



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 6, 2026 – 07:54 AM UTC

PDB ID : 3T1I / pdb_00003t1i
Title : Crystal Structure of Human Mre11: Understanding Tumorigenic Mutations
Authors : Park, Y.B.; Chae, J.; Kim, Y.; Cho, Y.
Deposited on : 2011-07-22
Resolution : 3.00 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 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

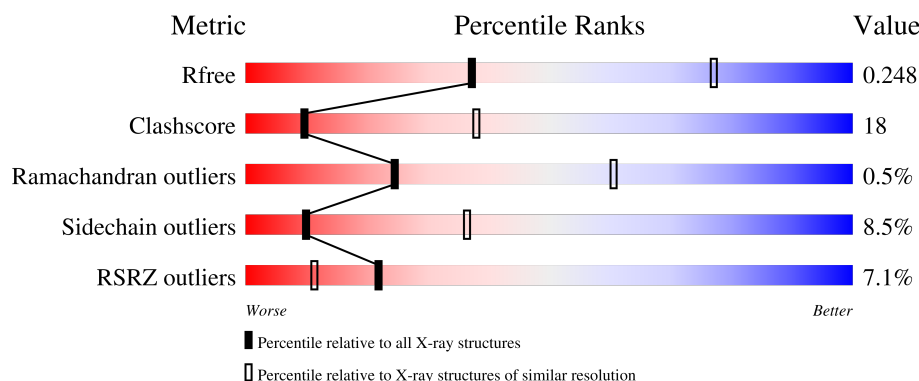
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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	2672 (3.00-3.00)
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)
RSRZ outliers	180081	2671 (3.00-3.00)

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	431	8% 55% 29% • 13%
1	B	431	5% 55% 29% • 12%
1	C	431	7% 52% 30% 5% 13%
1	D	431	5% 54% 31% • 10%

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	DTT	A	452	-	-	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 12407 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 Double-strand break repair protein MRE11A.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	376	Total	C	N	O	S	Se	0	0	0
			3032	1933	528	556	6	9			
1	B	378	Total	C	N	O	S	Se	0	0	0
			3045	1941	530	559	6	9			
1	C	377	Total	C	N	O	S	Se	0	0	0
			3038	1934	530	559	6	9			
1	D	386	Total	C	N	O	S	Se	0	0	0
			3112	1986	541	570	6	9			

There are 80 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MSE	-	expression tag	UNP P49959
A	-18	GLY	-	expression tag	UNP P49959
A	-17	SER	-	expression tag	UNP P49959
A	-16	SER	-	expression tag	UNP P49959
A	-15	HIS	-	expression tag	UNP P49959
A	-14	HIS	-	expression tag	UNP P49959
A	-13	HIS	-	expression tag	UNP P49959
A	-12	HIS	-	expression tag	UNP P49959
A	-11	HIS	-	expression tag	UNP P49959
A	-10	HIS	-	expression tag	UNP P49959
A	-9	SER	-	expression tag	UNP P49959
A	-8	SER	-	expression tag	UNP P49959
A	-7	GLY	-	expression tag	UNP P49959
A	-6	LEU	-	expression tag	UNP P49959
A	-5	VAL	-	expression tag	UNP P49959
A	-4	PRO	-	expression tag	UNP P49959
A	-3	ARG	-	expression tag	UNP P49959
A	-2	GLY	-	expression tag	UNP P49959
A	-1	SER	-	expression tag	UNP P49959
A	0	HIS	-	expression tag	UNP P49959
B	-19	MSE	-	expression tag	UNP P49959

