



wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 6, 2024 – 08:38 pm GMT

PDB ID : 5O4Q
Title : Crystal Structure of mutant M54L/M64L/M96L of Two-Domain Laccase from *Streptomyces griseoflavus* with 0.25 mM copper sulfate on growth medium
Authors : Gabdulkhakov, A.G.; Tishchenko, T.V.
Deposited on : 2017-05-30
Resolution : 1.90 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 : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

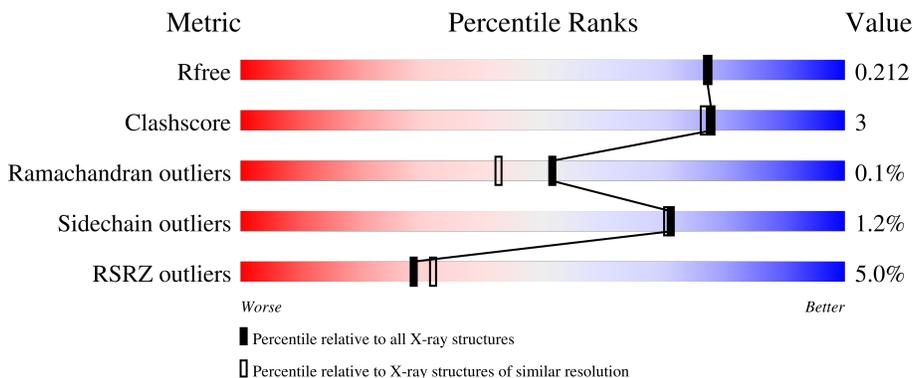
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.90 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.



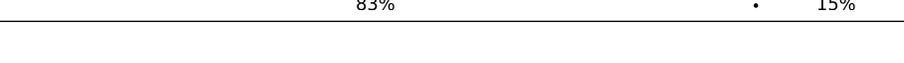
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

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	322	
1	B	322	
1	C	322	
1	D	322	
1	E	322	

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Mol	Chain	Length	Quality of chain
1	F	322	 3% 79% 7% 15%
1	G	322	 6% 80% 7% 14%
1	H	322	 5% 78% 8% 14%
1	I	322	 5% 79% 6% 15%
1	J	322	 3% 81% 6% 13%
1	K	322	 4% 78% 8% 14%
1	L	322	 5% 83% 7% 15%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 26408 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 Two-domain laccase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	281	2171	1355	397	409	10	0	2	0
1	B	278	2139	1336	391	403	9	0	1	0
1	C	275	2133	1333	389	402	9	0	3	0
1	D	278	2130	1331	389	401	9	0	0	0
1	E	278	2144	1341	391	403	9	0	2	0
1	F	275	2110	1319	386	396	9	0	0	0
1	G	278	2130	1331	389	401	9	0	0	0
1	H	278	2133	1333	389	401	10	0	1	0
1	I	275	2110	1319	386	396	9	0	0	0
1	J	280	2148	1341	392	406	9	0	0	0
1	K	278	2133	1333	389	401	10	0	1	0
1	L	275	2110	1319	386	396	9	0	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
A	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
A	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
B	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
B	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81

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Chain	Residue	Modelled	Actual	Comment	Reference
B	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
C	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
C	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
C	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
D	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
D	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
D	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
E	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
E	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
E	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
F	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
F	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
F	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
G	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
G	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
G	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
H	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
H	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
H	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
I	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
I	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
I	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
J	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
J	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
J	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
K	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
K	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
K	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81
L	54	LEU	MET	engineered mutation	UNP A0A0M4FJ81
L	64	LEU	MET	engineered mutation	UNP A0A0M4FJ81
L	96	LEU	MET	engineered mutation	UNP A0A0M4FJ81

