
C	13	GLY	-	expression tag	UNP A0A7J4XIY8
C	14	LEU	-	expression tag	UNP A0A7J4XIY8
C	15	VAL	-	expression tag	UNP A0A7J4XIY8
C	16	PRO	-	expression tag	UNP A0A7J4XIY8
C	17	ARG	-	expression tag	UNP A0A7J4XIY8
C	18	GLY	-	expression tag	UNP A0A7J4XIY8
C	19	SER	-	expression tag	UNP A0A7J4XIY8
C	20	HIS	-	expression tag	UNP A0A7J4XIY8
C	21	MET	-	expression tag	UNP A0A7J4XIY8
C	22	ALA	-	expression tag	UNP A0A7J4XIY8
C	23	SER	-	expression tag	UNP A0A7J4XIY8
C	24	GLN	-	expression tag	UNP A0A7J4XIY8
C	25	ASN	-	expression tag	UNP A0A7J4XIY8
C	26	VAL	-	expression tag	UNP A0A7J4XIY8
C	27	PHE	-	expression tag	UNP A0A7J4XIY8
C	28	THR	-	expression tag	UNP A0A7J4XIY8
D	1	MET	-	initiating methionine	UNP A0A7J4XIY8
D	2	GLY	-	expression tag	UNP A0A7J4XIY8
D	3	SER	-	expression tag	UNP A0A7J4XIY8
D	4	SER	-	expression tag	UNP A0A7J4XIY8
D	5	HIS	-	expression tag	UNP A0A7J4XIY8
D	6	HIS	-	expression tag	UNP A0A7J4XIY8
D	7	HIS	-	expression tag	UNP A0A7J4XIY8
D	8	HIS	-	expression tag	UNP A0A7J4XIY8
D	9	HIS	-	expression tag	UNP A0A7J4XIY8
D	10	HIS	-	expression tag	UNP A0A7J4XIY8
D	11	SER	-	expression tag	UNP A0A7J4XIY8
D	12	SER	-	expression tag	UNP A0A7J4XIY8
D	13	GLY	-	expression tag	UNP A0A7J4XIY8
D	14	LEU	-	expression tag	UNP A0A7J4XIY8
D	15	VAL	-	expression tag	UNP A0A7J4XIY8
D	16	PRO	-	expression tag	UNP A0A7J4XIY8
D	17	ARG	-	expression tag	UNP A0A7J4XIY8
D	18	GLY	-	expression tag	UNP A0A7J4XIY8
D	19	SER	-	expression tag	UNP A0A7J4XIY8

Continued on next page...

Continued from previous page...

| Chain	Residue	Modelled	Actual	Comment	Reference
D	20	HIS	-	expression tag	UNP A0A7J4XIY8
D	21	MET	-	expression tag	UNP A0A7J4XIY8
D	22	ALA	-	expression tag	UNP A0A7J4XIY8
D	23	SER	-	expression tag	UNP A0A7J4XIY8
D	24	GLN	-	expression tag	UNP A0A7J4XIY8
D	25	ASN	-	expression tag	UNP A0A7J4XIY8
D	26	VAL	-	expression tag	UNP A0A7J4XIY8
D	27	PHE	-	expression tag	UNP A0A7J4XIY8
D	28	THR	-	expression tag	UNP A0A7J4XIY8
E	1	MET	-	initiating methionine	UNP A0A7J4XIY8
E	2	GLY	-	expression tag	UNP A0A7J4XIY8
E	3	SER	-	expression tag	UNP A0A7J4XIY8
E	4	SER	-	expression tag	UNP A0A7J4XIY8
E	5	HIS	-	expression tag	UNP A0A7J4XIY8
E	6	HIS	-	expression tag	UNP A0A7J4XIY8
E	7	HIS	-	expression tag	UNP A0A7J4XIY8
E	8	HIS	-	expression tag	UNP A0A7J4XIY8
E	9	HIS	-	expression tag	UNP A0A7J4XIY8
E	10	HIS	-	expression tag	UNP A0A7J4XIY8
E	11	SER	-	expression tag	UNP A0A7J4XIY8
E	12	SER	-	expression tag	UNP A0A7J4XIY8
E	13	GLY	-	expression tag	UNP A0A7J4XIY8
E	14	LEU	-	expression tag	UNP A0A7J4XIY8
E	15	VAL	-	expression tag	UNP A0A7J4XIY8
E	16	PRO	-	expression tag	UNP A0A7J4XIY8
E	17	ARG	-	expression tag	UNP A0A7J4XIY8
E	18	GLY	-	expression tag	UNP A0A7J4XIY8
E	19	SER	-	expression tag	UNP A0A7J4XIY8
E	20	HIS	-	expression tag	UNP A0A7J4XIY8
E	21	MET	-	expression tag	UNP A0A7J4XIY8
E	22	ALA	-	expression tag	UNP A0A7J4XIY8
E	23	SER	-	expression tag	UNP A0A7J4XIY8
E	24	GLN	-	expression tag	UNP A0A7J4XIY8
E	25	ASN	-	expression tag	UNP A0A7J4XIY8
E	26	VAL	-	expression tag	UNP A0A7J4XIY8
E	27	PHE	-	expression tag	UNP A0A7J4XIY8
E	28	THR	-	expression tag	UNP A0A7J4XIY8

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: GH31 alpha-galactosidase

Chain A:

- Molecule 1: GH31 alpha-galactosidase

Chain B:
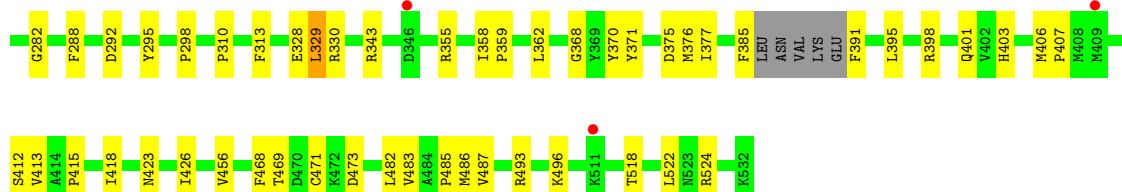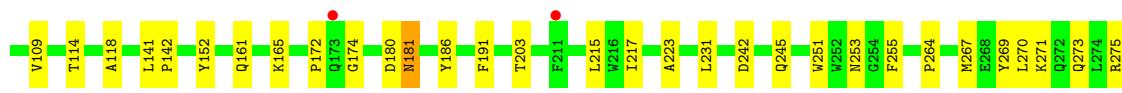