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-18	GLY	-	expression tag	UNP P49959
B	-17	SER	-	expression tag	UNP P49959
B	-16	SER	-	expression tag	UNP P49959
B	-15	HIS	-	expression tag	UNP P49959
B	-14	HIS	-	expression tag	UNP P49959
B	-13	HIS	-	expression tag	UNP P49959
B	-12	HIS	-	expression tag	UNP P49959
B	-11	HIS	-	expression tag	UNP P49959
B	-10	HIS	-	expression tag	UNP P49959
B	-9	SER	-	expression tag	UNP P49959
B	-8	SER	-	expression tag	UNP P49959
B	-7	GLY	-	expression tag	UNP P49959
B	-6	LEU	-	expression tag	UNP P49959
B	-5	VAL	-	expression tag	UNP P49959
B	-4	PRO	-	expression tag	UNP P49959
B	-3	ARG	-	expression tag	UNP P49959
B	-2	GLY	-	expression tag	UNP P49959
B	-1	SER	-	expression tag	UNP P49959
B	0	HIS	-	expression tag	UNP P49959
C	-19	MSE	-	expression tag	UNP P49959
C	-18	GLY	-	expression tag	UNP P49959
C	-17	SER	-	expression tag	UNP P49959
C	-16	SER	-	expression tag	UNP P49959
C	-15	HIS	-	expression tag	UNP P49959
C	-14	HIS	-	expression tag	UNP P49959
C	-13	HIS	-	expression tag	UNP P49959
C	-12	HIS	-	expression tag	UNP P49959
C	-11	HIS	-	expression tag	UNP P49959
C	-10	HIS	-	expression tag	UNP P49959
C	-9	SER	-	expression tag	UNP P49959
C	-8	SER	-	expression tag	UNP P49959
C	-7	GLY	-	expression tag	UNP P49959
C	-6	LEU	-	expression tag	UNP P49959
C	-5	VAL	-	expression tag	UNP P49959
C	-4	PRO	-	expression tag	UNP P49959
C	-3	ARG	-	expression tag	UNP P49959
C	-2	GLY	-	expression tag	UNP P49959
C	-1	SER	-	expression tag	UNP P49959
C	0	HIS	-	expression tag	UNP P49959
D	-19	MSE	-	expression tag	UNP P49959
D	-18	GLY	-	expression tag	UNP P49959
D	-17	SER	-	expression tag	UNP P49959

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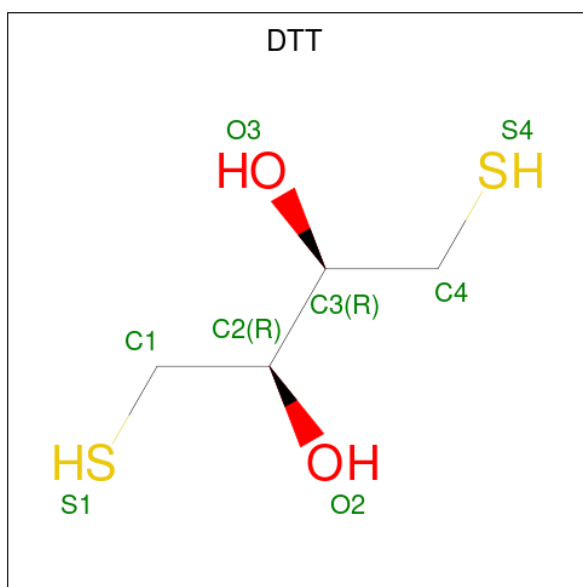
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Chain	Residue	Modelled	Actual	Comment	Reference
D	-16	SER	-	expression tag	UNP P49959
D	-15	HIS	-	expression tag	UNP P49959
D	-14	HIS	-	expression tag	UNP P49959
D	-13	HIS	-	expression tag	UNP P49959
D	-12	HIS	-	expression tag	UNP P49959
D	-11	HIS	-	expression tag	UNP P49959
D	-10	HIS	-	expression tag	UNP P49959
D	-9	SER	-	expression tag	UNP P49959
D	-8	SER	-	expression tag	UNP P49959
D	-7	GLY	-	expression tag	UNP P49959
D	-6	LEU	-	expression tag	UNP P49959
D	-5	VAL	-	expression tag	UNP P49959
D	-4	PRO	-	expression tag	UNP P49959
D	-3	ARG	-	expression tag	UNP P49959
D	-2	GLY	-	expression tag	UNP P49959
D	-1	SER	-	expression tag	UNP P49959
D	0	HIS	-	expression tag	UNP P49959

- Molecule 2 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn).

