



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 25, 2026 – 04:23 PM EDT

PDB ID : 3EZW / pdb_00003ezw
Title : Crystal Structure of a Hyperactive Escherichia coli Glycerol Kinase Mutant Gly230 → Asp Obtained Using Microfluidic Crystallization Devices
Authors : Anderson, M.J.; DeLaBarre, B.; Dunten, P.; Brunger, A.T.; Quake, S.R.
Deposited on : 2008-10-23
Resolution : 2.00 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

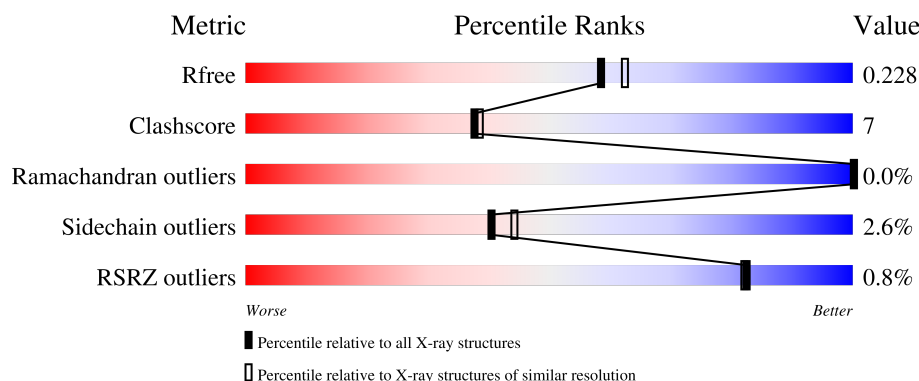
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	10052 (2.00-2.00)
Clashscore	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)
RSRZ outliers	180081	10067 (2.00-2.00)

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 $\leq 5\%$. 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	526	
1	B	526	
1	C	526	
1	D	526	
1	E	526	

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Mol	Chain	Length	Quality of chain
1	F	526	78% 14% • 6%
1	G	526	79% 14% • 5%
1	H	526	% 75% 17% • 6%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 32916 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 Glycerol kinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	498	Total	C	N	O	S	0	5	0
			3970	2501	698	750	21			
1	B	496	Total	C	N	O	S	0	2	0
			3933	2481	687	746	19			
1	E	492	Total	C	N	O	S	0	2	0
			3908	2464	683	742	19			
1	G	498	Total	C	N	O	S	0	3	0
			3948	2488	689	752	19			
1	C	489	Total	C	N	O	S	0	3	0
			3890	2452	682	735	21			
1	D	482	Total	C	N	O	S	0	1	0
			3818	2409	666	723	20			
1	F	492	Total	C	N	O	S	0	0	0
			3890	2454	680	737	19			
1	H	492	Total	C	N	O	S	0	1	0
			3900	2461	681	739	19			

There are 216 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	230	ASP	GLY	engineered mutation	UNP P0A6F3
A	501	GLN	-	expression tag	UNP P0A6F3
A	502	LEU	-	expression tag	UNP P0A6F3
A	503	TYR	-	expression tag	UNP P0A6F3
A	504	THR	-	expression tag	UNP P0A6F3
A	505	ARG	-	expression tag	UNP P0A6F3
A	506	ALA	-	expression tag	UNP P0A6F3
A	507	SER	-	expression tag	UNP P0A6F3
A	508	GLN	-	expression tag	UNP P0A6F3
A	509	PRO	-	expression tag	UNP P0A6F3
A	510	GLU	-	expression tag	UNP P0A6F3
A	511	LEU	-	expression tag	UNP P0A6F3
A	512	ALA	-	expression tag	UNP P0A6F3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	513	PRO	-	expression tag	UNP P0A6F3
A	514	GLU	-	expression tag	UNP P0A6F3
A	515	ASP	-	expression tag	UNP P0A6F3
A	516	PRO	-	expression tag	UNP P0A6F3
A	517	GLU	-	expression tag	UNP P0A6F3
A	518	ASP	-	expression tag	UNP P0A6F3
A	519	LEU	-	expression tag	UNP P0A6F3
A	520	GLU	-	expression tag	UNP P0A6F3
A	521	HIS	-	expression tag	UNP P0A6F3
A	522	HIS	-	expression tag	UNP P0A6F3
A	523	HIS	-	expression tag	UNP P0A6F3
A	524	HIS	-	expression tag	UNP P0A6F3
A	525	HIS	-	expression tag	UNP P0A6F3
A	526	HIS	-	expression tag	UNP P0A6F3
B	230	ASP	GLY	engineered mutation	UNP P0A6F3
B	501	GLN	-	expression tag	UNP P0A6F3
B	502	LEU	-	expression tag	UNP P0A6F3
B	503	TYR	-	expression tag	UNP P0A6F3
B	504	THR	-	expression tag	UNP P0A6F3
B	505	ARG	-	expression tag	UNP P0A6F3
B	506	ALA	-	expression tag	UNP P0A6F3
B	507	SER	-	expression tag	UNP P0A6F3
B	508	GLN	-	expression tag	UNP P0A6F3
B	509	PRO	-	expression tag	UNP P0A6F3
B	510	GLU	-	expression tag	UNP P0A6F3
B	511	LEU	-	expression tag	UNP P0A6F3
B	512	ALA	-	expression tag	UNP P0A6F3
B	513	PRO	-	expression tag	UNP P0A6F3
B	514	GLU	-	expression tag	UNP P0A6F3
B	515	ASP	-	expression tag	UNP P0A6F3
B	516	PRO	-	expression tag	UNP P0A6F3
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B	518	ASP	-	expression tag	UNP P0A6F3
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B	520	GLU	-	expression tag	UNP P0A6F3
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B	522	HIS	-	expression tag	UNP P0A6F3
B	523	HIS	-	expression tag	UNP P0A6F3
B	524	HIS	-	expression tag	UNP P0A6F3
B	525	HIS	-	expression tag	UNP P0A6F3
B	526	HIS	-	expression tag	UNP P0A6F3
E	230	ASP	GLY	engineered mutation	UNP P0A6F3

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Chain	Residue	Modelled	Actual	Comment	Reference
E	501	GLN	-	expression tag	UNP P0A6F3
E	502	LEU	-	expression tag	UNP P0A6F3
E	503	TYR	-	expression tag	UNP P0A6F3
E	504	THR	-	expression tag	UNP P0A6F3
E	505	ARG	-	expression tag	UNP P0A6F3
E	506	ALA	-	expression tag	UNP P0A6F3
E	507	SER	-	expression tag	UNP P0A6F3
E	508	GLN	-	expression tag	UNP P0A6F3
E	509	PRO	-	expression tag	UNP P0A6F3
E	510	GLU	-	expression tag	UNP P0A6F3
E	511	LEU	-	expression tag	UNP P0A6F3
E	512	ALA	-	expression tag	UNP P0A6F3
E	513	PRO	-	expression tag	UNP P0A6F3
E	514	GLU	-	expression tag	UNP P0A6F3
E	515	ASP	-	expression tag	UNP P0A6F3
E	516	PRO	-	expression tag	UNP P0A6F3
E	517	GLU	-	expression tag	UNP P0A6F3
E	518	ASP	-	expression tag	UNP P0A6F3
E	519	LEU	-	expression tag	UNP P0A6F3
E	520	GLU	-	expression tag	UNP P0A6F3
E	521	HIS	-	expression tag	UNP P0A6F3
E	522	HIS	-	expression tag	UNP P0A6F3
E	523	HIS	-	expression tag	UNP P0A6F3
E	524	HIS	-	expression tag	UNP P0A6F3
E	525	HIS	-	expression tag	UNP P0A6F3
E	526	HIS	-	expression tag	UNP P0A6F3
G	230	ASP	GLY	engineered mutation	UNP P0A6F3
G	501	GLN	-	expression tag	UNP P0A6F3
G	502	LEU	-	expression tag	UNP P0A6F3
G	503	TYR	-	expression tag	UNP P0A6F3
G	504	THR	-	expression tag	UNP P0A6F3
G	505	ARG	-	expression tag	UNP P0A6F3
G	506	ALA	-	expression tag	UNP P0A6F3
G	507	SER	-	expression tag	UNP P0A6F3
G	508	GLN	-	expression tag	UNP P0A6F3
G	509	PRO	-	expression tag	UNP P0A6F3
G	510	GLU	-	expression tag	UNP P0A6F3
G	511	LEU	-	expression tag	UNP P0A6F3
G	512	ALA	-	expression tag	UNP P0A6F3
G	513	PRO	-	expression tag	UNP P0A6F3
G	514	GLU	-	expression tag	UNP P0A6F3
G	515	ASP	-	expression tag	UNP P0A6F3

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Chain	Residue	Modelled	Actual	Comment	Reference
G	516	PRO	-	expression tag	UNP P0A6F3
G	517	GLU	-	expression tag	UNP P0A6F3
G	518	ASP	-	expression tag	UNP P0A6F3
G	519	LEU	-	expression tag	UNP P0A6F3
G	520	GLU	-	expression tag	UNP P0A6F3
G	521	HIS	-	expression tag	UNP P0A6F3
G	522	HIS	-	expression tag	UNP P0A6F3
G	523	HIS	-	expression tag	UNP P0A6F3
G	524	HIS	-	expression tag	UNP P0A6F3
G	525	HIS	-	expression tag	UNP P0A6F3
G	526	HIS	-	expression tag	UNP P0A6F3
C	230	ASP	GLY	engineered mutation	UNP P0A6F3
C	501	GLN	-	expression tag	UNP P0A6F3
C	502	LEU	-	expression tag	UNP P0A6F3
C	503	TYR	-	expression tag	UNP P0A6F3
C	504	THR	-	expression tag	UNP P0A6F3
C	505	ARG	-	expression tag	UNP P0A6F3
C	506	ALA	-	expression tag	UNP P0A6F3
C	507	SER	-	expression tag	UNP P0A6F3
C	508	GLN	-	expression tag	UNP P0A6F3
C	509	PRO	-	expression tag	UNP P0A6F3
C	510	GLU	-	expression tag	UNP P0A6F3
C	511	LEU	-	expression tag	UNP P0A6F3
C	512	ALA	-	expression tag	UNP P0A6F3
C	513	PRO	-	expression tag	UNP P0A6F3
C	514	GLU	-	expression tag	UNP P0A6F3
C	515	ASP	-	expression tag	UNP P0A6F3
C	516	PRO	-	expression tag	UNP P0A6F3
C	517	GLU	-	expression tag	UNP P0A6F3
C	518	ASP	-	expression tag	UNP P0A6F3
C	519	LEU	-	expression tag	UNP P0A6F3
C	520	GLU	-	expression tag	UNP P0A6F3
C	521	HIS	-	expression tag	UNP P0A6F3
C	522	HIS	-	expression tag	UNP P0A6F3
C	523	HIS	-	expression tag	UNP P0A6F3
C	524	HIS	-	expression tag	UNP P0A6F3
C	525	HIS	-	expression tag	UNP P0A6F3
C	526	HIS	-	expression tag	UNP P0A6F3
D	230	ASP	GLY	engineered mutation	UNP P0A6F3
D	501	GLN	-	expression tag	UNP P0A6F3
D	502	LEU	-	expression tag	UNP P0A6F3
D	503	TYR	-	expression tag	UNP P0A6F3

