



wwPDB X-ray Structure Validation Summary Report ⓘ

May 15, 2020 – 06:48 am BST

PDB ID : 4B0J
Title : Crystal Structure of 3-hydroxydecanoyl-Acyl Carrier Protein Dehydratase (FabA) from Pseudomonas aeruginosa in complex with 5-(2- thienyl)-3-isoxaz
olyl methanol
Authors : Moynie, L.; McMahon, S.A.; Duthie, F.G.; Naismith, J.H.
Deposited on : 2012-07-02
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

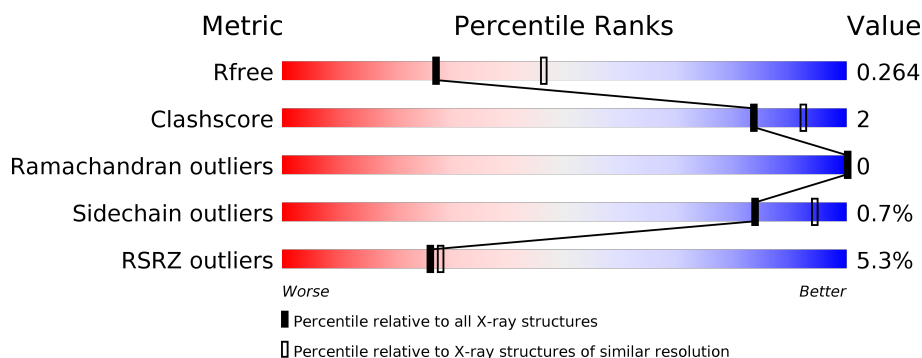
1 Overall quality at a glance

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	171	<div> <div>4%</div> <div> <div></div> <div>92%</div> <div>5%</div> </div> </div>
1	B	171	<div> <div>6%</div> <div> <div></div> <div>95%</div> <div>5%</div> </div> </div>
1	C	171	<div> <div>5%</div> <div> <div></div> <div>95%</div> <div></div> </div> </div>
1	D	171	<div> <div>8%</div> <div> <div></div> <div>94%</div> <div>5%</div> </div> </div>
1	E	171	<div> <div>4%</div> <div> <div></div> <div>93%</div> <div>5%</div> </div> </div>
1	F	171	<div> <div>4%</div> <div> <div></div> <div>94%</div> <div>5%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	G	171	
1	H	171	
1	I	171	
1	J	171	
1	K	171	
1	L	171	
1	M	171	
1	N	171	
1	O	171	
1	P	171	
1	Q	171	
1	R	171	
1	S	171	
1	T	171	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 27044 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 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE.

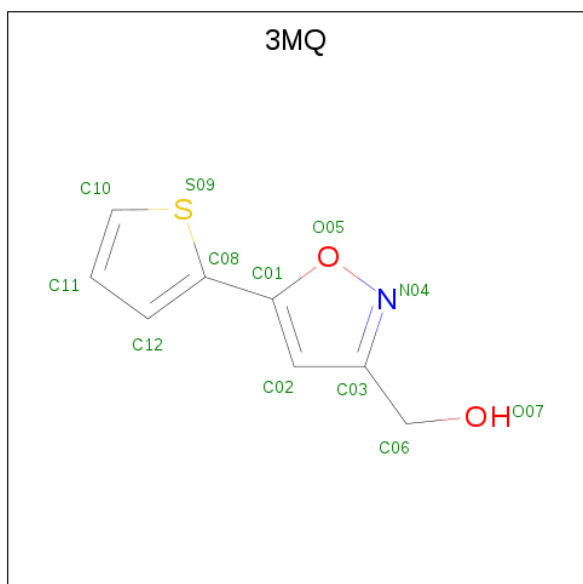
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	167	Total	C	N	O	S	0	0	0
			1287	825	222	233	7			
1	B	170	Total	C	N	O	S	0	0	0
			1312	838	229	238	7			
1	C	168	Total	C	N	O	S	0	0	0
			1295	829	224	235	7			
1	D	170	Total	C	N	O	S	0	0	0
			1312	838	229	238	7			
1	E	168	Total	C	N	O	S	0	0	0
			1295	829	224	235	7			
1	F	169	Total	C	N	O	S	0	0	0
			1306	835	228	236	7			
1	G	166	Total	C	N	O	S	0	0	0
			1279	819	221	232	7			
1	H	167	Total	C	N	O	S	0	0	0
			1287	825	222	233	7			
1	I	169	Total	C	N	O	S	0	0	0
			1306	835	228	236	7			
1	J	168	Total	C	N	O	S	0	0	0
			1295	829	224	235	7			
1	K	169	Total	C	N	O	S	0	0	0
			1306	835	228	236	7			
1	L	170	Total	C	N	O	S	0	0	0
			1312	838	229	238	7			
1	M	168	Total	C	N	O	S	0	0	0
			1295	829	224	235	7			
1	N	168	Total	C	N	O	S	0	0	0
			1298	829	227	235	7			
1	O	170	Total	C	N	O	S	0	0	0
			1312	838	229	238	7			
1	P	170	Total	C	N	O	S	0	0	0
			1312	838	229	238	7			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	168	Total	C	N	O	S	0	0	0
			1295	829	224	235	7			
1	R	167	Total	C	N	O	S	0	0	0
			1287	825	222	233	7			
1	S	167	Total	C	N	O	S	0	0	0
			1287	825	222	233	7			
1	T	167	Total	C	N	O	S	0	0	0
			1287	825	222	233	7			