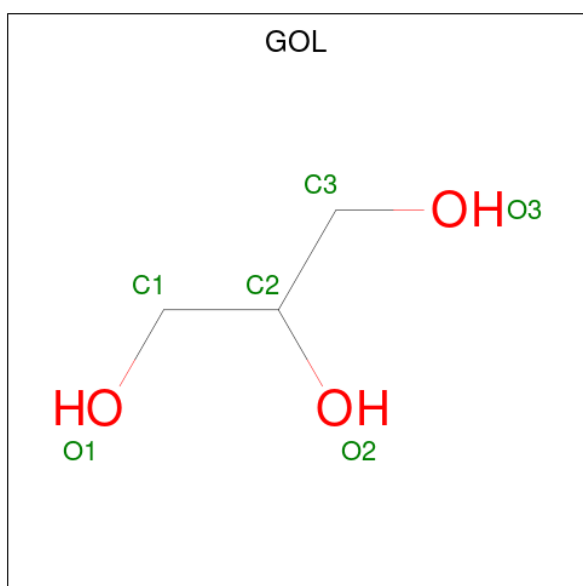
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Mn 2 2	0	0
2	B	2	Total Mn 2 2	0	0
2	C	2	Total Mn 2 2	0	0
2	D	2	Total Mn 2 2	0	0

- Molecule 3 is 2,3-DIHYDROXY-1,4-DITHIOBUTANE (CCD ID: DTT) (formula: C₄H₁₀O₂S₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	S	
			8	4	2	2	
3	A	1	Total	C	O	S	
			8	4	2	2	
							0
							0

- Molecule 4 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



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

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

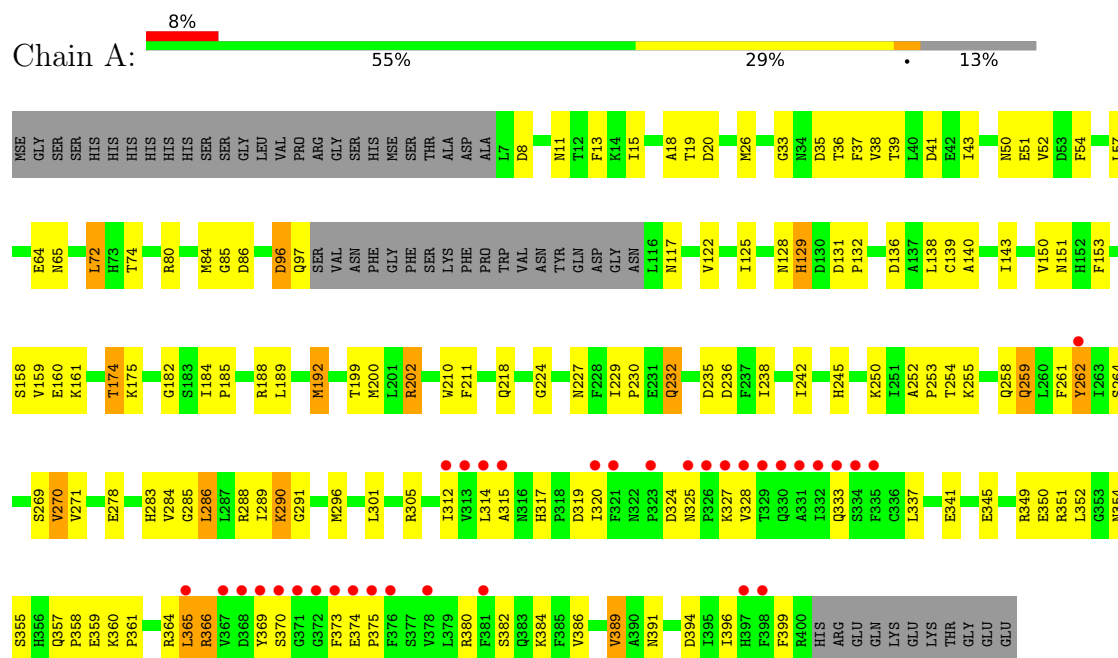
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	22	Total O 22 22	0	0
5	B	11	Total O 11 11	0	0
5	C	23	Total O 23 23	0	0
5	D	10	Total O 10 10	0	0