- Molecule 1: GH31 alpha-galactosidase

Chain C:
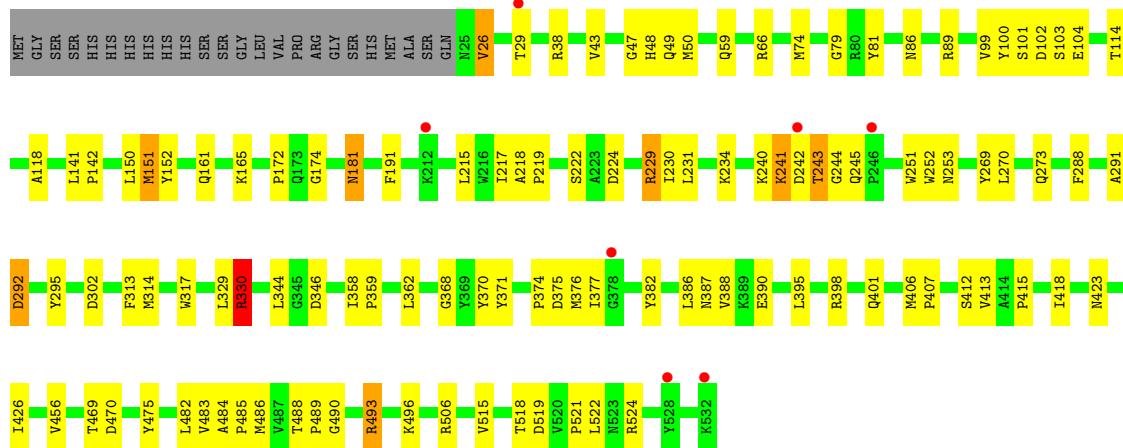
• Molecule 1: GH31 alpha-galactosidase

Chain D:

• Molecule 1: GH31 alpha-galactosidase

Chain E:

N423 I426 K446 E450 V456 P464 H465 C471 Q474 L482 V483 A484 P485 M486 V487 T488 P489 G490 K496 K501 W502 K503 K514 V515 I516 D517 T518 P521 L522 N523 R524 I531 K532
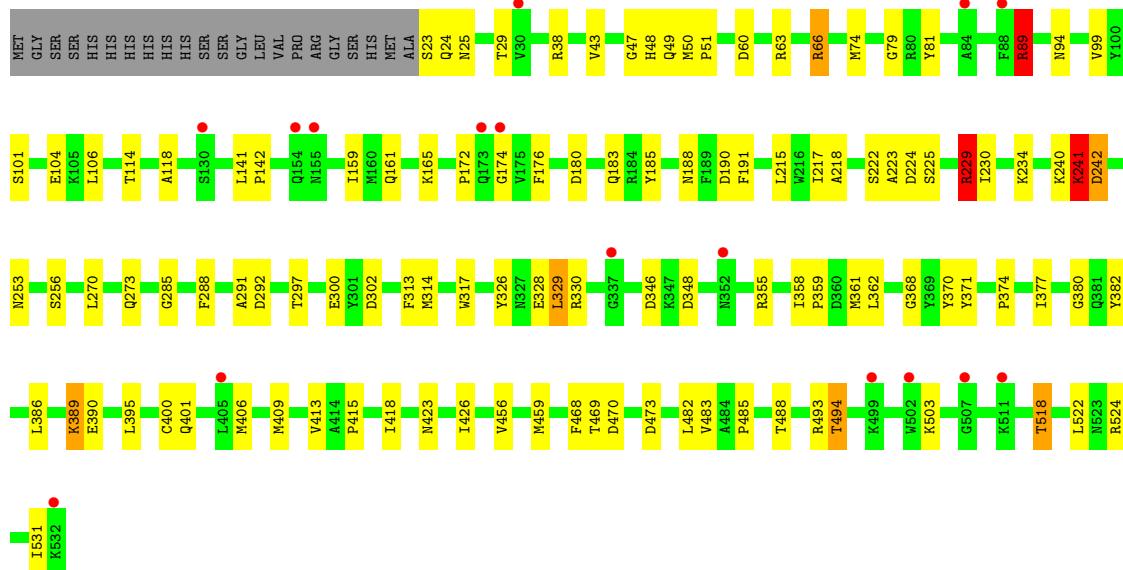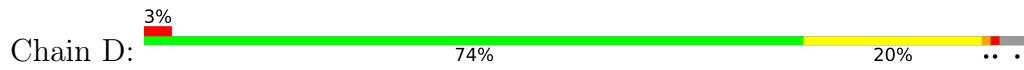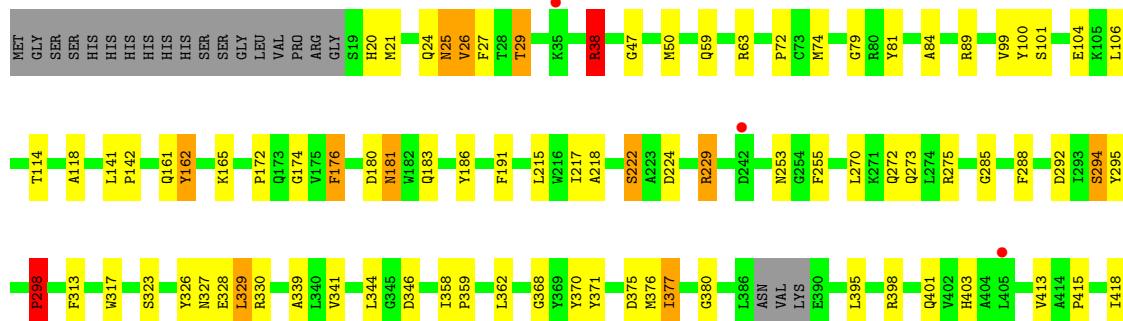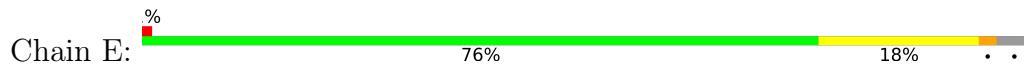
4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	200.52Å 157.53Å 131.41Å 90.00° 116.82° 90.00°	Depositor
Resolution (Å)	48.63 – 3.50 48.59 – 3.50	Depositor EDS
% Data completeness (in resolution range)	99.9 (48.63-3.50) 100.0 (48.59-3.50)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.57 (at 3.48Å)	Xtriage
Refinement program	REFMAC 5.8.0405	Depositor
R, R_{free}	0.257 , 0.313 0.270 , 0.320	Depositor DCC
R_{free} test set	2223 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å^2)	79.5	Xtriage
Anisotropy	0.052	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 65.0	EDS
L-test for twinning[2]	$< |L| > = 0.39$, $< L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.87	EDS
Total number of atoms	40710	wwPDB-VP
Average B, all atoms (Å^2)	104.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.02% 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 ⓘ

