



wwPDB X-ray Structure Validation Summary Report ⓘ

May 25, 2020 – 04:48 am BST

PDB ID : 2DW7
Title : Crystal structure of D-tartrate dehydratase from Bradyrhizobium japonicum complexed with Mg++ and meso-tartrate
Authors : Fedorov, A.A.; Fedorov, E.V.; Yew, W.S.; Wood, B.M.; Gerlt, J.A.; Almo, S.C.
Deposited on : 2006-08-07
Resolution : 2.50 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

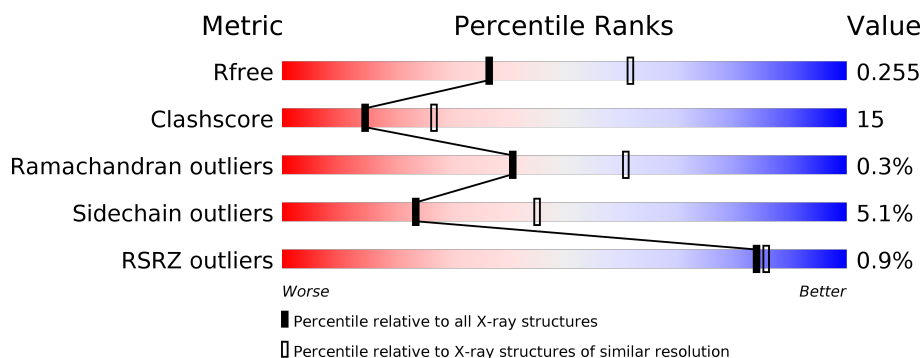
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

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













Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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 on 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	389	<div> <div>74%</div> <div>23%</div> <div>•</div> </div>
1	B	389	<div> <div>69%</div> <div>29%</div> <div>•</div> </div>
1	C	389	<div> <div>74%</div> <div>24%</div> <div>•</div> </div>
1	D	389	<div> <div>74%</div> <div>23%</div> <div>•</div> </div>
1	E	389	<div> <div>%</div> <div>72%</div> <div>25%</div> <div>•</div> </div>
1	F	389	<div> <div>71%</div> <div>26%</div> <div>•</div> </div>

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Mol	Chain	Length	Quality of chain
1	G	389	 68% 30% .
1	H	389	 70% 28% .
1	I	389	 73% 24% .
1	J	389	 69% 29% .
1	K	389	 72% 25% .
1	L	389	 69% 28% .
1	M	389	 69% 28% .
1	N	389	 70% 27% .
1	O	389	 69% 28% .
1	P	389	 67% 29% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SRT	G	1007	-	-	X	-
3	SRT	I	1009	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 48977 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.

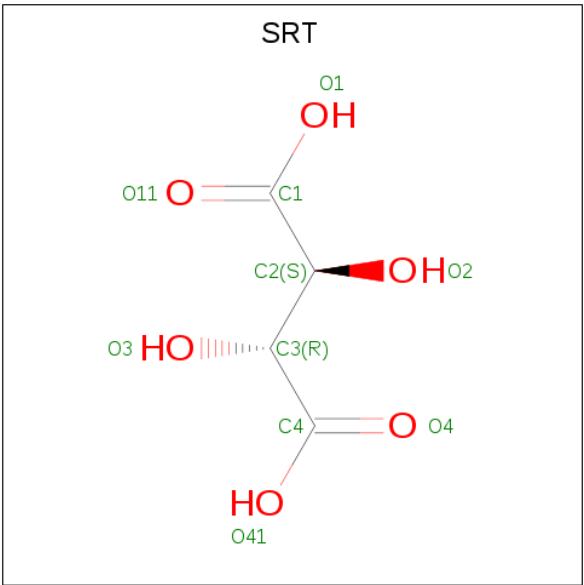
- Molecule 1 is a protein called Bll6730 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	B	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	C	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	D	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	E	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	F	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	G	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	H	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	I	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	J	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	K	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	L	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	M	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	N	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	O	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			
1	P	388	Total	C	N	O	S	0	0	0
			3022	1917	530	558	17			

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	P	1	Total	Mg	0	0
			1	1		
2	G	1	Total	Mg	0	0
			1	1		
2	J	1	Total	Mg	0	0
			1	1		
2	D	1	Total	Mg	0	0
			1	1		
2	K	1	Total	Mg	0	0
			1	1		
2	E	1	Total	Mg	0	0
			1	1		
2	H	1	Total	Mg	0	0
			1	1		
2	B	1	Total	Mg	0	0
			1	1		
2	I	1	Total	Mg	0	0
			1	1		
2	C	1	Total	Mg	0	0
			1	1		
2	A	1	Total	Mg	0	0
			1	1		
2	N	1	Total	Mg	0	0
			1	1		
2	O	1	Total	Mg	0	0
			1	1		
2	L	1	Total	Mg	0	0
			1	1		
2	F	1	Total	Mg	0	0
			1	1		
2	M	1	Total	Mg	0	0
			1	1		

- Molecule 3 is S,R MESO-TARTARIC ACID (three-letter code: SRT) (formula: C₄H₆O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			10	4	6		
3	B	1	Total	C	O	0	0
			10	4	6		
3	C	1	Total	C	O	0	0
			10	4	6		
3	D	1	Total	C	O	0	0
			10	4	6		
3	E	1	Total	C	O	0	0
			10	4	6		
3	F	1	Total	C	O	0	0
			10	4	6		
3	G	1	Total	C	O	0	0
			10	4	6		
3	H	1	Total	C	O	0	0
			10	4	6		
3	I	1	Total	C	O	0	0
			10	4	6		
3	J	1	Total	C	O	0	0
			10	4	6		
3	K	1	Total	C	O	0	0
			10	4	6		
3	L	1	Total	C	O	0	0
			10	4	6		
3	M	1	Total	C	O	0	0
			10	4	6		
3	N	1	Total	C	O	0	0
			10	4	6		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	O	1	Total	C	O	0	0
			10	4	6		
3	P	1	Total	C	O	0	0
			10	4	6		