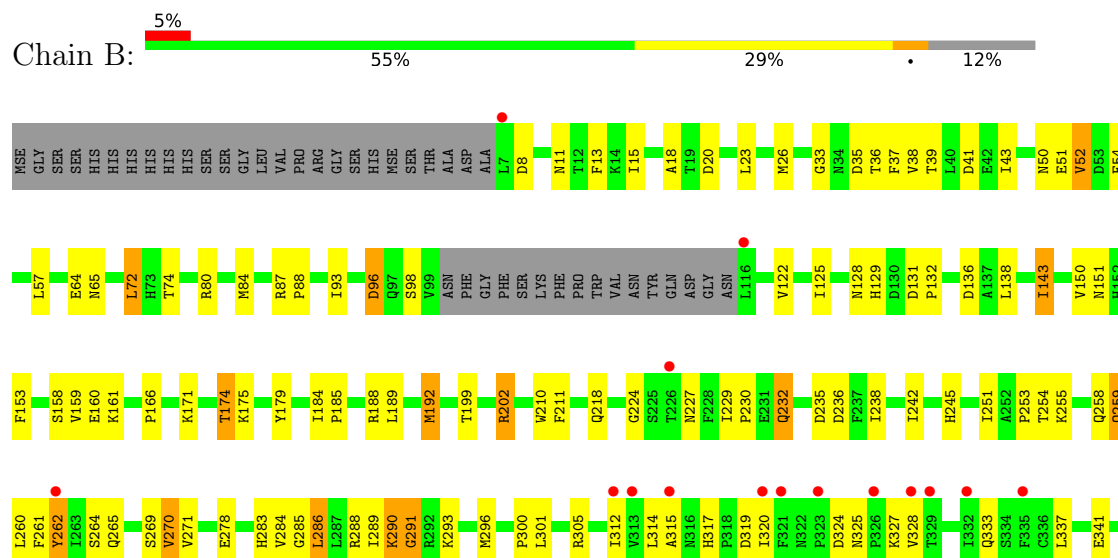
3 Residue-property plots

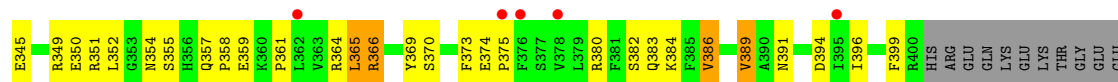
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Double-strand break repair protein MRE11A