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	0.48	0/4237	0.86	1/5733 (0.0%)
1	B	0.46	0/4203	0.82	1/5686 (0.0%)
1	C	0.47	0/4245	0.82	0/5744
1	D	0.46	0/4260	0.81	2/5764 (0.0%)
1	E	0.48	0/4265	0.84	3/5769 (0.1%)
All	All	0.47	0/21210	0.83	7/28696 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
1	C	0	2
1	D	0	3
1	E	0	2
All	All	0	11

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	298	PRO	N-CA-CB	-7.44	94.37	103.30
1	B	343	ARG	NE-CZ-NH2	6.56	123.58	120.30
1	D	89	ARG	NE-CZ-NH2	-6.37	117.11	120.30
1	D	229	ARG	NE-CZ-NH1	-5.96	117.32	120.30
1	A	355	ARG	NE-CZ-NH1	-5.88	117.36	120.30
1	E	298	PRO	CA-N-CD	5.62	119.57	111.70
1	E	38	ARG	NE-CZ-NH1	-5.61	117.49	120.30

There are no chirality outliers.

All (11) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	208	ARG	Sidechain
1	A	343	ARG	Sidechain
1	A	355	ARG	Sidechain
1	A	417	ARG	Sidechain
1	C	229	ARG	Sidechain
1	C	330	ARG	Sidechain
1	D	229	ARG	Sidechain
1	D	66	ARG	Sidechain
1	D	89	ARG	Sidechain
1	E	229	ARG	Sidechain
1	E	38	ARG	Sidechain

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	4117	4019	4008	82	0
1	B	4084	3980	3968	68	0
1	C	4125	4025	4014	68	0
1	D	4140	4038	4027	82	0
1	E	4145	4037	4024	72	0
All	All	20611	20099	20041	355	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 9.

All (355) 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:355:ARG:HG2	1:B:487:VAL:CG1	2.13	0.78
1:A:493:ARG:NH1	1:A:494:THR:O	2.18	0.77
1:D:29:THR:CG2	1:D:99:VAL:HB	2.14	0.77
1:D:473:ASP:O	1:D:493:ARG:NH2	2.19	0.75
1:A:355:ARG:HH21	1:A:355:ARG:HB2	1.52	0.74
1:A:29:THR:CG2	1:A:99:VAL:HB	2.20	0.72

