



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 09:57 PM UTC

PDB ID : 4D47 / pdb\_00004d47  
Title : X-ray structure of the levansucrase from *Erwinia amylovora*  
Authors : Wuerges, J.; Caputi, L.; Cianci, M.; Benini, S.  
Deposited on : 2014-10-27  
Resolution : 2.77 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](mailto: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>.

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

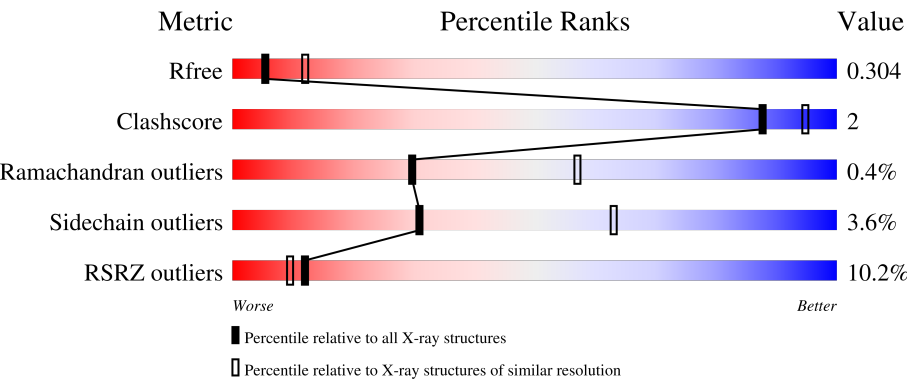
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:  
*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.77 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.



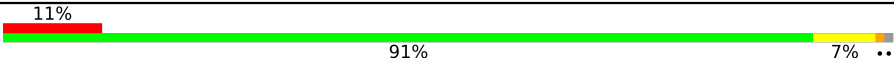
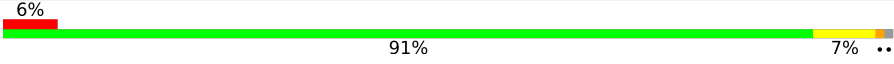
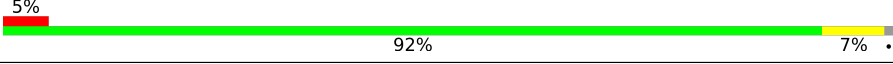
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	5248 (2.80-2.76)
Clashscore	190562	5693 (2.80-2.76)
Ramachandran outliers	187476	5590 (2.80-2.76)
Sidechain outliers	187428	5592 (2.80-2.76)
RSRZ outliers	180081	5251 (2.80-2.76)

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  $\geq 3$ , 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	415	<div><div>5%</div><div>91%7%</div></div>
1	B	415	<div><div>10%</div><div>92%7%</div></div>
1	C	415	<div><div>17%</div><div>93%6%</div></div>
1	D	415	<div><div>12%</div><div>92%7%</div></div>
1	E	415	<div><div>15%</div><div>90%8%</div></div>

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Mol	Chain	Length	Quality of chain
1	F	415	 11% 91% 7% ..
1	G	415	 6% 91% 7% ..
1	H	415	 5% 92% 7% .

## 2 Entry composition

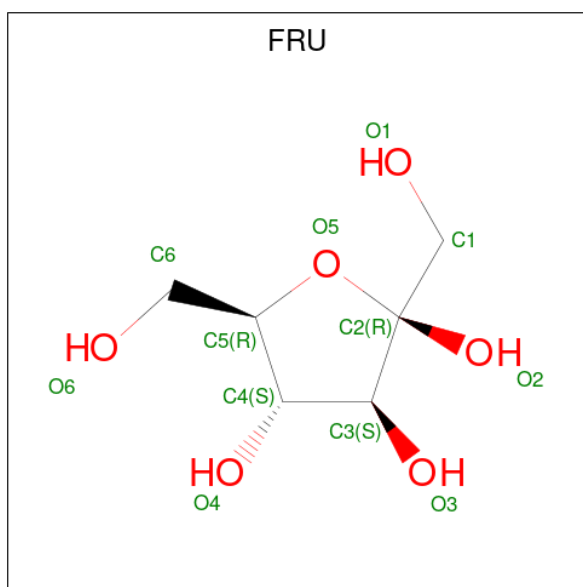
There are 4 unique types of molecules in this entry. The entry contains 26263 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 LEVANSUCRASE.

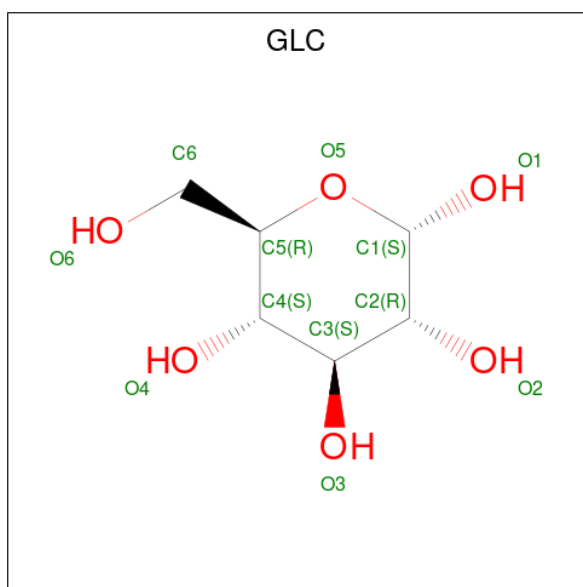
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	B	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	C	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	D	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	E	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	F	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	G	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			
1	H	411	Total	C	N	O	S	0	0	0
			3247	2072	535	628	12			

- Molecule 2 is beta-D-fructofuranose (CCD ID: FRU) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			12	6	6		
2	B	1	Total	C	O	0	0
			12	6	6		
2	C	1	Total	C	O	0	0
			12	6	6		
2	D	1	Total	C	O	0	0
			12	6	6		
2	E	1	Total	C	O	0	0
			12	6	6		
2	F	1	Total	C	O	0	0
			12	6	6		
2	G	1	Total	C	O	0	0
			12	6	6		
2	H	1	Total	C	O	0	0
			12	6	6		

- Molecule 3 is alpha-D-glucopyranose (CCD ID: GLC) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			12	6	6		
3	B	1	Total	C	O	0	0
			12	6	6		
3	C	1	Total	C	O	0	0
			12	6	6		
3	D	1	Total	C	O	0	0
			12	6	6		
3	E	1	Total	C	O	0	0
			12	6	6		
3	F	1	Total	C	O	0	0
			12	6	6		
3	G	1	Total	C	O	0	0
			12	6	6		
3	H	1	Total	C	O	0	0
			12	6	6		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	25	Total	O	0	0
			25	25		
4	B	4	Total	O	0	0
			4	4		
4	C	11	Total	O	0	0
			11	11		
4	D	8	Total	O	0	0
			8	8		

