Full wwPDB X-ray Structure Validation Report (i)

Apr 2, 2024 – 02:14 PM JST

PDB ID	:	8J9F
Title	:	Structure of STG-hydrolyzing beta-glucosidase 1 (PSTG1)
Authors	:	Yanai, T.; Imaizumi, R.; Takahashi, Y.; Katsumura, E.; Yamamoto, M.; Nakayama, T.; Yamashita, S.; Takeshita, K.; Sakai, N.; Matsuura, H.
Deposited on	:	2023-05-03
Resolution	:	2.85 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

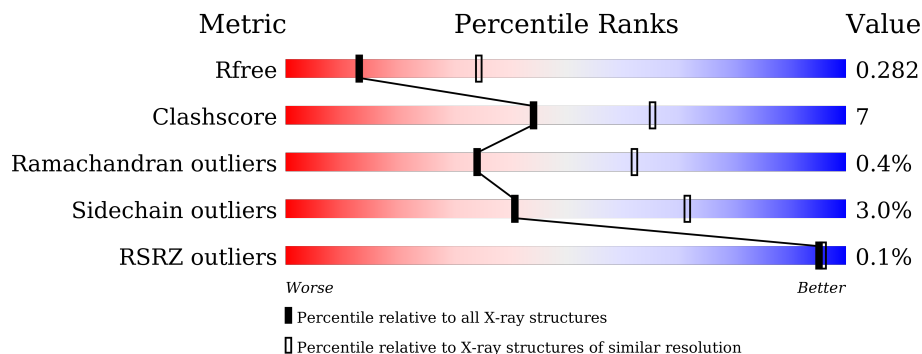|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (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 2.85 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		0.282
Clashscore		7
Ramachandran outliers		0.4%
Sidechain outliers		3.0%
RSRZ outliers		0.1%

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	3168 (2.90-2.82)
Clashscore	141614	3438 (2.90-2.82)
Ramachandran outliers	138981	3348 (2.90-2.82)
Sidechain outliers	138945	3351 (2.90-2.82)
RSRZ outliers	127900	3103 (2.90-2.82)

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	780	79% 16% •
1	B	780	78% 17% • 5%
1	C	780	78% 17% • •
1	D	780	78% 17% • •

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 23612 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 Beta-glucosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	745	Total 5765	C 3651	N 983	O 1107	S 24	0	0	0
1	B	744	Total 5756	C 3647	N 981	O 1103	S 25	0	0	0
1	C	749	Total 5795	C 3667	N 989	O 1114	S 25	0	0	0
1	D	749	Total 5787	C 3662	N 987	O 1113	S 25	0	0	0

There are 108 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-26	MET	-	initiating methionine	UNP D6RVX0
A	-25	ASN	-	expression tag	UNP D6RVX0
A	-24	HIS	-	expression tag	UNP D6RVX0
A	-23	LYS	-	expression tag	UNP D6RVX0
A	-22	VAL	-	expression tag	UNP D6RVX0
A	-21	HIS	-	expression tag	UNP D6RVX0
A	-20	HIS	-	expression tag	UNP D6RVX0
A	-19	HIS	-	expression tag	UNP D6RVX0
A	-18	HIS	-	expression tag	UNP D6RVX0
A	-17	HIS	-	expression tag	UNP D6RVX0
A	-16	HIS	-	expression tag	UNP D6RVX0
A	-15	ILE	-	expression tag	UNP D6RVX0
A	-14	GLU	-	expression tag	UNP D6RVX0
A	-13	GLY	-	expression tag	UNP D6RVX0
A	-12	ARG	-	expression tag	UNP D6RVX0
A	-11	HIS	-	expression tag	UNP D6RVX0
A	-10	MET	-	expression tag	UNP D6RVX0
A	-9	GLU	-	expression tag	UNP D6RVX0
A	-8	LEU	-	expression tag	UNP D6RVX0
A	-7	GLY	-	expression tag	UNP D6RVX0
A	-6	THR	-	expression tag	UNP D6RVX0

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	LEU	-	expression tag	UNP D6RVX0
A	-4	GLU	-	expression tag	UNP D6RVX0
A	-3	GLY	-	expression tag	UNP D6RVX0
A	-2	SER	-	expression tag	UNP D6RVX0
A	-1	GLU	-	expression tag	UNP D6RVX0
A	0	PHE	-	expression tag	UNP D6RVX0
B	-26	MET	-	initiating methionine	UNP D6RVX0
B	-25	ASN	-	expression tag	UNP D6RVX0
B	-24	HIS	-	expression tag	UNP D6RVX0
B	-23	LYS	-	expression tag	UNP D6RVX0
B	-22	VAL	-	expression tag	UNP D6RVX0
B	-21	HIS	-	expression tag	UNP D6RVX0
B	-20	HIS	-	expression tag	UNP D6RVX0
B	-19	HIS	-	expression tag	UNP D6RVX0
B	-18	HIS	-	expression tag	UNP D6RVX0
B	-17	HIS	-	expression tag	UNP D6RVX0
B	-16	HIS	-	expression tag	UNP D6RVX0
B	-15	ILE	-	expression tag	UNP D6RVX0
B	-14	GLU	-	expression tag	UNP D6RVX0
B	-13	GLY	-	expression tag	UNP D6RVX0
B	-12	ARG	-	expression tag	UNP D6RVX0
B	-11	HIS	-	expression tag	UNP D6RVX0
B	-10	MET	-	expression tag	UNP D6RVX0
B	-9	GLU	-	expression tag	UNP D6RVX0
B	-8	LEU	-	expression tag	UNP D6RVX0
B	-7	GLY	-	expression tag	UNP D6RVX0
B	-6	THR	-	expression tag	UNP D6RVX0
B	-5	LEU	-	expression tag	UNP D6RVX0
B	-4	GLU	-	expression tag	UNP D6RVX0
B	-3	GLY	-	expression tag	UNP D6RVX0
B	-2	SER	-	expression tag	UNP D6RVX0
B	-1	GLU	-	expression tag	UNP D6RVX0
B	0	PHE	-	expression tag	UNP D6RVX0
C	-26	MET	-	initiating methionine	UNP D6RVX0
C	-25	ASN	-	expression tag	UNP D6RVX0
C	-24	HIS	-	expression tag	UNP D6RVX0
C	-23	LYS	-	expression tag	UNP D6RVX0
C	-22	VAL	-	expression tag	UNP D6RVX0
C	-21	HIS	-	expression tag	UNP D6RVX0
C	-20	HIS	-	expression tag	UNP D6RVX0
C	-19	HIS	-	expression tag	UNP D6RVX0
C	-18	HIS	-	expression tag	UNP D6RVX0