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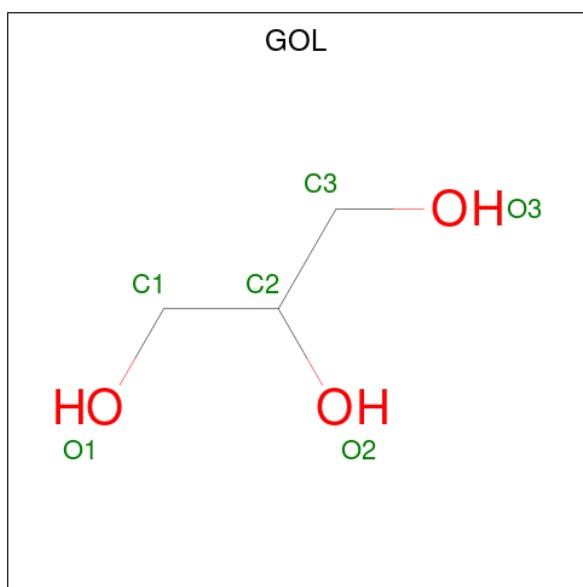
Chain	Residue	Modelled	Actual	Comment	Reference
D	504	THR	-	expression tag	UNP P0A6F3
D	505	ARG	-	expression tag	UNP P0A6F3
D	506	ALA	-	expression tag	UNP P0A6F3
D	507	SER	-	expression tag	UNP P0A6F3
D	508	GLN	-	expression tag	UNP P0A6F3
D	509	PRO	-	expression tag	UNP P0A6F3
D	510	GLU	-	expression tag	UNP P0A6F3
D	511	LEU	-	expression tag	UNP P0A6F3
D	512	ALA	-	expression tag	UNP P0A6F3
D	513	PRO	-	expression tag	UNP P0A6F3
D	514	GLU	-	expression tag	UNP P0A6F3
D	515	ASP	-	expression tag	UNP P0A6F3
D	516	PRO	-	expression tag	UNP P0A6F3
D	517	GLU	-	expression tag	UNP P0A6F3
D	518	ASP	-	expression tag	UNP P0A6F3
D	519	LEU	-	expression tag	UNP P0A6F3
D	520	GLU	-	expression tag	UNP P0A6F3
D	521	HIS	-	expression tag	UNP P0A6F3
D	522	HIS	-	expression tag	UNP P0A6F3
D	523	HIS	-	expression tag	UNP P0A6F3
D	524	HIS	-	expression tag	UNP P0A6F3
D	525	HIS	-	expression tag	UNP P0A6F3
D	526	HIS	-	expression tag	UNP P0A6F3
F	230	ASP	GLY	engineered mutation	UNP P0A6F3
F	501	GLN	-	expression tag	UNP P0A6F3
F	502	LEU	-	expression tag	UNP P0A6F3
F	503	TYR	-	expression tag	UNP P0A6F3
F	504	THR	-	expression tag	UNP P0A6F3
F	505	ARG	-	expression tag	UNP P0A6F3
F	506	ALA	-	expression tag	UNP P0A6F3
F	507	SER	-	expression tag	UNP P0A6F3
F	508	GLN	-	expression tag	UNP P0A6F3
F	509	PRO	-	expression tag	UNP P0A6F3
F	510	GLU	-	expression tag	UNP P0A6F3
F	511	LEU	-	expression tag	UNP P0A6F3
F	512	ALA	-	expression tag	UNP P0A6F3
F	513	PRO	-	expression tag	UNP P0A6F3
F	514	GLU	-	expression tag	UNP P0A6F3
F	515	ASP	-	expression tag	UNP P0A6F3
F	516	PRO	-	expression tag	UNP P0A6F3
F	517	GLU	-	expression tag	UNP P0A6F3
F	518	ASP	-	expression tag	UNP P0A6F3

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Chain	Residue	Modelled	Actual	Comment	Reference
F	519	LEU	-	expression tag	UNP P0A6F3
F	520	GLU	-	expression tag	UNP P0A6F3
F	521	HIS	-	expression tag	UNP P0A6F3
F	522	HIS	-	expression tag	UNP P0A6F3
F	523	HIS	-	expression tag	UNP P0A6F3
F	524	HIS	-	expression tag	UNP P0A6F3
F	525	HIS	-	expression tag	UNP P0A6F3
F	526	HIS	-	expression tag	UNP P0A6F3
H	230	ASP	GLY	engineered mutation	UNP P0A6F3
H	501	GLN	-	expression tag	UNP P0A6F3
H	502	LEU	-	expression tag	UNP P0A6F3
H	503	TYR	-	expression tag	UNP P0A6F3
H	504	THR	-	expression tag	UNP P0A6F3
H	505	ARG	-	expression tag	UNP P0A6F3
H	506	ALA	-	expression tag	UNP P0A6F3
H	507	SER	-	expression tag	UNP P0A6F3
H	508	GLN	-	expression tag	UNP P0A6F3
H	509	PRO	-	expression tag	UNP P0A6F3
H	510	GLU	-	expression tag	UNP P0A6F3
H	511	LEU	-	expression tag	UNP P0A6F3
H	512	ALA	-	expression tag	UNP P0A6F3
H	513	PRO	-	expression tag	UNP P0A6F3
H	514	GLU	-	expression tag	UNP P0A6F3
H	515	ASP	-	expression tag	UNP P0A6F3
H	516	PRO	-	expression tag	UNP P0A6F3
H	517	GLU	-	expression tag	UNP P0A6F3
H	518	ASP	-	expression tag	UNP P0A6F3
H	519	LEU	-	expression tag	UNP P0A6F3
H	520	GLU	-	expression tag	UNP P0A6F3
H	521	HIS	-	expression tag	UNP P0A6F3
H	522	HIS	-	expression tag	UNP P0A6F3
H	523	HIS	-	expression tag	UNP P0A6F3
H	524	HIS	-	expression tag	UNP P0A6F3
H	525	HIS	-	expression tag	UNP P0A6F3
H	526	HIS	-	expression tag	UNP P0A6F3

- Molecule 2 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			6	3	3		
2	B	1	Total	C	O	0	0
			6	3	3		
2	E	1	Total	C	O	0	0
			6	3	3		
2	G	1	Total	C	O	0	0
			6	3	3		
2	C	1	Total	C	O	0	0
			6	3	3		
2	D	1	Total	C	O	0	0
			6	3	3		
2	F	1	Total	C	O	0	0
			6	3	3		
2	H	1	Total	C	O	0	0
			6	3	3		

- Molecule 3 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Cl	0	0
			1	1		
3	B	1	Total	Cl	0	0
			1	1		
3	E	1	Total	Cl	0	0
			1	1		
3	G	1	Total	Cl	0	0
			1	1		

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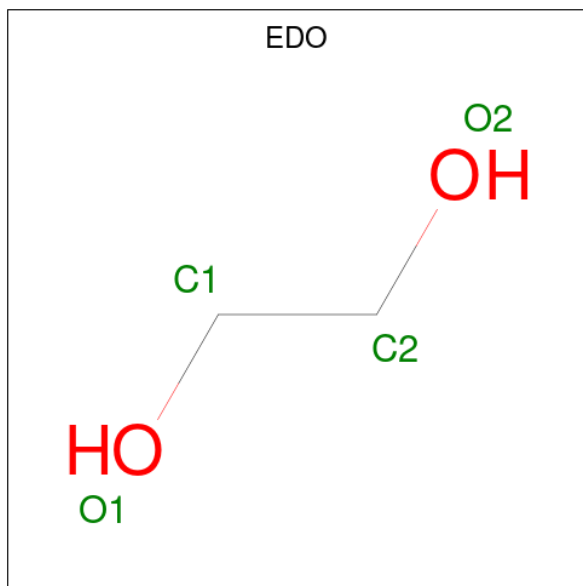
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	1	Total	Cl	0	0
			1	1		
3	D	1	Total	Cl	0	0
			1	1		
3	F	1	Total	Cl	0	0
			1	1		
3	H	1	Total	Cl	0	0
			1	1		

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Mg	0	0
			1	1		

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



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

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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	214	Total O 214 214	0	0
6	B	237	Total O 237 237	0	0
6	E	209	Total O 209 209	0	0
6	G	218	Total O 218 218	0	0

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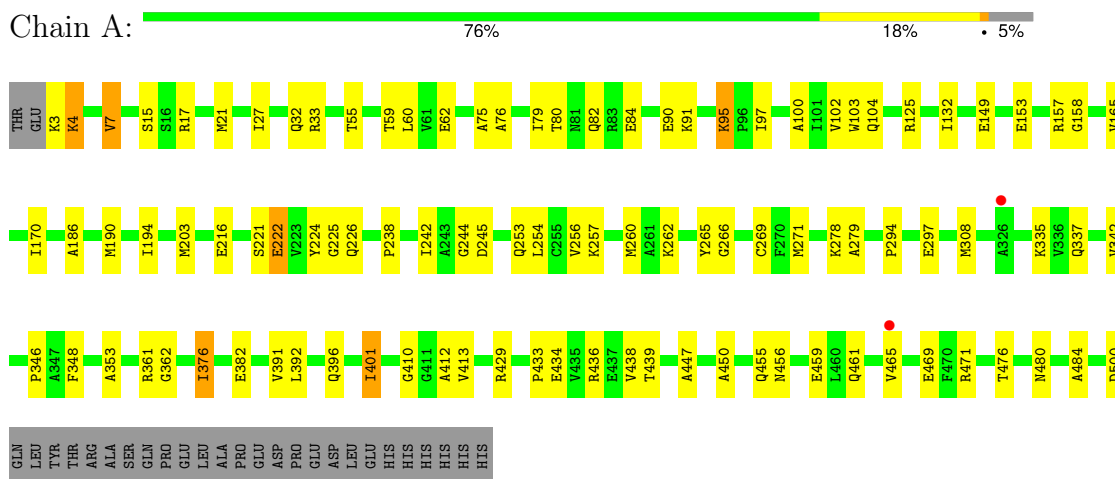
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	C	157	Total 157	O 157	0	0
6	D	130	Total 130	O 130	0	0
6	F	193	Total 193	O 193	0	0
6	H	168	Total 168	O 168	0	0