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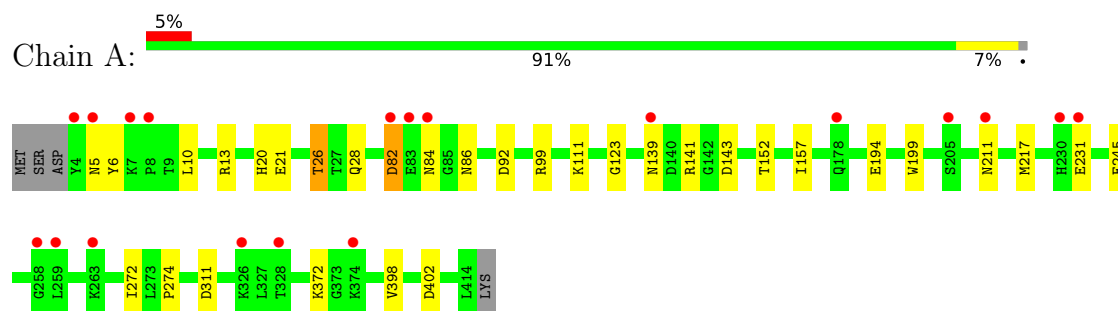
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	12	Total 12	O 12	0	0
4	F	16	Total 16	O 16	0	0
4	G	6	Total 6	O 6	0	0
4	H	13	Total 13	O 13	0	0

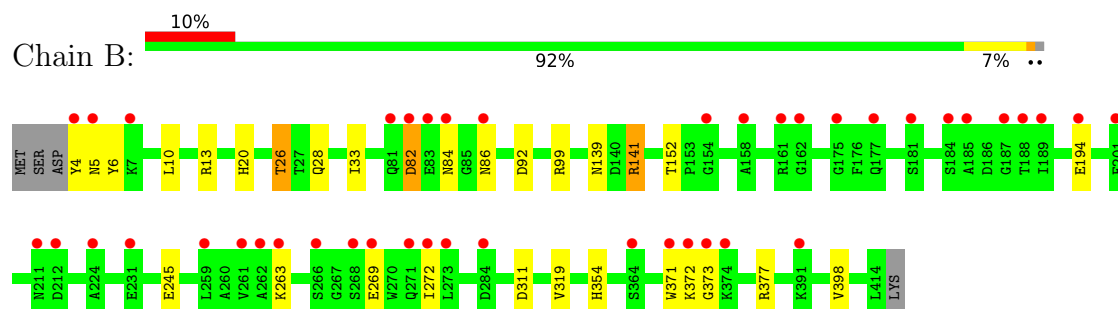
### 3 Residue-property plots [i](#)

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.