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-17	HIS	-	expression tag	UNP D6RVX0
C	-16	HIS	-	expression tag	UNP D6RVX0
C	-15	ILE	-	expression tag	UNP D6RVX0
C	-14	GLU	-	expression tag	UNP D6RVX0
C	-13	GLY	-	expression tag	UNP D6RVX0
C	-12	ARG	-	expression tag	UNP D6RVX0
C	-11	HIS	-	expression tag	UNP D6RVX0
C	-10	MET	-	expression tag	UNP D6RVX0
C	-9	GLU	-	expression tag	UNP D6RVX0
C	-8	LEU	-	expression tag	UNP D6RVX0
C	-7	GLY	-	expression tag	UNP D6RVX0
C	-6	THR	-	expression tag	UNP D6RVX0
C	-5	LEU	-	expression tag	UNP D6RVX0
C	-4	GLU	-	expression tag	UNP D6RVX0
C	-3	GLY	-	expression tag	UNP D6RVX0
C	-2	SER	-	expression tag	UNP D6RVX0
C	-1	GLU	-	expression tag	UNP D6RVX0
C	0	PHE	-	expression tag	UNP D6RVX0
D	-26	MET	-	initiating methionine	UNP D6RVX0
D	-25	ASN	-	expression tag	UNP D6RVX0
D	-24	HIS	-	expression tag	UNP D6RVX0
D	-23	LYS	-	expression tag	UNP D6RVX0
D	-22	VAL	-	expression tag	UNP D6RVX0
D	-21	HIS	-	expression tag	UNP D6RVX0
D	-20	HIS	-	expression tag	UNP D6RVX0
D	-19	HIS	-	expression tag	UNP D6RVX0
D	-18	HIS	-	expression tag	UNP D6RVX0
D	-17	HIS	-	expression tag	UNP D6RVX0
D	-16	HIS	-	expression tag	UNP D6RVX0
D	-15	ILE	-	expression tag	UNP D6RVX0
D	-14	GLU	-	expression tag	UNP D6RVX0
D	-13	GLY	-	expression tag	UNP D6RVX0
D	-12	ARG	-	expression tag	UNP D6RVX0
D	-11	HIS	-	expression tag	UNP D6RVX0
D	-10	MET	-	expression tag	UNP D6RVX0
D	-9	GLU	-	expression tag	UNP D6RVX0
D	-8	LEU	-	expression tag	UNP D6RVX0
D	-7	GLY	-	expression tag	UNP D6RVX0
D	-6	THR	-	expression tag	UNP D6RVX0
D	-5	LEU	-	expression tag	UNP D6RVX0
D	-4	GLU	-	expression tag	UNP D6RVX0
D	-3	GLY	-	expression tag	UNP D6RVX0

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	SER	-	expression tag	UNP D6RVX0
D	-1	GLU	-	expression tag	UNP D6RVX0
D	0	PHE	-	expression tag	UNP D6RVX0

• Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
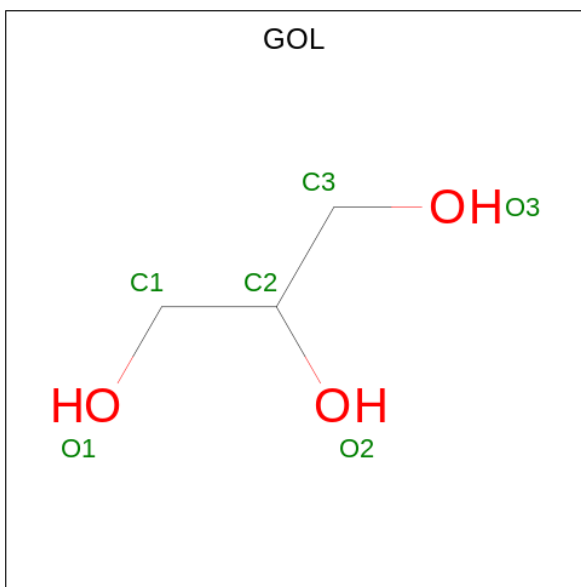
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	D	1	Total 6	C 3	O 3	0	0

• Molecule 3 is water.

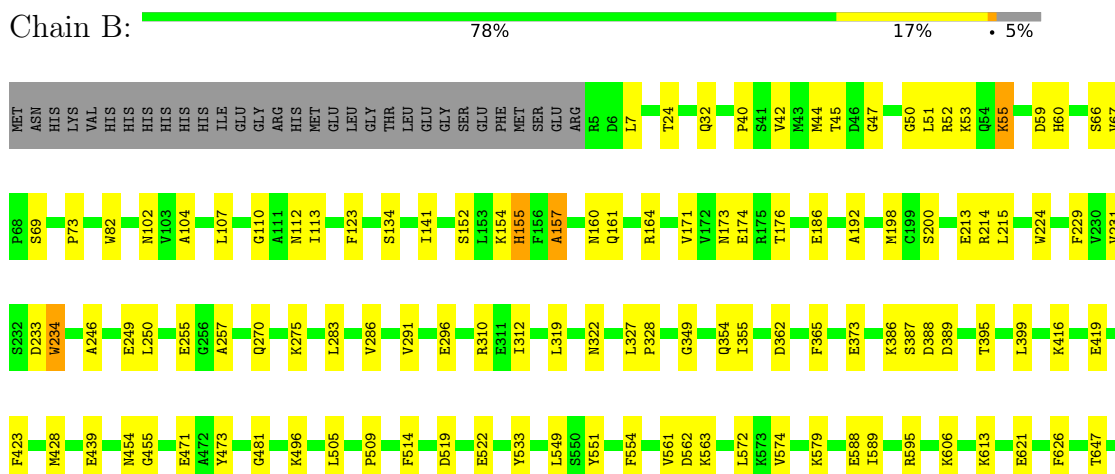| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	109	Total 109	O 109	0	0
3	B	136	Total 136	O 136	0	0
3	C	109	Total 109	O 109	0	0
3	D	137	Total 137	O 137	0	0