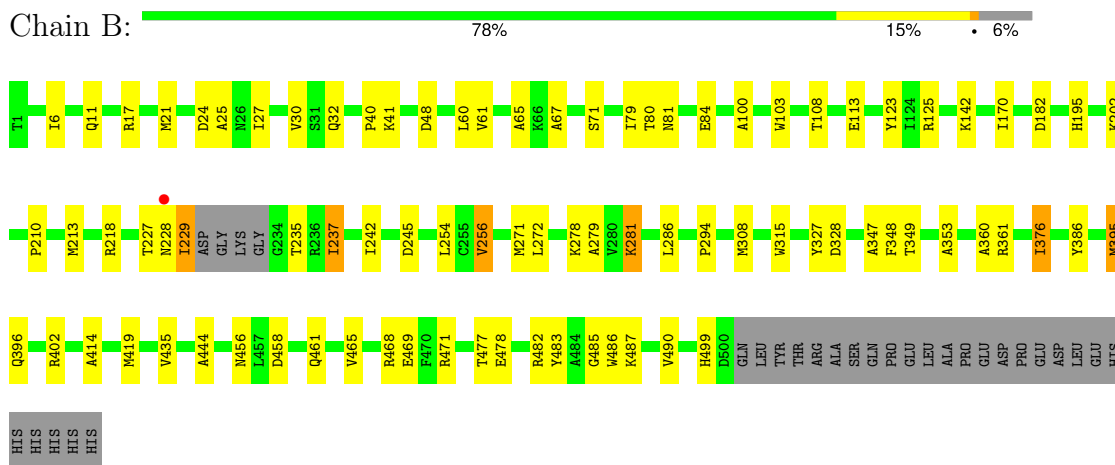
3 Residue-property plots

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: Glycerol kinase

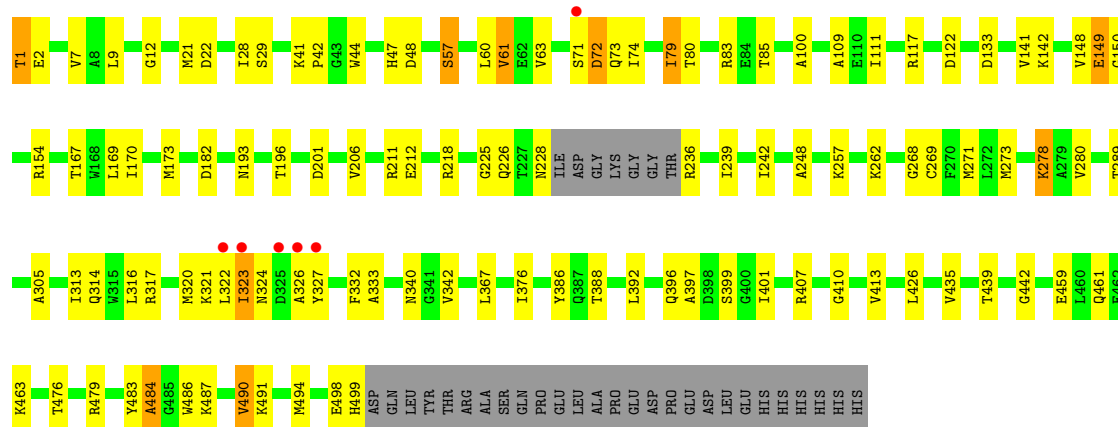


• Molecule 1: Glycerol kinase



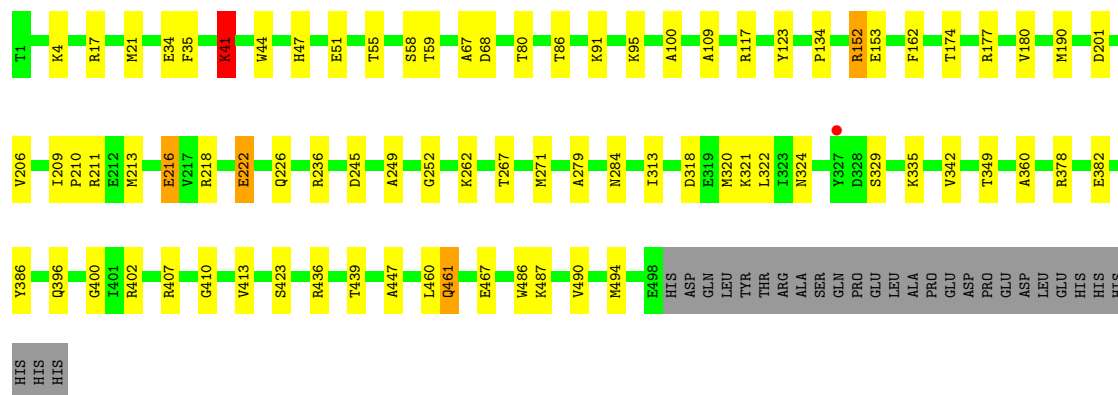
• Molecule 1: Glycerol kinase





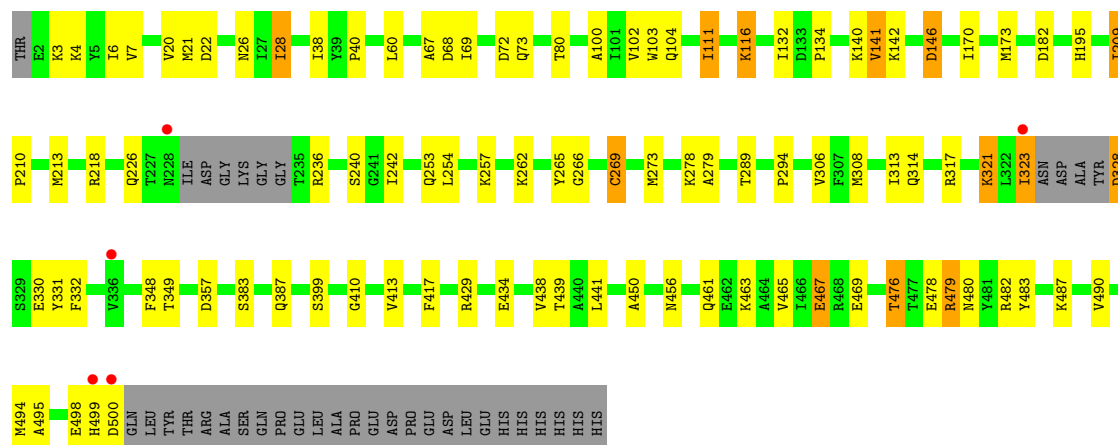
• Molecule 1: Glycerol kinase

Chain G: 79% 14% • 5%



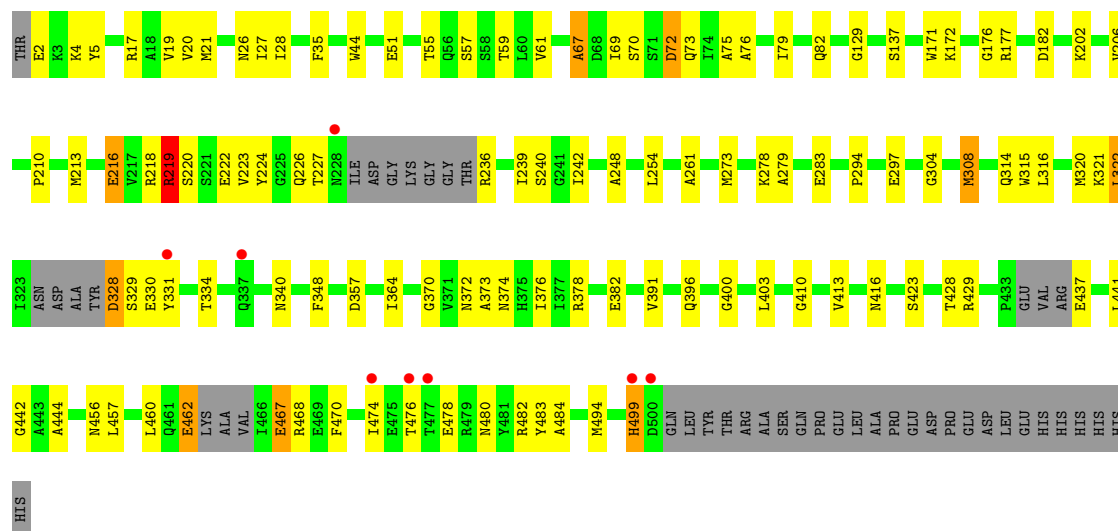
• Molecule 1: Glycerol kinase

Chain C: 74% 16% • 7%



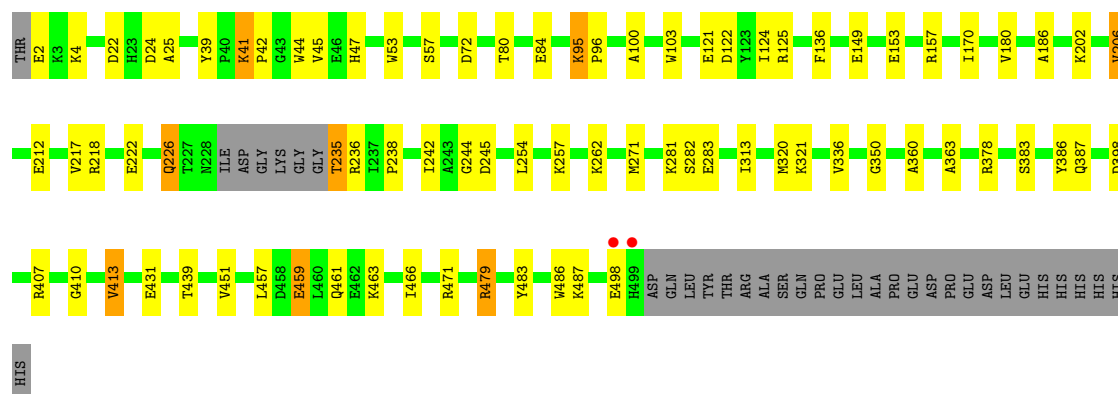
• Molecule 1: Glycerol kinase

Chain D: 70% 20% • 8%



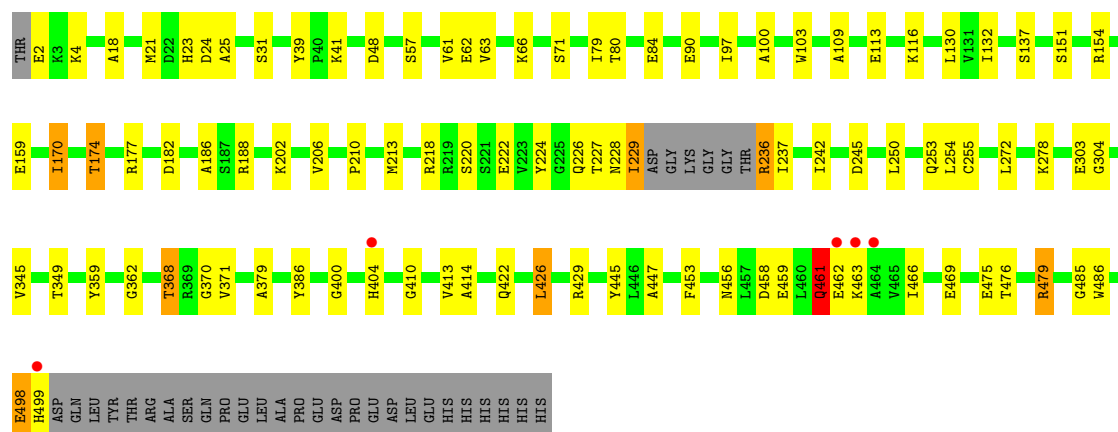
• Molecule 1: Glycerol kinase

Chain F: 78% 14% 6%



• Molecule 1: Glycerol kinase

Chain H: 75% 17% 6%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	91.12Å 114.26Å 212.62Å 90.00° 91.15° 90.00°	Depositor
Resolution (Å)	20.00 – 2.00 20.00 – 2.00	Depositor EDS
% Data completeness (in resolution range)	84.0 (20.00-2.00) 83.9 (20.00-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	7.11 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.4.0067, CNS	Depositor
R, R_{free}	0.167 , 0.225 0.173 , 0.228	Depositor DCC
R_{free} test set	5036 reflections (1.72%)	wwPDB-VP
Wilson B-factor (Å ²)	23.2	Xtriage
Anisotropy	0.659	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 48.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.016 for h,-k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	32916	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

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

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: MG, GOL, EDO, CL

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	1.47	24/4050 (0.6%)	1.27	6/5488 (0.1%)
1	B	1.42	11/4012 (0.3%)	1.25	16/5439 (0.3%)
1	C	1.41	10/3967 (0.3%)	1.28	14/5374 (0.3%)
1	D	1.32	5/3893 (0.1%)	1.28	17/5272 (0.3%)
1	E	1.44	17/3987 (0.4%)	1.25	9/5405 (0.2%)
1	F	1.33	6/3969 (0.2%)	1.20	11/5381 (0.2%)
1	G	1.42	9/4027 (0.2%)	1.29	18/5458 (0.3%)
1	H	1.31	12/3979 (0.3%)	1.24	10/5394 (0.2%)
All	All	1.39	94/31884 (0.3%)	1.26	101/43211 (0.2%)