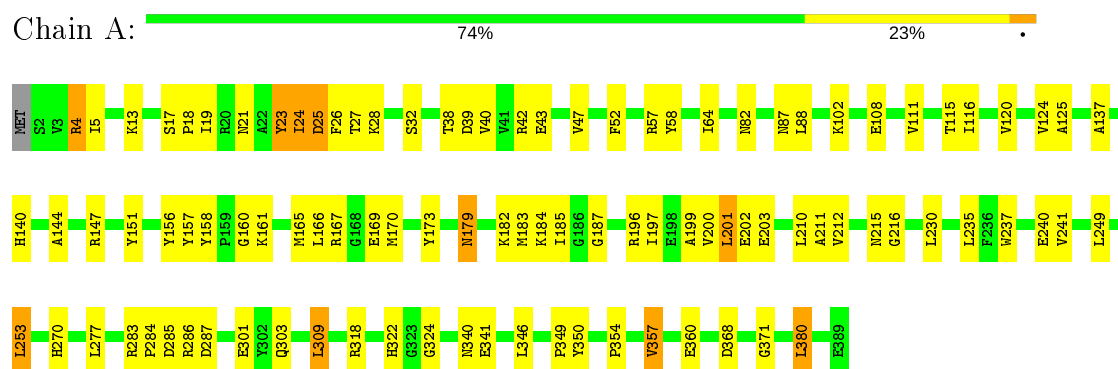
- Molecule 4 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	43	Total	O		0	0
			43	43			
4	B	21	Total	O		0	0
			21	21			
4	C	61	Total	O		0	0
			61	61			
4	D	49	Total	O		0	0
			49	49			
4	E	29	Total	O		0	0
			29	29			
4	F	53	Total	O		0	0
			53	53			
4	G	41	Total	O		0	0
			41	41			
4	H	22	Total	O		0	0
			22	22			
4	I	20	Total	O		0	0
			20	20			
4	J	12	Total	O		0	0
			12	12			
4	K	29	Total	O		0	0
			29	29			
4	L	20	Total	O		0	0
			20	20			
4	M	12	Total	O		0	0
			12	12			
4	N	20	Total	O		0	0
			20	20			
4	O	5	Total	O		0	0
			5	5			
4	P	12	Total	O		0	0
			12	12			

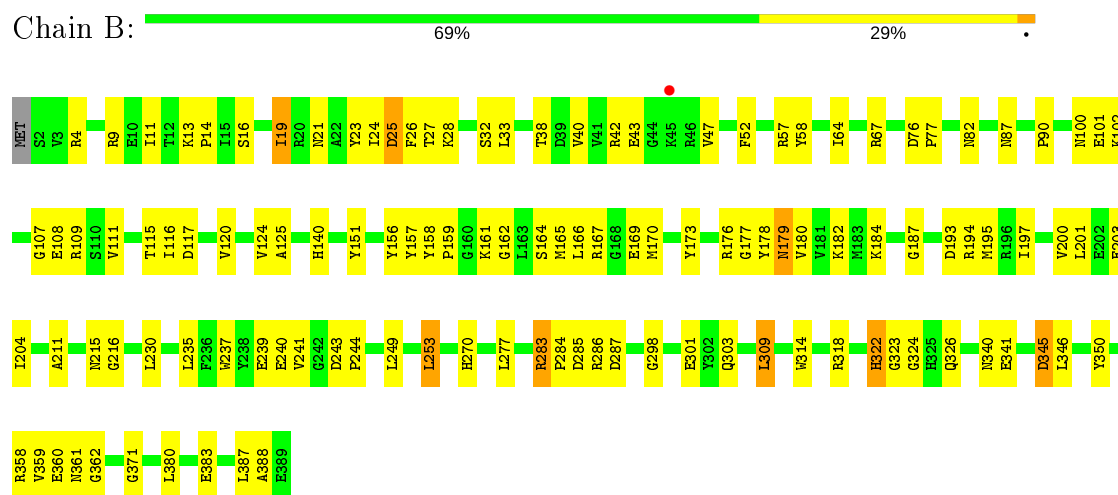
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

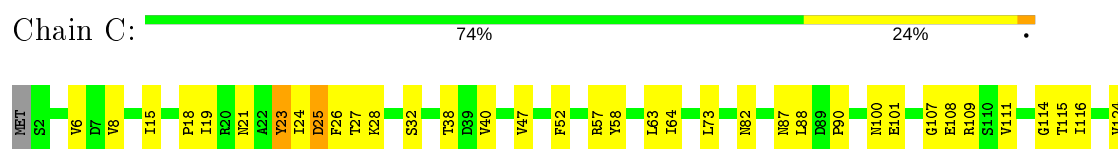
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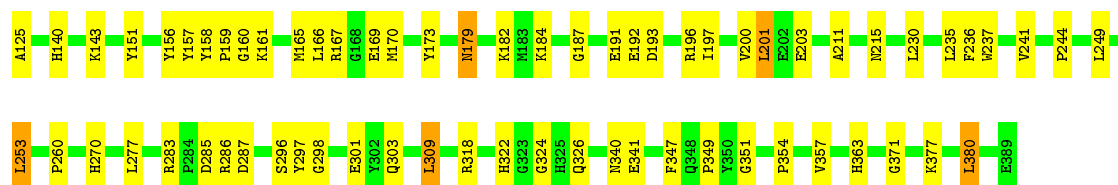