- Molecule 2 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

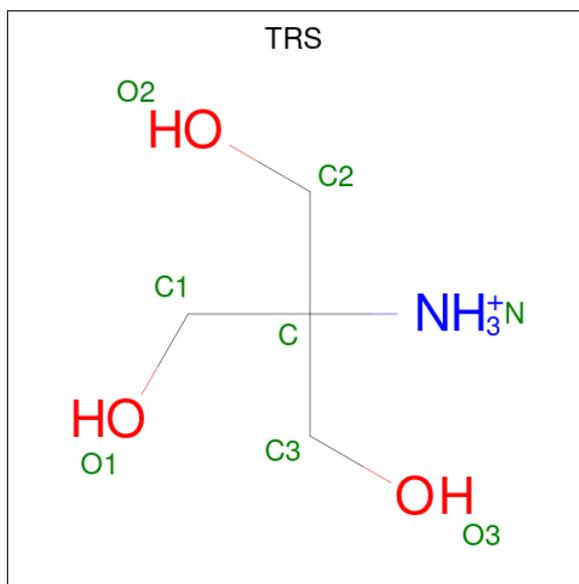
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Cu 2 2	0	0
2	B	2	Total Cu 2 2	0	0
2	C	2	Total Cu 2 2	0	0
2	D	2	Total Cu 2 2	0	0

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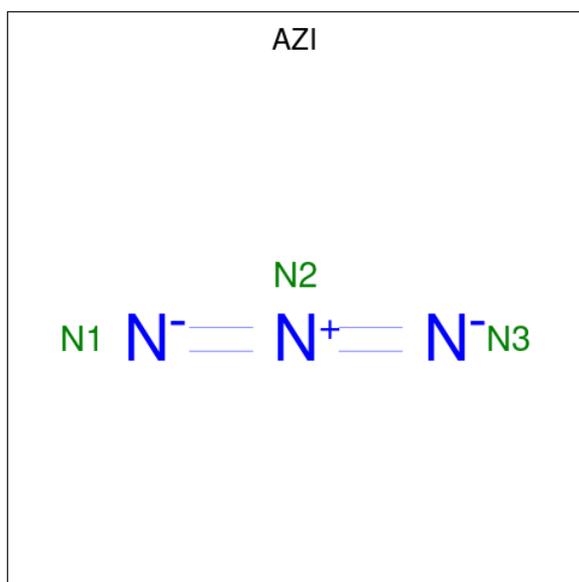
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	E	2	Total	Cu	0	0
			2	2		
2	F	2	Total	Cu	0	0
			2	2		
2	G	2	Total	Cu	0	0
			2	2		
2	H	2	Total	Cu	0	0
			2	2		
2	I	2	Total	Cu	0	0
			2	2		
2	J	2	Total	Cu	0	0
			2	2		
2	K	2	Total	Cu	0	0
			2	2		
2	L	2	Total	Cu	0	0
			2	2		

- Molecule 3 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: C₄H₁₂NO₃).



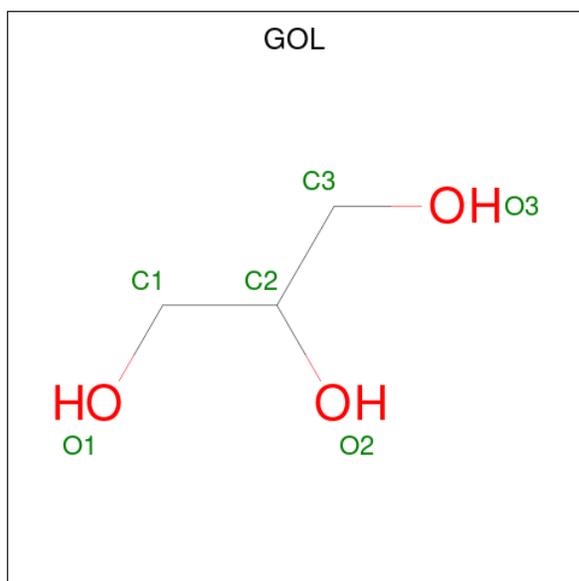
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			8	4	1	3		
3	J	1	Total	C	N	O	0	0
			8	4	1	3		

- Molecule 4 is AZIDE ION (three-letter code: AZI) (formula: N₃).