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.
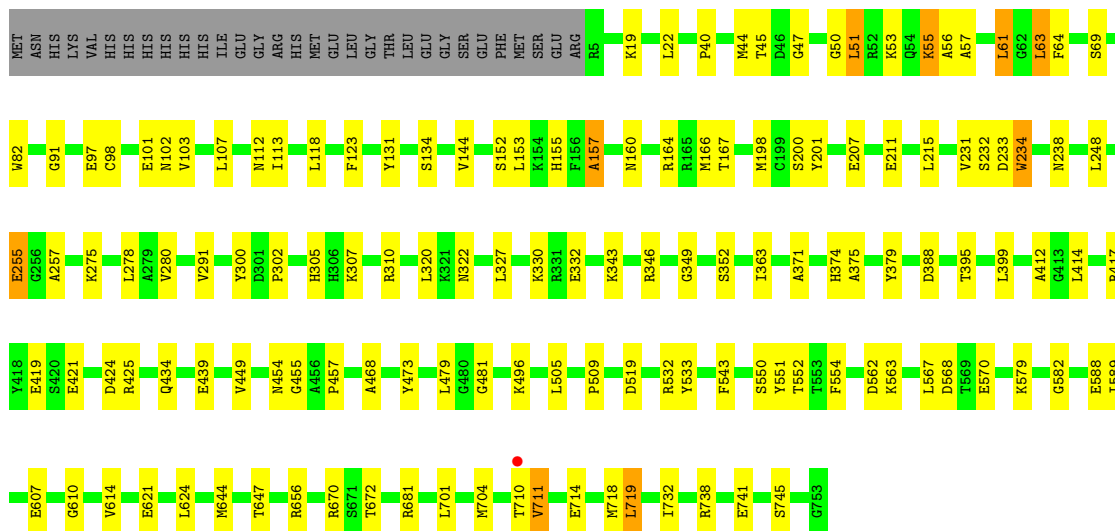
- Molecule 1: Beta-glucosidase
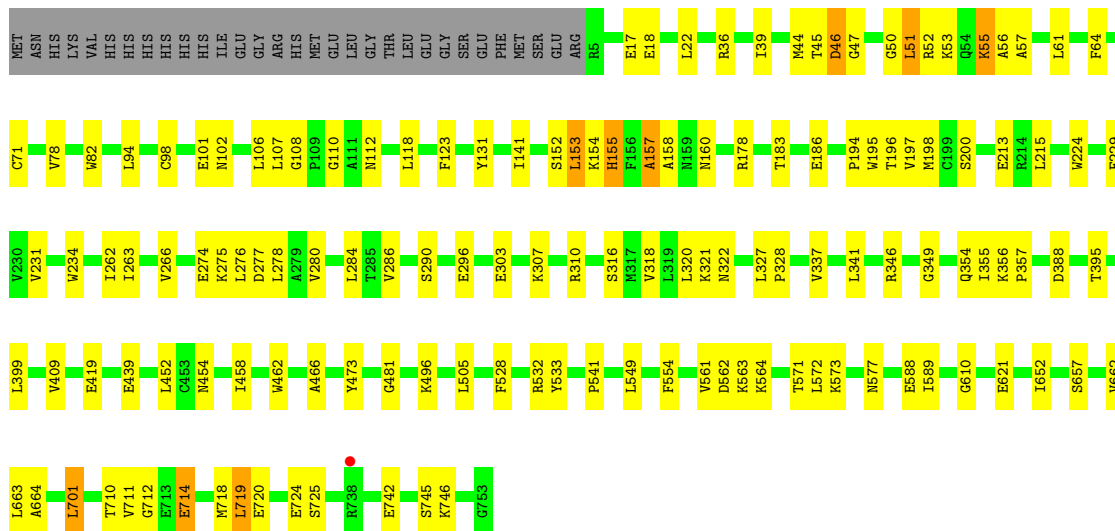
Chain A:

- Molecule 1: Beta-glucosidase

Chain B:

E651 I652 R656 L663 A664 R670 R681 N682 S683 F697 A698 Q699 K700 L701 I705 P706 F707 G708 GLU THR VAL GLY GLU E714 L719 K723 L728 F734 E741 S745 G753
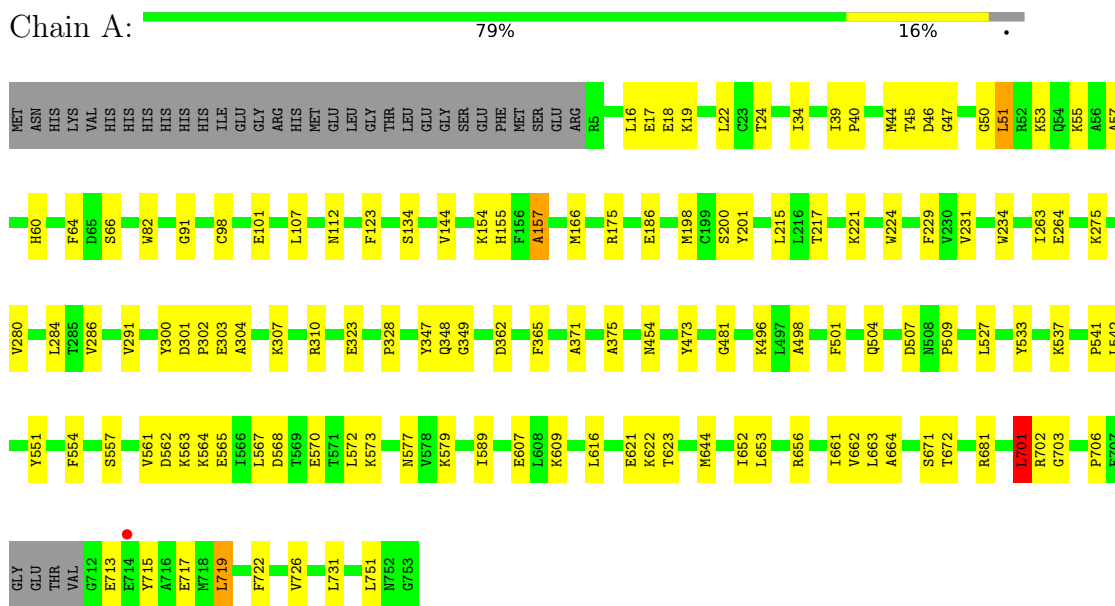
• Molecule 1: Beta-glucosidase

Chain C:

78% 17%

MET ASN HIS LYS VAL HIS HIS HIS HIS HIS ILE GLU GLY ARG HIS MET GLU LEU GLY THR LEU GLU GLY SER GLU PHE MET SER GLU ARG R5 K19 L22 P40 M44 T45 D46 G47 G50 L51 R52 K53 Q54 K55 A56 A57 L61 G62 L63 F64 S69

W82 G91 E97 C98 E101 N102 V103 L107 N112 I113 L118 F123 Y131 S134 V144 S152 L153 K154 H155 F156 A157 N160 R164 R165 M166 T167 M198 C199 S200 Y201 E207 E211 L215 V231 S232 D233 W234 N238 L248

E255 G256 A257 K275 L278 A279 V280 V291 Y300 D301 P302 H305 H306 K307 R310 L320 K321 N322 L327 K330 R331 E332 K343 R346 G349 S352 I363 A371 H374 A375 Y379 D388 T395 L399 A412 G413 L414 R417

Y418 E419 S420 E421 D424 R425 Q434 E439 V449 N454 G455 A456 P457 A468 Y473 L479 G480 G481 K496 L505 P509 D519 R532 Y533 F543 S550 Y551 T552 T553 F554 D562 K563 L567 D568 T569 E570 K579 G582 E588 I589

E607 G610 V614 E621 L624 M644 T647 R656 R670 S671 T672 R681 L701 M704 T710 V711 E714 M718 L719 I732 R738 E741 S745 G753

• Molecule 1: Beta-glucosidase

Chain D:

78% 17%

MET ASN HIS LYS VAL HIS HIS HIS HIS HIS ILE GLU GLY ARG HIS MET GLU LEU GLY THR LEU GLU GLY SER GLU PHE MET SER GLU ARG R5 E17 E18 L22 R36 I39 M44 T45 D46 G47 G50 L51 R52 K53 Q54 K55 A56 A57 L61 F64

C71 V78 W82 L94 C98 E101 N102 L106 L107 G108 P109 G110 A111 N112 L118 F123 Y131 I141 S152 L153 K154 H155 F156 A157 A158 N159 N160 R178 T183 E186 P194 W195 T196 V197 M198 C199 S200 E213 R214 L215 W224 F229

V230 V231 W234 I262 I263 V266 E274 K275 L276 D277 L278 A279 V280 L284 T285 V286 S290 E296 E303 K307 R310 S316 M317 V318 L319 L320 K321 N322 L327 P328 V337 L341 R346 G349 Q354 I355 K356 P357 D388 T395

L399 V409 E419 E439 L452 C453 N454 I458 W462 A466 Y473 G481 K496 L505 F528 R532 Y533 P541 L549 F554 V561 D562 K563 K564 T571 L572 K573 N577 E588 I589 G610 E621 I652 S657 V662

L663 A664 L701 T710 V711 G712 E713 E714 M718 L719 E720 E724 S725 R738 E742 S745 K746 G753

4　Data and refinement statistics　ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	65.30Å　113.25Å　158.66Å 71.47°　　82.68°　　79.83°	Depositor
Resolution (Å)	47.60　–　2.85 47.61　–　2.85	Depositor EDS
% Data completeness (in resolution range)	99.7 (47.60-2.85) 99.7 (47.61-2.85)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.64 (at 2.86Å)	Xtriage
Refinement program	REFMAC 5.8.0405, PHENIX 1.20.1-4487	Depositor
R, R_{free}	0.232　,　0.282 0.232　,　0.282	Depositor DCC
R_{free} test set	5067 reflections (5.15%)	wwPDB-VP
Wilson B-factor (Å^2)	23.2	Xtriage
Anisotropy	0.087	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 45.9	EDS
L-test for twinning[2]	$< |L| > = 0.43, < L^2 > = 0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.86	EDS
Total number of atoms	23612	wwPDB-VP
Average B, all atoms (Å^2)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.32% 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: GOL

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	0.53	0/5876	0.72	0/7947
1	B	0.53	0/5867	0.72	0/7934
1	C	0.51	0/5906	0.71	0/7988
1	D	0.51	0/5898	0.71	0/7978
All	All	0.52	0/23547	0.71	0/31847

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5765	0	5716	75	0
1	B	5756	0	5713	78	0
1	C	5795	0	5743	75	0
1	D	5787	0	5737	83	0
2	A	6	0	8	1	0
2	B	6	0	8	1	0
2	D	6	0	8	0	0
3	A	109	0	0	9	0
3	B	136	0	0	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	109	0	0	6	0
3	D	137	0	0	8	0
All	All	23612	0	22933	303	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 7.