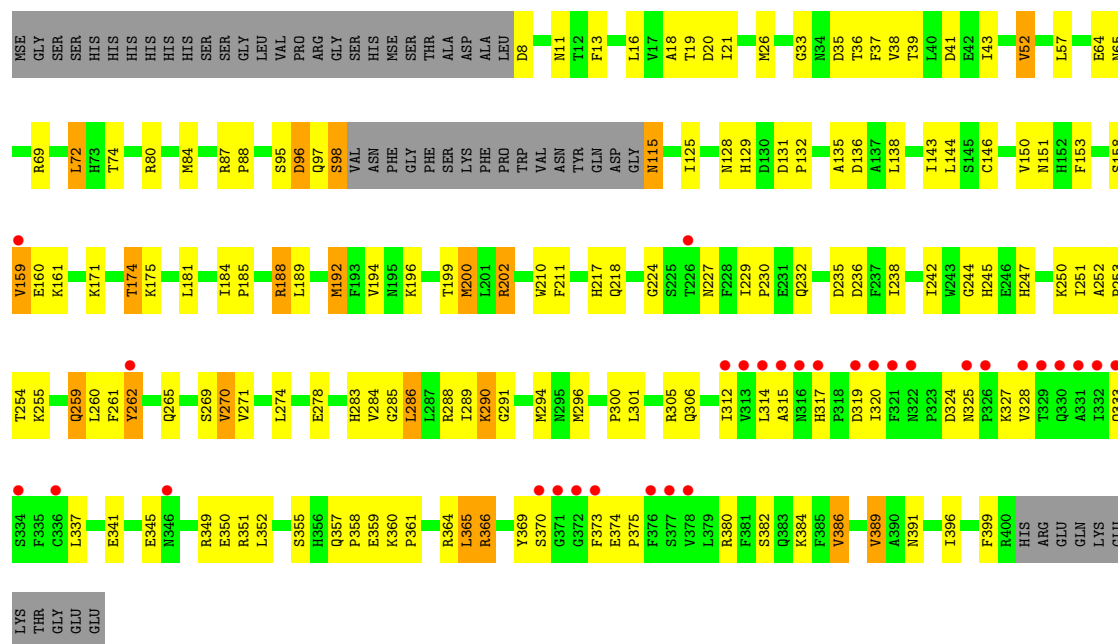


• Molecule 1: Double-strand break repair protein MRE11A

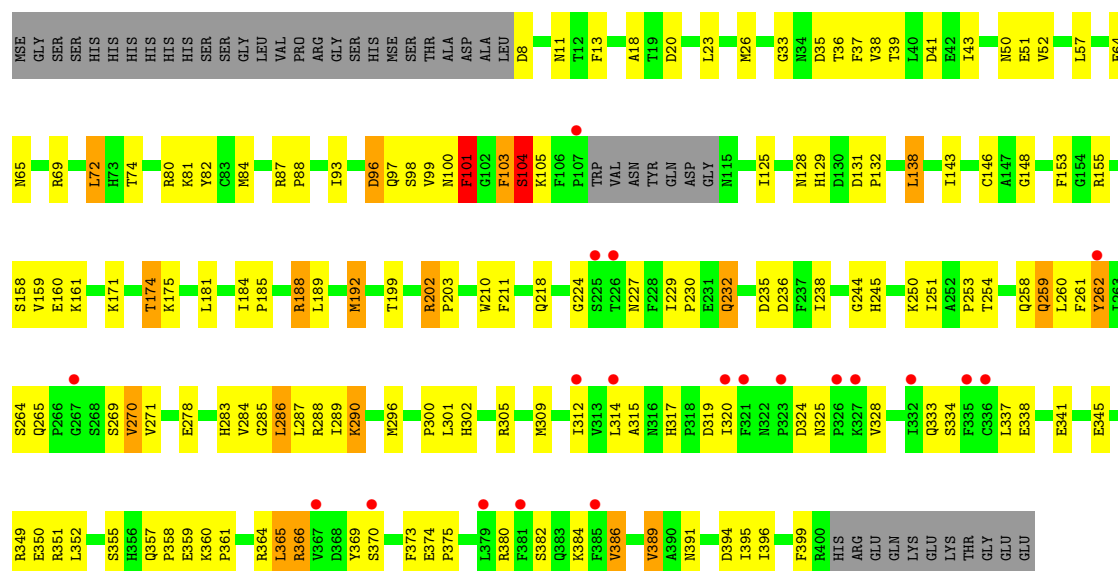




• Molecule 1: Double-strand break repair protein MRE11A



• Molecule 1: Double-strand break repair protein MRE11A



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	134.79Å 135.21Å 135.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.53 – 3.00 29.53 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.5 (29.53-3.00) 93.8 (29.53-3.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.45 (at 3.01Å)	Xtriage
Refinement program	CNS, PHENIX (phenix.refine: 1.7.1_743)	Depositor
R, R_{free}	0.227 , 0.250 0.226 , 0.248	Depositor DCC
R_{free} test set	2488 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	66.0	Xtriage
Anisotropy	0.379	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 47.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.018 for -h,l,k 0.014 for -l,-k,-h 0.017 for k,h,-l 0.005 for k,l,h 0.005 for l,h,k	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	12407	wwPDB-VP
Average B, all atoms (Å ²)	85.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.13% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MN, DTT, GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.62	2/3091 (0.1%)	0.95	4/4158 (0.1%)
1	B	0.61	0/3104	0.93	2/4176 (0.0%)
1	C	0.62	0/3097	0.94	4/4166 (0.1%)
1	D	0.61	0/3175	0.94	2/4271 (0.0%)
All	All	0.62	2/12467 (0.0%)	0.94	12/16771 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	129	HIS	CE1-NE2	-5.17	1.27	1.32
1	A	283	HIS	CE1-NE2	-5.05	1.27	1.32

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	360	LYS	CA-C-N	5.65	125.60	119.78
1	D	360	LYS	C-N-CA	5.65	125.60	119.78
1	B	143	ILE	N-CA-C	-5.61	105.25	110.53
1	C	159	VAL	N-CA-C	-5.60	107.00	111.81
1	A	360	LYS	CA-C-N	5.38	125.32	119.78

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	3032	0	3013	97	0
1	B	3045	0	3027	102	0
1	C	3038	0	3013	119	0
1	D	3112	0	3083	128	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	16	0	20	4	0
4	A	36	0	48	1	0
4	C	36	0	48	10	0
4	D	18	0	24	1	0
5	A	22	0	0	1	0
5	B	11	0	0	1	0
5	C	23	0	0	3	0
5	D	10	0	0	1	0
All	All	12407	0	12276	436	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 18.