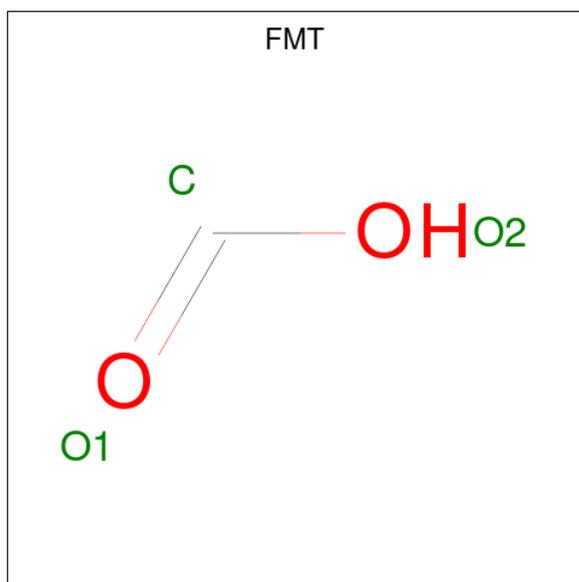
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total N 3 3	0	0
4	E	1	Total N 3 3	0	0
4	H	1	Total N 3 3	0	0
4	J	1	Total N 3 3	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



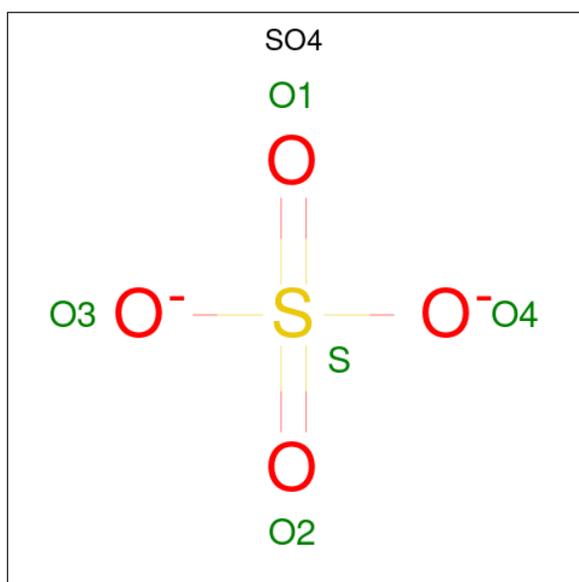
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			6	3	3		

- Molecule 6 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total	C	O	0	0
			3	1	2		

- Molecule 7 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	K	1	Total	O	S	0	0
			5	4	1		

- Molecule 8 is water.

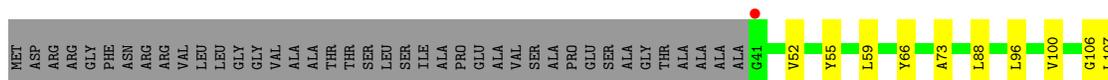
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	74	Total	O	0	0
			74	74		
8	B	68	Total	O	0	0
			68	68		
8	C	59	Total	O	0	0
			59	59		
8	D	56	Total	O	0	0
			56	56		
8	E	76	Total	O	0	0
			76	76		
8	F	73	Total	O	0	0
			73	73		
8	G	61	Total	O	0	0
			61	61		
8	H	55	Total	O	0	0
			55	55		
8	I	46	Total	O	0	0
			46	46		
8	J	66	Total	O	0	0
			66	66		
8	K	71	Total	O	0	0
			71	71		
8	L	46	Total	O	0	0
			46	46		



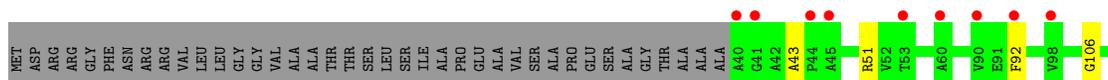
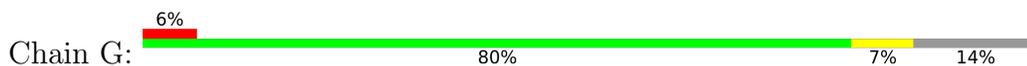
- Molecule 1: Two-domain laccase