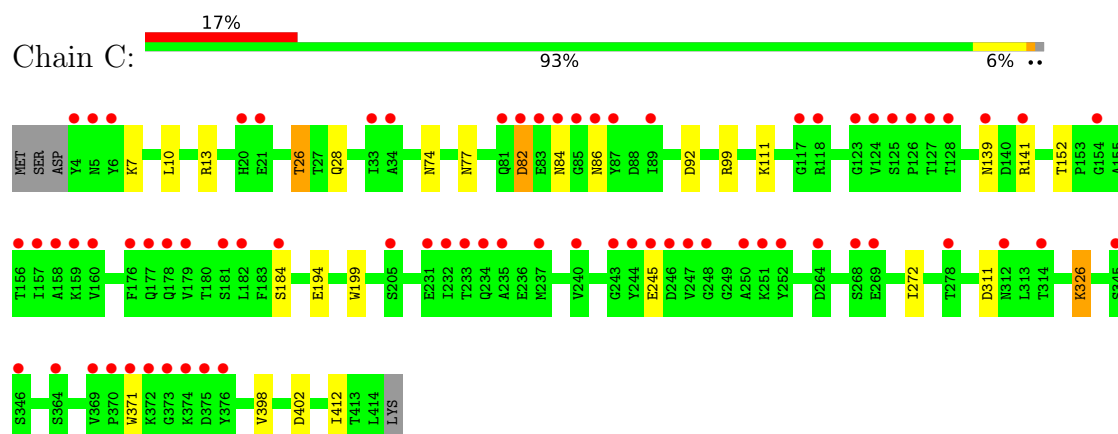
#### • Molecule 1: LEVANSUCRASE



#### • Molecule 1: LEVANSUCRASE



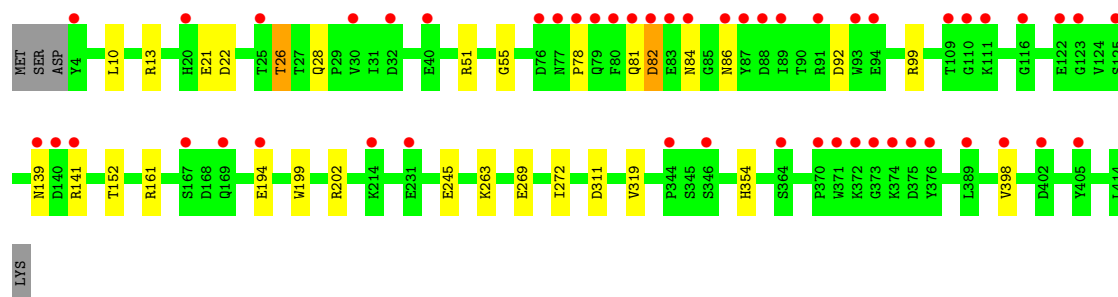
#### • Molecule 1: LEVANSUCRASE



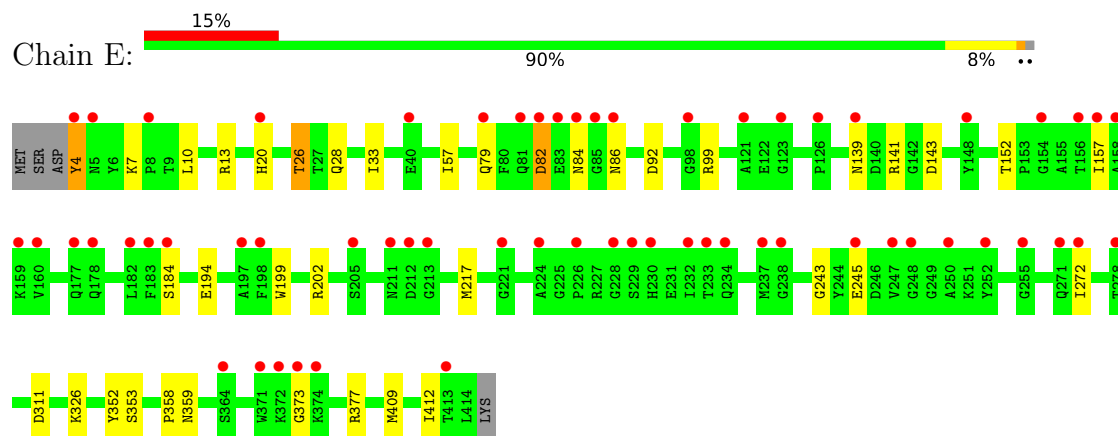
#### • Molecule 1: LEVANSUCRASE



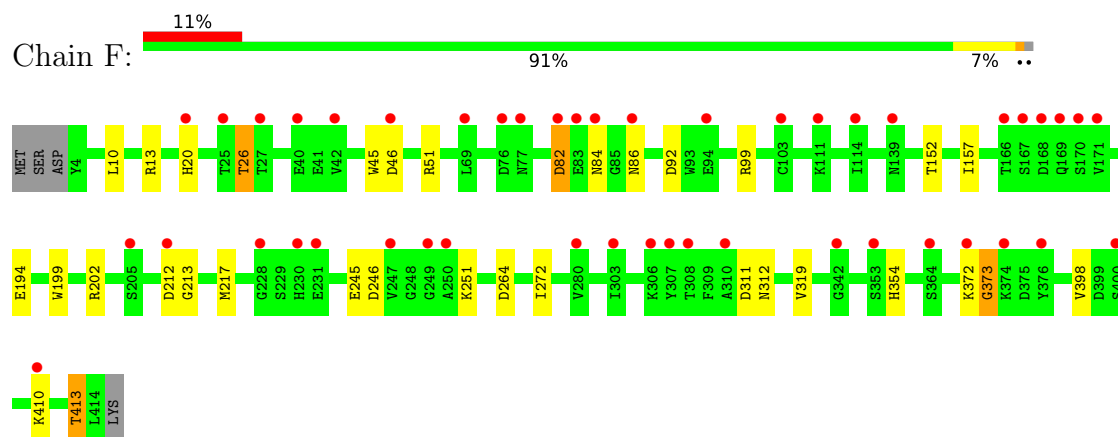




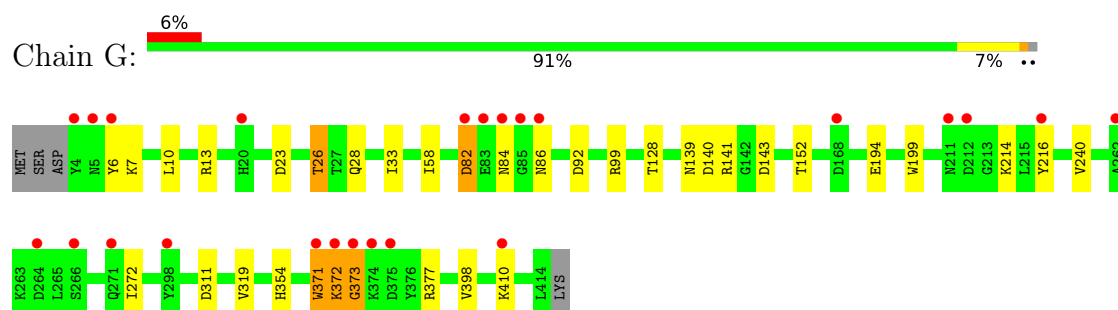
• Molecule 1: LEVANSUCRASE



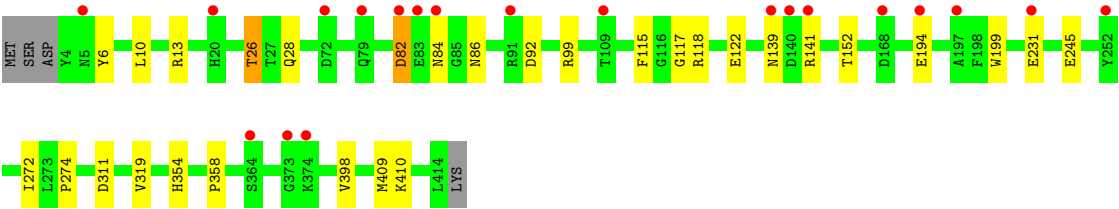
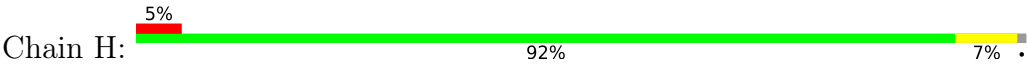
• Molecule 1: LEVANSUCRASE



• Molecule 1: LEVANSUCRASE



• Molecule 1: LEVANSUCRASE



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	155.59Å 178.74Å 158.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.85 – 2.77 20.85 – 2.77	Depositor EDS
% Data completeness (in resolution range)	99.7 (20.85-2.77) 99.6 (20.85-2.77)	Depositor EDS
$R_{merge}$	0.18	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.00 (at 2.77Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, $R_{free}$	0.262 , 0.298 0.270 , 0.304	Depositor DCC
$R_{free}$ test set	5650 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.8	Xtriage
Anisotropy	0.306	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.38 , 40.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.000 for l,-k,h	Xtriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	26263	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 63.21 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.0017e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: FRU, GLC

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	0.35	0/3340	0.68	0/4555
1	B	0.34	0/3340	0.68	1/4555 (0.0%)
1	C	0.35	0/3340	0.67	0/4555
1	D	0.33	0/3340	0.67	0/4555
1	E	0.36	0/3340	0.70	0/4555
1	F	0.36	0/3340	0.68	0/4555
1	G	0.36	0/3340	0.70	2/4555 (0.0%)
1	H	0.36	0/3340	0.69	0/4555
All	All	0.35	0/26720	0.68	3/36440 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	6	TYR	N-CA-C	8.05	121.14	109.14
1	B	6	TYR	N-CA-C	5.58	117.89	110.53
1	G	140	ASP	N-CA-C	-5.31	106.58	113.16

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	5	ASN	Peptide

## 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	3247	0	3087	14	0
1	B	3247	0	3087	12	0
1	C	3247	0	3087	8	0
1	D	3247	0	3087	13	0
1	E	3247	0	3087	19	0
1	F	3247	0	3087	18	0
1	G	3247	0	3087	14	0
1	H	3247	0	3087	12	0
2	A	12	0	12	0	0
2	B	12	0	12	0	0
2	C	12	0	12	0	0
2	D	12	0	12	1	0
2	E	12	0	12	1	0
2	F	12	0	12	1	0
2	G	12	0	12	0	0
2	H	12	0	12	0	0
3	A	12	0	12	0	0
3	B	12	0	12	0	0
3	C	12	0	12	0	0
3	D	12	0	12	0	0
3	E	12	0	12	0	0
3	F	12	0	12	0	0
3	G	12	0	12	0	0
3	H	12	0	12	0	0
4	A	25	0	0	0	0
4	B	4	0	0	0	0
4	C	11	0	0	0	0
4	D	8	0	0	0	0
4	E	12	0	0	0	0
4	F	16	0	0	1	0
4	G	6	0	0	0	0
4	H	13	0	0	0	0
All	All	26263	0	24888	101	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 2.