- Molecule 2 is (5-thiophen-2-ylisoxazol-3-yl)methanol (three-letter code: 3MQ) (formula: C₈H₇NO₂S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	B	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	C	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	D	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	E	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	F	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	G	1	Total	C	N	O	S	0	0
			12	8	1	2	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	H	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	I	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	J	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	K	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	L	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	M	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	N	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	O	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	P	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	Q	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	R	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	S	1	Total	C	N	O	S	0	0
			12	8	1	2	1		
2	T	1	Total	C	N	O	S	0	0
			12	8	1	2	1		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	57	Total	O	0	0
			57	57		
3	B	41	Total	O	0	0
			41	41		
3	C	60	Total	O	0	0
			60	60		
3	D	35	Total	O	0	0
			35	35		
3	E	41	Total	O	0	0
			41	41		
3	F	35	Total	O	0	0
			35	35		

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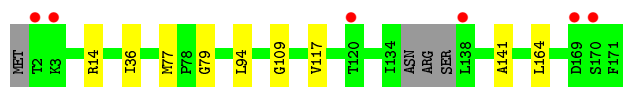
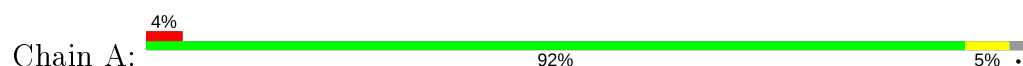
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	G	42	Total 42	O 42	0	0
3	H	40	Total 40	O 40	0	0
3	I	68	Total 68	O 68	0	0
3	J	54	Total 54	O 54	0	0
3	K	43	Total 43	O 43	0	0
3	L	43	Total 43	O 43	0	0
3	M	51	Total 51	O 51	0	0
3	N	41	Total 41	O 41	0	0
3	O	44	Total 44	O 44	0	0
3	P	33	Total 33	O 33	0	0
3	Q	30	Total 30	O 30	0	0
3	R	29	Total 29	O 29	0	0
3	S	30	Total 30	O 30	0	0
3	T	22	Total 22	O 22	0	0

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.

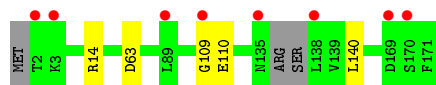
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- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



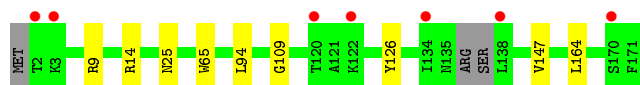
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- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



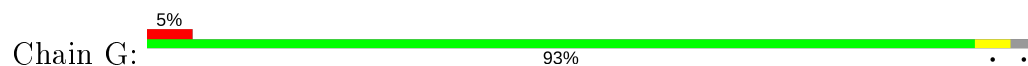
- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



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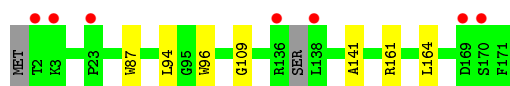
- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