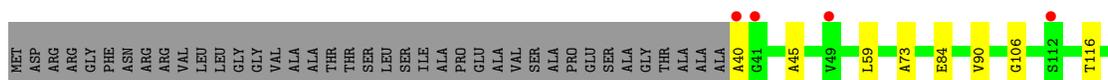
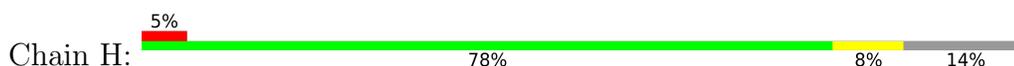
- Molecule 1: Two-domain laccase



- Molecule 1: Two-domain laccase

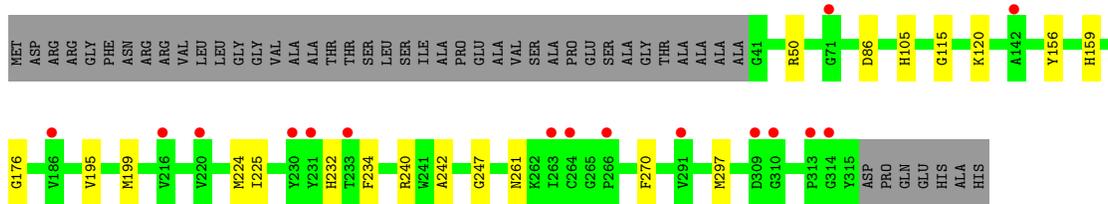


- Molecule 1: Two-domain laccase

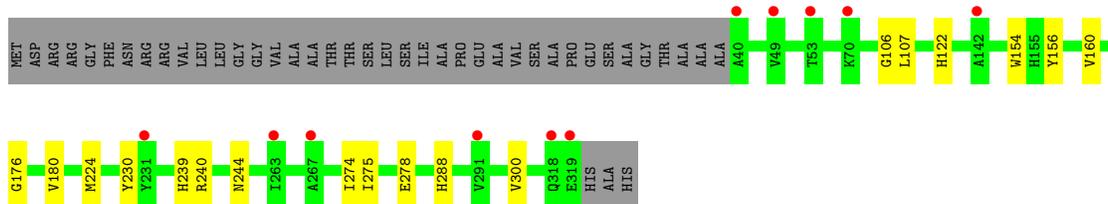
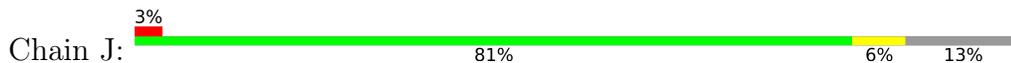


- Molecule 1: Two-domain laccase

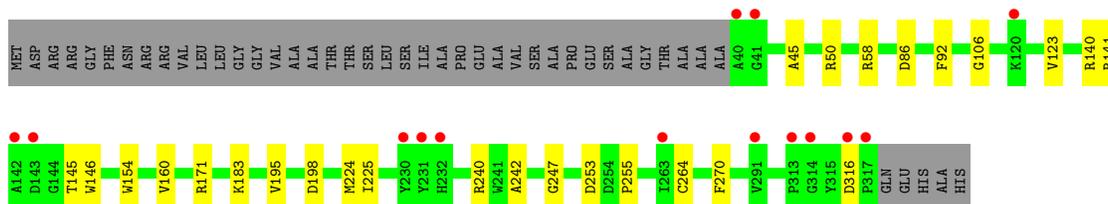
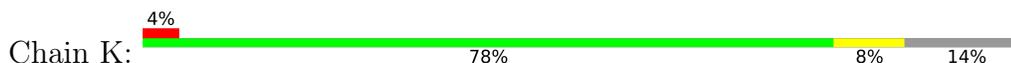




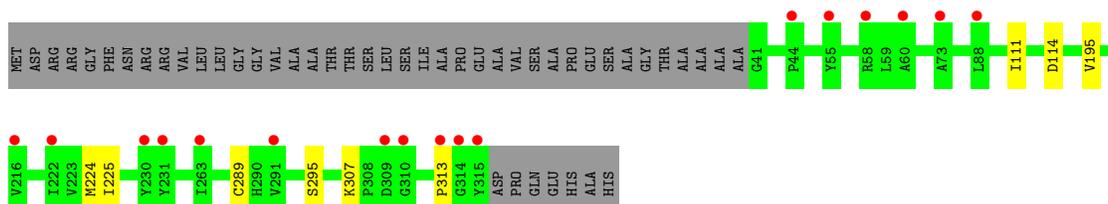
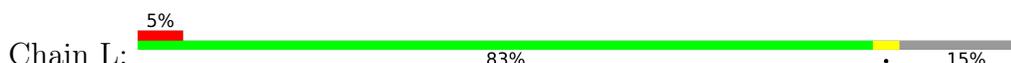
• Molecule 1: Two-domain laccase