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:413:VAL:O	1:D:415:PRO:HD3	1.91	0.71
1:E:376:MET:SD	1:E:380:GLY:HA2	2.30	0.71
1:C:413:VAL:O	1:C:415:PRO:HD3	1.91	0.70
1:A:473:ASP:O	1:A:493:ARG:NH2	2.23	0.70
1:B:413:VAL:O	1:B:415:PRO:HD3	1.92	0.69
1:B:264:PRO:HG3	1:D:348:ASP:OD2	1.94	0.68
1:C:29:THR:CG2	1:C:99:VAL:HB	2.24	0.67
1:B:355:ARG:HG2	1:B:487:VAL:HG13	1.75	0.67
1:E:531:ILE:O	1:E:532:LYS:HG3	1.96	0.66
1:E:413:VAL:O	1:E:415:PRO:HD3	1.95	0.65
1:A:29:THR:HG23	1:A:29:THR:O	1.95	0.65
1:A:342:GLN:HG3	1:A:369:TYR:HB3	1.79	0.65
1:A:413:VAL:O	1:A:415:PRO:HD3	1.96	0.65
1:A:531:ILE:O	1:A:532:LYS:HB3	1.97	0.65
1:B:29:THR:HG23	1:B:99:VAL:HB	1.80	0.64
1:D:413:VAL:HG21	1:D:418:ILE:HD13	1.80	0.63
1:B:355:ARG:HG2	1:B:487:VAL:HG12	1.80	0.63
1:D:222:SER:HA	1:E:224:ASP:OD2	1.99	0.62
1:A:161:GLN:HE21	1:A:165:LYS:HE3	1.62	0.62
1:A:255:PHE:O	1:B:223:ALA:HB3	2.00	0.62
1:E:162:TYR:CD1	1:E:176:PHE:HZ	2.19	0.61
1:D:297:THR:HB	1:D:300:GLU:OE1	2.01	0.60
1:C:152:TYR:O	1:C:181:ASN:HB3	2.01	0.60
1:E:518:THR:OG1	1:E:524:ARG:NH1	2.33	0.60
1:D:29:THR:HG23	1:D:99:VAL:HB	1.83	0.60
1:C:376:MET:HG2	1:C:412:SER:HB2	1.84	0.60
1:C:518:THR:OG1	1:C:524:ARG:NH1	2.35	0.60
1:B:518:THR:OG1	1:B:524:ARG:NH1	2.34	0.59
1:D:159:ILE:HG23	1:D:176:PHE:CE2	2.37	0.59
1:C:243:THR:C	1:C:245:GLN:H	2.04	0.59
1:C:29:THR:O	1:C:29:THR:HG23	2.03	0.58
1:A:413:VAL:HG21	1:A:418:ILE:HD13	1.85	0.58
1:E:99:VAL:CG1	1:E:106:LEU:HD12	2.34	0.58
1:E:191:PHE:CZ	1:E:215:LEU:HD11	2.39	0.58
1:C:229:ARG:HH11	1:C:229:ARG:HG3	1.70	0.57
1:D:518:THR:OG1	1:D:524:ARG:NH1	2.38	0.56
1:B:292:ASP:OD1	1:B:330:ARG:NH1	2.38	0.56
1:E:186:TYR:OH	1:E:253:ASN:ND2	2.38	0.56
1:D:29:THR:HG23	1:D:29:THR:O	2.05	0.56
1:C:413:VAL:HG21	1:C:418:ILE:HD13	1.88	0.56
1:C:142:PRO:HG3	1:C:172:PRO:HG2	1.88	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:ASP:CG	1:B:376:MET:H	2.10	0.55
1:E:63:ARG:O	1:E:294:SER:HA	2.05	0.55
1:D:292:ASP:OD1	1:D:330:ARG:NH1	2.39	0.55
1:A:242:ASP:OD1	1:A:243:THR:HG23	2.07	0.55
1:D:101:SER:HB3	1:D:104:GLU:O	2.05	0.55
1:A:518:THR:OG1	1:A:524:ARG:NH1	2.37	0.55
1:D:230:ILE:O	1:D:234:LYS:HG3	2.07	0.55
1:C:483:VAL:HG12	1:C:485:PRO:HD3	1.89	0.54
1:E:180:ASP:O	1:E:181:ASN:HB2	2.06	0.54
1:A:328:GLU:C	1:A:329:LEU:HD23	2.28	0.54
1:B:413:VAL:HG21	1:B:418:ILE:HD13	1.88	0.54
1:C:252:TRP:HE3	1:C:295:TYR:HH	1.54	0.54
1:A:390:GLU:OE2	1:E:275:ARG:HD3	2.07	0.54
1:C:346:ASP:HA	1:C:375:ASP:OD1	2.07	0.54
1:A:47:GLY:HA3	1:A:360:ASP:HA	1.88	0.54
1:D:142:PRO:HG3	1:D:172:PRO:HG2	1.90	0.54
1:B:99:VAL:CG1	1:B:106:LEU:HD12	2.37	0.54
1:C:29:THR:HG23	1:C:99:VAL:HB	1.89	0.54
1:C:161:GLN:O	1:C:165:LYS:HG2	2.08	0.53
1:A:48:HIS:HA	1:A:359:PRO:HB2	1.90	0.53
1:A:329:LEU:HD23	1:A:329:LEU:N	2.23	0.53
1:A:230:ILE:O	1:A:234:LYS:HG3	2.08	0.53
1:E:101:SER:HB3	1:E:104:GLU:O	2.09	0.53
1:A:223:ALA:HB3	1:B:255:PHE:O	2.08	0.53
1:B:483:VAL:HG12	1:B:485:PRO:HD3	1.91	0.53
1:D:222:SER:HB3	1:D:225:SER:HB3	1.90	0.53
1:B:43:VAL:HG11	1:B:66:ARG:HD2	1.89	0.53
1:E:358:ILE:HB	1:E:359:PRO:HD3	1.90	0.53
1:A:355:ARG:HH21	1:A:355:ARG:CB	2.20	0.53
1:D:159:ILE:HG23	1:D:176:PHE:HE2	1.73	0.53
1:B:329:LEU:N	1:B:329:LEU:HD23	2.23	0.52
1:C:48:HIS:CD2	1:C:49:GLN:HG3	2.44	0.52
1:E:501:LYS:HD3	1:E:532:LYS:HD2	1.92	0.52
1:B:368:GLY:HA2	1:B:370:TYR:CZ	2.44	0.52
1:D:329:LEU:N	1:D:329:LEU:HD23	2.25	0.52
1:A:59:GLN:O	1:A:89:ARG:HA	2.10	0.52
1:A:29:THR:HG22	1:A:99:VAL:HB	1.90	0.52
1:B:142:PRO:HG3	1:B:172:PRO:HG2	1.92	0.52
1:E:142:PRO:HG3	1:E:172:PRO:HG2	1.90	0.52
1:A:373:CYS:SG	1:A:410:GLN:HB2	2.50	0.52