• Molecule 1: Bll6730 protein

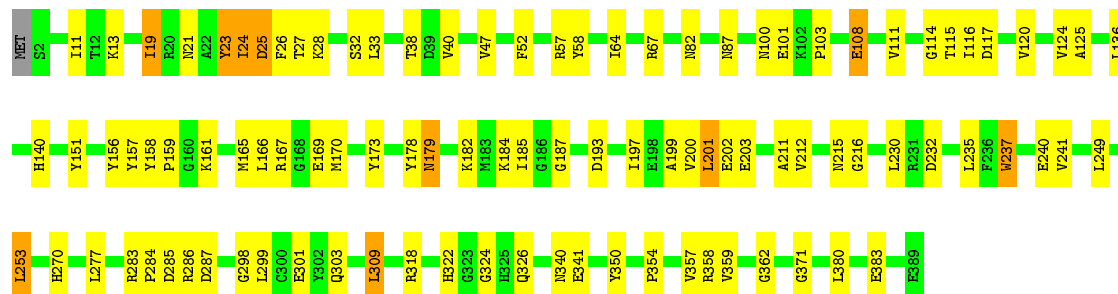


• Molecule 1: Bll6730 protein

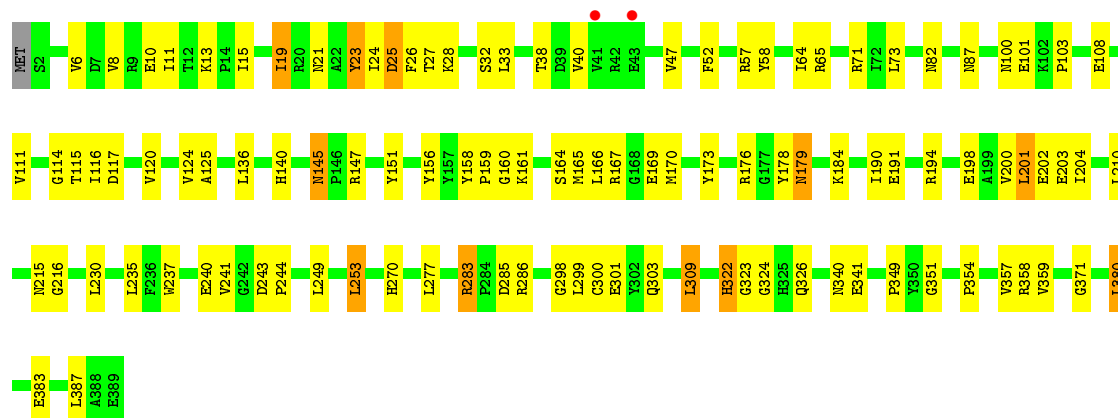




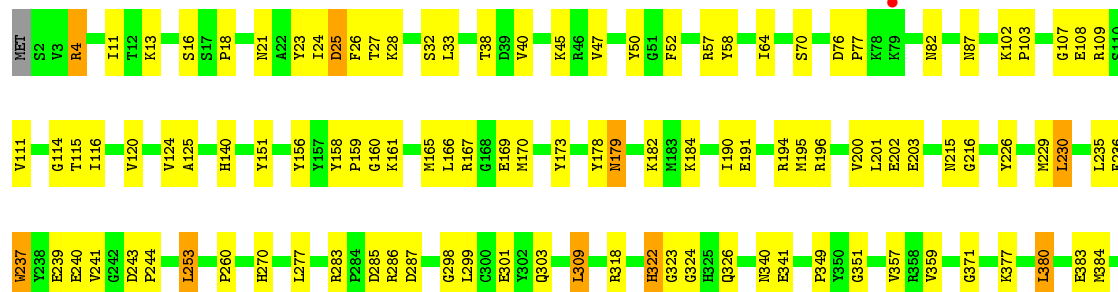
• Molecule 1: Bll6730 protein



• Molecule 1: Bll6730 protein

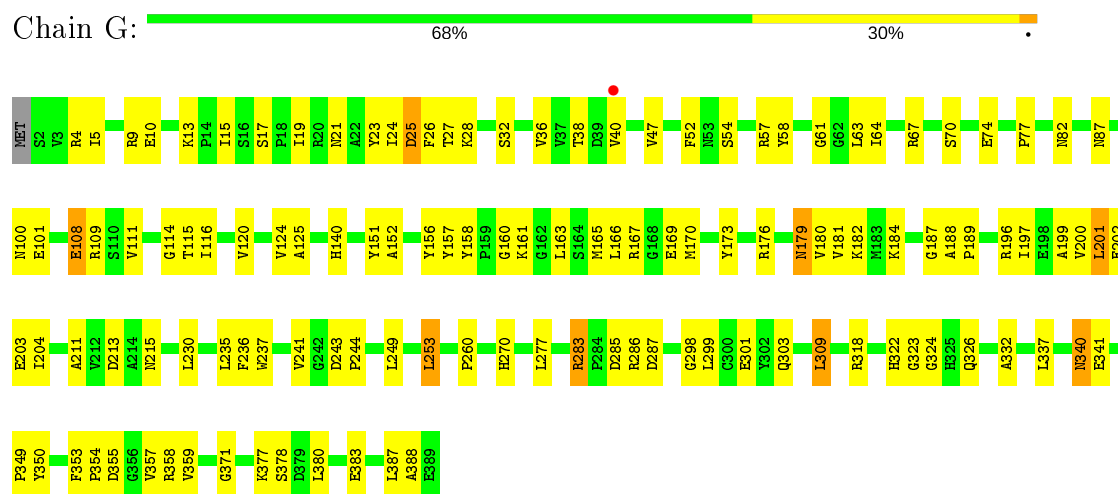


• Molecule 1: Bll6730 protein

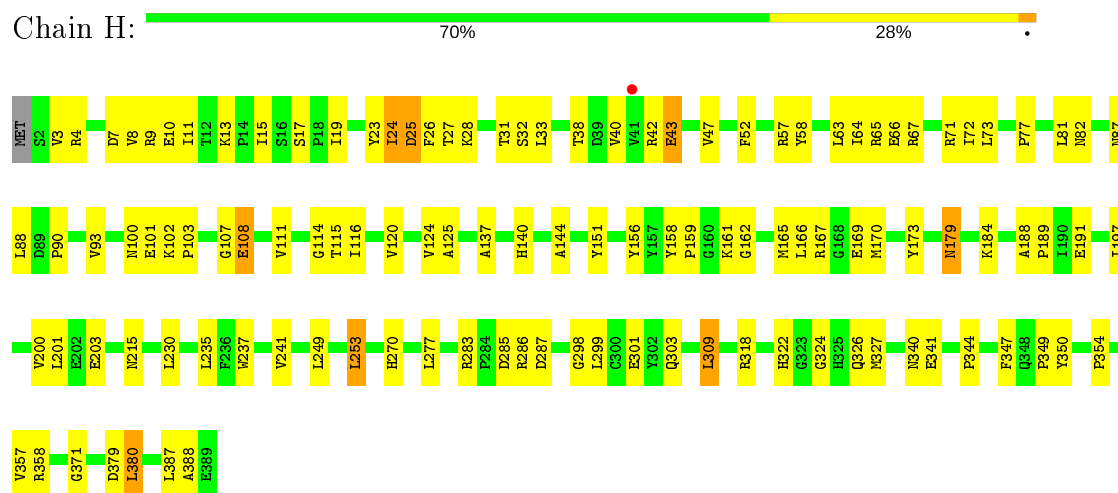


L387
A388
E389

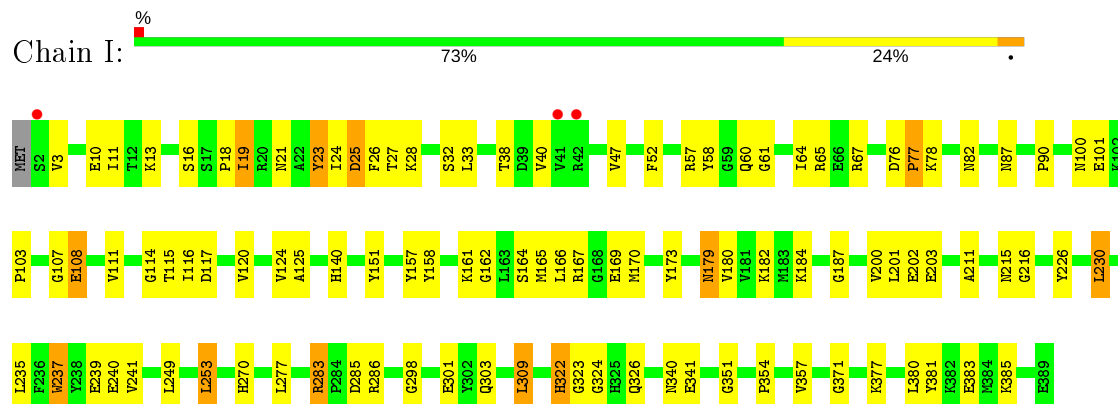
• Molecule 1: Bll6730 protein



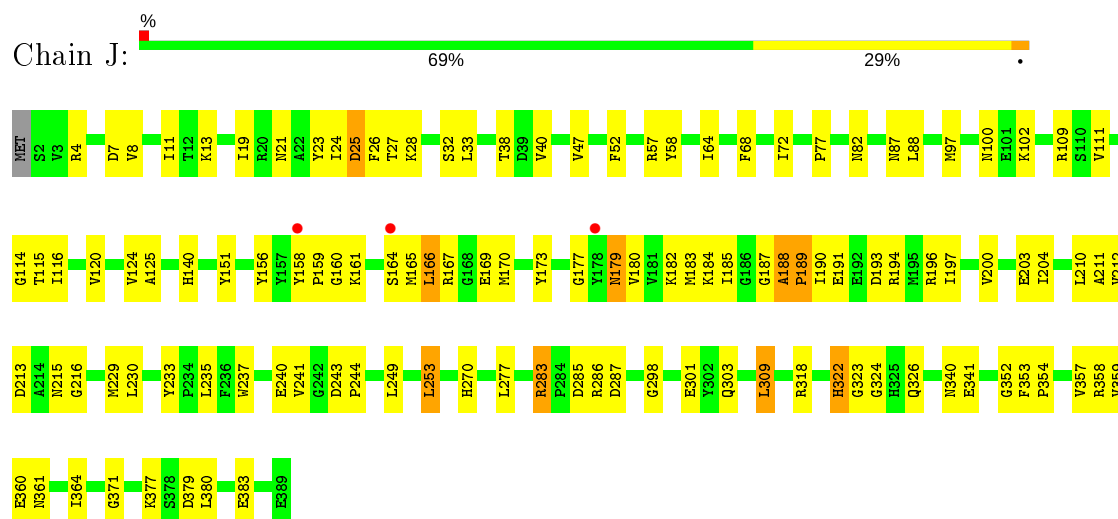
• Molecule 1: Bll6730 protein



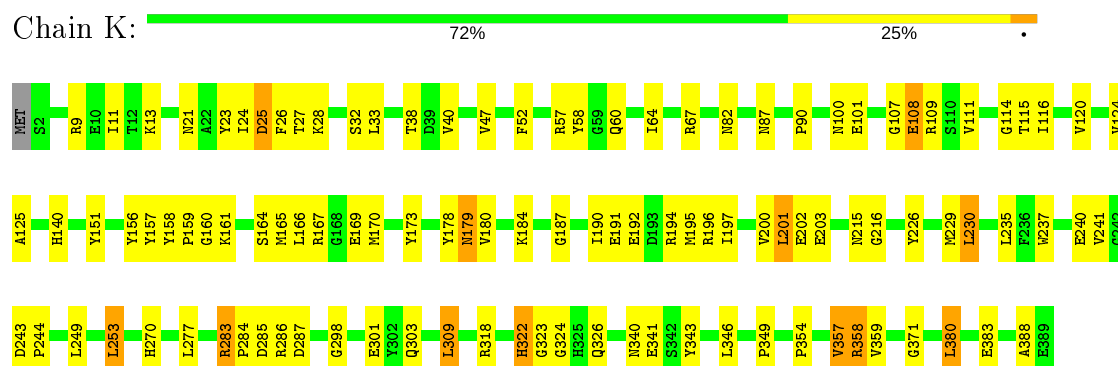
• Molecule 1: Bll6730 protein



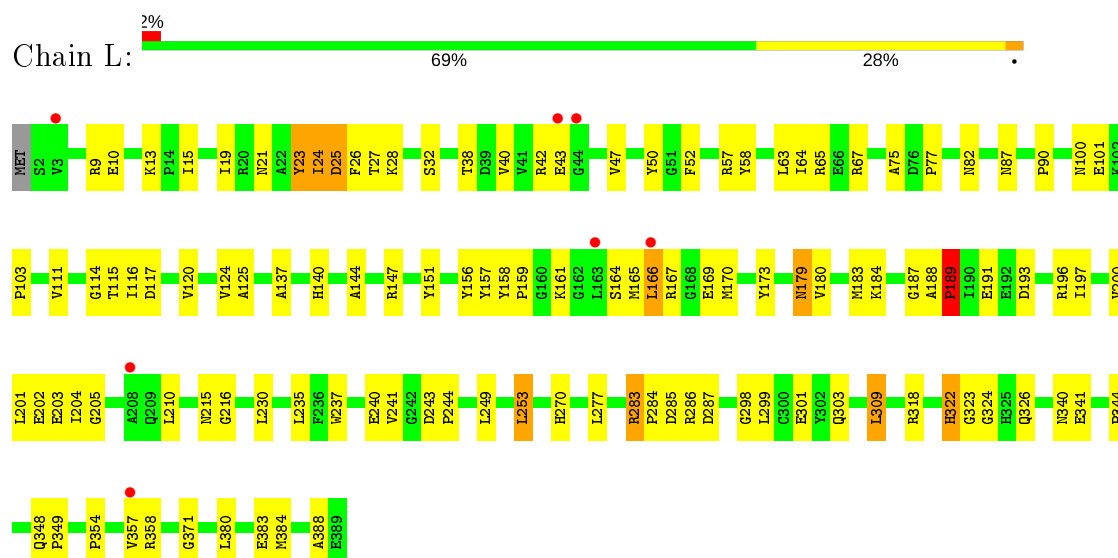
- Molecule 1: Bll6730 protein



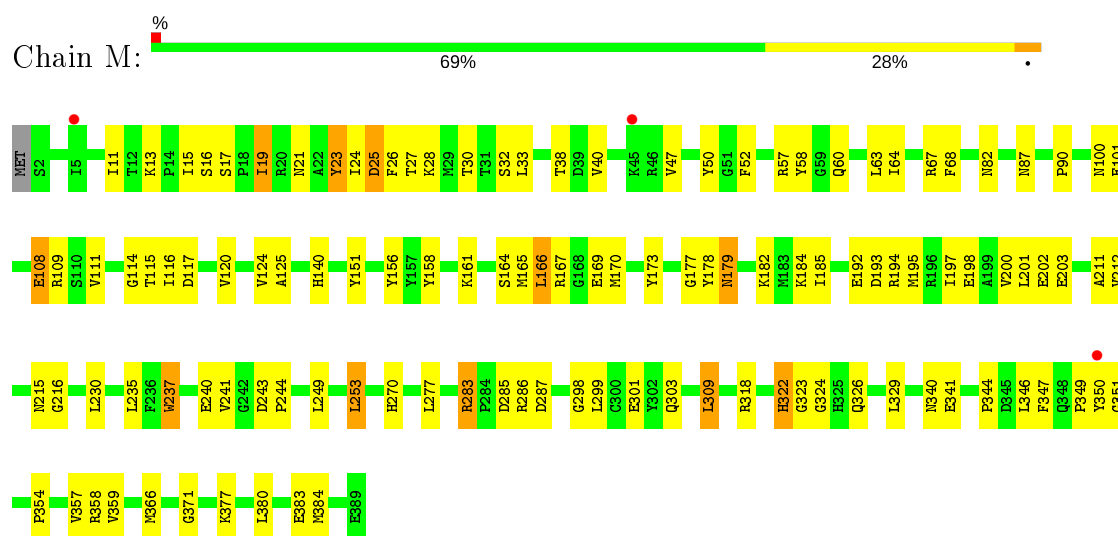
- Molecule 1: Bll6730 protein



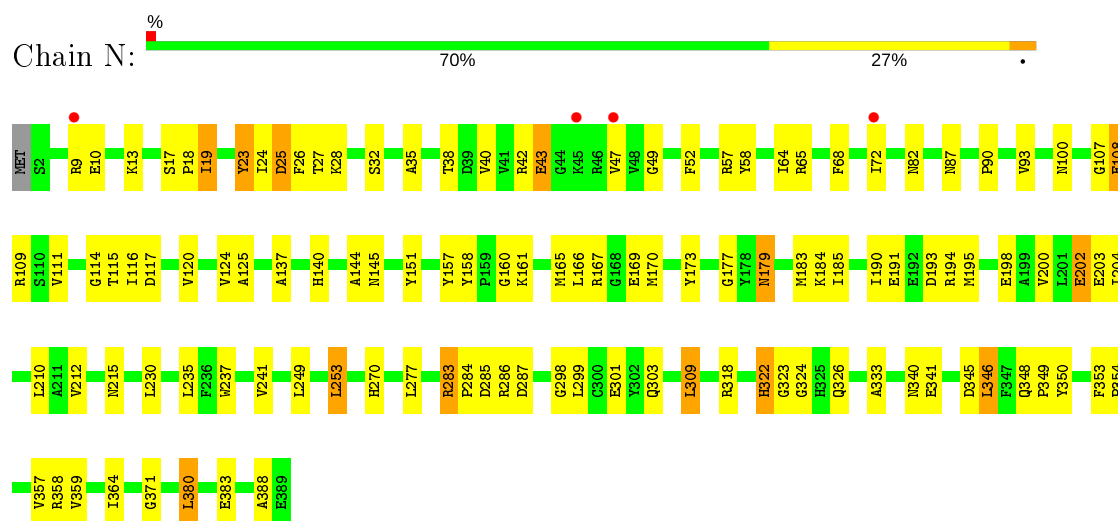
- Molecule 1: Bll6730 protein



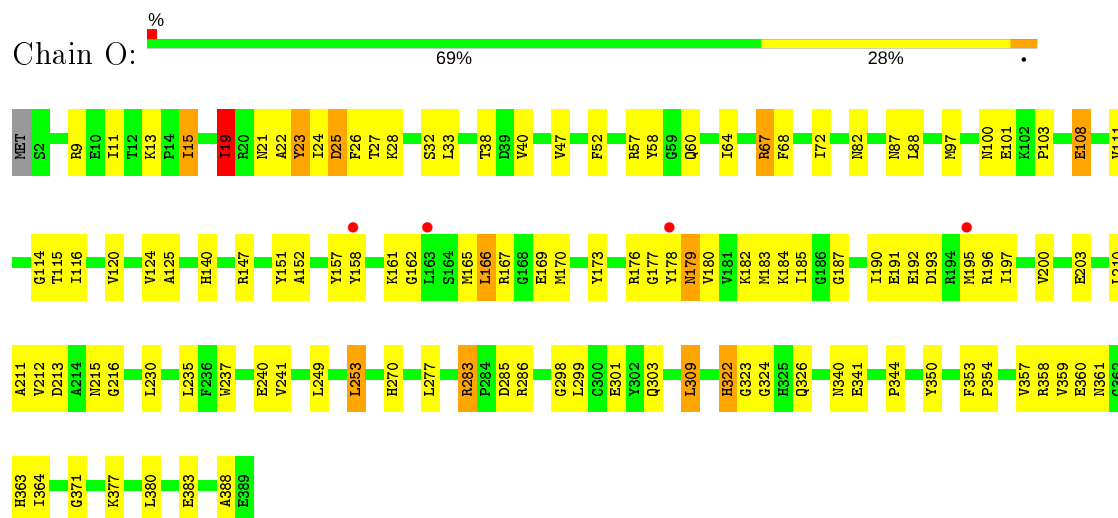
- Molecule 1: Bll6730 protein