All (94) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	223	VAL	CA-CB	8.82	1.63	1.53
1	A	353	ALA	CA-CB	8.60	1.66	1.53
1	A	346	PRO	CA-CB	-7.83	1.48	1.53
1	H	109	ALA	CA-CB	7.30	1.64	1.53
1	C	349	THR	CA-CB	7.29	1.63	1.53
1	H	349	THR	CA-CB	7.26	1.63	1.53
1	B	281	LYS	CE-NZ	7.24	1.71	1.49
1	G	284	ASN	N-CA	7.02	1.53	1.46
1	E	109	ALA	CA-CB	6.94	1.64	1.53
1	E	167	THR	N-CA	6.76	1.54	1.46
1	E	239	ILE	CA-CB	-6.68	1.46	1.54
1	F	244	GLY	CA-C	-6.60	1.46	1.52
1	C	314	GLN	CG-CD	6.51	1.68	1.52
1	E	79	ILE	CA-CB	-6.48	1.46	1.54
1	E	268	GLY	N-CA	6.45	1.50	1.44
1	E	12	GLY	N-CA	6.42	1.51	1.44
1	B	40	PRO	C-O	-6.38	1.16	1.24
1	A	79	ILE	CA-CB	-6.35	1.46	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	349	THR	CA-CB	6.24	1.62	1.53
1	B	48	ASP	N-CA	6.21	1.56	1.46
1	H	39	TYR	CA-C	6.15	1.59	1.52
1	A	100	ALA	CA-CB	6.10	1.63	1.53
1	G	461	GLN	CG-CD	6.06	1.67	1.52
1	E	61	VAL	CA-CB	6.01	1.61	1.54
1	A	256	VAL	CA-CB	6.00	1.61	1.54
1	B	281	LYS	CG-CD	5.99	1.70	1.52
1	D	82	GLN	C-O	5.95	1.31	1.23
1	H	100	ALA	CA-CB	5.94	1.63	1.53
1	C	6	ILE	CA-CB	5.93	1.62	1.54
1	C	314	GLN	CB-CG	5.93	1.70	1.52
1	H	170	ILE	N-CA	5.90	1.53	1.46
1	A	79	ILE	C-O	-5.89	1.17	1.24
1	C	441	LEU	N-CA	5.89	1.53	1.46
1	E	435	VAL	CA-CB	5.88	1.60	1.53
1	A	221	SER	C-O	-5.79	1.17	1.23
1	A	186	ALA	CA-CB	5.75	1.62	1.53
1	A	4	LYS	C-O	-5.73	1.16	1.24
1	F	257	LYS	CA-C	-5.71	1.45	1.52
1	A	484	ALA	CA-CB	5.71	1.62	1.53
1	A	391	VAL	CA-CB	5.66	1.62	1.54
1	E	289	THR	CA-CB	5.64	1.63	1.53
1	A	97	ILE	CA-CB	5.62	1.61	1.54
1	A	450	ALA	CA-CB	-5.62	1.44	1.53
1	E	57	SER	C-O	-5.56	1.17	1.24
1	G	249	ALA	CA-CB	5.55	1.62	1.53
1	C	209	ILE	C-O	-5.54	1.18	1.24
1	A	90	GLU	N-CA	5.53	1.53	1.46
1	H	188	ARG	N-CA	5.53	1.53	1.46
1	G	152	ARG	N-CA	5.51	1.53	1.46
1	A	132	ILE	CA-CB	5.50	1.60	1.53
1	B	353	ALA	CA-CB	5.49	1.62	1.53
1	E	397	ALA	CA-CB	5.48	1.61	1.53
1	D	216	GLU	CA-C	-5.48	1.45	1.52
1	H	137	SER	N-CA	5.45	1.53	1.46
1	H	414	ALA	N-CA	5.43	1.53	1.46
1	A	266	GLY	N-CA	5.42	1.50	1.45
1	D	44	TRP	N-CA	5.39	1.52	1.46
1	A	401	ILE	CA-CB	5.38	1.61	1.54
1	A	194	ILE	CA-CB	-5.38	1.48	1.54
1	E	28	ILE	CA-CB	-5.37	1.46	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	111	ILE	CG1-CD1	5.37	1.72	1.51
1	A	238	PRO	N-CA	-5.37	1.41	1.47
1	F	413	VAL	CA-CB	5.37	1.60	1.54
1	E	490	VAL	N-CA	5.36	1.52	1.46
1	C	266	GLY	C-O	-5.34	1.19	1.24
1	F	451	VAL	N-CA	5.34	1.53	1.46
1	E	133	ASP	CA-C	5.33	1.58	1.52
1	H	186	ALA	CA-CB	5.28	1.61	1.53
1	F	186	ALA	CA-CB	5.27	1.61	1.53
1	B	349	THR	CA-CB	5.25	1.60	1.53
1	A	361	ARG	C-O	-5.24	1.17	1.23
1	E	149	GLU	CA-C	-5.23	1.46	1.52
1	E	401	ILE	CA-CB	5.22	1.60	1.54
1	G	271	MET	CB-CG	-5.21	1.36	1.52
1	C	289	THR	CA-CB	5.21	1.63	1.53
1	B	195	HIS	CA-C	-5.21	1.46	1.52
1	B	113	GLU	N-CA	5.17	1.52	1.46
1	E	269	CYS	CA-C	-5.17	1.46	1.52
1	H	90	GLU	CA-C	-5.15	1.46	1.52
1	A	7	VAL	CA-CB	5.14	1.60	1.54
1	F	136	PHE	N-CA	5.14	1.52	1.45
1	B	360	ALA	CA-CB	5.13	1.61	1.53
1	G	461	GLN	CB-CG	5.13	1.67	1.52
1	D	314	GLN	CG-CD	5.12	1.64	1.52
1	A	203	MET	N-CA	5.11	1.52	1.46
1	A	165	VAL	CA-CB	5.10	1.60	1.54
1	A	376	ILE	N-CA	5.10	1.52	1.46
1	B	142	LYS	N-CA	5.10	1.52	1.46
1	B	100	ALA	CA-CB	5.08	1.61	1.53
1	G	360	ALA	CA-CB	5.05	1.61	1.53
1	C	173	MET	C-O	-5.03	1.17	1.24
1	H	174	THR	N-CA	5.02	1.51	1.46
1	G	279	ALA	C-O	-5.00	1.17	1.23
1	H	379	ALA	CA-CB	5.00	1.61	1.53

All (101) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	460	LEU	N-CA-C	-8.67	101.91	111.36
1	A	244	GLY	N-CA-C	-7.63	103.16	111.93
1	H	445	TYR	N-CA-C	-7.50	103.19	111.36
1	C	314	GLN	N-CA-C	-7.19	103.44	111.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	326	ALA	N-CA-C	-7.06	103.01	111.69
1	D	340	ASN	N-CA-C	-7.05	103.98	112.58
1	C	417	PHE	N-CA-C	-7.03	103.70	111.36
1	H	485	GLY	N-CA-C	-6.88	104.15	113.37
1	H	479	ARG	N-CA-C	-6.87	103.85	111.82
1	C	479	ARG	N-CA-C	-6.85	103.90	111.36
1	E	323	ILE	N-CA-C	6.84	117.46	107.75
1	D	483	TYR	N-CA-C	-6.82	103.91	111.82
1	F	39	TYR	CA-C-N	-6.60	111.59	119.84
1	F	39	TYR	C-N-CA	-6.60	111.59	119.84
1	F	124	ILE	N-CA-C	-6.21	104.45	110.72
1	D	283	GLU	CB-CA-C	-6.20	100.25	110.72
1	G	267	THR	CA-C-N	6.17	127.96	122.47
1	G	267	THR	C-N-CA	6.17	127.96	122.47
1	G	252	GLY	N-CA-C	6.13	120.31	112.83
1	E	320	MET	N-CA-C	-6.11	105.66	113.23
1	H	461	GLN	N-CA-C	-6.11	104.73	111.82
1	H	97	ILE	N-CA-C	-6.08	105.74	113.22
1	D	137	SER	N-CA-C	6.04	117.87	111.28
1	E	122	ASP	N-CA-C	6.02	117.52	111.07
1	D	357	ASP	CA-C-N	-6.00	113.79	120.45
1	D	357	ASP	C-N-CA	-6.00	113.79	120.45
1	B	376	ILE	N-CA-C	-5.94	104.53	111.00
1	G	209	ILE	CB-CA-C	-5.92	104.37	111.18
1	D	72	ASP	N-CA-C	-5.92	106.02	113.18
1	F	121	GLU	N-CA-C	5.84	118.14	111.02
1	D	400	GLY	N-CA-C	-5.83	107.19	115.30
1	H	130	LEU	N-CA-C	5.82	119.03	110.59
1	G	400	GLY	N-CA-C	-5.82	107.62	115.36
1	A	4	LYS	CB-CG-CD	-5.79	97.99	111.30
1	B	81	ASN	N-CA-C	5.77	117.30	108.52
1	B	281	LYS	CD-CE-NZ	5.76	130.32	111.90
1	F	95	LYS	N-CA-C	5.73	116.87	109.65
1	B	67	ALA	N-CA-C	-5.72	106.31	113.28
1	C	463	LYS	N-CA-C	-5.71	106.15	113.23
1	B	477	THR	N-CA-C	-5.68	105.17	111.36
1	C	100	ALA	N-CA-C	-5.67	101.23	110.20
1	B	315	TRP	N-CA-C	-5.67	105.02	111.14
1	A	225	GLY	N-CA-C	5.66	118.22	110.69
1	E	141	VAL	N-CA-C	-5.64	105.02	110.72
1	B	444	ALA	N-CA-C	-5.61	105.09	111.14
1	A	447	ALA	CA-C-N	5.58	126.13	119.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	447	ALA	C-N-CA	5.58	126.13	119.94
1	G	267	THR	N-CA-C	-5.57	105.36	111.82
1	D	376	ILE	N-CA-C	-5.55	104.95	111.00
1	D	484	ALA	N-CA-C	-5.55	105.24	112.23
1	G	423	SER	N-CA-C	-5.55	105.15	111.14
1	A	382	GLU	N-CA-C	-5.54	105.39	111.82
1	C	314	GLN	CB-CG-CD	5.53	122.00	112.60
1	C	141	VAL	CB-CA-C	-5.49	104.65	112.22
1	G	324	ASN	CB-CA-C	-5.48	100.67	110.70
1	C	357	ASP	CA-C-N	-5.45	114.40	120.45
1	C	357	ASP	C-N-CA	-5.45	114.40	120.45
1	E	48	ASP	CA-C-N	5.45	125.12	119.56
1	E	48	ASP	C-N-CA	5.45	125.12	119.56
1	F	313	ILE	N-CA-C	-5.44	105.07	111.00
1	F	45	VAL	N-CA-C	5.43	115.86	107.78
1	C	456	ASN	N-CA-C	5.42	115.70	108.38
1	D	494	MET	N-CA-C	5.42	117.71	110.35
1	D	177	ARG	N-CA-C	5.41	117.26	111.36
1	C	146	ASP	N-CA-C	-5.41	106.19	112.89
1	E	340	ASN	CB-CA-C	-5.40	103.19	111.66
1	B	41	LYS	CA-C-N	-5.37	114.03	119.83
1	B	41	LYS	C-N-CA	-5.37	114.03	119.83
1	G	342	VAL	N-CA-C	5.33	116.46	109.21
1	G	91	LYS	CA-C-N	5.33	127.42	120.28
1	G	91	LYS	C-N-CA	5.33	127.42	120.28
1	D	467	GLU	N-CA-C	-5.32	106.78	113.28
1	E	484	ALA	N-CA-C	-5.30	105.58	111.36
1	B	11	GLN	CA-C-N	-5.29	117.72	122.43
1	B	11	GLN	C-N-CA	-5.29	117.72	122.43
1	C	480	ASN	N-CA-C	-5.29	106.33	112.89
1	B	237	ILE	CA-C-N	5.29	125.54	119.83
1	B	237	ILE	C-N-CA	5.29	125.54	119.83
1	H	400	GLY	N-CA-C	-5.27	108.36	115.36
1	F	471	ARG	NE-CZ-NH2	-5.26	114.47	119.20
1	B	485	GLY	N-CA-C	-5.25	106.33	113.37
1	F	271	MET	CB-CA-C	-5.21	100.70	109.72
1	G	447	ALA	CA-C-N	5.21	125.77	119.98
1	G	447	ALA	C-N-CA	5.21	125.77	119.98
1	G	313	ILE	N-CA-C	-5.21	105.01	112.35
1	G	41	LYS	CA-C-N	-5.20	114.56	119.76
1	G	41	LYS	C-N-CA	-5.20	114.56	119.76
1	B	256	VAL	N-CA-C	5.19	117.89	112.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	129	GLY	CA-C-O	5.19	124.75	119.10
1	H	447	ALA	N-CA-C	-5.18	105.81	111.82
1	C	306	VAL	N-CA-C	5.18	115.03	107.37
1	H	48	ASP	CA-C-N	-5.13	114.33	119.56
1	H	48	ASP	C-N-CA	-5.13	114.33	119.56
1	F	471	ARG	CG-CD-NE	-5.12	100.74	112.00
1	F	459	GLU	N-CA-C	-5.11	105.62	111.14
1	C	330	GLU	N-CA-C	-5.10	105.80	111.36
1	D	67	ALA	N-CA-C	-5.10	106.74	113.17
1	G	216	GLU	N-CA-C	-5.09	102.94	110.48
1	B	65	ALA	N-CA-C	-5.06	105.76	111.28
1	D	219	ARG	N-CA-CB	5.06	117.32	110.38
1	D	456	ASN	N-CA-C	5.06	114.51	107.73

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	3970	0	3904	50	0
1	B	3933	0	3870	50	0
1	C	3890	0	3825	61	0
1	D	3818	0	3745	85	0
1	E	3908	0	3837	58	0
1	F	3890	0	3822	46	0
1	G	3948	0	3884	39	0
1	H	3900	0	3831	52	0
2	A	6	0	8	0	0
2	B	6	0	8	0	0
2	C	6	0	8	0	0
2	D	6	0	8	0	0
2	E	6	0	8	0	0
2	F	6	0	8	0	0
2	G	6	0	8	0	0
2	H	6	0	8	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	1	0	0	0	0
5	A	8	0	12	0	0
5	B	8	0	12	0	0
5	C	16	0	24	1	0
5	D	8	0	12	0	0
5	E	4	0	6	0	0
5	F	8	0	12	0	0
5	G	16	0	24	0	0
5	H	8	0	12	0	0
6	A	214	0	0	2	0
6	B	237	0	0	2	0
6	C	157	0	0	1	0
6	D	130	0	0	3	0
6	E	209	0	0	1	0
6	F	193	0	0	2	0
6	G	218	0	0	2	0
6	H	168	0	0	0	0
All	All	32916	0	30896	435	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 (435) 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:281:LYS:CE	1:B:281:LYS:NZ	1.71	1.51
1:E:317:ARG:O	1:E:321:LYS:HA	1.31	1.25
1:D:308:MET:HE2	1:D:348:PHE:CD1	1.73	1.23
1:D:21[A]:MET:CE	1:D:441:LEU:HD23	1.79	1.13
1:C:308:MET:HE2	1:C:348:PHE:CD1	1.85	1.11
1:D:21[B]:MET:HE1	1:D:444:ALA:CB	1.83	1.09
1:D:308:MET:HE2	1:D:348:PHE:HD1	1.08	1.08
1:D:21[B]:MET:HE1	1:D:444:ALA:HB3	1.31	1.08