• Molecule 1: Two-domain laccase



• Molecule 1: Two-domain laccase



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	76.84Å 94.85Å 116.61Å 90.04° 90.29° 91.49°	Depositor
Resolution (Å)	50.00 – 1.90 49.69 – 1.90	Depositor EDS
% Data completeness (in resolution range)	95.7 (50.00-1.90) 95.7 (49.69-1.90)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.21 (at 1.90Å)	Xtrriage
Refinement program	REFMAC 5.8.0073	Depositor
R, R_{free}	0.187 , 0.213 0.189 , 0.212	Depositor DCC
R_{free} test set	12501 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	24.3	Xtrriage
Anisotropy	0.440	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 46.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.28$	Xtrriage
Estimated twinning fraction	0.074 for h,-k,-l 0.155 for -h,k,-l 0.115 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	26408	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.48% 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: CU, FMT, SO4, AZI, TRS, 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	0.35	0/2234	0.58	0/3038
1	B	0.34	0/2201	0.54	0/2993
1	C	0.33	0/2194	0.56	0/2983
1	D	0.34	0/2192	0.57	0/2981
1	E	0.38	0/2206	0.58	0/3001
1	F	0.36	0/2171	0.59	0/2951
1	G	0.32	0/2192	0.54	0/2981
1	H	0.34	0/2198	0.55	0/2989
1	I	0.32	0/2171	0.54	0/2951
1	J	0.36	0/2210	0.57	0/3005
1	K	0.33	0/2198	0.55	0/2989
1	L	0.32	0/2171	0.55	0/2951
All	All	0.34	0/26338	0.56	0/35813

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 [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	2171	0	2040	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2139	0	2014	19	0
1	C	2133	0	2010	17	0
1	D	2130	0	2007	12	0
1	E	2144	0	2023	11	0
1	F	2110	0	1991	11	0
1	G	2130	0	2007	12	0
1	H	2133	0	2012	21	0
1	I	2110	0	1991	13	0
1	J	2148	0	2021	11	0
1	K	2133	0	2012	13	0
1	L	2110	0	1991	5	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
2	E	2	0	0	0	0
2	F	2	0	0	0	0
2	G	2	0	0	0	0
2	H	2	0	0	0	0
2	I	2	0	0	0	0
2	J	2	0	0	0	0
2	K	2	0	0	0	0
2	L	2	0	0	0	0
3	A	8	0	12	4	0
3	J	8	0	12	1	0
4	B	3	0	0	1	0
4	E	3	0	0	1	0
4	H	3	0	0	0	0
4	J	3	0	0	0	0
5	B	6	0	8	1	0
6	D	3	0	1	0	0
7	K	5	0	0	1	0
8	A	74	0	0	2	0
8	B	68	0	0	0	0
8	C	59	0	0	1	0
8	D	56	0	0	0	0
8	E	76	0	0	0	0
8	F	73	0	0	0	0
8	G	61	0	0	0	0
8	H	55	0	0	1	0
8	I	46	0	0	1	0
8	J	66	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	K	71	0	0	0	0
8	L	46	0	0	0	0
All	All	26408	0	24152	146	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 3.