All (101) 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:G:139:ASN:HB3	1:G:141:ARG:H	1.63	0.63
1:C:92:ASP:OD1	1:C:99:ARG:NH2	2.34	0.60
1:D:141:ARG:NH2	1:F:213:GLY:O	2.32	0.60
1:A:13:ARG:NH2	1:A:311:ASP:O	2.35	0.60
1:F:92:ASP:OD1	1:F:99:ARG:NH2	2.34	0.59
1:D:13:ARG:NH2	1:D:311:ASP:O	2.35	0.59
1:A:92:ASP:OD1	1:A:99:ARG:NH2	2.36	0.59
1:G:33:ILE:HD13	1:G:371:TRP:HB3	1.84	0.59
1:H:13:ARG:NH2	1:H:311:ASP:O	2.36	0.58
1:G:92:ASP:OD1	1:G:99:ARG:NH2	2.36	0.58
1:H:92:ASP:OD1	1:H:99:ARG:NH2	2.37	0.58
1:B:13:ARG:NH2	1:B:311:ASP:O	2.38	0.57
1:E:20:HIS:CD2	1:F:20:HIS:CE1	2.92	0.56
1:E:20:HIS:HB2	1:F:20:HIS:CD2	2.40	0.56
1:G:13:ARG:NH2	1:G:311:ASP:O	2.39	0.55
1:B:92:ASP:OD1	1:B:99:ARG:NH2	2.40	0.55
1:F:202:ARG:NE	2:F:1415:FRU:O1	2.38	0.55
1:A:111:LYS:HE2	1:A:402:ASP:OD2	2.08	0.54
1:E:82:ASP:N	1:E:86:ASN:O	2.30	0.54
1:E:92:ASP:OD1	1:E:99:ARG:NH2	2.41	0.54
1:E:243:GLY:N	1:E:245:GLU:OE2	2.42	0.53
1:C:13:ARG:NH2	1:C:311:ASP:O	2.41	0.53
1:G:82:ASP:N	1:G:86:ASN:O	2.36	0.52
1:E:13:ARG:NH2	1:E:311:ASP:O	2.43	0.52
1:F:13:ARG:NH2	1:F:311:ASP:O	2.43	0.51
1:A:211:ASN:O	1:F:413:THR:OG1	2.26	0.51
1:E:359:ASN:CG	1:E:409:MET:HE2	2.36	0.51
1:A:20:HIS:CD2	1:A:21:GLU:O	2.64	0.51
1:D:263:LYS:HD3	1:D:269:GLU:HB2	1.93	0.50
1:E:139:ASN:ND2	1:E:143:ASP:OD2	2.45	0.50
1:A:20:HIS:HB2	1:B:20:HIS:CD2	2.46	0.50
1:H:139:ASN:HB3	1:H:141:ARG:H	1.76	0.50
1:E:4:TYR:C	1:E:4:TYR:CD1	2.90	0.50
1:E:4:TYR:C	1:H:122:GLU:HG3	2.36	0.50
1:E:4:TYR:C	1:E:4:TYR:HD1	2.20	0.50
1:G:58:ILE:HD12	1:G:410:LYS:HD2	1.93	0.50
1:B:82:ASP:N	1:B:86:ASN:O	2.31	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:212:ASP:OD1	1:F:213:GLY:N	2.45	0.49
1:B:263:LYS:HD3	1:B:269:GLU:HB2	1.94	0.49
1:E:358:PRO:HD2	1:E:409:MET:HE1	1.94	0.49
1:C:82:ASP:N	1:C:86:ASN:O	2.36	0.49
1:G:58:ILE:CD1	1:G:410:LYS:HD2	2.43	0.49
1:D:92:ASP:OD1	1:D:99:ARG:NH2	2.46	0.48
1:F:51:ARG:NH1	4:F:2009:HOH:O	2.35	0.48
1:A:211:ASN:HB3	1:F:413:THR:HG21	1.95	0.48
1:F:372:LYS:HG2	1:F:373:GLY:H	1.78	0.48
1:A:139:ASN:HB3	1:A:141:ARG:H	1.78	0.47
1:H:358:PRO:HB2	1:H:409:MET:HE1	1.97	0.47
1:A:82:ASP:N	1:A:86:ASN:O	2.32	0.46
1:B:26:THR:O	1:B:26:THR:HG23	2.14	0.46
1:C:111:LYS:HE2	1:C:402:ASP:HB3	1.96	0.46
1:A:6:TYR:OH	1:A:274:PRO:O	2.32	0.46
1:F:246:ASP:OD2	1:F:312:ASN:ND2	2.48	0.46
1:D:161:ARG:NH1	1:F:264:ASP:OD2	2.50	0.45
1:E:26:THR:O	1:E:26:THR:HG23	2.16	0.45
1:E:202:ARG:NE	2:E:1415:FRU:O1	2.48	0.45
1:D:139:ASN:HB3	1:D:141:ARG:H	1.81	0.45
1:E:57:ILE:HG12	1:E:409:MET:HE3	1.99	0.45
1:G:26:THR:O	1:G:26:THR:HG23	2.16	0.45
1:G:33:ILE:O	1:G:377:ARG:NH1	2.45	0.45
1:F:82:ASP:N	1:F:86:ASN:O	2.36	0.44
1:A:26:THR:O	1:A:26:THR:HG23	2.16	0.44
1:C:26:THR:HG23	1:C:26:THR:O	2.16	0.44
1:D:78:PRO:HA	1:D:81:GLN:HG3	1.99	0.44
1:D:319:VAL:HB	1:D:354:HIS:HB2	1.99	0.44
1:B:139:ASN:HB3	1:B:141:ARG:H	1.83	0.44
1:D:26:THR:HG23	1:D:26:THR:O	2.16	0.44
1:B:263:LYS:CD	1:B:269:GLU:HB2	2.47	0.44
1:D:51:ARG:HD2	1:D:55:GLY:HA2	2.00	0.44
1:G:23:ASP:HB3	1:G:26:THR:HG22	2.00	0.44
1:H:26:THR:HG23	1:H:26:THR:O	2.17	0.44
1:B:319:VAL:HB	1:B:354:HIS:HB2	2.00	0.43
1:F:26:THR:O	1:F:26:THR:HG23	2.19	0.43
1:G:319:VAL:HB	1:G:354:HIS:HB2	2.00	0.43
1:A:139:ASN:ND2	1:A:143:ASP:OD2	2.51	0.43
1:C:139:ASN:HB3	1:C:141:ARG:H	1.84	0.43
1:G:372:LYS:O	1:G:373:GLY:C	2.62	0.43
1:H:82:ASP:N	1:H:86:ASN:O	2.35	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:74:ASN:HB3	1:C:77:ASN:HB3	2.02	0.42
1:B:141:ARG:NH1	1:B:141:ARG:HG3	2.35	0.42
1:H:118:ARG:HH12	1:H:122:GLU:HG2	1.85	0.42
1:D:202:ARG:NE	2:D:1415:FRU:O1	2.48	0.42
1:H:118:ARG:HH22	1:H:122:GLU:HG2	1.85	0.42
1:E:352:TYR:CG	1:E:353:SER:N	2.88	0.41
1:G:214:LYS:HB2	1:G:216:TYR:CE2	2.55	0.41
1:G:139:ASN:ND2	1:G:143:ASP:OD2	2.51	0.41
1:D:21:GLU:O	1:D:22:ASP:HB2	2.21	0.41
1:F:319:VAL:HB	1:F:354:HIS:HB2	2.03	0.41
1:E:139:ASN:HB3	1:E:141:ARG:H	1.84	0.41
1:H:6:TYR:OH	1:H:274:PRO:O	2.36	0.41
1:B:33:ILE:O	1:B:377:ARG:NH1	2.48	0.41
1:D:82:ASP:N	1:D:86:ASN:O	2.35	0.41
1:E:33:ILE:O	1:E:377:ARG:NH1	2.48	0.41
1:E:157:ILE:HG21	1:E:217:MET:HE1	2.02	0.41
1:H:319:VAL:HB	1:H:354:HIS:HB2	2.02	0.41
1:B:371:TRP:CE3	1:B:372:LYS:HB2	2.56	0.41
1:H:115:PHE:CE2	1:H:117:GLY:HA2	2.56	0.41
1:A:157:ILE:HG21	1:A:217:MET:HE1	2.03	0.40
1:A:123:GLY:O	1:C:326:LYS:HD3	2.22	0.40
1:F:45:TRP:CD1	1:F:46:ASP:H	2.40	0.40
1:F:157:ILE:HD13	1:F:217:MET:HE1	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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	409/415 (99%)	388 (95%)	20 (5%)	1 (0%)	43 70
1	B	409/415 (99%)	388 (95%)	19 (5%)	2 (0%)	24 52