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:21[A]:MET:HE1	1:D:441:LEU:HD23	1.06	1.04
1:C:308:MET:HE2	1:C:348:PHE:HD1	1.19	1.02
1:D:70:SER:CB	1:D:72:ASP:OD1	2.10	0.99
1:D:70:SER:HB3	1:D:72:ASP:OD1	1.67	0.94
1:D:254:LEU:HD21	1:D:457:LEU:HD22	1.52	0.91
1:D:254:LEU:CD2	1:D:457:LEU:HD22	2.02	0.89
1:F:41:LYS:HB2	1:F:42:PRO:HD2	1.56	0.88
1:H:228:ASN:OD1	1:H:236:ARG:HD3	1.76	0.86
1:H:359:TYR:CE2	1:H:499:HIS:HB3	2.12	0.85
1:D:70:SER:HB2	1:D:72:ASP:OD1	1.76	0.84
1:D:308:MET:CE	1:D:348:PHE:CD1	2.60	0.83
1:D:21[B]:MET:CE	1:D:444:ALA:CB	2.57	0.83
1:D:21[A]:MET:HE1	1:D:441:LEU:CD2	2.01	0.82
1:A:455:GLN:HB2	1:A:459:GLU:OE2	1.80	0.82
1:C:383:SER:O	1:C:387:GLN:HG3	1.80	0.81
1:D:21[A]:MET:CE	1:D:441:LEU:CD2	2.58	0.81
1:D:21[B]:MET:HE3	1:D:441:LEU:HD23	1.61	0.79
1:D:428:THR:HG22	1:D:429:ARG:N	1.95	0.78
1:C:170:ILE:CD1	1:C:242:ILE:HD11	2.13	0.78
1:H:368:THR:HG23	1:H:370:GLY:H	1.46	0.78
1:D:428:THR:HG22	1:D:429:ARG:O	1.85	0.77
1:F:41:LYS:HB2	1:F:42:PRO:CD	2.15	0.77
1:B:125:ARG:HG2	1:B:281:LYS:HE2	1.66	0.76
1:D:410:GLY:O	1:D:413:VAL:HG22	1.85	0.76
1:B:435:VAL:HG23	1:B:465:VAL:HG21	1.68	0.75
1:D:428:THR:CG2	1:D:429:ARG:N	2.48	0.75
1:E:459:GLU:OE2	1:E:463:LYS:HE2	1.87	0.74
1:B:435:VAL:CG2	1:B:465:VAL:HG21	2.17	0.74
1:E:1:THR:HG23	1:E:2:GLU:N	2.02	0.74
1:F:202:LYS:O	1:F:206:VAL:HG13	1.89	0.73
1:D:462:GLU:HA	1:D:462:GLU:OE1	1.89	0.73
1:F:262:LYS:HD2	1:F:262:LYS:C	2.13	0.73
1:H:499:HIS:O	1:H:499:HIS:ND1	2.20	0.72
1:F:483:TYR:CZ	1:F:487:LYS:HE3	2.24	0.72
1:F:153:GLU:HG3	1:F:157:ARG:HH11	1.55	0.71
1:D:315:TRP:CH2	1:D:320:MET:HG2	2.26	0.70
1:D:35:PHE:HB2	1:D:51:GLU:HG2	1.73	0.70
1:H:422:GLN:HE21	1:H:426:LEU:HD22	1.57	0.70
1:C:253:GLN:HG2	1:C:438:VAL:HG11	1.74	0.69
1:F:254:LEU:HD13	1:F:461:GLN:HG2	1.73	0.69
1:A:456:ASN:O	1:A:459:GLU:HB2	1.93	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:313:ILE:HG22	1:E:323:ILE:HD11	1.76	0.68
1:G:226:GLN:NE2	6:G:9166:HOH:O	2.28	0.67
1:G:216:GLU:OE2	1:G:218:ARG:NH2	2.27	0.67
1:D:2:GLU:OE1	1:D:4:LYS:HE3	1.95	0.67
1:D:476:THR:O	1:D:480:ASN:HB2	1.95	0.66
1:H:170:ILE:CD1	1:H:242:ILE:HD11	2.25	0.66
1:C:226:GLN:HB3	1:C:236:ARG:HB3	1.78	0.66
1:C:273:MET:HE1	1:C:399:SER:CB	2.25	0.66
1:G:318:ASP:O	1:G:321:LYS:NZ	2.24	0.66
1:H:410:GLY:O	1:H:413:VAL:HG22	1.95	0.66
1:C:328:ASP:O	1:C:331:TYR:HB3	1.97	0.65
1:B:278:LYS:HE2	1:B:279:ALA:O	1.97	0.64
1:A:429:ARG:HG2	1:A:471:ARG:HG2	1.80	0.64
1:A:429:ARG:HG2	1:A:471:ARG:CG	2.27	0.64
1:A:500:ASP:OD2	6:A:9160:HOH:O	2.15	0.63
1:G:41:LYS:HD3	1:G:44:TRP:CE3	2.33	0.63
1:C:257:LYS:HE3	1:C:294:PRO:HG3	1.80	0.63
1:F:72:ASP:HA	1:F:235:THR:HG21	1.81	0.63
1:B:170:ILE:CD1	1:B:242:ILE:HD11	2.28	0.62
1:C:3:LYS:HD3	1:C:72:ASP:O	1.99	0.62
1:C:278:LYS:HE2	1:C:279:ALA:O	2.00	0.62
1:A:429:ARG:CG	1:A:471:ARG:HG2	2.29	0.61
1:E:22:ASP:OD1	1:E:22:ASP:C	2.40	0.61
1:D:499:HIS:N	1:D:499:HIS:CD2	2.69	0.61
1:F:2:GLU:O	6:F:2811:HOH:O	2.16	0.61
1:C:317:ARG:O	1:C:321:LYS:HG3	2.00	0.61
1:A:278:LYS:HE2	1:A:279:ALA:O	1.99	0.61
1:A:455:GLN:N	1:A:459:GLU:OE2	2.33	0.60
1:D:474:ILE:HD12	1:D:478:GLU:HG2	1.82	0.60
1:H:359:TYR:CZ	1:H:499:HIS:HB3	2.36	0.60
1:C:257:LYS:HE3	1:C:294:PRO:CG	2.31	0.60
1:A:262:LYS:HD2	1:A:262:LYS:C	2.27	0.60
1:B:396:GLN:HE22	1:B:402:ARG:NH2	2.00	0.60
1:H:456:ASN:OD1	1:H:458:ASP:HB2	2.01	0.60
1:F:483:TYR:OH	1:F:487:LYS:HE3	2.02	0.59
1:E:80:THR:HG21	1:E:439:THR:HG22	1.83	0.59
1:C:262:LYS:HD2	1:C:262:LYS:C	2.27	0.59
1:A:15:SER:HB2	1:A:33[A]:ARG:O	2.02	0.59
1:F:24:ASP:O	1:F:25:ALA:HB3	2.02	0.59
1:A:170:ILE:CD1	1:A:242:ILE:HD11	2.32	0.58
1:B:80:THR:OG1	1:B:245:ASP:HA	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:229:ILE:C	1:H:229:ILE:HD12	2.27	0.58
1:E:41:LYS:HB2	1:E:42:PRO:CD	2.33	0.58
1:C:116:LYS:HG3	1:C:132:ILE:HD12	1.83	0.58
1:A:413:VAL:HG22	1:A:436:ARG:HD2	1.86	0.58
1:C:278:LYS:CE	1:C:279:ALA:O	2.52	0.58
1:A:153:GLU:O	1:A:157:ARG:HG3	2.03	0.57
1:D:330:GLU:O	1:D:334:THR:HG23	2.03	0.57
1:H:227:THR:HG23	1:H:229:ILE:CG2	2.34	0.57
1:H:71:SER:HB2	1:H:237:ILE:HD11	1.86	0.57
1:C:116:LYS:HE2	1:C:132:ILE:HB	1.86	0.57
1:E:111:ILE:HD13	1:E:142:LYS:HD3	1.86	0.56
1:E:305:ALA:O	6:E:2666:HOH:O	2.18	0.56
1:D:428:THR:CG2	1:D:429:ARG:H	2.18	0.56
1:D:423:SER:OG	1:D:428:THR:O	2.17	0.56
1:B:286:LEU:HD13	1:B:395:MET:HE2	1.88	0.56
1:C:498:GLU:C	1:C:500:ASP:H	2.14	0.56
1:B:308:MET:HE2	1:B:348:PHE:CD1	2.41	0.56
1:A:222:GLU:HG2	1:A:224:TYR:CE2	2.40	0.55
1:F:410:GLY:O	1:F:413:VAL:HG22	2.07	0.55
1:B:210:PRO:O	1:B:213:MET:HG2	2.06	0.55
1:B:254:LEU:HD13	1:B:461:GLN:HG2	1.89	0.55
1:E:262:LYS:HA	1:E:407:ARG:O	2.07	0.55
1:D:273:MET:CE	1:D:403:LEU:HD21	2.37	0.55
1:H:422:GLN:NE2	1:H:426:LEU:HD22	2.22	0.55
1:G:410:GLY:O	1:G:413:VAL:HG22	2.07	0.55
1:C:195:HIS:ND1	5:C:2653:EDO:H21	2.22	0.54
1:E:41:LYS:HB2	1:E:42:PRO:HD2	1.89	0.54
1:E:1:THR:HG22	1:E:72:ASP:O	2.07	0.54
1:A:21[B]:MET:HE3	1:A:27[B]:ILE:HD11	1.90	0.54
1:H:218:ARG:NE	1:H:222:GLU:OE2	2.41	0.54
1:G:80:THR:HG21	1:G:439:THR:HG22	1.89	0.54
1:C:80:THR:HG21	1:C:439:THR:HG22	1.90	0.54
1:H:228:ASN:OD1	1:H:236:ARG:CD	2.54	0.54
1:A:254:LEU:HD12	1:A:461:GLN:NE2	2.23	0.53
1:F:383:SER:O	1:F:387:GLN:HG3	2.06	0.53
1:C:142:LYS:NZ	1:C:146:ASP:OD2	2.42	0.53
1:E:392:LEU:O	1:E:396[A]:GLN:HG3	2.07	0.53
1:B:456:ASN:OD1	1:B:458:ASP:CG	2.52	0.53
1:G:35:PHE:HB2	1:G:51:GLU:HG2	1.90	0.53
1:E:170:ILE:CD1	1:E:242:ILE:HD11	2.39	0.53
1:H:2:GLU:O	1:H:4:LYS:HG3	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:253:GLN:O	1:H:254:LEU:HB2	2.08	0.53
1:C:278:LYS:HD3	1:C:279:ALA:O	2.08	0.52
1:D:21[A]:MET:HE2	1:D:441:LEU:CD2	2.37	0.52
1:E:313:ILE:CG2	1:E:323:ILE:HD11	2.38	0.52
1:D:17:ARG:NH2	1:D:437:GLU:OE2	2.42	0.52
1:G:216:GLU:CD	1:G:218:ARG:NH2	2.67	0.52
1:F:53:TRP:O	1:F:57:SER:HB2	2.09	0.52
1:B:376:ILE:HD12	1:G:320:MET:SD	2.50	0.52
1:E:206:VAL:HG22	1:E:206:VAL:O	2.09	0.52
1:D:328:ASP:O	1:D:331:TYR:HB3	2.09	0.52
1:C:434:GLU:OE1	1:C:465:VAL:HG11	2.10	0.52
1:C:495:ALA:HB1	1:C:499:HIS:NE2	2.24	0.52
1:C:22:ASP:OD2	1:C:26:ASN:HB2	2.09	0.52
1:F:170:ILE:CD1	1:F:242:ILE:HD11	2.40	0.52
1:A:342:VAL:HG11	1:A:376:ILE:HD13	1.91	0.52
1:B:27:ILE:HG21	1:B:30:VAL:CG2	2.40	0.52
1:F:320:MET:O	1:F:321:LYS:C	2.52	0.52
1:D:372:ASN:OD1	1:D:374:ASN:HB2	2.10	0.51
1:E:150:GLY:O	1:E:154:ARG:HG3	2.10	0.51
1:C:323:ILE:HG22	1:C:332:PHE:CE1	2.46	0.51
1:D:227:THR:HG23	1:D:227:THR:O	2.10	0.51