All (303) 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:D:110:GLY:HA2	1:D:154:LYS:HB2	1.50	0.93
1:C:496:LYS:HD2	1:C:589:ILE:HB	1.64	0.80
1:A:82:TRP:HB2	1:A:589:ILE:HD13	1.69	0.75
1:B:554:PHE:O	1:B:656:ARG:NH2	2.21	0.73
1:A:701:LEU:O	1:A:703:GLY:N	2.21	0.72
1:D:110:GLY:CA	1:D:154:LYS:HB2	2.19	0.71
1:B:496:LYS:HD2	1:B:589:ILE:HB	1.73	0.70
1:D:82:TRP:HB2	1:D:589:ILE:HD13	1.72	0.70
1:D:496:LYS:HD2	1:D:589:ILE:HB	1.74	0.70
1:A:554:PHE:O	1:A:656:ARG:NH2	2.26	0.69
1:C:82:TRP:HB2	1:C:589:ILE:HD13	1.76	0.68
1:B:270:GLN:NE2	1:D:213:GLU:OE2	2.27	0.67
1:A:701:LEU:C	1:A:703:GLY:H	1.98	0.67
1:B:113:ILE:O	1:B:160:ASN:ND2	2.29	0.66
1:D:108:GLY:HA2	1:D:154:LYS:HG3	1.78	0.66
1:A:16:LEU:N	3:A:901:HOH:O	2.24	0.66
1:A:323:GLU:HG2	3:A:999:HOH:O	1.96	0.65
1:C:567:LEU:HD12	1:C:570:GLU:OE2	1.97	0.64
1:D:47:GLY:HA3	1:D:50:GLY:O	1.98	0.63
1:B:328:PRO:HB3	1:B:551:TYR:CE2	2.33	0.63
1:C:22:LEU:HD12	1:C:280:VAL:HG13	1.79	0.63
1:C:55:LYS:H	1:C:55:LYS:HD2	1.63	0.62
1:D:710:THR:O	1:D:712:GLY:N	2.32	0.62
1:A:57:ALA:HB1	1:A:64:PHE:HD2	1.65	0.61
1:D:195:TRP:HZ3	1:D:290:SER:HB3	1.64	0.61
1:D:346:ARG:HH22	1:D:419:GLU:HB2	1.66	0.61
1:D:57:ALA:HA	3:D:905:HOH:O	2.00	0.61
1:B:310:ARG:CZ	1:B:481:GLY:HA3	2.30	0.61
1:C:112:ASN:OD1	1:C:155:HIS:HB2	2.00	0.61
1:C:310:ARG:HD2	3:C:839:HOH:O	2.02	0.60
1:C:47:GLY:HA3	1:C:50:GLY:O	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:102:ASN:HB2	3:B:1000:HOH:O	2.02	0.60
1:A:40:PRO:HG3	1:A:291:VAL:HG21	1.84	0.59
1:B:663:LEU:HA	3:B:1001:HOH:O	2.01	0.59
1:C:425:ARG:NH2	1:C:457:PRO:O	2.29	0.59
1:A:47:GLY:HA3	1:A:50:GLY:O	2.02	0.59
1:B:47:GLY:HA3	1:B:50:GLY:O	2.03	0.59
1:B:55:LYS:HE3	1:B:67:VAL:HG22	1.85	0.59
1:B:697:PHE:CE2	1:B:701:LEU:HD13	2.38	0.58
1:A:662:VAL:HG23	1:A:663:LEU:HG	1.84	0.58
1:C:568:ASP:OD2	1:C:672:THR:N	2.35	0.57
1:A:362:ASP:HB3	1:A:365:PHE:HB3	1.86	0.57
1:B:112:ASN:OD1	1:B:155:HIS:HB2	2.05	0.57
1:D:55:LYS:H	1:D:55:LYS:HD2	1.69	0.57
1:D:742:GLU:HG3	1:D:746:LYS:HE2	1.86	0.57
1:D:152:SER:HA	1:D:196:THR:O	2.05	0.57
1:C:47:GLY:HA2	3:C:845:HOH:O	2.04	0.56
1:D:57:ALA:HB1	1:D:64:PHE:HD2	1.70	0.56
1:A:572:LEU:HD12	1:A:573:LYS:H	1.69	0.56
1:C:113:ILE:O	1:C:160:ASN:ND2	2.37	0.56
1:C:562:ASP:OD1	1:C:563:LYS:N	2.38	0.56
1:C:352:SER:OG	1:C:421:GLU:OE1	2.23	0.56
1:D:18:GLU:OE1	1:D:36:ARG:NH1	2.39	0.55
1:D:153:LEU:HG	1:D:197:VAL:HG22	1.88	0.55
1:B:110:GLY:HA2	1:B:154:LYS:HG2	1.88	0.55
1:D:562:ASP:OD1	1:D:563:LYS:N	2.39	0.55
1:B:44:MET:HE2	1:B:107:LEU:HD21	1.88	0.55
1:A:264:GLU:HG2	3:A:979:HOH:O	2.07	0.55
1:B:157:ALA:HB3	1:B:200:SER:OG	2.06	0.55
1:A:44:MET:HE2	1:A:107:LEU:HD21	1.88	0.54
1:A:454:ASN:O	1:A:473:TYR:HA	2.06	0.54
1:B:171:VAL:HB	1:B:522:GLU:HA	1.89	0.54
1:C:614:VAL:HB	1:C:624:LEU:HD21	1.89	0.54
1:A:229:PHE:HE2	1:A:286:VAL:HB	1.72	0.54
1:C:704:MET:HG2	1:C:738:ARG:NH2	2.23	0.54
1:D:44:MET:HE2	1:D:107:LEU:HD21	1.90	0.54
1:D:153:LEU:HB2	1:D:197:VAL:HG22	1.90	0.54
1:B:123:PHE:CE2	1:B:349:GLY:HA3	2.42	0.54
1:D:303:GLU:OE2	1:D:303:GLU:HA	2.08	0.53
1:B:509:PRO:HB3	1:B:533:TYR:CD1	2.43	0.53
1:A:310:ARG:CZ	1:A:481:GLY:HA3	2.39	0.53
1:B:32:GLN:NE2	3:B:903:HOH:O	2.33	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:17:GLU:HG3	1:A:263:ILE:HD13	1.91	0.53
1:D:55:LYS:HG2	1:D:56:ALA:H	1.73	0.52
1:B:419:GLU:OE2	1:B:455:GLY:N	2.40	0.52
1:A:51:LEU:HD11	1:A:98:CYS:SG	2.50	0.52
1:A:568:ASP:OD2	1:A:672:THR:N	2.39	0.52
1:A:701:LEU:HD21	1:A:731:LEU:HD13	1.92	0.52
1:B:40:PRO:HG3	1:B:291:VAL:HG21	1.90	0.52
1:B:47:GLY:HA2	3:B:968:HOH:O	2.09	0.52
1:C:395:THR:O	1:C:399:LEU:HG	2.10	0.52
1:D:112:ASN:OD1	1:D:155:HIS:HB2	2.10	0.52
1:C:61:LEU:HG	1:D:718:MET:CE	2.40	0.52
1:D:17:GLU:HG3	1:D:263:ILE:HD13	1.92	0.52
1:D:577:ASN:HB3	1:D:621:GLU:OE2	2.09	0.52
1:B:681:ARG:NH1	1:B:741:GLU:OE2	2.43	0.52
1:D:318:VAL:HG23	3:D:987:HOH:O	2.09	0.51
1:B:60:HIS:O	2:B:801:GOL:H32	2.11	0.51
1:D:22:LEU:HD12	1:D:280:VAL:HG13	1.91	0.51
1:C:91:GLY:O	1:C:144:VAL:HA	2.11	0.51
1:C:346:ARG:HH22	1:C:419:GLU:HB2	1.76	0.51
1:C:421:GLU:O	1:D:718:MET:HE3	2.11	0.51
1:B:174:GLU:OE1	1:B:214:ARG:NH2	2.43	0.51
1:A:123:PHE:CE2	1:A:349:GLY:HA3	2.45	0.51
1:C:55:LYS:HG2	1:C:56:ALA:H	1.76	0.51
1:C:496:LYS:HE2	1:C:656:ARG:O	2.10	0.51
1:B:387:SER:HG	1:B:389:ASP:H	1.57	0.51
1:A:328:PRO:HB3	1:A:551:TYR:CE2	2.46	0.50
1:C:211:GLU:OE1	1:C:238:ASN:HB3	2.12	0.50
1:D:561:VAL:HB	1:D:572:LEU:HD11	1.94	0.50
1:C:310:ARG:CZ	1:C:481:GLY:HA3	2.41	0.50
1:A:509:PRO:HB3	1:A:533:TYR:CD2	2.47	0.50
1:B:213:GLU:HG3	1:B:246:ALA:HA	1.93	0.50