The worst 5 of 436 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:271:VAL:HG13	1:B:278:GLU:HG2	1.31	1.09
1:C:271:VAL:HG13	1:C:278:GLU:HG2	1.37	1.07
1:D:271:VAL:HG13	1:D:278:GLU:HG2	1.30	1.06
1:A:271:VAL:HG13	1:A:278:GLU:HG2	1.30	1.06
1:C:159:VAL:HG13	1:D:159:VAL:HG13	1.07	1.04

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	372/431 (86%)	347 (93%)	25 (7%)	0	100	100
1	B	374/431 (87%)	347 (93%)	25 (7%)	2 (0%)	24	60
1	C	373/431 (86%)	347 (93%)	24 (6%)	2 (0%)	24	60
1	D	382/431 (89%)	354 (93%)	25 (6%)	3 (1%)	16	50
All	All	1501/1724 (87%)	1395 (93%)	99 (7%)	7 (0%)	24	60

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	101	PHE
1	C	95	SER
1	D	104	SER
1	B	291	GLY
1	B	386	VAL

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	341/377 (90%)	312 (92%)	29 (8%)	10	36
1	B	343/377 (91%)	317 (92%)	26 (8%)	12	41
1	C	342/377 (91%)	311 (91%)	31 (9%)	9	33
1	D	350/377 (93%)	319 (91%)	31 (9%)	9	34
All	All	1376/1508 (91%)	1259 (92%)	117 (8%)	10	36

5 of 117 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	52	VAL
1	D	324	ASP
1	C	254	THR

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Mol	Chain	Res	Type
1	D	319	ASP
1	D	202	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 39 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	283	HIS
1	D	258	GLN
1	C	357	GLN
1	D	212	ASN
1	D	283	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](#)

Of 25 ligands modelled in this entry, 8 are monoatomic - leaving 17 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	$\# Z > 2$
4	GOL	C	453	-	5,5,5	0.44	0	5,5,5	0.40	0
4	GOL	D	453	-	5,5,5	0.41	0	5,5,5	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	GOL	A	456	-	5,5,5	0.41	0	5,5,5	0.37	0
4	GOL	C	451	-	5,5,5	0.35	0	5,5,5	0.51	0
4	GOL	A	453	-	5,5,5	0.40	0	5,5,5	0.33	0
4	GOL	C	454	-	5,5,5	0.33	0	5,5,5	0.47	0
3	DTT	A	452	-	7,7,7	0.86	0	4,8,8	1.43	1 (25%)
4	GOL	A	454	-	5,5,5	0.34	0	5,5,5	0.46	0
4	GOL	C	452	-	5,5,5	0.36	0	5,5,5	0.32	0
4	GOL	A	457	-	5,5,5	0.35	0	5,5,5	0.44	0
4	GOL	D	451	-	5,5,5	0.41	0	5,5,5	0.44	0
4	GOL	D	452	-	5,5,5	0.44	0	5,5,5	0.86	0
4	GOL	C	456	-	5,5,5	0.44	0	5,5,5	0.25	0
4	GOL	A	455	-	5,5,5	0.35	0	5,5,5	0.25	0
4	GOL	A	458	-	5,5,5	0.42	0	5,5,5	0.47	0
3	DTT	A	451	-	7,7,7	0.74	0	4,8,8	0.50	0
4	GOL	C	455	-	5,5,5	0.36	0	5,5,5	0.40	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
4	GOL	C	453	-	-	0/4/4/4	-
4	GOL	D	453	-	-	0/4/4/4	-
4	GOL	A	456	-	-	2/4/4/4	-
4	GOL	C	451	-	-	2/4/4/4	-
4	GOL	A	453	-	-	2/4/4/4	-
4	GOL	C	454	-	-	2/4/4/4	-
3	DTT	A	452	-	-	6/8/8/8	-
4	GOL	A	454	-	-	2/4/4/4	-
4	GOL	C	452	-	-	2/4/4/4	-
4	GOL	A	457	-	-	2/4/4/4	-
4	GOL	D	451	-	-	2/4/4/4	-
4	GOL	D	452	-	-	2/4/4/4	-
4	GOL	C	456	-	-	2/4/4/4	-
4	GOL	A	455	-	-	4/4/4/4	-
4	GOL	A	458	-	-	2/4/4/4	-
3	DTT	A	451	-	-	6/8/8/8	-
4	GOL	C	455	-	-	2/4/4/4	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
3	A	452	DTT	C2-C1-S1	2.51	121.44	114.43