1:H:31:SER:OG	1:H:63:VAL:HG12	2.10	0.51
1:D:4:LYS:HZ2	1:D:73:GLN:HE21	1.58	0.51
1:C:7:VAL:HG11	1:C:60:LEU:HD13	1.92	0.51
1:E:484:ALA:HA	1:E:487:LYS:HE3	1.93	0.51
1:D:19:VAL:HG13	1:D:27:ILE:HG23	1.93	0.51
1:D:322:LEU:HD13	1:D:373:ALA:HB1	1.93	0.51
1:D:4:LYS:NZ	1:D:73:GLN:HE21	2.09	0.51
1:H:254:LEU:HD13	1:H:461:GLN:HG2	1.93	0.51
1:D:19:VAL:HG11	1:D:27:ILE:HD12	1.92	0.51
1:H:80:THR:OG1	1:H:245:ASP:HA	2.11	0.51
1:A:91:LYS:HE3	1:A:158:GLY:O	2.11	0.51
1:G:47:HIS:HB2	1:G:100:ALA:HB3	1.92	0.50
1:A:80:THR:OG1	1:A:245:ASP:HA	2.11	0.50
1:E:228:ASN:OD1	1:E:236:ARG:NE	2.37	0.50
1:C:182:ASP:HA	1:C:218:ARG:O	2.11	0.50
1:H:24:ASP:O	1:H:25:ALA:HB3	2.10	0.50
1:E:410:GLY:O	1:E:413:VAL:HG22	2.12	0.50
1:C:22:ASP:OD1	1:C:22:ASP:C	2.55	0.50
1:C:483:TYR:CD2	1:C:487:LYS:HE3	2.47	0.50
1:F:153:GLU:O	1:F:157:ARG:HG3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:396:GLN:HE22	1:B:402:ARG:CZ	2.25	0.50
1:H:429:ARG:HD3	1:H:469:GLU:OE2	2.12	0.49
1:E:271:MET:HE1	1:E:388:THR:HG23	1.93	0.49
1:C:102:VAL:HG12	1:C:104:GLN:H	1.77	0.49
1:C:410:GLY:O	1:C:413:VAL:HG22	2.12	0.49
1:D:216:GLU:OE2	1:D:218:ARG:NH2	2.45	0.49
1:F:336:VAL:O	1:F:378:ARG:NH1	2.45	0.49
1:H:404:HIS:CE1	1:H:429:ARG:HH22	2.29	0.49
1:D:315:TRP:CZ3	1:D:320:MET:HG2	2.47	0.49
1:D:370:GLY:HA3	6:D:2667:HOH:O	2.13	0.49
1:F:41:LYS:HD3	1:F:44:TRP:CE2	2.48	0.49
1:B:17:ARG:NH2	1:B:32:GLN:NE2	2.61	0.49
1:G:262:LYS:HA	1:G:407:ARG:O	2.13	0.49
1:E:483:TYR:CD2	1:E:487:LYS:HE2	2.48	0.49
1:E:201:ASP:OD1	1:E:211:ARG:NH1	2.45	0.49
1:G:262:LYS:C	1:G:262:LYS:HD2	2.38	0.49
1:C:429:ARG:NE	1:C:469:GLU:OE2	2.35	0.49
1:A:55:THR:O	1:A:59:THR:HG23	2.13	0.48
1:A:84:GLU:HB2	1:A:103:TRP:HB3	1.95	0.48
1:A:429:ARG:HD2	1:A:469:GLU:CD	2.38	0.48
1:G:210:PRO:O	1:G:213:MET:HG2	2.13	0.48
1:F:217:VAL:C	1:F:218:ARG:HG2	2.37	0.48
1:F:218:ARG:NH1	1:F:222:GLU:OE2	2.41	0.48
1:A:80:THR:HG21	1:A:439:THR:HG22	1.95	0.48
1:D:370:GLY:CA	6:D:2667:HOH:O	2.61	0.48
1:C:490:VAL:O	1:C:494:MET:HG3	2.13	0.48
1:F:479:ARG:NH1	6:F:2723:HOH:O	2.46	0.48
1:H:220:SER:HB3	1:H:242:ILE:O	2.13	0.48
1:C:170:ILE:HD13	1:C:242:ILE:HD11	1.94	0.48
1:F:41:LYS:HD3	1:F:44:TRP:CD2	2.49	0.48
1:H:210:PRO:O	1:H:213:MET:HG2	2.14	0.48
1:D:220:SER:HB3	1:D:242:ILE:O	2.13	0.47
1:A:271:MET:HE1	1:A:392:LEU:HB2	1.96	0.47
1:B:456:ASN:OD1	1:B:458:ASP:HB2	2.14	0.47
1:C:498:GLU:C	1:C:500:ASP:N	2.72	0.47
1:E:317:ARG:O	1:E:321:LYS:CA	2.27	0.47
1:F:262:LYS:HA	1:F:407:ARG:O	2.14	0.47
1:H:174:THR:O	1:H:177:ARG:HG3	2.15	0.47
1:A:33[A]:ARG:HG2	1:A:55:THR:HG22	1.95	0.47
1:E:182:ASP:HA	1:E:218:ARG:O	2.14	0.47
1:D:171:TRP:CE2	1:D:176:GLY:HA2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:153:GLU:HG3	1:F:157:ARG:NH1	2.26	0.47
1:H:250:LEU:HG	1:H:255:CYS:HB2	1.97	0.47
1:A:410:GLY:O	1:A:413:VAL:HG22	2.15	0.47
1:A:429:ARG:HG2	1:A:471:ARG:HG3	1.97	0.47
1:B:327:TYR:HA	6:B:2876:HOH:O	2.15	0.47
1:B:435:VAL:HG23	1:B:465:VAL:CG2	2.41	0.47
1:G:378:ARG:O	1:G:382:GLU:HG3	2.15	0.47
1:D:61:VAL:HG21	1:H:61:VAL:HG21	1.97	0.47
1:D:364:ILE:O	1:F:363:ALA:HA	2.15	0.47
1:H:359:TYR:CZ	1:H:499:HIS:CB	2.98	0.47
1:F:431:GLU:HB3	1:F:466:ILE:HD12	1.96	0.47
1:H:202:LYS:O	1:H:206:VAL:HG23	2.14	0.47
1:A:27[B]:ILE:N	1:A:27[B]:ILE:HD13	2.30	0.47
1:G:190:MET:O	1:G:190:MET:HG2	2.15	0.47
1:A:17:ARG:HG2	1:A:32:GLN:HG3	1.97	0.47
1:F:226:GLN:HG3	1:F:238:PRO:HA	1.97	0.47
1:H:224:TYR:CE1	1:H:242:ILE:HG13	2.50	0.47
1:B:79:ILE:O	1:B:242:ILE:HA	2.16	0.46
1:B:61:VAL:HG21	1:E:61:VAL:HG21	1.98	0.46
1:G:174:THR:O	1:G:177:ARG:HG3	2.15	0.46
1:C:170:ILE:CD1	1:C:242:ILE:CD1	2.90	0.46
1:F:84:GLU:HB2	1:F:103:TRP:HB3	1.98	0.46
1:H:272:LEU:HG	1:H:303:GLU:HB2	1.97	0.46
1:B:456:ASN:OD1	1:B:458:ASP:CB	2.62	0.46
1:E:490:VAL:O	1:E:494:MET:HG3	2.15	0.46
1:D:21[B]:MET:CE	1:D:444:ALA:HB3	2.20	0.46
1:G:436:ARG:NH2	1:G:467:GLU:OE1	2.48	0.46
1:B:71:SER:HB2	1:B:237:ILE:HD11	1.96	0.46
1:B:396:GLN:NE2	1:B:402:ARG:NH2	2.63	0.46
1:E:79:ILE:O	1:E:242:ILE:HA	2.16	0.46
1:E:324:ASN:OD1	1:E:327:TYR:HB2	2.15	0.46
1:E:476:THR:O	1:E:479:ARG:HG2	2.15	0.46
1:F:483:TYR:OH	1:F:487:LYS:CE	2.64	0.46
1:H:170:ILE:HD11	1:H:242:ILE:HD11	1.95	0.46
1:A:308:MET:HE2	1:A:348:PHE:CD1	2.50	0.46
1:E:29:SER:HB3	1:E:63:VAL:HG22	1.98	0.46
1:D:320:MET:O	1:D:321:LYS:HB2	2.15	0.46
1:E:7:VAL:HG23	1:E:74:ILE:HD12	1.96	0.46
1:E:271:MET:HE2	1:E:271:MET:HB2	1.59	0.46
1:C:210:PRO:O	1:C:213:MET:HG2	2.16	0.46
1:D:416:ASN:OD1	1:D:470:PHE:HZ	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:368:THR:HG23	1:H:370:GLY:N	2.24	0.46
1:A:433:PRO:HA	1:A:465:VAL:O	2.15	0.46
1:B:84:GLU:HB2	1:B:103:TRP:HB3	1.97	0.46
1:D:378:ARG:O	1:D:382:GLU:HG3	2.16	0.46
1:F:262:LYS:HD2	1:F:262:LYS:O	2.16	0.46
1:D:4:LYS:HG3	1:D:5:TYR:CE2	2.51	0.46
1:H:345:VAL:O	1:H:362:GLY:HA2	2.16	0.46
1:B:347:ALA:O	1:B:361:ARG:HA	2.16	0.46
1:D:75:ALA:O	1:D:76:ALA:HB2	2.16	0.46
1:H:170:ILE:CD1	1:H:242:ILE:CD1	2.93	0.46
1:C:308:MET:HE3	1:C:308:MET:HB3	1.87	0.45
1:B:108:THR:HA	6:B:2692:HOH:O	2.16	0.45
1:G:117:ARG:HE	1:G:117:ARG:HB3	1.49	0.45
1:D:210:PRO:O	1:D:213:MET:HG2	2.17	0.45
1:H:498:GLU:OE1	1:H:498:GLU:HA	2.17	0.45
1:G:386:TYR:HB3	1:G:486:TRP:CD2	2.51	0.45
1:B:328:ASP:C	1:B:328:ASP:OD1	2.60	0.45
1:G:318:ASP:C	1:G:321:LYS:HD3	2.42	0.45
1:D:20:VAL:HG11	1:D:69:ILE:HD13	1.98	0.45
1:D:222:GLU:O	1:D:240:SER:HA	2.16	0.45
1:F:72:ASP:CA	1:F:235:THR:HG21	2.45	0.45
1:E:9:LEU:HD21	1:E:60:LEU:HD13	1.99	0.45
1:G:201:ASP:OD1	1:G:211:ARG:NH1	2.41	0.45
1:C:111:ILE:HG13	6:C:2767:HOH:O	2.16	0.45
1:C:141:VAL:CG1	1:C:209:ILE:HD12	2.46	0.45
1:C:111:ILE:HD13	1:C:142:LYS:HD3	1.99	0.45
1:D:224:TYR:CE1	1:D:242:ILE:HG13	2.51	0.45
1:D:227:THR:O	1:D:227:THR:CG2	2.64	0.45
1:G:109:ALA:HA	1:G:134:PRO:HG3	1.98	0.45
1:D:396:GLN:HE21	1:D:396:GLN:HB3	1.67	0.45
1:F:282:SER:OG	1:F:398:ASP:OD2	2.23	0.45
1:A:294:PRO:HD2	1:A:297:GLU:OE2	2.17	0.45
1:B:414:ALA:HA	1:B:419:MET:HE3	1.98	0.45
1:G:67:ALA:O	1:G:68:ASP:HB3	2.17	0.45
1:G:218:ARG:HD2	1:G:222:GLU:OE2	2.17	0.45
1:A:95:LYS:HB2	1:A:95:LYS:HE3	1.76	0.44
1:G:123:TYR:C	1:G:123:TYR:CD2	2.94	0.44
1:D:21[A]:MET:HE3	1:D:21[A]:MET:HB2	1.87	0.44
1:D:35:PHE:HB3	1:D:55:THR:HG21	1.99	0.44
1:A:102:VAL:HG12	1:A:104:GLN:H	1.82	0.44
1:A:253:GLN:HG2	1:A:438:VAL:HG11	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:4:LYS:NZ	1:C:73:GLN:HE21	2.15	0.44
1:G:34[B]:GLU:HG2	6:G:9012:HOH:O	2.17	0.44