1:C:198:MET:HA	1:C:231:VAL:O	2.11	0.50
1:B:683:SER:O	1:B:728:LEU:HG	2.12	0.49
1:A:557:SER:O	1:A:577:ASN:HB2	2.11	0.49
1:B:257:ALA:HB2	3:B:1017:HOH:O	2.11	0.49
1:A:371:ALA:HB1	1:A:375:ALA:HB3	1.94	0.49
1:A:46:ASP:HA	1:A:107:LEU:HB2	1.95	0.49
1:A:579:LYS:HG3	1:A:621:GLU:HB2	1.94	0.49
1:C:123:PHE:CE2	1:C:349:GLY:HA3	2.47	0.49
1:A:186:GLU:HG3	1:A:224:TRP:CE2	2.47	0.49
1:A:198:MET:HA	1:A:231:VAL:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:310:ARG:CZ	1:D:481:GLY:HA3	2.42	0.48
1:B:395:THR:O	1:B:399:LEU:HG	2.12	0.48
1:D:662:VAL:HG23	1:D:663:LEU:HG	1.93	0.48
1:B:387:SER:OG	1:B:388:ASP:N	2.46	0.48
1:C:51:LEU:HD11	1:C:98:CYS:SG	2.53	0.48
1:D:356:LYS:HD2	1:D:357:PRO:HD2	1.96	0.48
1:D:341:LEU:HD22	3:D:914:HOH:O	2.12	0.48
1:A:722:PHE:O	1:A:726:VAL:HG23	2.14	0.48
1:B:73:PRO:HG2	1:B:312:ILE:HG22	1.95	0.48
1:C:40:PRO:HG3	1:C:291:VAL:HG21	1.96	0.48
1:D:141:ILE:HD13	1:D:194:PRO:HB3	1.95	0.48
1:C:419:GLU:OE2	1:C:455:GLY:N	2.36	0.48
1:D:554:PHE:CZ	1:D:588:GLU:HB2	2.49	0.48
1:A:562:ASP:OD1	1:A:563:LYS:N	2.47	0.48
1:B:428:MET:HG3	1:B:505:LEU:HD13	1.96	0.48
1:C:53:LYS:HD2	1:C:101:GLU:HB3	1.96	0.47
1:B:561:VAL:HB	1:B:572:LEU:HD11	1.95	0.47
1:D:178:ARG:O	1:D:183:THR:OG1	2.25	0.47
1:A:154:LYS:HD2	1:A:155:HIS:NE2	2.29	0.47
1:A:607:GLU:O	1:A:609:LYS:HG2	2.14	0.47
1:B:322:ASN:ND2	1:B:327:LEU:HB2	2.29	0.47
1:A:91:GLY:O	1:A:144:VAL:HA	2.14	0.47
1:A:496:LYS:HD2	1:A:589:ILE:HB	1.95	0.47
1:A:652:ILE:O	1:A:664:ALA:HA	2.15	0.47
1:B:355:ILE:HD11	3:B:968:HOH:O	2.15	0.47
1:A:572:LEU:HD12	1:A:573:LYS:N	2.29	0.47
1:B:595:ARG:HD3	1:B:651:GLU:OE1	2.15	0.47
1:D:454:ASN:O	1:D:473:TYR:HA	2.14	0.47
1:C:63:LEU:HD21	1:D:719:LEU:HG	1.97	0.47
1:C:371:ALA:HB1	1:C:375:ALA:HB3	1.97	0.47
1:C:275:LYS:HA	1:C:275:LYS:HD3	1.66	0.46
1:A:53:LYS:HD2	1:A:101:GLU:HB3	1.97	0.46
1:A:19:LYS:HG2	1:A:280:VAL:HG21	1.96	0.46
1:B:647:THR:HG23	1:B:670:ARG:HA	1.96	0.46
1:D:53:LYS:HD2	1:D:101:GLU:HB3	1.97	0.46
1:D:276:LEU:O	1:D:280:VAL:HG23	2.14	0.46
1:D:337:VAL:HA	1:D:409:VAL:O	2.15	0.46
1:A:715:TYR:OH	1:B:354:GLN:NE2	2.47	0.46
1:B:164:ARG:NE	1:B:519:ASP:OD1	2.41	0.46
1:D:395:THR:O	1:D:399:LEU:HG	2.16	0.46
1:C:19:LYS:HG2	1:C:280:VAL:HG21	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:509:PRO:HB3	1:C:533:TYR:CD2	2.50	0.46
1:A:112:ASN:OD1	1:A:155:HIS:HB2	2.16	0.46
1:C:343:LYS:HD3	1:C:379:TYR:CZ	2.51	0.46
1:A:18:GLU:HB3	1:A:34:ILE:HD13	1.97	0.46
1:C:255:GLU:OE2	1:C:257:ALA:HB3	2.16	0.46
1:A:175:ARG:NH2	1:A:527:LEU:HD11	2.31	0.46
1:B:198:MET:HA	1:B:231:VAL:O	2.16	0.46
1:D:274:GLU:HA	1:D:277:ASP:HB2	1.98	0.46
1:D:321:LYS:NZ	1:D:466:ALA:O	2.42	0.45
1:A:701:LEU:C	1:A:703:GLY:N	2.65	0.45
1:B:141:ILE:HB	1:B:192:ALA:HB1	1.99	0.45
1:D:322:ASN:ND2	1:D:327:LEU:HB2	2.31	0.45
1:C:167:THR:HB	1:C:519:ASP:OD2	2.16	0.45
1:A:577:ASN:OD1	1:A:623:THR:OG1	2.35	0.45
1:B:52:ARG:HG3	1:B:354:GLN:O	2.16	0.45
1:B:161:GLN:HB3	1:B:514:PHE:HE1	1.82	0.45
1:B:186:GLU:HG3	1:B:224:TRP:CE2	2.52	0.45
1:D:356:LYS:HD2	1:D:357:PRO:CD	2.46	0.45
1:B:229:PHE:HE2	1:B:286:VAL:HB	1.82	0.45
1:D:123:PHE:CE2	1:D:349:GLY:HA3	2.51	0.45
1:D:39:ILE:HD13	1:D:284:LEU:HD21	1.99	0.45
1:A:60:HIS:O	2:A:801:GOL:H32	2.15	0.45
1:C:718:MET:HE1	1:D:61:LEU:HD22	1.98	0.45
1:C:51:LEU:HD21	1:C:103:VAL:HG21	1.98	0.45
1:C:61:LEU:HG	1:D:718:MET:HE1	1.99	0.45
1:D:46:ASP:HA	1:D:107:LEU:HB2	1.98	0.45
1:A:616:LEU:HD23	1:A:622:LYS:HE3	1.99	0.45
1:C:454:ASN:O	1:C:473:TYR:HA	2.18	0.45
1:C:554:PHE:CE2	1:C:588:GLU:HB2	2.52	0.44
1:D:102:ASN:HB2	3:D:1004:HOH:O	2.16	0.44
1:A:565:GLU:HG2	3:A:976:HOH:O	2.17	0.44
1:D:198:MET:HA	1:D:231:VAL:O	2.18	0.44
1:D:572:LEU:HD12	1:D:573:LYS:H	1.82	0.44
1:D:701:LEU:HD13	1:D:701:LEU:HA	1.75	0.44
1:B:319:LEU:HD23	1:B:549:LEU:HB2	2.00	0.44
1:D:720:GLU:HG3	1:D:724:GLU:OE2	2.18	0.44
1:A:300:TYR:O	1:A:302:PRO:HD3	2.17	0.44
1:A:541:PRO:HA	3:A:944:HOH:O	2.16	0.44
1:A:653:LEU:HD22	1:A:661:ILE:HG21	1.98	0.44
1:B:255:GLU:OE1	1:B:257:ALA:HB3	2.17	0.44
1:C:417:ARG:NH1	3:C:810:HOH:O	2.44	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:562:ASP:OD1	1:B:563:LYS:N	2.50	0.44
1:B:579:LYS:HB2	1:B:621:GLU:HB2	2.00	0.44
1:D:52:ARG:HG3	1:D:354:GLN:O	2.18	0.44
1:D:262:ILE:O	1:D:266:VAL:HG23	2.18	0.44
1:A:537:LYS:HB3	3:A:936:HOH:O	2.17	0.44
1:A:719:LEU:HD23	1:A:719:LEU:HA	1.82	0.44
1:C:44:MET:HE2	1:C:107:LEU:HD21	2.00	0.44
1:C:157:ALA:HB3	1:C:200:SER:OG	2.17	0.44
1:A:561:VAL:HB	1:A:572:LEU:HD11	2.00	0.43
1:B:454:ASN:O	1:B:473:TYR:HA	2.17	0.43
1:C:102:ASN:HB2	3:C:898:HOH:O	2.17	0.43