The worst 5 of 146 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:H:45:ALA:HA	1:H:183:LYS:HG3	1.57	0.83
3:A:403:TRS:O2	3:A:403:TRS:O1	2.05	0.74
3:A:403:TRS:H22	8:H:549:HOH:O	1.88	0.72
1:A:293:SER:OG	1:C:229:GLU:OE1	2.06	0.72
1:D:116:THR:HG21	1:E:286:MET:HE3	1.73	0.70

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	281/322 (87%)	274 (98%)	7 (2%)	0	100 100
1	B	277/322 (86%)	270 (98%)	6 (2%)	1 (0%)	34 24
1	C	276/322 (86%)	270 (98%)	6 (2%)	0	100 100
1	D	276/322 (86%)	270 (98%)	6 (2%)	0	100 100
1	E	278/322 (86%)	273 (98%)	5 (2%)	0	100 100
1	F	273/322 (85%)	270 (99%)	3 (1%)	0	100 100
1	G	276/322 (86%)	266 (96%)	9 (3%)	1 (0%)	34 24
1	H	277/322 (86%)	269 (97%)	8 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	I	273/322 (85%)	267 (98%)	6 (2%)	0	100	100
1	J	278/322 (86%)	271 (98%)	7 (2%)	0	100	100
1	K	277/322 (86%)	271 (98%)	6 (2%)	0	100	100
1	L	273/322 (85%)	268 (98%)	5 (2%)	0	100	100
All	All	3315/3864 (86%)	3239 (98%)	74 (2%)	2 (0%)	51	42

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	120	LYS
1	G	160	VAL

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	224/249 (90%)	222 (99%)	2 (1%)	78	79
1	B	220/249 (88%)	216 (98%)	4 (2%)	59	55
1	C	220/249 (88%)	216 (98%)	4 (2%)	59	55
1	D	219/249 (88%)	216 (99%)	3 (1%)	67	65
1	E	221/249 (89%)	217 (98%)	4 (2%)	59	55
1	F	217/249 (87%)	215 (99%)	2 (1%)	78	79
1	G	219/249 (88%)	215 (98%)	4 (2%)	59	55
1	H	220/249 (88%)	218 (99%)	2 (1%)	78	79
1	I	217/249 (87%)	215 (99%)	2 (1%)	78	79
1	J	221/249 (89%)	219 (99%)	2 (1%)	78	79
1	K	220/249 (88%)	216 (98%)	4 (2%)	59	55
1	L	217/249 (87%)	216 (100%)	1 (0%)	88	89
All	All	2635/2988 (88%)	2601 (99%)	34 (1%)	71	68

5 of 34 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	240	ARG
1	K	160	VAL
1	K	253	ASP
1	D	240	ARG
1	D	224	MET

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

Mol	Chain	Res	Type
1	B	122	HIS
1	E	237	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 33 ligands modelled in this entry, 24 are monoatomic - leaving 9 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	AZI	H	403	-	0,2,2	-	-	0,1,1	-	-

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	FMT	D	403	-	2,2,2	0.70	0	1,1,1	0.50	0
4	AZI	J	403	-	0,2,2	-	-	0,1,1	-	-
4	AZI	E	403	-	0,2,2	-	-	0,1,1	-	-
3	TRS	A	403	-	7,7,7	0.28	0	9,9,9	0.77	0
7	SO4	K	403	-	4,4,4	0.30	0	6,6,6	0.08	0
4	AZI	B	403	-	0,2,2	-	-	0,1,1	-	-
5	GOL	B	404	-	5,5,5	0.20	0	5,5,5	0.20	0
3	TRS	J	404	-	7,7,7	0.35	0	9,9,9	0.76	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
5	GOL	B	404	-	-	4/4/4/4	-
3	TRS	A	403	-	-	6/9/9/9	-
3	TRS	J	404	-	-	9/9/9/9	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 19 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	403	TRS	C2-C-C1-O1
3	A	403	TRS	C3-C-C1-O1
3	A	403	TRS	N-C-C1-O1
3	A	403	TRS	C1-C-C2-O2
3	A	403	TRS	N-C-C2-O2