1:D:478:GLU:OE2	1:D:482:ARG:CZ	2.65	0.44
1:H:23:HIS:HA	1:H:453:PHE:CE2	2.52	0.44
1:A:265:TYR:HB3	1:A:412:ALA:HB3	2.00	0.44
1:A:455:GLN:CB	1:A:459:GLU:OE2	2.57	0.44
1:C:20:VAL:HG11	1:C:69:ILE:HD13	2.00	0.44
1:C:328:ASP:OD2	1:C:328:ASP:C	2.60	0.44
1:F:262:LYS:C	1:F:262:LYS:CD	2.87	0.44
1:A:190:MET:HG2	1:A:190:MET:O	2.18	0.44
1:B:486:TRP:O	1:B:490:VAL:HG23	2.16	0.44
1:G:318:ASP:O	1:G:321:LYS:CE	2.64	0.44
1:G:490:VAL:O	1:G:494:MET:HG3	2.18	0.44
1:F:122:ASP:OD1	1:F:281:LYS:NZ	2.49	0.44
1:D:219:ARG:HB3	6:D:2696:HOH:O	2.17	0.44
1:F:459:GLU:HG2	1:F:463:LYS:HE2	2.00	0.44
1:E:41:LYS:HD2	1:E:44:TRP:CE2	2.53	0.44
1:E:248:ALA:O	1:E:442:GLY:HA3	2.18	0.44
1:D:294:PRO:HD2	1:D:297:GLU:OE2	2.18	0.44
1:F:80:THR:HG21	1:F:439:THR:HG22	2.00	0.44
1:F:180:VAL:CG2	1:F:218:ARG:HG3	2.47	0.44
1:H:368:THR:HG22	1:H:371:VAL:HG23	1.99	0.44
1:D:55:THR:O	1:D:59:THR:HG23	2.17	0.44
1:D:202:LYS:O	1:D:206:VAL:HG13	2.18	0.44
1:E:47:HIS:HB2	1:E:100:ALA:HB3	2.00	0.43
1:B:27:ILE:HG21	1:B:30:VAL:HG23	1.99	0.43
1:C:38:ILE:HG22	1:C:40:PRO:HD3	2.00	0.43
1:D:261:ALA:HB2	1:D:273:MET:HB2	1.99	0.43
1:H:154:ARG:O	1:H:159:GLU:HB2	2.18	0.43
1:C:226:GLN:HE21	1:C:236:ARG:HB3	1.82	0.43
1:E:262:LYS:C	1:E:262:LYS:HD2	2.43	0.43
1:A:476:THR:O	1:A:480:ASN:HB2	2.19	0.43
1:D:429:ARG:HA	1:D:470:PHE:O	2.19	0.43
1:B:256:VAL:HB	1:B:294:PRO:HG3	1.99	0.43
1:A:257:LYS:HB3	1:A:260:MET:SD	2.58	0.43
1:E:342:VAL:HG11	1:E:376:ILE:CD1	2.48	0.43
1:A:75:ALA:O	1:A:76:ALA:HB2	2.19	0.43
1:B:24:ASP:O	1:B:25:ALA:HB3	2.19	0.43
1:B:478:GLU:HG2	1:B:482:ARG:HD2	2.00	0.43
1:E:193:ASN:HB3	1:E:196:THR:OG1	2.18	0.43
1:E:332:PHE:O	1:E:333:ALA:C	2.61	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:265:TYR:CD2	1:C:269[A]:CYS:SG	3.12	0.43
1:C:278:LYS:CD	1:C:279:ALA:O	2.67	0.43
1:D:248:ALA:O	1:D:442:GLY:HA3	2.19	0.43
1:D:460:LEU:C	1:D:462:GLU:H	2.26	0.43
1:F:350:GLY:HA2	1:F:360:ALA:O	2.19	0.43
1:A:362:GLY:HA3	1:E:367:LEU:HB2	2.00	0.43
1:B:386:TYR:HB3	1:B:486:TRP:CD2	2.53	0.43
1:E:7:VAL:CG2	1:E:74:ILE:HD12	2.49	0.43
1:G:35:PHE:HB3	1:G:55:THR:HG21	2.00	0.42
1:C:313:ILE:N	1:C:313:ILE:HD12	2.34	0.42
1:H:475:GLU:OE1	1:H:475:GLU:HA	2.19	0.42
1:B:27:ILE:CG2	1:B:30:VAL:HG23	2.48	0.42
1:B:483:TYR:CZ	1:B:487:LYS:HE3	2.55	0.42
1:D:467:GLU:O	1:D:468:ARG:HB2	2.19	0.42
1:B:468:ARG:HG3	1:B:469:GLU:N	2.32	0.42
1:H:84:GLU:HB2	1:H:103:TRP:HB3	2.02	0.42
1:B:123:TYR:CZ	1:B:202:LYS:HD3	2.55	0.42
1:E:83:ARG:C	1:E:85:THR:H	2.27	0.42
1:E:278:LYS:HE2	1:E:280:VAL:HG22	2.02	0.42
1:C:28:ILE:N	1:C:28:ILE:HD13	2.34	0.42
1:A:125:ARG:HH11	1:A:125:ARG:HD2	1.62	0.42
1:E:498:GLU:O	1:E:499:HIS:C	2.62	0.42
1:F:47:HIS:HB2	1:F:100:ALA:HB3	2.01	0.42
1:A:469:GLU:O	6:A:9183:HOH:O	2.22	0.42
1:E:273:MET:HE1	1:E:399:SER:CB	2.49	0.42
1:G:80:THR:OG1	1:G:245:ASP:HA	2.20	0.42
1:C:67:ALA:O	1:C:68:ASP:C	2.63	0.42
1:B:21:MET:HE2	1:B:21:MET:HB3	1.74	0.42
1:C:434:GLU:HG2	1:C:467:GLU:HB2	2.00	0.42
1:D:478:GLU:O	1:D:482:ARG:HG3	2.20	0.42
1:D:21[B]:MET:HA	1:D:26:ASN:O	2.19	0.42
1:H:466:ILE:HD13	1:H:466:ILE:HA	1.78	0.42
1:A:33[B]:ARG:HB2	1:A:59:THR:CG2	2.49	0.42
1:H:303:GLU:CG	1:H:304:GLY:N	2.83	0.42
1:E:342:VAL:HG11	1:E:376:ILE:HD13	2.01	0.41
1:G:17:ARG:HH11	1:G:17:ARG:HD3	1.69	0.41
1:D:304:GLY:HA3	1:D:391:VAL:CG1	2.50	0.41
1:A:82:GLN:O	1:A:82:GLN:HG3	2.19	0.41
1:F:80:THR:OG1	1:F:245:ASP:HA	2.20	0.41
1:F:386:TYR:HB3	1:F:486:TRP:CD2	2.55	0.41
1:C:102:VAL:HG12	1:C:103:TRP:N	2.34	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:182:ASP:HA	1:B:218:ARG:O	2.20	0.41
1:E:148:VAL:O	1:E:149:GLU:C	2.60	0.41
1:E:316:LEU:O	1:E:322:LEU:N	2.53	0.41
1:G:322:LEU:HD23	1:G:322:LEU:HA	1.93	0.41
1:G:396:GLN:OE1	1:G:402:ARG:HD2	2.20	0.41
1:C:134:PRO:O	1:C:140:LYS:HE2	2.19	0.41
1:C:257:LYS:HE3	1:C:294:PRO:HG2	2.00	0.41
1:C:476:THR:OG1	1:C:479:ARG:NH2	2.54	0.41
1:D:67:ALA:HB3	1:D:69:ILE:HD12	2.03	0.41
1:D:316:LEU:HD23	1:D:316:LEU:HA	1.62	0.41
1:H:18:ALA:HB3	1:H:63:VAL:CG1	2.50	0.41
1:B:396:GLN:NE2	1:B:402:ARG:CZ	2.84	0.41
1:E:392:LEU:HD23	1:E:426:LEU:HD22	2.03	0.41
1:G:180:VAL:CG2	1:G:218:ARG:HG3	2.51	0.41
1:D:172:LYS:HA	1:D:172:LYS:HD2	1.94	0.41
1:H:18:ALA:HB3	1:H:63:VAL:HG11	2.02	0.41
1:H:116:LYS:HG3	1:H:132:ILE:HG21	2.03	0.41
1:A:7:VAL:HG11	1:A:60:LEU:HD13	2.02	0.41
1:B:227:THR:O	1:B:227:THR:HG23	2.21	0.41
1:E:225:GLY:C	1:E:226:GLN:HG2	2.46	0.41
1:E:257:LYS:NZ	1:E:461:GLN:HE22	2.18	0.41
1:G:386:TYR:HB3	1:G:486:TRP:CE2	2.56	0.41
1:C:240:SER:HB2	1:C:450:ALA:HB3	2.02	0.41
1:D:278:LYS:HG2	1:D:279:ALA:N	2.35	0.41
1:A:392:LEU:O	1:A:396:GLN:HG3	2.20	0.41
1:A:401:ILE:HD13	1:A:401:ILE:HG21	1.87	0.41
1:B:499:HIS:CD2	1:B:499:HIS:N	2.89	0.41
1:E:271:MET:CE	1:E:388:THR:HG23	2.51	0.41
1:E:386:TYR:HB3	1:E:486:TRP:CD2	2.55	0.41
1:G:86:THR:HG23	1:G:162:PHE:HE1	1.86	0.41
1:D:21[B]:MET:CE	1:D:444:ALA:HB1	2.49	0.41
1:D:226:GLN:NE2	1:D:236:ARG:HE	2.19	0.41
1:D:227:THR:HB	1:D:239:ILE:HD11	2.03	0.41
1:F:22:ASP:OD1	1:F:22:ASP:C	2.64	0.41
1:F:125:ARG:HG2	1:F:281:LYS:HE2	2.03	0.41
1:E:71:SER:C	1:E:73:GLN:H	2.28	0.41
1:D:21[B]:MET:CG	1:D:27:ILE:HD13	2.51	0.41
1:H:62:GLU:O	1:H:66:LYS:HG2	2.21	0.41
1:A:62:GLU:HB2	1:G:58:SER:HB3	2.02	0.40
1:B:17:ARG:CZ	1:B:32:GLN:NE2	2.85	0.40
1:B:60:LEU:HD21	1:B:229:ILE:HG13	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:211:ARG:HH11	1:G:211:ARG:HD2	1.63	0.40
1:C:21[A]:MET:HA	1:C:26:ASN:O	2.20	0.40
1:H:182:ASP:HA	1:H:218:ARG:O	2.21	0.40
1:E:313:ILE:CG2	1:E:323:ILE:CD1	2.99	0.40
1:G:55:THR:O	1:G:59:THR:HG23	2.20	0.40
1:C:478:GLU:O	1:C:482:ARG:HG3	2.21	0.40
1:H:79:ILE:HD13	1:H:170:ILE:HG13	2.02	0.40
1:B:271:MET:C	1:B:272:LEU:HD12	2.47	0.40
1:C:254:LEU:CD1	1:C:461:GLN:HA	2.52	0.40
1:D:460:LEU:C	1:D:462:GLU:N	2.76	0.40
1:H:113:GLU:OE2	1:H:116:LYS:HD2	2.21	0.40
1:B:471:ARG:HH11	1:B:471:ARG:HD3	1.75	0.40
1:H:386:TYR:HB3	1:H:486:TRP:CD2	2.56	0.40
1:B:483:TYR:O	1:B:486:TRP:HB3	2.22	0.40
1:E:169:LEU:O	1:E:173:MET:HG3	2.21	0.40
1:F:95:LYS:HA	1:F:96:PRO:HD3	1.99	0.40
1:F:457:LEU:O	1:F:461:GLN:HG3	2.22	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	501/526 (95%)	487 (97%)	14 (3%)	0	100	100
1	B	494/526 (94%)	485 (98%)	9 (2%)	0	100	100
1	C	486/526 (92%)	475 (98%)	11 (2%)	0	100	100
1	D	473/526 (90%)	460 (97%)	13 (3%)	0	100	100
1	E	490/526 (93%)	475 (97%)	15 (3%)	0	100	100
1	F	488/526 (93%)	482 (99%)	6 (1%)	0	100	100
1	G	499/526 (95%)	485 (97%)	13 (3%)	1 (0%)	43	42