1:E:329:LEU:N	1:E:329:LEU:HD23	2.24	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:151:MET:HG2	1:C:382:TYR:CD2	2.45	0.52
1:B:101:SER:HB3	1:B:104:GLU:O	2.08	0.51
1:C:251:TRP:CH2	1:C:253:ASN:HB2	2.45	0.51
1:E:272:GLN:HG2	1:E:275:ARG:NH1	2.25	0.51
1:C:43:VAL:HG11	1:C:66:ARG:HD2	1.92	0.51
1:A:142:PRO:HG3	1:A:172:PRO:HG2	1.92	0.51
1:E:346:ASP:HA	1:E:375:ASP:OD1	2.10	0.51
1:E:141:LEU:HD13	1:E:174:GLY:HA2	1.92	0.51
1:C:368:GLY:HA2	1:C:370:TYR:CE1	2.45	0.51
1:C:423:ASN:HA	1:C:426:ILE:HD12	1.93	0.51
1:B:358:ILE:O	1:B:362:LEU:HG	2.10	0.51
1:A:423:ASN:HA	1:A:426:ILE:HD12	1.92	0.51
1:B:423:ASN:HA	1:B:426:ILE:HD12	1.93	0.51
1:C:89:ARG:HB2	1:C:100:TYR:HB2	1.93	0.51
1:E:446:LYS:O	1:E:450:GLU:HG3	2.11	0.51
1:E:483:VAL:HG12	1:E:485:PRO:HD3	1.92	0.51
1:A:47:GLY:O	1:A:50:MET:HB2	2.11	0.50
1:D:224:ASP:C	1:D:229:ARG:HH22	2.15	0.50
1:D:368:GLY:HA2	1:D:370:TYR:CE1	2.46	0.50
1:A:141:LEU:HD13	1:A:174:GLY:HA2	1.92	0.50
1:D:229:ARG:HH21	1:D:229:ARG:HG3	1.76	0.50
1:E:423:ASN:HA	1:E:426:ILE:HD12	1.92	0.50
1:C:230:ILE:O	1:C:234:LYS:HG3	2.11	0.50
1:C:362:LEU:HD23	1:C:456:VAL:HG12	1.93	0.50
1:A:159:ILE:HG23	1:A:176:PHE:CE1	2.47	0.50
1:E:368:GLY:HA2	1:E:370:TYR:CZ	2.47	0.50
1:C:101:SER:HB3	1:C:104:GLU:O	2.11	0.50
1:B:89:ARG:HB2	1:B:100:TYR:HB2	1.92	0.50
1:B:473:ASP:HB2	1:B:487:VAL:HG21	1.93	0.50
1:C:368:GLY:HA2	1:C:370:TYR:CZ	2.47	0.50
1:D:423:ASN:HA	1:D:426:ILE:HD12	1.93	0.50
1:E:285:GLY:HA3	1:E:326:TYR:HB2	1.93	0.50
1:A:243:THR:C	1:A:245:GLN:H	2.16	0.50
1:A:377:ILE:HB	1:A:411:PHE:HA	1.94	0.50
1:D:99:VAL:CG1	1:D:106:LEU:HD12	2.42	0.49
1:E:413:VAL:HG21	1:E:418:ILE:HD13	1.93	0.49
1:A:362:LEU:HD23	1:A:456:VAL:HG12	1.93	0.49
1:E:531:ILE:O	1:E:532:LYS:CG	2.61	0.49
1:B:161:GLN:O	1:B:165:LYS:HG2	2.13	0.49
1:D:368:GLY:HA2	1:D:370:TYR:CZ	2.47	0.49
1:D:47:GLY:O	1:D:50:MET:HB2	2.12	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:241:LYS:HA	1:C:302:ASP:OD1	2.13	0.49
1:D:355:ARG:HH11	1:D:488:THR:HG22	1.78	0.49
1:A:296:MET:HE1	1:A:313:PHE:CZ	2.48	0.49
1:A:313:PHE:CD1	1:A:313:PHE:C	2.85	0.49
1:D:483:VAL:HG12	1:D:485:PRO:HD3	1.93	0.49
1:B:47:GLY:O	1:B:50:MET:HB2	2.12	0.49
1:B:298:PRO:HG3	1:B:310:PRO:HG2	1.94	0.49
1:B:368:GLY:HA2	1:B:370:TYR:CE1	2.47	0.49
1:B:376:MET:HG2	1:B:412:SER:HB2	1.95	0.49
1:D:141:LEU:HB3	1:D:174:GLY:HA2	1.95	0.49
1:A:483:VAL:HG12	1:A:485:PRO:HD3	1.95	0.49
1:C:484:ALA:HB1	1:C:493:ARG:HE	1.76	0.49
1:A:79:GLY:HA2	1:A:114:THR:O	2.13	0.48
1:D:313:PHE:CD1	1:D:313:PHE:C	2.86	0.48
1:E:47:GLY:O	1:E:50:MET:HB2	2.13	0.48
1:E:162:TYR:CD1	1:E:176:PHE:CZ	3.00	0.48
1:A:216:TRP:HZ2	1:A:252:TRP:HZ2	1.60	0.48
1:D:224:ASP:OD2	1:E:222:SER:HA	2.14	0.48
1:D:256:SER:OG	1:E:224:ASP:HB3	2.13	0.48
1:E:161:GLN:O	1:E:165:LYS:HG2	2.13	0.48
1:B:328:GLU:C	1:B:329:LEU:HD23	2.33	0.48
1:C:79:GLY:HA2	1:C:114:THR:O	2.13	0.48
1:C:292:ASP:HB2	1:C:295:TYR:CD2	2.49	0.48
1:A:132:GLN:NE2	1:C:490:GLY:HA2	2.29	0.48
1:B:191:PHE:CZ	1:B:215:LEU:HD11	2.49	0.48
1:D:241:LYS:O	1:D:242:ASP:C	2.52	0.48
1:A:161:GLN:HE21	1:A:165:LYS:CE	2.25	0.48
1:B:358:ILE:HB	1:B:359:PRO:HD3	1.96	0.48
1:D:224:ASP:C	1:D:224:ASP:OD1	2.52	0.48
1:D:358:ILE:HB	1:D:359:PRO:HD3	1.94	0.48
1:E:292:ASP:OD1	1:E:330:ARG:NH1	2.39	0.48
1:B:377:ILE:HG13	1:B:403:HIS:CE1	2.49	0.47
1:E:63:ARG:HE	1:E:298:PRO:HG2	1.79	0.47
1:C:47:GLY:O	1:C:50:MET:HB2	2.14	0.47
1:D:361:MET:SD	1:D:374:PRO:HB3	2.54	0.47
1:E:29:THR:HG23	1:E:99:VAL:HB	1.95	0.47
1:C:59:GLN:O	1:C:89:ARG:HA	2.13	0.47
1:D:79:GLY:HA2	1:D:118:ALA:HB2	1.96	0.47
1:E:59:GLN:O	1:E:89:ARG:HA	2.15	0.47
1:D:218:ALA:HA	1:D:317:TRP:CZ2	2.49	0.47
1:A:390:GLU:OE2	1:E:275:ARG:CD	2.62	0.47