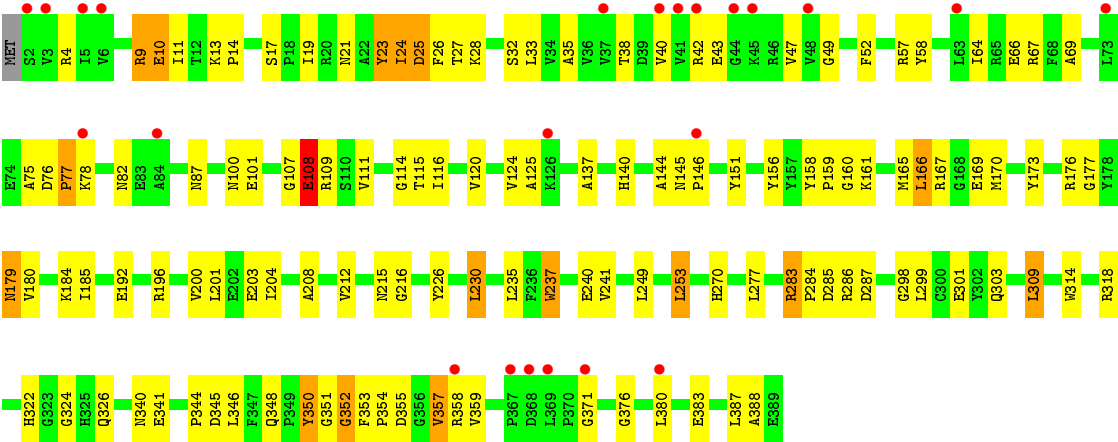
- Molecule 1: Bll6730 protein



- Molecule 1: Bll6730 protein



- Molecule 1: Bll6730 protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	74.84Å 162.54Å 168.18Å 117.76° 90.03° 90.67°	Depositor
Resolution (Å)	25.00 – 2.50 39.39 – 2.49	Depositor EDS
% Data completeness (in resolution range)	(Not available) (25.00-2.50) 91.1 (39.39-2.49)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.35 (at 2.48Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.241 , 0.265 0.232 , 0.255	Depositor DCC
R_{free} test set	11937 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	35.4	Xtriage
Anisotropy	0.180	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 17.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.064 for h,-k,-l 0.016 for -h,k,-k-l 0.014 for -h,-k,k+l	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	48977	wwPDB-VP