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	409/415 (99%)	389 (95%)	19 (5%)	1 (0%)	43	70
1	D	409/415 (99%)	388 (95%)	20 (5%)	1 (0%)	43	70
1	E	409/415 (99%)	389 (95%)	18 (4%)	2 (0%)	24	52
1	F	409/415 (99%)	388 (95%)	19 (5%)	2 (0%)	24	52
1	G	409/415 (99%)	388 (95%)	19 (5%)	2 (0%)	24	52
1	H	409/415 (99%)	388 (95%)	20 (5%)	1 (0%)	43	70
All	All	3272/3320 (99%)	3106 (95%)	154 (5%)	12 (0%)	30	57

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	373	GLY
1	E	373	GLY
1	F	373	GLY
1	G	373	GLY
1	B	152	THR
1	F	152	THR
1	G	152	THR
1	A	152	THR
1	C	152	THR
1	D	152	THR
1	E	152	THR
1	H	152	THR

### 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	351/355 (99%)	338 (96%)	13 (4%)	30	62
1	B	351/355 (99%)	340 (97%)	11 (3%)	35	68
1	C	351/355 (99%)	336 (96%)	15 (4%)	26	57
1	D	351/355 (99%)	341 (97%)	10 (3%)	38	70

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	351/355 (99%)	337 (96%)	14 (4%)	28	60
1	F	351/355 (99%)	339 (97%)	12 (3%)	32	65
1	G	351/355 (99%)	337 (96%)	14 (4%)	28	60
1	H	351/355 (99%)	339 (97%)	12 (3%)	32	65
All	All	2808/2840 (99%)	2707 (96%)	101 (4%)	31	63

All (101) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	ASN
1	A	10	LEU
1	A	26	THR
1	A	28	GLN
1	A	82	ASP
1	A	84	ASN
1	A	194	GLU
1	A	199	TRP
1	A	231	GLU
1	A	245	GLU
1	A	272	ILE
1	A	372	LYS
1	A	398	VAL
1	B	4	TYR
1	B	10	LEU
1	B	26	THR
1	B	28	GLN
1	B	82	ASP
1	B	84	ASN
1	B	141	ARG
1	B	194	GLU
1	B	245	GLU
1	B	272	ILE
1	B	398	VAL
1	C	7	LYS
1	C	10	LEU
1	C	26	THR
1	C	28	GLN
1	C	82	ASP
1	C	84	ASN
1	C	184	SER
1	C	194	GLU

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Mol	Chain	Res	Type
1	C	199	TRP
1	C	245	GLU
1	C	272	ILE
1	C	326	LYS
1	C	371	TRP
1	C	398	VAL
1	C	412	ILE
1	D	10	LEU
1	D	26	THR
1	D	28	GLN
1	D	82	ASP
1	D	84	ASN
1	D	194	GLU
1	D	199	TRP
1	D	245	GLU
1	D	272	ILE
1	D	398	VAL
1	E	4	TYR
1	E	7	LYS
1	E	10	LEU
1	E	26	THR
1	E	28	GLN
1	E	79	GLN
1	E	82	ASP
1	E	84	ASN
1	E	184	SER
1	E	194	GLU
1	E	199	TRP
1	E	272	ILE
1	E	326	LYS
1	E	412	ILE
1	F	10	LEU
1	F	26	THR
1	F	82	ASP
1	F	84	ASN
1	F	194	GLU
1	F	199	TRP
1	F	245	GLU
1	F	251	LYS
1	F	272	ILE
1	F	398	VAL
1	F	410	LYS

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Mol	Chain	Res	Type
1	F	413	THR
1	G	7	LYS
1	G	10	LEU
1	G	26	THR
1	G	28	GLN
1	G	82	ASP
1	G	84	ASN
1	G	128	THR
1	G	194	GLU
1	G	199	TRP
1	G	240	VAL
1	G	272	ILE
1	G	371	TRP
1	G	372	LYS
1	G	398	VAL
1	H	10	LEU
1	H	26	THR
1	H	28	GLN
1	H	82	ASP
1	H	84	ASN
1	H	194	GLU
1	H	199	TRP
1	H	231	GLU
1	H	245	GLU
1	H	272	ILE
1	H	398	VAL
1	H	410	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	HIS
1	A	97	HIS
1	B	5	ASN
1	B	20	HIS
1	B	239	ASN
1	B	285	GLN
1	B	343	ASN
1	C	20	HIS
1	C	239	ASN
1	C	285	GLN
1	C	343	ASN