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	489/526 (93%)	479 (98%)	10 (2%)	0	100	100
All	All	3920/4208 (93%)	3828 (98%)	91 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	222	GLU

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	415/436 (95%)	403 (97%)	12 (3%)	37	40
1	B	412/436 (94%)	407 (99%)	5 (1%)	63	70
1	C	408/436 (94%)	399 (98%)	9 (2%)	45	50
1	D	400/436 (92%)	389 (97%)	11 (3%)	38	41
1	E	409/436 (94%)	400 (98%)	9 (2%)	45	50
1	F	407/436 (93%)	396 (97%)	11 (3%)	39	42
1	G	413/436 (95%)	400 (97%)	13 (3%)	35	37
1	H	408/436 (94%)	391 (96%)	17 (4%)	26	25
All	All	3272/3488 (94%)	3185 (97%)	87 (3%)	40	42

All (87) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LYS
1	A	4	LYS
1	A	95	LYS
1	A	149	GLU
1	A	216	GLU
1	A	222	GLU
1	A	226	GLN

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Mol	Chain	Res	Type
1	A	269[A]	CYS
1	A	269[B]	CYS
1	A	335	LYS
1	A	337	GLN
1	A	434	GLU
1	B	6	ILE
1	B	228	ASN
1	B	229	ILE
1	B	235	THR
1	B	395	MET
1	E	1	THR
1	E	21	MET
1	E	57	SER
1	E	72	ASP
1	E	117	ARG
1	E	212	GLU
1	E	278	LYS
1	E	314	GLN
1	E	491	LYS
1	G	4	LYS
1	G	21	MET
1	G	41	LYS
1	G	95	LYS
1	G	152	ARG
1	G	153	GLU
1	G	206	VAL
1	G	236	ARG
1	G	329	SER
1	G	335	LYS
1	G	461	GLN
1	G	487[A]	LYS
1	G	487[B]	LYS
1	C	28	ILE
1	C	116	LYS
1	C	269[A]	CYS
1	C	269[B]	CYS
1	C	321	LYS
1	C	323	ILE
1	C	328	ASP
1	C	467	GLU
1	C	476	THR
1	D	28	ILE

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Mol	Chain	Res	Type
1	D	57	SER
1	D	79	ILE
1	D	182	ASP
1	D	219	ARG
1	D	308	MET
1	D	322	LEU
1	D	328	ASP
1	D	329	SER
1	D	462	GLU
1	D	499	HIS
1	F	4	LYS
1	F	41	LYS
1	F	149	GLU
1	F	206	VAL
1	F	212	GLU
1	F	226	GLN
1	F	235	THR
1	F	236	ARG
1	F	283	GLU
1	F	479	ARG
1	F	498	GLU
1	H	21	MET
1	H	41	LYS
1	H	57	SER
1	H	151	SER
1	H	226	GLN
1	H	229	ILE
1	H	236	ARG
1	H	278	LYS
1	H	368	THR
1	H	426	LEU
1	H	459	GLU
1	H	461	GLN
1	H	462	GLU
1	H	463	LYS
1	H	476	THR
1	H	479	ARG
1	H	498	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	420	GLN
1	A	461	GLN
1	B	32	GLN
1	B	147	HIS
1	B	226	GLN
1	B	396	GLN
1	B	455	GLN
1	E	73	GLN
1	E	104	GLN
1	E	420	GLN
1	E	461	GLN
1	G	387	GLN
1	G	420	GLN
1	G	455	GLN
1	G	461	GLN
1	C	26	ASN
1	C	73	GLN
1	C	226	GLN
1	C	455	GLN
1	D	73	GLN
1	D	175	GLN
1	D	226	GLN
1	D	314	GLN
1	D	340	ASN
1	D	396	GLN
1	D	499	HIS
1	F	56	GLN
1	F	228	ASN
1	F	420	GLN
1	F	461	GLN
1	F	499	HIS
1	H	26	ASN
1	H	404	HIS
1	H	461	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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 36 ligands modelled in this entry, 9 are monoatomic - leaving 27 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	GOL	D	2640	-	5,5,5	0.51	0	5,5,5	0.67	0
5	EDO	G	2646	-	3,3,3	0.31	0	2,2,2	0.66	0
5	EDO	C	2654	-	3,3,3	0.30	0	2,2,2	0.57	0
5	EDO	A	2650	-	3,3,3	0.41	0	2,2,2	0.19	0
2	GOL	C	2649	-	5,5,5	0.76	0	5,5,5	0.47	0
5	EDO	G	2647	-	3,3,3	0.30	0	2,2,2	0.62	0
5	EDO	D	2642	-	3,3,3	0.51	0	2,2,2	0.63	0
5	EDO	C	2652	-	3,3,3	0.24	0	2,2,2	0.38	0
2	GOL	A	2647	-	5,5,5	0.35	0	5,5,5	1.34	0
2	GOL	B	2648	-	5,5,5	0.33	0	5,5,5	0.93	0
2	GOL	E	2641	-	5,5,5	0.72	0	5,5,5	0.83	0
5	EDO	B	2650	-	3,3,3	0.36	0	2,2,2	0.20	0
5	EDO	F	2644	-	3,3,3	0.31	0	2,2,2	1.04	0
5	EDO	E	2643	-	3,3,3	0.50	0	2,2,2	0.75	0
5	EDO	F	2645	-	3,3,3	0.58	0	2,2,2	0.30	0
5	EDO	C	2653	-	3,3,3	0.30	0	2,2,2	0.72	0
2	GOL	F	2642	-	5,5,5	0.55	0	5,5,5	0.64	0
5	EDO	G	2648	-	3,3,3	0.48	0	2,2,2	0.52	0
5	EDO	G	2645	-	3,3,3	0.40	0	2,2,2	0.16	0
5	EDO	H	2647	-	3,3,3	0.52	0	2,2,2	0.48	0
5	EDO	B	2651	-	3,3,3	0.65	0	2,2,2	0.53	0
2	GOL	G	2643	-	5,5,5	0.67	0	5,5,5	0.72	0
5	EDO	C	2651	-	3,3,3	0.55	0	2,2,2	0.40	0
5	EDO	H	2646	-	3,3,3	0.38	0	2,2,2	0.45	0
5	EDO	D	2643	-	3,3,3	0.63	0	2,2,2	0.31	0
5	EDO	A	2651	-	3,3,3	0.52	0	2,2,2	0.74	0
2	GOL	H	2644	-	5,5,5	0.53	0	5,5,5	0.45	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	D	2640	-	-	0/4/4/4	-
5	EDO	G	2646	-	-	0/1/1/1	-
5	EDO	C	2654	-	-	0/1/1/1	-
5	EDO	A	2650	-	-	0/1/1/1	-
2	GOL	C	2649	-	-	0/4/4/4	-
5	EDO	G	2647	-	-	0/1/1/1	-
5	EDO	D	2642	-	-	1/1/1/1	-
5	EDO	C	2652	-	-	1/1/1/1	-
2	GOL	A	2647	-	-	0/4/4/4	-
2	GOL	B	2648	-	-	0/4/4/4	-
2	GOL	E	2641	-	-	0/4/4/4	-
5	EDO	B	2650	-	-	0/1/1/1	-
5	EDO	F	2644	-	-	1/1/1/1	-
5	EDO	E	2643	-	-	0/1/1/1	-
5	EDO	F	2645	-	-	1/1/1/1	-
5	EDO	C	2653	-	-	0/1/1/1	-
2	GOL	F	2642	-	-	0/4/4/4	-
5	EDO	G	2648	-	-	1/1/1/1	-
5	EDO	G	2645	-	-	0/1/1/1	-
5	EDO	H	2647	-	-	0/1/1/1	-
5	EDO	B	2651	-	-	0/1/1/1	-
2	GOL	G	2643	-	-	0/4/4/4	-
5	EDO	C	2651	-	-	0/1/1/1	-
5	EDO	H	2646	-	-	0/1/1/1	-
5	EDO	D	2643	-	-	0/1/1/1	-
5	EDO	A	2651	-	-	0/1/1/1	-
2	GOL	H	2644	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	D	2642	EDO	O1-C1-C2-O2
5	C	2652	EDO	O1-C1-C2-O2
5	G	2648	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
5	F	2644	EDO	O1-C1-C2-O2
5	F	2645	EDO	O1-C1-C2-O2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	2653	EDO	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	498/526 (94%)	-0.39	2 (0%)	88	88	10, 24, 44, 57	5 (1%)
1	B	496/526 (94%)	-0.41	1 (0%)	91	90	10, 24, 42, 57	2 (0%)
1	C	489/526 (92%)	-0.24	5 (1%)	79	79	13, 28, 47, 71	3 (0%)
1	D	482/526 (91%)	-0.05	8 (1%)	69	68	19, 31, 56, 71	1 (0%)
1	E	492/526 (93%)	-0.31	6 (1%)	76	76	12, 25, 45, 61	2 (0%)
1	F	492/526 (93%)	-0.30	2 (0%)	88	88	19, 28, 45, 66	0
1	G	498/526 (94%)	-0.39	1 (0%)	91	90	11, 26, 42, 56	3 (0%)
1	H	492/526 (93%)	-0.18	5 (1%)	79	79	13, 30, 48, 66	1 (0%)
All	All	3939/4208 (93%)	-0.29	30 (0%)	82	82	10, 27, 47, 71	17 (0%)

All (30) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	499	HIS	4.7
1	E	326	ALA	4.0
1	G	327	TYR	3.8
1	H	464	ALA	3.2
1	D	331	TYR	3.1
1	D	499	HIS	3.0
1	D	474	ILE	2.8
1	C	336	VAL	2.7
1	B	228	ASN	2.7
1	E	323	ILE	2.7
1	D	228	ASN	2.7
1	A	326	ALA	2.6
1	H	499	HIS	2.6
1	D	476	THR	2.6
1	D	500	ASP	2.5
1	E	327	TYR	2.5

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Mol	Chain	Res	Type	RSRZ
1	H	404	HIS	2.4
1	E	325	ASP	2.4
1	D	477	THR	2.3
1	C	228	ASN	2.3
1	C	323	ILE	2.2
1	C	500	ASP	2.2
1	F	498	GLU	2.1
1	A	465	VAL	2.1
1	E	322	LEU	2.1
1	H	463	LYS	2.1
1	D	337	GLN	2.1
1	F	499	HIS	2.1
1	H	462	GLU	2.0
1	E	71	SER	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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($\text{\AA}^2$)	Q<0.9
5	EDO	A	2651	4/4	0.93	0.10	22,24,25,26	0
5	EDO	G	2647	4/4	0.93	0.08	30,31,31,33	0
5	EDO	B	2650	4/4	0.94	0.08	28,28,28,30	0
5	EDO	A	2650	4/4	0.94	0.07	33,34,34,35	0
5	EDO	G	2648	4/4	0.94	0.08	29,38,40,45	0
5	EDO	C	2653	4/4	0.94	0.09	33,35,40,44	0
5	EDO	D	2642	4/4	0.94	0.08	33,35,35,35	0
5	EDO	C	2651	4/4	0.95	0.07	24,31,32,33	0
5	EDO	B	2651	4/4	0.95	0.07	26,27,28,28	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	EDO	G	2646	4/4	0.95	0.07	31,33,33,34	0
5	EDO	D	2643	4/4	0.95	0.07	27,31,33,37	0
5	EDO	H	2647	4/4	0.95	0.12	28,33,33,35	0
5	EDO	C	2654	4/4	0.96	0.06	24,25,29,31	0
4	MG	A	2649	1/1	0.96	0.06	52,52,52,52	0
5	EDO	C	2652	4/4	0.96	0.07	34,35,36,37	0
5	EDO	F	2645	4/4	0.96	0.06	24,27,31,33	0
2	GOL	E	2641	6/6	0.96	0.06	16,20,22,22	0
3	CL	D	2641	1/1	0.97	0.06	37,37,37,37	0
3	CL	H	2645	1/1	0.97	0.10	39,39,39,39	0
2	GOL	D	2640	6/6	0.97	0.06	18,22,26,31	0
5	EDO	F	2644	4/4	0.97	0.05	24,25,28,29	0
5	EDO	E	2643	4/4	0.97	0.06	23,27,27,28	0
3	CL	E	2642	1/1	0.97	0.05	34,34,34,34	0
2	GOL	A	2647	6/6	0.98	0.05	14,17,24,27	0
3	CL	C	2650	1/1	0.98	0.07	32,32,32,32	0
2	GOL	G	2643	6/6	0.98	0.05	19,20,20,21	0
5	EDO	G	2645	4/4	0.98	0.04	22,23,24,29	0
2	GOL	C	2649	6/6	0.98	0.05	18,19,25,28	0
2	GOL	B	2648	6/6	0.98	0.06	16,17,22,28	0
2	GOL	F	2642	6/6	0.98	0.06	20,25,27,29	0
5	EDO	H	2646	4/4	0.98	0.07	25,26,29,32	0
2	GOL	H	2644	6/6	0.98	0.06	21,22,26,30	0
3	CL	B	2649	1/1	0.99	0.04	33,33,33,33	0
3	CL	A	2648	1/1	0.99	0.03	23,23,23,23	0
3	CL	F	2643	1/1	0.99	0.09	35,35,35,35	0
3	CL	G	2644	1/1	0.99	0.04	28,28,28,28	0

6.5 Other polymers [i](#)

There are no such residues in this entry.