1:C:232:SER:HB3	1:C:248:LEU:HD11	2.00	0.43
1:C:552:THR:OG1	1:C:582:GLY:HA3	2.18	0.43
1:D:131:TYR:CE2	1:D:610:GLY:HA2	2.53	0.43
1:A:347:TYR:CE1	1:A:348:GLN:HG2	2.53	0.43
1:C:505:LEU:HB2	3:C:879:HOH:O	2.17	0.43
1:A:157:ALA:HB3	1:A:200:SER:OG	2.19	0.43
1:D:274:GLU:O	1:D:278:LEU:HD13	2.19	0.43
1:B:123:PHE:CZ	1:B:349:GLY:HA3	2.54	0.43
1:B:362:ASP:HB3	1:B:365:PHE:HB3	2.00	0.43
1:B:705:ILE:CD1	1:B:723:LYS:HG2	2.48	0.43
1:A:496:LYS:HE2	1:A:656:ARG:O	2.18	0.43
1:B:24:THR:HB	3:B:1009:HOH:O	2.19	0.43
1:A:504:GLN:HG2	1:A:507:ASP:OD2	2.19	0.43
1:C:233:ASP:OD1	1:C:234:TRP:N	2.44	0.43
1:C:320:LEU:HD22	1:C:543:PHE:CD1	2.53	0.43
1:C:711:VAL:HG21	1:C:719:LEU:HD12	2.00	0.43
1:B:249:GLU:HB3	1:B:283:LEU:HD21	2.00	0.43
1:D:532:ARG:NH1	3:D:908:HOH:O	2.42	0.43
1:B:275:LYS:HA	1:B:275:LYS:HD3	1.87	0.43
1:C:300:TYR:O	1:C:302:PRO:HD3	2.17	0.43
1:A:47:GLY:HA2	3:A:973:HOH:O	2.18	0.43
1:B:574:VAL:HB	1:B:626:PHE:HB2	2.01	0.43
1:C:164:ARG:NE	1:C:519:ASP:OD1	2.48	0.43
1:C:166:MET:HA	1:C:201:TYR:HB3	2.01	0.43
1:B:373:GLU:OE1	3:B:901:HOH:O	2.21	0.43
1:D:318:VAL:HG12	1:D:320:LEU:HG	2.01	0.43
1:D:652:ILE:O	1:D:664:ALA:HA	2.19	0.43
1:B:231:VAL:HG23	1:B:250:LEU:HB3	2.01	0.42
1:B:705:ILE:HD13	1:B:723:LYS:HG2	2.01	0.42
1:C:97:GLU:OE2	1:C:305:HIS:ND1	2.39	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:22:LEU:HD12	1:A:280:VAL:HG13	2.01	0.42
1:D:528:PHE:O	1:D:533:TYR:HB2	2.18	0.42
1:D:714:GLU:H	1:D:714:GLU:HG3	1.53	0.42
1:A:498:ALA:HB3	3:A:992:HOH:O	2.20	0.42
1:B:110:GLY:CA	1:B:154:LYS:HG2	2.49	0.42
1:D:158:ALA:HB1	1:D:160:ASN:OD1	2.18	0.42
1:D:186:GLU:HG3	1:D:224:TRP:CE2	2.54	0.42
1:D:328:PRO:HD2	3:D:980:HOH:O	2.19	0.42
1:A:567:LEU:HD12	1:A:570:GLU:OE2	2.19	0.42
1:B:233:ASP:OD1	1:B:234:TRP:N	2.48	0.42
1:B:706:PRO:HD3	1:B:734:PHE:O	2.20	0.42
1:C:57:ALA:HB1	1:C:64:PHE:HD2	1.85	0.42
1:A:304:ALA:O	1:A:307:LYS:HB2	2.19	0.42
1:D:71:CYS:HB2	1:D:355:ILE:HB	2.02	0.42
1:A:301:ASP:OD1	1:A:303:GLU:HB3	2.20	0.42
1:A:717:GLU:HB3	1:B:423:PHE:CE2	2.55	0.42
1:C:118:LEU:O	1:C:424:ASP:HB3	2.20	0.42
1:C:363:ILE:HD11	1:C:479:LEU:HD11	2.00	0.42
1:C:532:ARG:NH2	1:C:607:GLU:HG2	2.34	0.42
1:D:229:PHE:HE2	1:D:286:VAL:HB	1.84	0.42
1:D:310:ARG:HD2	3:D:946:HOH:O	2.20	0.42
1:B:82:TRP:HB2	1:B:589:ILE:HD13	2.00	0.42
1:D:541:PRO:HA	3:D:906:HOH:O	2.19	0.42
1:B:7:LEU:HD23	1:B:7:LEU:HA	1.80	0.41
1:C:330:LYS:HD3	1:C:332:GLU:OE2	2.20	0.41
1:C:732:ILE:HD13	1:C:741:GLU:HG2	2.02	0.41
1:D:94:LEU:HD13	1:D:106:LEU:HD21	2.02	0.41
1:B:42:VAL:HB	1:B:104:ALA:CB	2.51	0.41
1:A:751:LEU:HD23	1:A:751:LEU:HA	1.82	0.41
1:C:322:ASN:ND2	1:C:327:LEU:HB2	2.35	0.41
1:D:452:LEU:HD13	1:D:458:ILE:HD11	2.01	0.41
1:C:55:LYS:HG2	3:C:812:HOH:O	2.19	0.41
1:A:501:PHE:O	1:A:542:LEU:HB3	2.20	0.41
1:B:652:ILE:O	1:B:664:ALA:HA	2.21	0.41
1:C:579:LYS:HG3	1:C:621:GLU:HB2	2.01	0.41
1:D:51:LEU:HD11	1:D:98:CYS:SG	2.61	0.41
1:A:217:THR:HA	1:A:221:LYS:HB2	2.02	0.41
1:B:55:LYS:H	1:B:55:LYS:HG2	1.34	0.41
1:C:131:TYR:CE2	1:C:610:GLY:HA2	2.55	0.41
1:A:24:THR:HB	3:A:984:HOH:O	2.20	0.41
1:A:166:MET:HA	1:A:201:TYR:HB3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:53:LYS:O	1:B:66:SER:HB2	2.21	0.41
1:C:332:GLU:HA	1:C:374:HIS:O	2.21	0.41
1:D:78:VAL:HA	1:D:316:SER:OG	2.21	0.41
1:D:153:LEU:HD22	1:D:153:LEU:HA	1.91	0.41
1:B:588:GLU:O	1:B:613:LYS:HA	2.21	0.40
1:A:303:GLU:OE1	1:A:303:GLU:HA	2.21	0.40
1:B:173:ASN:ND2	1:B:176:THR:H	2.19	0.40
1:C:449:VAL:HG22	1:C:468:ALA:HB3	2.04	0.40
1:C:647:THR:HG23	1:C:670:ARG:HA	2.02	0.40
1:D:118:LEU:HD11	1:D:505:LEU:HD21	2.03	0.40
1:D:452:LEU:HD11	1:D:462:TRP:HH2	1.86	0.40
1:A:568:ASP:OD2	1:A:671:SER:HA	2.21	0.40
1:B:496:LYS:HE2	1:B:656:ARG:O	2.21	0.40
1:B:549:LEU:HA	1:B:549:LEU:HD23	1.88	0.40
1:C:554:PHE:CZ	1:C:588:GLU:HB2	2.56	0.40
1:D:157:ALA:HB3	1:D:200:SER:OG	2.21	0.40
1:A:39:ILE:HD13	1:A:284:LEU:HD21	2.03	0.40
1:A:53:LYS:O	1:A:66:SER:HB2	2.21	0.40
1:B:699:GLN:C	1:B:701:LEU:H	2.25	0.40
1:C:346:ARG:HD2	1:C:414:LEU:O	2.21	0.40
1:C:550:SER:OG	1:C:551:TYR:N	2.54	0.40
1:B:386:LYS:HD3	1:B:386:LYS:HA	1.92	0.40
1:B:454:ASN:OD1	1:B:471:GLU:OE2	2.39	0.40
1:C:412:ALA:HB1	1:C:434:GLN:OE1	2.22	0.40
1:D:55:LYS:H	1:D:55:LYS:CD	2.31	0.40
1:D:549:LEU:HA	1:D:549:LEU:HD23	1.88	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	741/780 (95%)	710 (96%)	26 (4%)	5 (1%)	22	50
1	B	740/780 (95%)	712 (96%)	26 (4%)	2 (0%)	41	68
1	C	747/780 (96%)	719 (96%)	27 (4%)	1 (0%)	51	79
1	D	747/780 (96%)	722 (97%)	22 (3%)	3 (0%)	34	62
All	All	2975/3120 (95%)	2863 (96%)	101 (3%)	11 (0%)	34	62