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:358:ILE:HB	1:E:359:PRO:CD	2.44	0.47
1:C:313:PHE:CD1	1:C:313:PHE:C	2.88	0.47
1:D:328:GLU:C	1:D:329:LEU:HD23	2.35	0.47
1:A:285:GLY:HA3	1:A:326:TYR:HB2	1.97	0.47
1:B:38:ARG:HG3	1:B:469:THR:HG21	1.97	0.47
1:B:313:PHE:CD1	1:B:313:PHE:C	2.88	0.47
1:D:29:THR:HG22	1:D:99:VAL:HB	1.94	0.47
1:C:344:LEU:HB2	1:C:375:ASP:HB2	1.97	0.47
1:D:38:ARG:HH11	1:D:38:ARG:HG3	1.80	0.47
1:D:79:GLY:HA2	1:D:114:THR:O	2.14	0.47
1:A:191:PHE:CZ	1:A:215:LEU:HD11	2.50	0.46
1:B:79:GLY:HA2	1:B:114:THR:O	2.16	0.46
1:B:79:GLY:HA2	1:B:118:ALA:HB2	1.96	0.46
1:B:362:LEU:HD23	1:B:456:VAL:HG12	1.95	0.46
1:C:401:GLN:NE2	1:C:522:LEU:O	2.48	0.46
1:D:358:ILE:O	1:D:362:LEU:HG	2.16	0.46
1:E:377:ILE:HG13	1:E:403:HIS:CE1	2.50	0.46
1:A:38:ARG:HG3	1:A:38:ARG:HH11	1.80	0.46
1:A:218:ALA:HA	1:A:317:TRP:CZ2	2.51	0.46
1:B:231:LEU:HD21	1:B:269:TYR:HE2	1.80	0.46
1:E:313:PHE:CD1	1:E:313:PHE:C	2.88	0.46
1:A:346:ASP:HA	1:A:375:ASP:OD1	2.16	0.46
1:E:79:GLY:HA2	1:E:114:THR:O	2.15	0.46
1:E:496:LYS:HG2	1:E:515:VAL:HG22	1.97	0.46
1:A:275:ARG:HD3	1:C:390:GLU:OE2	2.15	0.46
1:A:501:LYS:HB2	1:A:532:LYS:OXT	2.16	0.46
1:D:503:LYS:HB2	1:D:531:ILE:HD13	1.98	0.46
1:E:376:MET:SD	1:E:380:GLY:CA	3.02	0.46
1:B:270:LEU:HA	1:B:273:GLN:CG	2.46	0.46
1:A:141:LEU:HB3	1:A:174:GLY:HA2	1.98	0.46
1:D:401:GLN:NE2	1:D:522:LEU:O	2.49	0.45
1:B:395:LEU:HD23	1:B:395:LEU:O	2.17	0.45
1:C:152:TYR:HB3	1:C:181:ASN:HD22	1.81	0.45
1:C:231:LEU:HD21	1:C:269:TYR:HE2	1.81	0.45
1:A:38:ARG:HB3	1:A:51:PRO:HB2	1.98	0.45
1:A:100:TYR:CD1	1:A:100:TYR:N	2.83	0.45
1:B:482:LEU:HD23	1:B:483:VAL:N	2.31	0.45
1:A:183:GLN:HA	1:A:190:ASP:O	2.16	0.45
1:B:267:MET:O	1:B:271:LYS:HG3	2.17	0.45
1:C:191:PHE:CZ	1:C:215:LEU:HD11	2.51	0.45
1:E:38:ARG:HD3	1:E:38:ARG:HA	1.90	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:264:PRO:CG	1:D:348:ASP:OD2	2.64	0.45
1:A:401:GLN:NE2	1:A:522:LEU:O	2.48	0.45
1:B:275:ARG:HH11	1:D:390:GLU:HB3	1.82	0.45
1:D:60:ASP:OD2	1:D:63:ARG:CZ	2.65	0.45
1:A:59:GLN:HE22	1:A:66:ARG:HH21	1.64	0.45
1:B:141:LEU:HD13	1:B:174:GLY:HA2	1.98	0.45
1:D:141:LEU:HD13	1:D:174:GLY:HA2	1.98	0.45
1:E:401:GLN:NE2	1:E:522:LEU:O	2.49	0.45
1:A:79:GLY:HA2	1:A:118:ALA:HB2	1.98	0.45
1:C:79:GLY:HA2	1:C:118:ALA:HB2	1.98	0.45
1:A:346:ASP:HB3	1:A:380:GLY:HA3	1.97	0.45
1:B:141:LEU:HB3	1:B:174:GLY:HA2	1.98	0.45
1:E:482:LEU:HD23	1:E:483:VAL:N	2.32	0.45
1:A:152:TYR:O	1:A:181:ASN:HB3	2.17	0.45
1:C:395:LEU:O	1:C:395:LEU:HD23	2.17	0.45
1:E:99:VAL:HG11	1:E:106:LEU:HD12	1.99	0.45
1:C:217:ILE:HD11	1:C:288:PHE:CD2	2.52	0.44
1:A:395:LEU:O	1:A:395:LEU:HD23	2.17	0.44
1:D:270:LEU:HA	1:D:273:GLN:CG	2.48	0.44
1:E:398:ARG:HD2	1:E:486:MET:HB2	1.99	0.44
1:B:269:TYR:O	1:B:273:GLN:HG2	2.17	0.44
1:B:38:ARG:HG3	1:B:38:ARG:HH11	1.83	0.44
1:D:48:HIS:CD2	1:D:49:GLN:HG3	2.52	0.44
1:D:482:LEU:HD23	1:D:483:VAL:N	2.33	0.44
1:A:224:ASP:OD2	1:B:186:TYR:HB2	2.16	0.44
1:A:470:ASP:O	1:A:472:LYS:HG3	2.18	0.44
1:B:180:ASP:O	1:B:181:ASN:HB2	2.17	0.44
1:B:217:ILE:HD11	1:B:288:PHE:CD2	2.53	0.44
1:C:38:ARG:HG3	1:C:469:THR:HG21	1.98	0.44
1:C:141:LEU:HD13	1:C:174:GLY:HA2	2.00	0.44
1:E:503:LYS:HB2	1:E:531:ILE:HD13	2.00	0.44
1:E:344:LEU:HB2	1:E:375:ASP:HB2	2.00	0.44
1:C:358:ILE:O	1:C:362:LEU:HG	2.17	0.44
1:C:456:VAL:HG13	1:C:475:TYR:CD2	2.52	0.44
1:E:217:ILE:HD11	1:E:288:PHE:CE2	2.53	0.44
1:B:27:PHE:HZ	1:D:94:ASN:HA	1.83	0.44
1:E:358:ILE:O	1:E:362:LEU:HG	2.18	0.44
1:A:203:THR:HG21	1:A:282:GLY:O	2.18	0.43
1:B:292:ASP:HB2	1:B:295:TYR:CD2	2.53	0.43
1:B:401:GLN:NE2	1:B:522:LEU:O	2.51	0.43
1:C:218:ALA:HA	1:C:317:TRP:CZ2	2.53	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:361:MET:HE2	1:D:406:MET:SD	2.58	0.43
1:E:218:ALA:HA	1:E:317:TRP:CZ2	2.53	0.43
1:E:395:LEU:HD23	1:E:395:LEU:O	2.18	0.43
1:A:252:TRP:HE3	1:A:295:TYR:OH	2.01	0.43
1:C:482:LEU:HD23	1:C:483:VAL:N	2.33	0.43
1:D:285:GLY:HA3	1:D:326:TYR:HB2	1.99	0.43
1:D:89:ARG:HE	1:D:89:ARG:HB2	1.65	0.43
1:B:398:ARG:HD2	1:B:486:MET:HB2	2.01	0.43
1:C:243:THR:C	1:C:245:GLN:N	2.72	0.43
1:D:346:ASP:HB3	1:D:380:GLY:HA3	2.00	0.43
1:B:203:THR:HG21	1:B:282:GLY:C	2.38	0.43
1:C:74:MET:O	1:C:81:TYR:HA	2.19	0.43
1:D:185:TYR:CE1	1:D:188:ASN:HB2	2.53	0.43