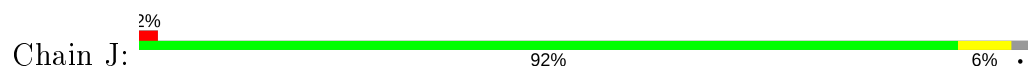
- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



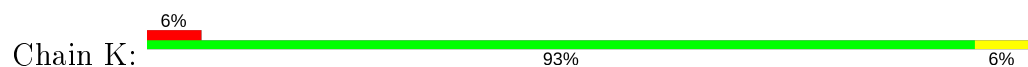
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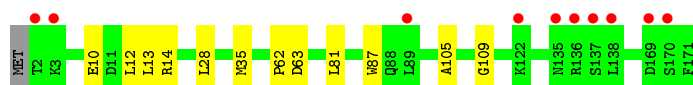
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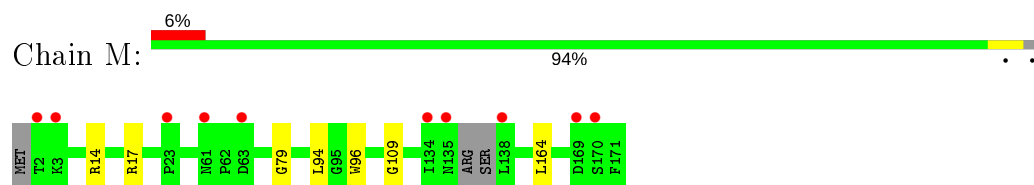
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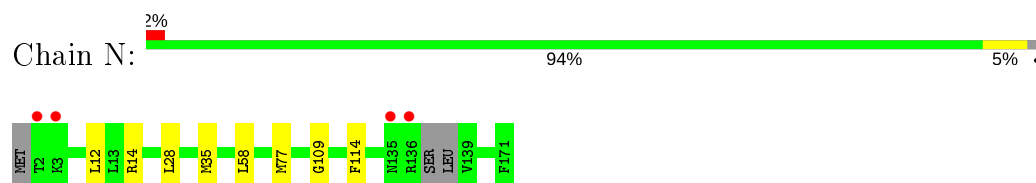
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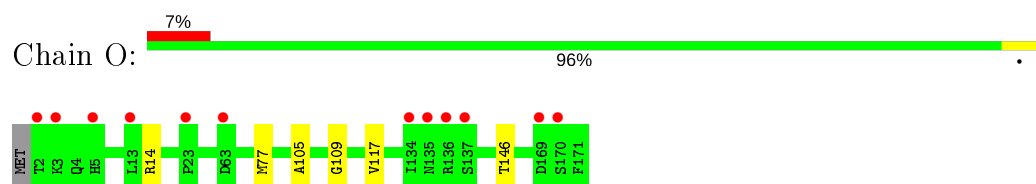
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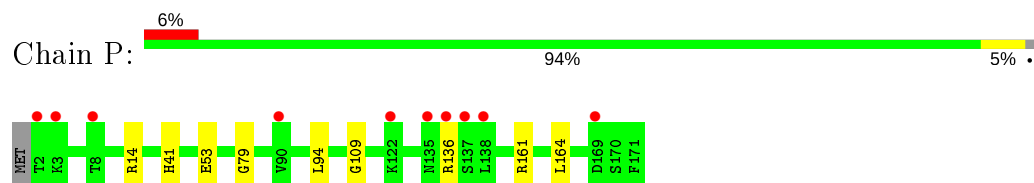
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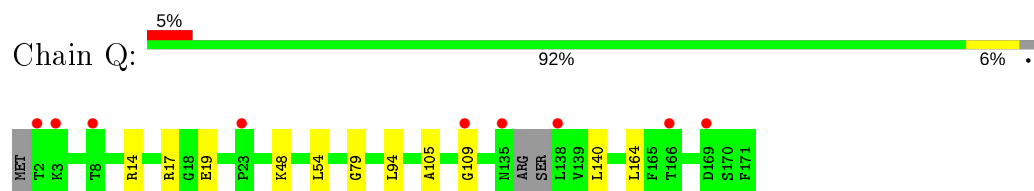
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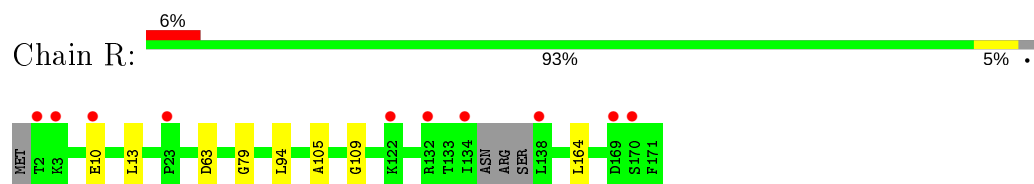
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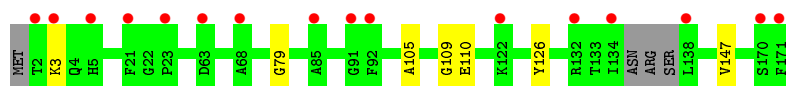


- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE

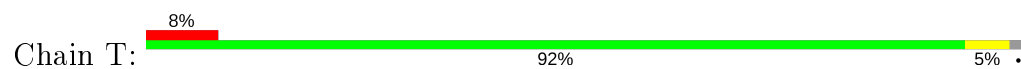


- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE





- Molecule 1: 3-HYDROXYDECANOYL-[ACYL-CARRIER-PROTEIN] DEHYDRATASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	109.75Å 108.17Å 201.77Å 90.00° 103.22° 90.00°	Depositor
Resolution (Å)	23.95 – 2.50 23.95 – 2.50	Depositor EDS
% Data completeness (in resolution range)	96.9 (23.95-2.50) 97.0 (23.95-2.50)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.45 (at 2.50Å)	Xtriage
Refinement program	REFMAC 5.6.0119	Depositor
R, R_{free}	0.233 , 0.265 0.236 , 0.264	Depositor DCC
R_{free} test set	7798 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	33.6	Xtriage
Anisotropy	0.598	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 40.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.000 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	27044	wwPDB-VP
Average B, all atoms (Å ²)	56.0	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 45.95 % 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 1.2281e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 3MQ

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	0.56	0/1317	0.69	0/1779
1	B	0.57	1/1343 (0.1%)	0.69	0/1815
1	C	0.53	0/1325	0.64	0/1790
1	D	0.55	0/1343	0.66	0/1815
1	E	0.56	1/1325 (0.1%)	0.65	0/1790
1	F	0.54	0/1336	0.67	0/1804
1	G	0.55	0/1309	0.64	0/1768
1	H	0.52	0/1317	0.64	0/1779
1	I	0.60	2/1336 (0.1%)	0.67	0/1804
1	J	0.56	0/1325	0.69	0/1790
1	K	0.55	0/1336	0.73	2/1804 (0.1%)
1	L	0.57	1/1343 (0.1%)	0.68	1/1815 (0.1%)
1	M	0.59	1/1325 (0.1%)	0.68	0/1790
1	N	0.54	0/1328	0.68	0/1793
1	O	0.53	0/1343	0.66	0/1815
1	P	0.56	0/1343	0.67	0/1815
1	Q	0.54	0/1325	0.65	0/1790
1	R	0.55	0/1317	0.65	0/1779
1	S	0.51	0/1317	0.64	0/1779
1	T	0.53	0/1317	0.67	0/1779
All	All	0.55	6/26570 (0.0%)	0.67	3/35893 (0.0%)

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	65	TRP	CD2-CE2	5.50	1.48	1.41
1	M	96	TRP	CD2-CE2	5.36	1.47	1.41
1	B	87	TRP	CD2-CE2	5.27	1.47	1.41
1	I	96	TRP	CD2-CE2	5.17	1.47	1.41
1	I	87	TRP	CD2-CE2	5.13	1.47	1.41

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	K	169	ASP	CB-CG-OD1	-9.15	110.07	118.30
1	K	169	ASP	CB-CG-OD2	8.22	125.70	118.30
1	L	10	GLU	CB-CA-C	-6.35	97.69	110.40