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Mol	Chain	Res	Type
1	C	347	GLN
1	C	354	HIS
1	D	239	ASN
1	D	305	HIS
1	D	347	GLN
1	E	20	HIS
1	E	97	HIS
1	E	234	GLN
1	E	343	ASN
1	E	354	HIS
1	F	5	ASN
1	F	20	HIS
1	F	239	ASN
1	G	74	ASN
1	G	285	GLN
1	G	343	ASN
1	G	347	GLN
1	G	354	HIS

### 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 oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

16 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	FRU	A	1415	-	11,12,12	0.48	0	10,18,18	0.73	0
3	GLC	H	1416	-	12,12,12	0.45	0	17,17,17	0.98	2 (11%)
2	FRU	H	1415	-	11,12,12	0.51	0	10,18,18	0.66	0
3	GLC	E	1416	-	12,12,12	0.45	0	17,17,17	0.76	0
3	GLC	F	1416	-	12,12,12	0.47	0	17,17,17	0.72	0
2	FRU	D	1415	-	11,12,12	0.48	0	10,18,18	0.75	0
2	FRU	C	1415	-	11,12,12	0.40	0	10,18,18	0.62	0
3	GLC	A	1416	-	12,12,12	0.44	0	17,17,17	0.81	0
3	GLC	B	1416	-	12,12,12	0.44	0	17,17,17	0.72	0
3	GLC	G	1416	-	12,12,12	0.45	0	17,17,17	0.77	1 (5%)
2	FRU	G	1415	-	11,12,12	0.48	0	10,18,18	0.69	0
2	FRU	F	1415	-	11,12,12	0.44	0	10,18,18	0.73	0
3	GLC	D	1416	-	12,12,12	0.48	0	17,17,17	0.52	0
2	FRU	B	1415	-	11,12,12	0.49	0	10,18,18	0.78	0
2	FRU	E	1415	-	11,12,12	0.46	0	10,18,18	0.58	0
3	GLC	C	1416	-	12,12,12	0.44	0	17,17,17	1.03	2 (11%)

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	FRU	A	1415	-	-	2/5/24/24	0/1/1/1
3	GLC	H	1416	-	-	2/2/22/22	0/1/1/1
2	FRU	H	1415	-	-	2/5/24/24	0/1/1/1
3	GLC	E	1416	-	-	2/2/22/22	0/1/1/1
3	GLC	F	1416	-	-	2/2/22/22	0/1/1/1
2	FRU	D	1415	-	-	2/5/24/24	0/1/1/1
2	FRU	C	1415	-	-	2/5/24/24	0/1/1/1
3	GLC	A	1416	-	-	2/2/22/22	0/1/1/1
3	GLC	B	1416	-	-	2/2/22/22	0/1/1/1
3	GLC	G	1416	-	-	2/2/22/22	0/1/1/1
2	FRU	G	1415	-	-	2/5/24/24	0/1/1/1
2	FRU	F	1415	-	-	2/5/24/24	0/1/1/1
3	GLC	D	1416	-	-	2/2/22/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FRU	B	1415	-	-	2/5/24/24	0/1/1/1
2	FRU	E	1415	-	-	2/5/24/24	0/1/1/1
3	GLC	C	1416	-	-	2/2/22/22	0/1/1/1

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	1416	GLC	C3-C4-C5	-2.53	105.65	110.23
3	C	1416	GLC	O5-C5-C6	2.26	112.04	106.44
3	H	1416	GLC	O5-C5-C6	2.20	111.90	106.44
3	G	1416	GLC	O5-C5-C6	2.15	111.76	106.44
3	H	1416	GLC	C3-C4-C5	-2.00	106.61	110.23

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1415	FRU	O5-C5-C6-O6
2	B	1415	FRU	O5-C5-C6-O6
2	C	1415	FRU	O5-C5-C6-O6
2	D	1415	FRU	O5-C5-C6-O6
2	E	1415	FRU	O5-C5-C6-O6
2	F	1415	FRU	O5-C5-C6-O6
2	G	1415	FRU	O5-C5-C6-O6
2	H	1415	FRU	O5-C5-C6-O6
2	A	1415	FRU	C4-C5-C6-O6
2	B	1415	FRU	C4-C5-C6-O6
2	C	1415	FRU	C4-C5-C6-O6
2	D	1415	FRU	C4-C5-C6-O6
2	E	1415	FRU	C4-C5-C6-O6
2	G	1415	FRU	C4-C5-C6-O6
2	H	1415	FRU	C4-C5-C6-O6
2	F	1415	FRU	C4-C5-C6-O6
3	H	1416	GLC	O5-C5-C6-O6
3	C	1416	GLC	O5-C5-C6-O6
3	D	1416	GLC	O5-C5-C6-O6
3	F	1416	GLC	O5-C5-C6-O6
3	A	1416	GLC	O5-C5-C6-O6
3	B	1416	GLC	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	E	1416	GLC	O5-C5-C6-O6
3	G	1416	GLC	O5-C5-C6-O6
3	E	1416	GLC	C4-C5-C6-O6
3	A	1416	GLC	C4-C5-C6-O6
3	B	1416	GLC	C4-C5-C6-O6
3	G	1416	GLC	C4-C5-C6-O6
3	D	1416	GLC	C4-C5-C6-O6
3	F	1416	GLC	C4-C5-C6-O6
3	C	1416	GLC	C4-C5-C6-O6
3	H	1416	GLC	C4-C5-C6-O6

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1415	FRU	1	0
2	F	1415	FRU	1	0
2	E	1415	FRU	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	411/415 (99%)	0.33	19 (4%) 37 31	14, 25, 42, 72	0
1	B	411/415 (99%)	0.61	43 (10%) 11 9	15, 31, 57, 104	0
1	C	411/415 (99%)	1.02	72 (17%) 4 3	17, 36, 56, 82	0
1	D	411/415 (99%)	0.86	51 (12%) 8 6	19, 44, 84, 129	0
1	E	411/415 (99%)	0.88	61 (14%) 5 5	17, 28, 47, 68	0
1	F	411/415 (99%)	1.00	46 (11%) 10 8	13, 30, 54, 82	0
1	G	411/415 (99%)	0.33	24 (5%) 29 24	16, 30, 53, 82	0
1	H	411/415 (99%)	0.20	20 (4%) 35 29	12, 21, 38, 67	0
All	All	3288/3320 (99%)	0.65	336 (10%) 12 9	12, 30, 57, 129	0