1:A:340:LEU:O	1:A:342:GLN:HG2	2.19	0.43
1:C:38:ARG:HG3	1:C:38:ARG:HH11	1.83	0.43
1:D:161:GLN:O	1:D:165:LYS:HG2	2.19	0.43
1:E:141:LEU:HB3	1:E:174:GLY:HA2	2.00	0.43
1:E:368:GLY:HA2	1:E:370:TYR:CE1	2.53	0.43
1:A:67:ASN:O	1:A:330:ARG:HD3	2.19	0.42
1:C:506:ARG:HH22	1:C:519:ASP:HB2	1.84	0.42
1:E:217:ILE:HD11	1:E:288:PHE:CD2	2.54	0.42
1:A:123:ALA:HA	1:A:127:PHE:CD1	2.54	0.42
1:B:59:GLN:O	1:B:89:ARG:HA	2.18	0.42
1:C:374:PRO:O	1:C:375:ASP:O	2.37	0.42
1:E:104:GLU:HG3	1:E:106:LEU:HD21	2.00	0.42
1:D:395:LEU:HD23	1:D:395:LEU:O	2.18	0.42
1:D:74:MET:O	1:D:81:TYR:HA	2.19	0.42
1:D:400:CYS:SG	1:D:409:MET:CE	3.08	0.42
1:E:521:PRO:HG2	1:E:524:ARG:HB2	2.02	0.42
1:A:203:THR:HG21	1:A:282:GLY:C	2.40	0.42
1:C:86:ASN:ND2	1:C:103:SER:OG	2.53	0.42
1:C:291:ALA:HB1	1:C:314:MET:HA	2.02	0.42
1:E:25:ASN:O	1:E:27:PHE:N	2.52	0.42
1:B:72:PRO:HB2	1:B:84:ALA:HB3	2.02	0.42
1:C:89:ARG:NH2	1:C:102:ASP:OD1	2.52	0.42
1:C:488:THR:HB	1:C:489:PRO:CD	2.50	0.42
1:D:183:GLN:HA	1:D:190:ASP:O	2.20	0.42
1:A:363:ALA:O	1:A:364:ALA:C	2.57	0.42
1:C:398:ARG:HD2	1:C:486:MET:HB2	2.02	0.42
1:A:361:MET:HE2	1:A:361:MET:HB3	1.89	0.42
1:C:252:TRP:HE3	1:C:295:TYR:OH	2.03	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:386:LEU:C	1:C:388:VAL:H	2.23	0.42
1:D:43:VAL:HG11	1:D:66:ARG:HD2	2.02	0.42
1:E:501:LYS:CB	1:E:532:LYS:HB2	2.50	0.42
1:D:493:ARG:NH1	1:D:494:THR:O	2.53	0.41
1:D:217:ILE:HD11	1:D:288:PHE:CD2	2.55	0.41
1:D:358:ILE:N	1:D:359:PRO:HD2	2.35	0.41
1:E:270:LEU:HA	1:E:273:GLN:CG	2.51	0.41
1:C:218:ALA:HB1	1:C:219:PRO:HD2	2.02	0.41
1:D:191:PHE:CZ	1:D:215:LEU:HD11	2.56	0.41
1:E:100:TYR:CD1	1:E:100:TYR:N	2.88	0.41
1:C:521:PRO:HG2	1:C:524:ARG:HB2	2.02	0.41
1:D:38:ARG:HG3	1:D:469:THR:HG21	2.02	0.41
1:D:459:MET:HB2	1:D:468:PHE:HB3	2.02	0.41
1:E:79:GLY:HA2	1:E:118:ALA:HB2	2.01	0.41
1:E:72:PRO:HB2	1:E:84:ALA:HB3	2.03	0.41
1:B:251:TRP:CH2	1:B:253:ASN:HB2	2.56	0.41
1:A:255:PHE:O	1:B:223:ALA:CB	2.68	0.41
1:A:482:LEU:HD23	1:A:483:VAL:N	2.36	0.41
1:B:468:PHE:HE1	1:B:496:LYS:HB3	1.86	0.41
1:D:382:TYR:CE2	1:D:386:LEU:HD11	2.55	0.41
1:E:74:MET:O	1:E:81:TYR:HA	2.20	0.41
1:A:217:ILE:HD11	1:A:288:PHE:CD2	2.55	0.41
1:B:413:VAL:CG2	1:B:418:ILE:HD13	2.51	0.41
1:D:223:ALA:HB3	1:E:255:PHE:O	2.21	0.41
1:D:241:LYS:HA	1:D:302:ASP:OD1	2.20	0.41
1:D:358:ILE:HB	1:D:359:PRO:CD	2.50	0.41
1:A:29:THR:HG23	1:A:99:VAL:HB	1.99	0.41
1:A:173:GLN:HB2	1:A:211:PHE:CD1	2.56	0.41
1:A:406:MET:HB3	1:A:407:PRO:CD	2.51	0.41
1:B:203:THR:HG21	1:B:282:GLY:O	2.21	0.41
1:B:385:PHE:CD2	1:B:391:PHE:HE2	2.39	0.41
1:B:406:MET:HB3	1:B:407:PRO:CD	2.51	0.41
1:C:358:ILE:N	1:C:359:PRO:HD2	2.35	0.41
1:E:471:CYS:SG	1:E:474:GLN:HG3	2.60	0.41
1:E:488:THR:HB	1:E:489:PRO:CD	2.51	0.41
1:A:43:VAL:HG11	1:A:66:ARG:HD2	2.02	0.41
1:A:185:TYR:CE1	1:A:188:ASN:HB2	2.56	0.41
1:A:453:GLU:OE2	1:A:457:ARG:NH1	2.54	0.41
1:C:406:MET:HB3	1:C:407:PRO:CD	2.51	0.41
1:D:38:ARG:HB3	1:D:51:PRO:HB2	2.03	0.41
1:D:413:VAL:CG2	1:D:418:ILE:HD13	2.49	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:292:ASP:HB2	1:E:295:TYR:CD2	2.56	0.41
1:A:292:ASP:HB2	1:A:295:TYR:CD2	2.56	0.40
1:A:521:PRO:HG2	1:A:524:ARG:HB2	2.04	0.40
1:E:362:LEU:HD23	1:E:456:VAL:HG12	2.02	0.40
1:B:80:ARG:HA	1:B:109:VAL:O	2.21	0.40
1:B:275:ARG:NH1	1:D:390:GLU:HB3	2.36	0.40
1:C:270:LEU:HA	1:C:273:GLN:CG	2.51	0.40
1:D:389:LYS:H	1:D:389:LYS:HG2	1.58	0.40
1:E:327:ASN:O	1:E:341:VAL:HB	2.21	0.40
1:A:72:PRO:HB2	1:A:84:ALA:HB3	2.02	0.40
1:A:217:ILE:HD11	1:A:288:PHE:CE2	2.56	0.40
1:A:496:LYS:HG2	1:A:515:VAL:HG22	2.03	0.40
1:D:99:VAL:HG12	1:D:106:LEU:HD12	2.03	0.40
1:A:151:MET:HG2	1:A:382:TYR:CD2	2.56	0.40
1:D:362:LEU:HD23	1:D:456:VAL:HG12	2.04	0.40
1:D:400:CYS:SG	1:D:409:MET:HE1	2.62	0.40
1:B:152:TYR:O	1:B:181:ASN:HB3	2.21	0.40
1:C:358:ILE:HB	1:C:359:PRO:HD3	2.03	0.40
1:C:496:LYS:HG2	1:C:515:VAL:HG22	2.03	0.40
1:D:180:ASP:OD2	1:D:253:ASN:ND2	2.55	0.40
1:D:291:ALA:HB1	1:D:314:MET:HA	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	505/532 (95%)	469 (93%)	34 (7%)	2 (0%)	34	72
1	B	499/532 (94%)	466 (93%)	32 (6%)	1 (0%)	47	81
1	C	506/532 (95%)	468 (92%)	34 (7%)	4 (1%)	19	58
1	D	508/532 (96%)	478 (94%)	29 (6%)	1 (0%)	47	81