Average B, all atoms (Å ²)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.93% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² 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: MG, SRT

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	0.40	0/3092	0.63	0/4177
1	B	0.37	0/3092	0.61	0/4177
1	C	0.43	0/3092	0.64	0/4177
1	D	0.41	0/3092	0.64	0/4177
1	E	0.39	0/3092	0.62	0/4177
1	F	0.41	0/3092	0.64	0/4177
1	G	0.41	0/3092	0.63	0/4177
1	H	0.35	0/3092	0.61	0/4177
1	I	0.37	0/3092	0.62	0/4177
1	J	0.36	0/3092	0.61	0/4177
1	K	0.39	0/3092	0.62	0/4177
1	L	0.36	0/3092	0.61	0/4177
1	M	0.37	0/3092	0.60	0/4177
1	N	0.34	0/3092	0.61	0/4177
1	O	0.36	0/3092	0.61	0/4177
1	P	0.35	0/3092	0.60	0/4177
All	All	0.38	0/49472	0.62	0/66832

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3022	0	2975	85	0
1	B	3022	0	2975	100	0
1	C	3022	0	2975	86	0
1	D	3022	0	2975	87	0
1	E	3022	0	2975	94	0
1	F	3022	0	2975	87	0
1	G	3022	0	2975	114	0
1	H	3022	0	2975	102	0
1	I	3022	0	2975	88	0
1	J	3022	0	2975	104	0
1	K	3022	0	2975	92	0
1	L	3022	0	2975	95	0
1	M	3022	0	2975	106	0
1	N	3022	0	2975	108	0
1	O	3022	0	2975	102	0
1	P	3022	0	2975	113	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
2	M	1	0	0	0	0
2	N	1	0	0	0	0
2	O	1	0	0	0	0
2	P	1	0	0	0	0
3	A	10	0	3	2	0
3	B	10	0	3	2	0
3	C	10	0	3	3	0
3	D	10	0	3	3	0
3	E	10	0	3	2	0
3	F	10	0	3	1	0
3	G	10	0	4	4	0
3	H	10	0	3	2	0
3	I	10	0	3	4	0
3	J	10	0	3	1	0
3	K	10	0	3	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	L	10	0	3	3	0
3	M	10	0	3	0	0
3	N	10	0	3	3	0
3	O	10	0	3	0	0
3	P	10	0	4	3	0
4	A	43	0	0	1	0
4	B	21	0	0	0	0
4	C	61	0	0	3	0
4	D	49	0	0	0	0
4	E	29	0	0	1	0
4	F	53	0	0	0	0
4	G	41	0	0	2	0
4	H	22	0	0	0	0
4	I	20	0	0	0	0
4	J	12	0	0	0	0
4	K	29	0	0	0	0
4	L	20	0	0	0	0
4	M	12	0	0	0	0
4	N	20	0	0	0	0
4	O	5	0	0	1	0
4	P	12	0	0	1	0
All	All	48977	0	47650	1472	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 15.