All (336) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	4	TYR	11.3
1	G	5	ASN	7.1
1	B	371	TRP	6.2
1	E	4	TYR	6.0
1	C	234	GLN	5.9
1	D	374	LYS	5.6
1	A	83	GLU	5.3
1	B	4	TYR	5.3
1	E	229	SER	5.1
1	D	86	ASN	4.9
1	H	5	ASN	4.9
1	B	84	ASN	4.8
1	D	84	ASN	4.8
1	C	84	ASN	4.8
1	B	82	ASP	4.7
1	C	372	LYS	4.6

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Mol	Chain	Res	Type	RSRZ
1	D	169	GLN	4.6
1	E	121	ALA	4.5
1	F	84	ASN	4.5
1	F	169	GLN	4.4
1	C	376	TYR	4.4
1	C	371	TRP	4.4
1	D	87	TYR	4.4
1	D	402	ASP	4.2
1	E	5	ASN	4.2
1	F	139	ASN	4.2
1	C	268	SER	4.2
1	D	83	GLU	4.2
1	C	139	ASN	4.2
1	E	228	GLY	4.2
1	B	83	GLU	4.1
1	E	371	TRP	4.1
1	E	84	ASN	4.1
1	G	371	TRP	4.1
1	D	373	GLY	4.0
1	F	20	HIS	4.0
1	C	374	LYS	3.9
1	G	212	ASP	3.9
1	F	83	GLU	3.9
1	G	211	ASN	3.9
1	C	245	GLU	3.9
1	D	20	HIS	3.9
1	D	346	SER	3.8
1	F	167	SER	3.8
1	C	177	GLN	3.8
1	E	82	ASP	3.7
1	B	262	ALA	3.7
1	H	109	THR	3.7
1	C	159	LYS	3.7
1	B	175	GLY	3.7
1	B	177	GLN	3.7
1	E	83	GLU	3.7
1	D	76	ASP	3.7
1	B	194	GLU	3.7
1	B	272	ILE	3.6
1	G	83	GLU	3.6
1	F	40	GLU	3.6
1	A	84	ASN	3.6

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Mol	Chain	Res	Type	RSRZ
1	H	82	ASP	3.6
1	C	248	GLY	3.6
1	E	178	GLN	3.5
1	A	82	ASP	3.5
1	F	82	ASP	3.5
1	G	84	ASN	3.5
1	E	278	THR	3.5
1	B	212	ASP	3.4
1	C	85	GLY	3.4
1	D	389	LEU	3.4
1	C	86	ASN	3.4
1	B	181	SER	3.3
1	C	345	SER	3.3
1	C	83	GLU	3.3
1	H	79	GLN	3.3
1	E	159	LYS	3.3
1	G	374	LYS	3.3
1	D	376	TYR	3.3
1	H	373	GLY	3.3
1	B	374	LYS	3.3
1	C	247	VAL	3.3
1	C	231	GLU	3.3
1	A	5	ASN	3.3
1	D	91	ARG	3.2
1	C	4	TYR	3.2
1	G	82	ASP	3.2
1	C	154	GLY	3.2
1	C	373	GLY	3.2
1	D	25	THR	3.1
1	A	4	TYR	3.1
1	B	5	ASN	3.1
1	B	263	LYS	3.1
1	D	371	TRP	3.1
1	D	372	LYS	3.1
1	C	141	ARG	3.1
1	E	139	ASN	3.1
1	A	231	GLU	3.1
1	E	177	GLN	3.1
1	C	123	GLY	3.1
1	E	85	GLY	3.1
1	C	244	TYR	3.0
1	C	82	ASP	3.0

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Mol	Chain	Res	Type	RSRZ
1	C	178	GLN	3.0
1	E	237	MET	3.0
1	D	93	TRP	3.0
1	H	84	ASN	3.0
1	E	123	GLY	3.0
1	E	271	GLN	3.0
1	D	80	PHE	3.0
1	C	233	THR	3.0
1	C	126	PRO	2.9
1	D	344	PRO	2.9
1	E	374	LYS	2.9
1	G	86	ASN	2.9
1	E	98	GLY	2.9
1	G	262	ALA	2.9
1	B	224	ALA	2.9
1	C	269	GLU	2.9
1	E	372	LYS	2.9
1	E	79	GLN	2.9
1	E	234	GLN	2.9
1	C	181	SER	2.9
1	D	89	ILE	2.9
1	F	231	GLU	2.8
1	H	83	GLU	2.8
1	E	126	PRO	2.8
1	C	34	ALA	2.8
1	F	171	VAL	2.8
1	F	230	HIS	2.8
1	C	312	ASN	2.8
1	C	375	ASP	2.8
1	B	188	THR	2.8
1	E	245	GLU	2.8
1	B	372	LYS	2.8
1	E	272	ILE	2.8
1	G	266	SER	2.8
1	D	139	ASN	2.8
1	C	205	SER	2.7
1	C	237	MET	2.7
1	D	4	TYR	2.7
1	E	252	TYR	2.7
1	B	271	GLN	2.7
1	D	79	GLN	2.7
1	D	125	SER	2.7