There are no chirality outliers.

5 of 40 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	451	DTT	C1-C2-C3-O3
3	A	451	DTT	C1-C2-C3-C4
3	A	451	DTT	O2-C2-C3-O3
3	A	451	DTT	O2-C2-C3-C4
3	A	451	DTT	C2-C3-C4-S4

There are no ring outliers.

8 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	453	GOL	1	0
4	C	454	GOL	3	0
3	A	452	DTT	4	0
4	A	454	GOL	1	0
4	C	452	GOL	2	0
4	D	452	GOL	1	0
4	C	456	GOL	2	0
4	C	455	GOL	2	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	367/431 (85%)	0.16	34 (9%) 14 7	39, 68, 165, 187	0
1	B	369/431 (85%)	0.12	20 (5%) 31 16	42, 70, 168, 188	0
1	C	368/431 (85%)	0.23	31 (8%) 17 9	40, 67, 166, 187	1 (0%)
1	D	377/431 (87%)	0.13	20 (5%) 32 16	39, 71, 168, 190	1 (0%)
All	All	1481/1724 (85%)	0.16	105 (7%) 22 11	39, 69, 167, 190	2 (0%)

The worst 5 of 105 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	314	LEU	7.4
1	C	320	ILE	5.0
1	A	372	GLY	4.6
1	C	315	ALA	4.6
1	C	321	PHE	4.5

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
4	GOL	A	458	6/6	0.75	0.16	82,101,108,109	0
2	MN	A	413	1/1	0.79	0.17	107,107,107,107	0
2	MN	C	413	1/1	0.81	0.14	99,99,99,99	0
4	GOL	A	457	6/6	0.83	0.10	89,95,114,119	0
4	GOL	C	451	6/6	0.83	0.14	78,86,89,93	0
2	MN	B	413	1/1	0.85	0.15	99,99,99,99	0
3	DTT	A	451	8/8	0.86	0.10	98,127,143,146	0
4	GOL	A	454	6/6	0.87	0.13	55,75,88,95	0
4	GOL	A	453	6/6	0.87	0.10	84,92,97,103	0
4	GOL	C	452	6/6	0.87	0.13	74,85,92,105	0
4	GOL	C	456	6/6	0.87	0.15	72,81,92,98	0
4	GOL	D	453	6/6	0.87	0.15	71,88,104,109	0
3	DTT	A	452	8/8	0.89	0.12	82,96,109,110	0
4	GOL	A	455	6/6	0.90	0.12	66,84,89,102	0
4	GOL	C	453	6/6	0.90	0.14	69,91,92,98	0
2	MN	D	413	1/1	0.91	0.10	111,111,111,111	0
4	GOL	D	452	6/6	0.91	0.13	76,90,106,106	0
4	GOL	C	454	6/6	0.91	0.22	78,81,86,93	0
4	GOL	D	451	6/6	0.92	0.10	68,85,100,102	0
4	GOL	A	456	6/6	0.93	0.10	77,85,95,100	0
4	GOL	C	455	6/6	0.94	0.10	70,87,99,106	0
2	MN	A	412	1/1	0.99	0.03	46,46,46,46	0
2	MN	B	412	1/1	0.99	0.04	56,56,56,56	0
2	MN	D	412	1/1	0.99	0.03	58,58,58,58	0
2	MN	C	412	1/1	1.00	0.04	42,42,42,42	0

6.5 Other polymers ⓘ

There are no such residues in this entry.