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	157	ALA
1	A	702	ARG
1	B	157	ALA
1	C	157	ALA
1	D	155	HIS
1	D	157	ALA
1	D	711	VAL
1	A	701	LEU
1	A	706	PRO
1	A	713	GLU
1	B	155	HIS

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	611/648 (94%)	599 (98%)	12 (2%)	55	80
1	B	610/648 (94%)	594 (97%)	16 (3%)	46	75
1	C	614/648 (95%)	589 (96%)	25 (4%)	30	61
1	D	613/648 (95%)	593 (97%)	20 (3%)	38	68
All	All	2448/2592 (94%)	2375 (97%)	73 (3%)	41	72

All (73) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	THR
1	A	51	LEU
1	A	55	LYS
1	A	134	SER
1	A	215	LEU
1	A	234	TRP
1	A	275	LYS
1	A	564	LYS
1	A	644	MET
1	A	681	ARG
1	A	701	LEU
1	A	719	LEU
1	B	45	THR
1	B	51	LEU
1	B	55	LYS
1	B	59	ASP
1	B	69	SER
1	B	134	SER
1	B	152	SER
1	B	215	LEU
1	B	234	TRP
1	B	296	GLU
1	B	416	LYS
1	B	439	GLU
1	B	606	LYS
1	B	701	LEU
1	B	719	LEU
1	B	745	SER
1	C	45	THR
1	C	51	LEU
1	C	55	LYS
1	C	61	LEU
1	C	63	LEU
1	C	69	SER
1	C	134	SER
1	C	152	SER
1	C	153	LEU
1	C	207	GLU
1	C	215	LEU
1	C	234	TRP
1	C	255	GLU
1	C	278	LEU
1	C	307	LYS

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Mol	Chain	Res	Type
1	C	388	ASP
1	C	439	GLU
1	C	644	MET
1	C	681	ARG
1	C	701	LEU
1	C	710	THR
1	C	711	VAL
1	C	714	GLU
1	C	719	LEU
1	C	745	SER
1	D	45	THR
1	D	46	ASP
1	D	51	LEU
1	D	55	LYS
1	D	153	LEU
1	D	215	LEU
1	D	234	TRP
1	D	275	LYS
1	D	296	GLU
1	D	307	LYS
1	D	388	ASP
1	D	439	GLU
1	D	564	LYS
1	D	571	THR
1	D	657	SER
1	D	701	LEU
1	D	714	GLU
1	D	719	LEU
1	D	725	SER
1	D	745	SER

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

Mol	Chain	Res	Type
1	A	294	HIS
1	B	354	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

3 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	GOL	A	801	-	5,5,5	2.00	2 (40%)	5,5,5	0.69	0
2	GOL	D	801	-	5,5,5	1.33	1 (20%)	5,5,5	0.75	0
2	GOL	B	801	-	5,5,5	1.68	1 (20%)	5,5,5	1.00	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	A	801	-	-	2/4/4/4	-
2	GOL	D	801	-	-	2/4/4/4	-
2	GOL	B	801	-	-	4/4/4/4	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	801	GOL	C1-C2	3.79	1.67	1.51
2	B	801	GOL	C1-C2	3.17	1.64	1.51
2	D	801	GOL	C3-C2	2.37	1.61	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	801	GOL	C3-C2	2.02	1.60	1.51

There are no bond angle outliers.

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	801	GOL	O2-C2-C3-O3
2	A	801	GOL	C1-C2-C3-O3
2	B	801	GOL	O1-C1-C2-C3
2	B	801	GOL	C1-C2-C3-O3
2	D	801	GOL	O1-C1-C2-C3
2	D	801	GOL	O1-C1-C2-O2
2	B	801	GOL	O2-C2-C3-O3
2	B	801	GOL	O1-C1-C2-O2

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	801	GOL	1	0
2	B	801	GOL	1	0

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	745/780 (95%)	-0.45	1 (0%)	95	96	7, 17, 42, 84	0
1	B	744/780 (95%)	-0.46	1 (0%)	95	96	8, 16, 43, 74	0
1	C	749/780 (96%)	-0.40	1 (0%)	95	96	9, 18, 46, 91	0
1	D	749/780 (96%)	-0.49	1 (0%)	95	96	7, 16, 42, 85	0
All	All	2987/3120 (95%)	-0.45	4 (0%)	95	96	7, 17, 44, 91	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	714	GLU	2.9
1	B	753	GLY	2.3
1	C	710	THR	2.3
1	D	738	ARG	2.2

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

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

6.3　Carbohydrates ⓘ

There are no 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	GOL	A	801	6/6	0.90	0.27	17,18,19,19	0
2	GOL	D	801	6/6	0.92	0.28	14,15,15,15	0
2	GOL	B	801	6/6	0.94	0.25	13,14,14,14	0

6.5 Other polymers (i)

There are no such residues in this entry.