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Mol	Chain	Res	Type	RSRZ
1	E	230	HIS	2.7
1	B	261	VAL	2.7
1	C	6	TYR	2.7
1	A	205	SER	2.7
1	H	20	HIS	2.7
1	A	211	ASN	2.7
1	D	167	SER	2.7
1	F	307	TYR	2.6
1	E	232	ILE	2.6
1	D	122	GLU	2.6
1	B	266	SER	2.6
1	C	369	VAL	2.6
1	D	364	SER	2.6
1	F	280	VAL	2.6
1	F	400	SER	2.6
1	F	410	LYS	2.6
1	H	194	GLU	2.6
1	C	160	VAL	2.6
1	G	6	TYR	2.6
1	B	184	SER	2.6
1	C	346	SER	2.6
1	D	32	ASP	2.6
1	C	182	LEU	2.6
1	E	20	HIS	2.6
1	D	123	GLY	2.6
1	A	139	ASN	2.6
1	B	211	ASN	2.6
1	E	86	ASN	2.6
1	H	139	ASN	2.6
1	F	166	THR	2.5
1	E	157	ILE	2.5
1	B	273	LEU	2.5
1	C	251	LYS	2.5
1	D	82	ASP	2.5
1	C	33	ILE	2.5
1	D	214	LYS	2.5
1	B	187	GLY	2.5
1	E	238	GLY	2.5
1	E	248	GLY	2.5
1	E	373	GLY	2.5
1	C	81	GLN	2.5
1	G	271	GLN	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	189	ILE	2.5
1	F	372	LYS	2.5
1	D	141	ARG	2.5
1	F	94	GLU	2.5
1	H	231	GLU	2.5
1	D	81	GLN	2.5
1	C	125	SER	2.5
1	E	182	LEU	2.5
1	D	110	GLY	2.5
1	E	255	GLY	2.5
1	F	342	GLY	2.5
1	C	250	ALA	2.5
1	D	111	LYS	2.4
1	C	156	THR	2.4
1	F	103	CYS	2.4
1	F	205	SER	2.4
1	D	78	PRO	2.4
1	C	87	TYR	2.4
1	D	405	TYR	2.4
1	G	375	ASP	2.4
1	A	374	LYS	2.4
1	E	247	VAL	2.4
1	C	128	THR	2.4
1	D	140	ASP	2.4
1	F	168	ASP	2.4
1	F	212	ASP	2.4
1	F	111	LYS	2.4
1	C	246	ASP	2.4
1	D	88	ASP	2.4
1	D	116	GLY	2.4
1	B	81	GLN	2.4
1	F	42	VAL	2.4
1	D	109	THR	2.3
1	B	7	LYS	2.3
1	E	221	GLY	2.3
1	C	176	PHE	2.3
1	E	198	PHE	2.3
1	C	127	THR	2.3
1	C	278	THR	2.3
1	F	25	THR	2.3
1	C	5	ASN	2.3
1	F	77	ASN	2.3

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Mol	Chain	Res	Type	RSRZ
1	E	184	SER	2.3
1	H	140	ASP	2.3
1	H	168	ASP	2.3
1	B	158	ALA	2.3
1	F	69	LEU	2.3
1	E	413	THR	2.3
1	F	376	TYR	2.3
1	B	231	GLU	2.3
1	E	205	SER	2.3
1	G	85	GLY	2.3
1	F	247	VAL	2.3
1	C	20	HIS	2.3
1	C	314	THR	2.3
1	E	233	THR	2.3
1	F	374	LYS	2.3
1	C	184	SER	2.3
1	D	370	PRO	2.3
1	E	364	SER	2.3
1	F	249	GLY	2.3
1	E	197	ALA	2.2
1	F	114	ILE	2.2
1	A	7	LYS	2.2
1	G	372	LYS	2.2
1	D	77	ASN	2.2
1	B	364	SER	2.2
1	E	81	GLN	2.2
1	E	212	ASP	2.2
1	G	264	ASP	2.2
1	D	30	VAL	2.2
1	G	410	LYS	2.2
1	B	269	GLU	2.2
1	D	231	GLU	2.2
1	E	156	THR	2.2
1	A	8	PRO	2.2
1	A	258	GLY	2.2
1	B	162	GLY	2.2
1	H	364	SER	2.2
1	A	259	LEU	2.2
1	A	263	LYS	2.2
1	A	326	LYS	2.2
1	G	20	HIS	2.2
1	C	235	ALA	2.2

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Mol	Chain	Res	Type	RSRZ
1	D	40	GLU	2.2
1	E	40	GLU	2.2
1	C	370	PRO	2.2
1	C	117	GLY	2.2
1	G	168	ASP	2.2
1	D	398	VAL	2.2
1	F	250	ALA	2.2
1	D	194	GLU	2.2
1	F	308	THR	2.2
1	G	216	TYR	2.2
1	F	353	SER	2.2
1	A	230	HIS	2.2
1	E	250	ALA	2.1
1	F	310	ALA	2.1
1	B	391	LYS	2.1
1	H	374	LYS	2.1
1	B	154	GLY	2.1
1	C	232	ILE	2.1
1	D	375	ASP	2.1
1	E	160	VAL	2.1
1	F	364	SER	2.1
1	C	158	ALA	2.1
1	F	306	LYS	2.1
1	A	178	GLN	2.1
1	C	252	TYR	2.1
1	B	284	ASP	2.1
1	C	179	VAL	2.1
1	F	303	ILE	2.1
1	H	72	ASP	2.1
1	F	170	SER	2.1
1	B	185	ALA	2.1
1	B	259	LEU	2.1
1	C	243	GLY	2.1
1	C	240	VAL	2.1
1	B	268	SER	2.1
1	D	94	GLU	2.1
1	E	224	ALA	2.1
1	F	27	THR	2.1
1	E	226	PRO	2.1
1	B	86	ASN	2.1
1	E	211	ASN	2.1
1	E	213	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	157	ILE	2.1
1	G	298	TYR	2.1
1	H	252	TYR	2.1
1	B	201	PHE	2.1
1	E	183	PHE	2.1
1	B	161	ARG	2.0
1	H	141	ARG	2.0
1	E	8	PRO	2.0
1	F	86	ASN	2.0
1	C	89	ILE	2.0
1	F	228	GLY	2.0
1	G	373	GLY	2.0
1	E	148	TYR	2.0
1	C	118	ARG	2.0
1	C	21	GLU	2.0
1	C	264	ASP	2.0
1	E	158	ALA	2.0
1	F	46	ASP	2.0
1	F	76	ASP	2.0
1	H	197	ALA	2.0
1	C	364	SER	2.0
1	A	328	THR	2.0
1	B	373	GLY	2.0
1	E	154	GLY	2.0
1	C	124	VAL	2.0
1	H	91	ARG	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, 95<sup>th</sup> 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
3	GLC	F	1416	12/12	0.68	0.24	45,55,78,80	0
3	GLC	E	1416	12/12	0.72	0.21	45,51,58,58	0
2	FRU	H	1415	12/12	0.73	0.21	29,33,43,48	0
2	FRU	D	1415	12/12	0.74	0.16	32,49,58,63	0
3	GLC	G	1416	12/12	0.78	0.20	45,53,64,71	0
3	GLC	H	1416	12/12	0.79	0.28	44,47,76,83	0
2	FRU	F	1415	12/12	0.80	0.17	31,38,53,53	0
2	FRU	E	1415	12/12	0.80	0.21	31,41,58,59	0
3	GLC	A	1416	12/12	0.81	0.19	44,48,70,70	0
3	GLC	D	1416	12/12	0.81	0.16	54,60,72,78	0
3	GLC	B	1416	12/12	0.82	0.20	45,57,67,70	0
2	FRU	A	1415	12/12	0.82	0.15	29,38,45,49	0
3	GLC	C	1416	12/12	0.83	0.16	45,50,57,60	0
2	FRU	G	1415	12/12	0.85	0.16	32,37,50,50	0
2	FRU	B	1415	12/12	0.85	0.16	30,38,48,52	0
2	FRU	C	1415	12/12	0.87	0.16	32,41,59,60	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.