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	507/532 (95%)	469 (92%)	34 (7%)	4 (1%)	19	58
All	All	2525/2660 (95%)	2350 (93%)	163 (6%)	12 (0%)	29	68

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	26	VAL
1	E	181	ASN
1	A	181	ASN
1	C	26	VAL
1	C	330	ARG
1	A	339	ALA
1	B	181	ASN
1	C	181	ASN
1	D	241	LYS
1	E	339	ALA
1	C	244	GLY
1	E	298	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	435/456 (95%)	424 (98%)	11 (2%)	47	75
1	B	431/456 (94%)	424 (98%)	7 (2%)	62	83
1	C	436/456 (96%)	419 (96%)	17 (4%)	32	64
1	D	438/456 (96%)	423 (97%)	15 (3%)	37	68
1	E	438/456 (96%)	417 (95%)	21 (5%)	25	60
All	All	2178/2280 (96%)	2107 (97%)	71 (3%)	38	68

All (71) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	101	SER
1	A	102	ASP
1	A	151	MET
1	A	222	SER
1	A	292	ASP
1	A	313	PHE
1	A	329	LEU
1	A	361	MET
1	A	367	LEU
1	A	371	TYR
1	A	377	ILE
1	B	29	THR
1	B	242	ASP
1	B	245	GLN
1	B	329	LEU
1	B	371	TYR
1	B	471	CYS
1	B	493	ARG
1	C	26	VAL
1	C	150	LEU
1	C	151	MET
1	C	222	SER
1	C	224	ASP
1	C	240	LYS
1	C	241	LYS
1	C	242	ASP
1	C	243	THR
1	C	292	ASP
1	C	329	LEU
1	C	330	ARG
1	C	371	TYR
1	C	377	ILE
1	C	387	ASN
1	C	470	ASP
1	C	493	ARG
1	D	23	SER
1	D	24	GLN
1	D	25	ASN
1	D	89	ARG
1	D	229	ARG
1	D	240	LYS
1	D	241	LYS
1	D	242	ASP

Continued from previous page...

Mol	Chain	Res	Type
1	D	329	LEU
1	D	371	TYR
1	D	377	ILE
1	D	389	LYS
1	D	470	ASP
1	D	494	THR
1	D	518	THR
1	E	20	HIS
1	E	21	MET
1	E	24	GLN
1	E	25	ASN
1	E	26	VAL
1	E	29	THR
1	E	38	ARG
1	E	162	TYR
1	E	176	PHE
1	E	183	GLN
1	E	222	SER
1	E	229	ARG
1	E	294	SER
1	E	323	SER
1	E	328	GLU
1	E	329	LEU
1	E	371	TYR
1	E	377	ILE
1	E	471	CYS
1	E	474	GLN
1	E	517	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	86	ASN
1	A	161	GLN
1	A	273	GLN
1	B	55	GLN
1	B	64	ASN
1	B	86	ASN
1	B	132	GLN
1	B	250	HIS
1	B	273	GLN
1	C	48	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	49	GLN
1	C	54	GLN
1	C	64	ASN
1	C	86	ASN
1	C	207	HIS
1	C	250	HIS
1	C	273	GLN
1	D	64	ASN
1	D	86	ASN
1	D	250	HIS
1	D	273	GLN
1	E	86	ASN
1	E	145	ASN
1	E	273	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 ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	507/532 (95%)	-0.01	2 (0%)	92	90	26, 91, 125, 178	0
1	B	503/532 (94%)	0.13	7 (1%)	75	69	54, 103, 144, 170	0
1	C	508/532 (95%)	0.07	7 (1%)	75	69	37, 100, 137, 186	0
1	D	510/532 (95%)	0.20	16 (3%)	49	43	44, 111, 158, 212	0
1	E	511/532 (96%)	0.19	7 (1%)	75	69	48, 105, 138, 207	0
All	All	2539/2660 (95%)	0.12	39 (1%)	73	68	26, 102, 145, 212	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	502	TRP	4.1
1	B	173	GLN	3.7
1	D	337	GLY	3.5
1	D	154	GLN	3.2
1	D	405	LEU	3.1
1	C	532	LYS	3.0
1	B	409	MET	2.9
1	A	27	PHE	2.8
1	B	93	LYS	2.8
1	D	88	PHE	2.8
1	D	507	GLY	2.8
1	D	130	SER	2.7
1	E	465	HIS	2.7
1	E	514	LYS	2.7
1	C	212	LYS	2.6
1	C	29	THR	2.6
1	D	352	ASN	2.5
1	E	464	PRO	2.5
1	E	242	ASP	2.4
1	C	242	ASP	2.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	528	TYR	2.3
1	E	405	LEU	2.3
1	B	511	LYS	2.3
1	D	174	GLY	2.3
1	D	511	LYS	2.3
1	E	490	GLY	2.2
1	D	173	GLN	2.2
1	A	154	GLN	2.2
1	B	346	ASP	2.1
1	D	30	VAL	2.1
1	C	246	PRO	2.1
1	D	499	LYS	2.1
1	C	378	GLY	2.1
1	D	84	ALA	2.1
1	D	155	ASN	2.1
1	D	532	LYS	2.0
1	E	35	LYS	2.0
1	B	211	PHE	2.0
1	B	25	ASN	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 ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.