The worst 5 of 1472 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:P:353:PHE:HB2	1:P:357:VAL:HG11	1.37	1.07
1:L:184:LYS:HE3	1:L:215:ASN:HD21	1.19	1.04
1:J:167:ARG:HD3	1:J:203:GLU:HB2	1.35	1.03
1:C:100:ASN:HA	1:D:24:ILE:HG13	1.37	1.03
1:C:24:ILE:HG13	1:D:100:ASN:HA	1.39	1.02

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	386/389 (99%)	370 (96%)	16 (4%)	0	100	100
1	B	386/389 (99%)	366 (95%)	20 (5%)	0	100	100
1	C	386/389 (99%)	373 (97%)	11 (3%)	2 (0%)	29	48
1	D	386/389 (99%)	374 (97%)	12 (3%)	0	100	100
1	E	386/389 (99%)	367 (95%)	18 (5%)	1 (0%)	41	61
1	F	386/389 (99%)	367 (95%)	18 (5%)	1 (0%)	41	61
1	G	386/389 (99%)	371 (96%)	14 (4%)	1 (0%)	41	61
1	H	386/389 (99%)	369 (96%)	17 (4%)	0	100	100
1	I	386/389 (99%)	367 (95%)	18 (5%)	1 (0%)	41	61
1	J	386/389 (99%)	367 (95%)	18 (5%)	1 (0%)	41	61
1	K	386/389 (99%)	371 (96%)	15 (4%)	0	100	100
1	L	386/389 (99%)	358 (93%)	26 (7%)	2 (0%)	29	48
1	M	386/389 (99%)	365 (95%)	20 (5%)	1 (0%)	41	61
1	N	386/389 (99%)	365 (95%)	21 (5%)	0	100	100
1	O	386/389 (99%)	367 (95%)	17 (4%)	2 (0%)	29	48
1	P	386/389 (99%)	363 (94%)	15 (4%)	8 (2%)	7	11
All	All	6176/6224 (99%)	5880 (95%)	276 (4%)	20 (0%)	41	61

5 of 20 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	108	GLU
1	J	188	ALA
1	M	350	TYR
1	P	66	GLU
1	P	352	GLY

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	308/309 (100%)	293 (95%)	15 (5%)	25	47
1	B	308/309 (100%)	291 (94%)	17 (6%)	21	41
1	C	308/309 (100%)	295 (96%)	13 (4%)	30	54
1	D	308/309 (100%)	291 (94%)	17 (6%)	21	41
1	E	308/309 (100%)	291 (94%)	17 (6%)	21	41
1	F	308/309 (100%)	292 (95%)	16 (5%)	23	44
1	G	308/309 (100%)	294 (96%)	14 (4%)	27	51
1	H	308/309 (100%)	293 (95%)	15 (5%)	25	47
1	I	308/309 (100%)	291 (94%)	17 (6%)	21	41
1	J	308/309 (100%)	296 (96%)	12 (4%)	32	57
1	K	308/309 (100%)	293 (95%)	15 (5%)	25	47
1	L	308/309 (100%)	292 (95%)	16 (5%)	23	44
1	M	308/309 (100%)	293 (95%)	15 (5%)	25	47
1	N	308/309 (100%)	289 (94%)	19 (6%)	18	35
1	O	308/309 (100%)	292 (95%)	16 (5%)	23	44
1	P	308/309 (100%)	290 (94%)	18 (6%)	20	38
All	All	4928/4944 (100%)	4676 (95%)	252 (5%)	24	45

5 of 252 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	166	LEU
1	J	25	ASP
1	O	322	HIS
1	H	237	TRP
1	I	25	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 109 such sidechains are listed below:

Mol	Chain	Res	Type
1	H	179	ASN
1	J	140	HIS
1	O	303	GLN
1	H	215	ASN
1	I	140	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 32 ligands modelled in this entry, 16 are monoatomic - leaving 16 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$
3	SRT	O	1015	2	3,9,9	0.70	0	6,12,12	0.87	0
3	SRT	D	1004	2	3,9,9	0.93	0	6,12,12	0.89	0
3	SRT	E	1005	2	3,9,9	0.87	0	6,12,12	0.92	0
3	SRT	P	1016	2	3,9,9	0.73	0	6,12,12	0.85	0
3	SRT	L	1012	2	3,9,9	0.78	0	6,12,12	0.81	0
3	SRT	A	1001	2	3,9,9	0.68	0	6,12,12	0.96	0
3	SRT	I	1009	2	3,9,9	0.55	0	6,12,12	0.83	0
3	SRT	B	1002	2	3,9,9	0.58	0	6,12,12	0.85	0
3	SRT	N	1014	2	3,9,9	0.65	0	6,12,12	0.85	0
3	SRT	J	1010	2	3,9,9	0.81	0	6,12,12	0.86	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	SRT	F	1006	2	3,9,9	0.86	0	6,12,12	0.98	0
3	SRT	G	1007	2	3,9,9	0.87	0	6,12,12	1.06	0
3	SRT	H	1008	2	3,9,9	0.77	0	6,12,12	0.91	0
3	SRT	C	1003	2	3,9,9	0.83	0	6,12,12	1.03	0
3	SRT	M	1013	2	3,9,9	0.84	0	6,12,12	0.82	0
3	SRT	K	1011	2	3,9,9	0.88	0	6,12,12	0.93	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
3	SRT	O	1015	2	-	4/4/12/12	-
3	SRT	D	1004	2	-	4/4/12/12	-
3	SRT	E	1005	2	-	4/4/12/12	-
3	SRT	P	1016	2	-	4/4/12/12	-
3	SRT	L	1012	2	-	4/4/12/12	-
3	SRT	A	1001	2	-	4/4/12/12	-
3	SRT	I	1009	2	-	4/4/12/12	-
3	SRT	B	1002	2	-	4/4/12/12	-
3	SRT	N	1014	2	-	4/4/12/12	-
3	SRT	J	1010	2	-	4/4/12/12	-
3	SRT	F	1006	2	-	4/4/12/12	-
3	SRT	G	1007	2	-	4/4/12/12	-
3	SRT	H	1008	2	-	4/4/12/12	-
3	SRT	C	1003	2	-	4/4/12/12	-
3	SRT	M	1013	2	-	4/4/12/12	-
3	SRT	K	1011	2	-	4/4/12/12	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 64 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1001	SRT	C1-C2-C3-C4

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Mol	Chain	Res	Type	Atoms
3	A	1001	SRT	O2-C2-C3-O3
3	P	1016	SRT	C1-C2-C3-C4
3	P	1016	SRT	O2-C2-C3-O3
3	J	1010	SRT	C1-C2-C3-C4

There are no ring outliers.