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	403	AZI	1	0
3	A	403	TRS	4	0
7	K	403	SO4	1	0
4	B	403	AZI	1	0
5	B	404	GOL	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	J	404	TRS	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 [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	281/322 (87%)	0.39	12 (4%) 35 38	15, 27, 40, 57	2 (0%)
1	B	278/322 (86%)	0.52	12 (4%) 35 38	16, 30, 48, 74	2 (0%)
1	C	275/322 (85%)	0.51	14 (5%) 28 31	16, 31, 47, 58	3 (1%)
1	D	278/322 (86%)	0.46	15 (5%) 25 29	15, 29, 46, 65	5 (1%)
1	E	278/322 (86%)	0.38	10 (3%) 42 45	16, 26, 40, 70	3 (1%)
1	F	275/322 (85%)	0.39	11 (4%) 38 41	15, 27, 41, 66	4 (1%)
1	G	278/322 (86%)	0.53	19 (6%) 17 19	17, 32, 49, 62	4 (1%)
1	H	278/322 (86%)	0.52	15 (5%) 25 29	17, 32, 49, 73	3 (1%)
1	I	275/322 (85%)	0.57	16 (5%) 23 25	17, 35, 49, 61	2 (0%)
1	J	280/322 (86%)	0.42	11 (3%) 39 42	15, 28, 41, 65	3 (1%)
1	K	278/322 (86%)	0.45	14 (5%) 28 32	14, 28, 47, 76	2 (0%)
1	L	275/322 (85%)	0.52	17 (6%) 20 23	18, 34, 50, 58	4 (1%)
All	All	3329/3864 (86%)	0.47	166 (4%) 28 32	14, 30, 47, 76	37 (1%)

The worst 5 of 166 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	40	ALA	8.8
1	E	40	ALA	8.0
1	D	40	ALA	7.1
1	E	317	PRO	7.1
1	B	317	PRO	7.0

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 monosaccharides 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(Å ²)	Q<0.9
3	TRS	J	404	8/8	0.84	0.33	33,35,39,41	0
3	TRS	A	403	8/8	0.88	0.32	32,35,40,44	0
4	AZI	J	403	3/3	0.90	0.26	22,22,23,30	0
4	AZI	E	403	3/3	0.91	0.22	28,28,30,31	0
5	GOL	B	404	6/6	0.91	0.15	35,38,42,43	0
6	FMT	D	403	3/3	0.92	0.13	34,34,40,40	0
4	AZI	H	403	3/3	0.94	0.27	19,19,22,25	0
4	AZI	B	403	3/3	0.95	0.25	19,19,25,27	0
7	SO4	K	403	5/5	0.97	0.29	66,66,69,70	0
2	CU	I	401	1/1	0.99	0.09	32,32,32,32	1
2	CU	J	402	1/1	0.99	0.10	39,39,39,39	0
2	CU	L	401	1/1	0.99	0.10	33,33,33,33	1
2	CU	D	402	1/1	0.99	0.10	32,32,32,32	0
2	CU	G	402	1/1	1.00	0.10	32,32,32,32	0
2	CU	H	401	1/1	1.00	0.11	20,20,20,20	0
2	CU	H	402	1/1	1.00	0.11	33,33,33,33	1
2	CU	A	402	1/1	1.00	0.11	29,29,29,29	1
2	CU	I	402	1/1	1.00	0.13	22,22,22,22	0
2	CU	J	401	1/1	1.00	0.12	21,21,21,21	0
2	CU	B	401	1/1	1.00	0.14	23,23,23,23	0
2	CU	K	401	1/1	1.00	0.13	21,21,21,21	0
2	CU	K	402	1/1	1.00	0.10	30,30,30,30	1
2	CU	B	402	1/1	1.00	0.10	34,34,34,34	1
2	CU	L	402	1/1	1.00	0.12	25,25,25,25	0
2	CU	C	401	1/1	1.00	0.09	29,29,29,29	1
2	CU	C	402	1/1	1.00	0.13	22,22,22,22	0
2	CU	D	401	1/1	1.00	0.13	22,22,22,22	0
2	CU	A	401	1/1	1.00	0.14	18,18,18,18	0
2	CU	E	401	1/1	1.00	0.11	20,20,20,20	0
2	CU	E	402	1/1	1.00	0.13	24,24,24,24	1
2	CU	F	401	1/1	1.00	0.10	28,28,28,28	1
2	CU	F	402	1/1	1.00	0.12	21,21,21,21	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	CU	G	401	1/1	1.00	0.12	22,22,22,22	0

6.5 Other polymers [i](#)

There are no such residues in this entry.