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	1287	0	1272	7	0
1	B	1312	0	1297	7	0
1	C	1295	0	1278	4	0
1	D	1312	0	1297	7	0
1	E	1295	0	1278	6	0
1	F	1306	0	1291	8	0
1	G	1279	0	1261	6	0
1	H	1287	0	1272	8	0
1	I	1306	0	1291	4	0
1	J	1295	0	1278	6	0
1	K	1306	0	1291	6	0
1	L	1312	0	1297	17	0
1	M	1295	0	1278	4	0
1	N	1298	0	1280	11	0
1	O	1312	0	1297	5	0
1	P	1312	0	1297	8	0
1	Q	1295	0	1278	9	1
1	R	1287	0	1272	18	0
1	S	1287	0	1272	5	0
1	T	1287	0	1272	7	1
2	A	12	0	7	3	0
2	B	12	0	7	0	0
2	C	12	0	7	0	0
2	D	12	0	7	1	0
2	E	12	0	7	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	F	12	0	7	0	0
2	G	12	0	7	2	0
2	H	12	0	7	1	0
2	I	12	0	7	1	0
2	J	12	0	7	0	0
2	K	12	0	7	1	0
2	L	12	0	7	0	0
2	M	12	0	7	1	0
2	N	12	0	7	0	0
2	O	12	0	7	0	0
2	P	12	0	7	3	0
2	Q	12	0	7	2	0
2	R	12	0	7	3	0
2	S	12	0	7	3	0
2	T	12	0	7	2	0
3	A	57	0	0	0	0
3	B	41	0	0	3	0
3	C	60	0	0	1	0
3	D	35	0	0	1	0
3	E	41	0	0	2	0
3	F	35	0	0	2	0
3	G	42	0	0	1	0
3	H	40	0	0	2	0
3	I	68	0	0	1	0
3	J	54	0	0	0	0
3	K	43	0	0	0	0
3	L	43	0	0	0	0
3	M	51	0	0	1	0
3	N	41	0	0	0	0
3	O	44	0	0	1	0
3	P	33	0	0	4	0
3	Q	30	0	0	1	0
3	R	29	0	0	0	0
3	S	30	0	0	0	0
3	T	22	0	0	0	0
All	All	27044	0	25789	127	1

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.

The worst 5 of 127 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:2:THR:HG21	3:B:2013:HOH:O	1.52	1.07
1:L:63:ASP:OD2	1:R:13:LEU:HD12	1.52	1.06
1:L:13:LEU:HD12	1:R:63:ASP:OD2	1.65	0.96
1:B:2:THR:CG2	3:B:2013:HOH:O	2.08	0.95
1:L:63:ASP:CG	1:R:10:GLU:OE2	2.15	0.84

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:19:GLU:O	1:T:169:ASP:OD2[2_647]	2.17	0.03

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	163/171 (95%)	159 (98%)	4 (2%)	0	100	100
1	B	168/171 (98%)	161 (96%)	7 (4%)	0	100	100
1	C	164/171 (96%)	160 (98%)	4 (2%)	0	100	100
1	D	168/171 (98%)	162 (96%)	6 (4%)	0	100	100
1	E	164/171 (96%)	160 (98%)	4 (2%)	0	100	100
1	F	165/171 (96%)	161 (98%)	4 (2%)	0	100	100
1	G	162/171 (95%)	157 (97%)	5 (3%)	0	100	100
1	H	163/171 (95%)	159 (98%)	4 (2%)	0	100	100
1	I	165/171 (96%)	160 (97%)	5 (3%)	0	100	100
1	J	164/171 (96%)	160 (98%)	4 (2%)	0	100	100
1	K	165/171 (96%)	161 (98%)	4 (2%)	0	100	100
1	L	168/171 (98%)	161 (96%)	7 (4%)	0	100	100
1	M	164/171 (96%)	159 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	N	164/171 (96%)	159 (97%)	5 (3%)	0	100	100
1	O	168/171 (98%)	161 (96%)	7 (4%)	0	100	100
1	P	168/171 (98%)	161 (96%)	7 (4%)	0	100	100
1	Q	164/171 (96%)	159 (97%)	5 (3%)	0	100	100
1	R	163/171 (95%)	159 (98%)	4 (2%)	0	100	100
1	S	163/171 (95%)	159 (98%)	4 (2%)	0	100	100
1	T	163/171 (95%)	159 (98%)	4 (2%)	0	100	100
All	All	3296/3420 (96%)	3197 (97%)	99 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	134/138 (97%)	132 (98%)	2 (2%)	65	85
1	B	137/138 (99%)	136 (99%)	1 (1%)	84	94
1	C	135/138 (98%)	134 (99%)	1 (1%)	84	94
1	D	137/138 (99%)	136 (99%)	1 (1%)	84	94
1	E	135/138 (98%)	134 (99%)	1 (1%)	84	94
1	F	136/138 (99%)	135 (99%)	1 (1%)	84	94
1	G	133/138 (96%)	133 (100%)	0	100	100
1	H	134/138 (97%)	133 (99%)	1 (1%)	84	94
1	I	136/138 (99%)	136 (100%)	0	100	100
1	J	135/138 (98%)	134 (99%)	1 (1%)	84	94
1	K	136/138 (99%)	136 (100%)	0	100	100
1	L	137/138 (99%)	136 (99%)	1 (1%)	84	94
1	M	135/138 (98%)	134 (99%)	1 (1%)	84	94
1	N	135/138 (98%)	134 (99%)	1 (1%)	84	94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	O	137/138 (99%)	136 (99%)	1 (1%)	84	94
1	P	137/138 (99%)	135 (98%)	2 (2%)	65	85
1	Q	135/138 (98%)	134 (99%)	1 (1%)	84	94
1	R	134/138 (97%)	134 (100%)	0	100	100
1	S	134/138 (97%)	133 (99%)	1 (1%)	84	94
1	T	134/138 (97%)	133 (99%)	1 (1%)	84	94
All	All	2706/2760 (98%)	2688 (99%)	18 (1%)	84	94