14 monomers are involved in 34 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	1004	SRT	3	0
3	E	1005	SRT	2	0
3	P	1016	SRT	3	0
3	L	1012	SRT	3	0
3	A	1001	SRT	2	0
3	I	1009	SRT	4	0
3	B	1002	SRT	2	0
3	N	1014	SRT	3	0
3	J	1010	SRT	1	0
3	F	1006	SRT	1	0
3	G	1007	SRT	4	0
3	H	1008	SRT	2	0
3	C	1003	SRT	3	0
3	K	1011	SRT	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(Å ²)	Q<0.9
1	A	388/389 (99%)	-0.52	0 100 100	14, 34, 57, 76	0
1	B	388/389 (99%)	-0.22	1 (0%) 94 94	21, 49, 68, 84	0
1	C	388/389 (99%)	-0.55	0 100 100	13, 30, 48, 77	0
1	D	388/389 (99%)	-0.55	0 100 100	13, 32, 50, 73	0
1	E	388/389 (99%)	-0.36	2 (0%) 91 91	16, 43, 66, 89	0
1	F	388/389 (99%)	-0.46	1 (0%) 94 94	11, 34, 64, 77	0
1	G	388/389 (99%)	-0.33	1 (0%) 94 94	14, 41, 69, 81	0
1	H	388/389 (99%)	-0.25	1 (0%) 94 94	18, 49, 67, 82	0
1	I	388/389 (99%)	-0.35	3 (0%) 86 87	22, 43, 71, 90	0
1	J	388/389 (99%)	-0.18	3 (0%) 86 87	19, 49, 70, 78	0
1	K	388/389 (99%)	-0.47	0 100 100	14, 38, 63, 84	0
1	L	388/389 (99%)	-0.15	7 (1%) 68 71	20, 53, 72, 83	0
1	M	388/389 (99%)	-0.19	3 (0%) 86 87	24, 53, 69, 89	0
1	N	388/389 (99%)	-0.06	4 (1%) 82 84	26, 58, 77, 87	0
1	O	388/389 (99%)	0.03	4 (1%) 82 84	34, 56, 72, 83	0
1	P	388/389 (99%)	0.28	23 (5%) 22 23	30, 62, 80, 94	0
All	All	6208/6224 (99%)	-0.27	53 (0%) 84 86	11, 45, 71, 94	0

The worst 5 of 53 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	P	44	GLY	9.7
1	P	3	VAL	4.5
1	P	5	ILE	4.2
1	N	45	LYS	4.1
1	I	2	SER	4.0

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 carbohydrates 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(\AA^2)	Q<0.9
2	MG	C	2003	1/1	0.84	0.13	26,26,26,26	0
2	MG	L	2012	1/1	0.87	0.07	42,42,42,42	0
2	MG	P	2016	1/1	0.87	0.12	45,45,45,45	0
3	SRT	G	1007	10/10	0.90	0.15	32,36,40,41	0
3	SRT	M	1013	10/10	0.90	0.10	47,51,52,54	0
3	SRT	O	1015	10/10	0.90	0.12	50,52,56,58	0
3	SRT	B	1002	10/10	0.90	0.12	44,49,53,54	0
2	MG	J	2010	1/1	0.91	0.06	41,41,41,41	0
3	SRT	P	1016	10/10	0.91	0.11	51,54,55,57	0
3	SRT	F	1006	10/10	0.92	0.12	25,33,37,38	0
3	SRT	A	1001	10/10	0.93	0.11	26,30,32,36	0
3	SRT	H	1008	10/10	0.93	0.12	50,54,56,57	0
2	MG	O	2015	1/1	0.93	0.05	43,43,43,43	0
3	SRT	L	1012	10/10	0.93	0.10	43,46,48,49	0
3	SRT	N	1014	10/10	0.93	0.13	49,51,52,53	0
3	SRT	J	1010	10/10	0.93	0.12	45,47,52,53	0
3	SRT	I	1009	10/10	0.94	0.14	20,33,36,36	0
3	SRT	E	1005	10/10	0.94	0.13	45,47,50,51	0
2	MG	E	2005	1/1	0.94	0.10	39,39,39,39	0
3	SRT	C	1003	10/10	0.94	0.13	18,28,38,45	0
3	SRT	K	1011	10/10	0.94	0.12	24,28,35,36	0
3	SRT	D	1004	10/10	0.95	0.12	21,34,38,43	0
2	MG	D	2004	1/1	0.95	0.09	27,27,27,27	0
2	MG	I	2009	1/1	0.95	0.10	25,25,25,25	0
2	MG	K	2011	1/1	0.96	0.10	15,15,15,15	0
2	MG	N	2014	1/1	0.97	0.08	27,27,27,27	0
2	MG	B	2002	1/1	0.97	0.08	62,62,62,62	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	MG	G	2007	1/1	0.97	0.08	31,31,31,31	0
2	MG	H	2008	1/1	0.97	0.10	42,42,42,42	0
2	MG	M	2013	1/1	0.98	0.09	36,36,36,36	0
2	MG	F	2006	1/1	0.98	0.09	19,19,19,19	0
2	MG	A	2001	1/1	0.98	0.10	20,20,20,20	0

6.5 Other polymers [i](#)

There are no such residues in this entry.