5 of 18 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	14	ARG
1	L	14	ARG
1	P	136	ARG
1	F	14	ARG
1	H	14	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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](#)

20 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	3MQ	I	1172	-	9,13,13	1.59	2 (22%)	6,17,17	4.64	3 (50%)
2	3MQ	O	1172	-	9,13,13	2.66	2 (22%)	6,17,17	4.03	3 (50%)
2	3MQ	B	1172	-	9,13,13	1.78	2 (22%)	6,17,17	4.20	5 (83%)
2	3MQ	M	1172	-	9,13,13	1.87	3 (33%)	6,17,17	4.75	5 (83%)
2	3MQ	S	1172	-	9,13,13	2.79	4 (44%)	6,17,17	5.06	4 (66%)
2	3MQ	F	1172	-	9,13,13	2.08	2 (22%)	6,17,17	4.27	4 (66%)
2	3MQ	Q	1172	-	9,13,13	2.09	3 (33%)	6,17,17	4.35	4 (66%)
2	3MQ	D	1172	-	9,13,13	2.67	4 (44%)	6,17,17	4.48	4 (66%)
2	3MQ	J	1172	-	9,13,13	2.28	3 (33%)	6,17,17	4.43	4 (66%)
2	3MQ	H	1172	-	9,13,13	2.33	2 (22%)	6,17,17	3.88	4 (66%)
2	3MQ	N	1172	-	9,13,13	2.55	3 (33%)	6,17,17	4.43	4 (66%)
2	3MQ	L	1172	-	9,13,13	2.97	3 (33%)	6,17,17	4.80	4 (66%)
2	3MQ	R	1172	-	9,13,13	2.30	3 (33%)	6,17,17	4.95	4 (66%)
2	3MQ	P	1172	-	9,13,13	1.75	2 (22%)	6,17,17	4.51	4 (66%)
2	3MQ	C	1172	-	9,13,13	1.61	1 (11%)	6,17,17	4.16	4 (66%)
2	3MQ	A	1172	-	9,13,13	2.01	3 (33%)	6,17,17	4.16	4 (66%)
2	3MQ	T	1172	-	9,13,13	1.82	2 (22%)	6,17,17	5.16	4 (66%)
2	3MQ	G	1172	-	9,13,13	2.10	3 (33%)	6,17,17	5.00	3 (50%)
2	3MQ	E	1172	-	9,13,13	1.82	2 (22%)	6,17,17	3.42	1 (16%)
2	3MQ	K	1172	-	9,13,13	2.20	2 (22%)	6,17,17	3.97	3 (50%)

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	3MQ	I	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	O	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	B	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	M	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	S	1172	-	-	0/1/6/6	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	3MQ	F	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	Q	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	D	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	J	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	H	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	N	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	L	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	R	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	P	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	C	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	A	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	T	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	G	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	E	1172	-	-	1/1/6/6	0/2/2/2
2	3MQ	K	1172	-	-	1/1/6/6	0/2/2/2

The worst 5 of 51 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	L	1172	3MQ	C08-S09	-7.72	1.65	1.72
2	O	1172	3MQ	C08-S09	-7.19	1.65	1.72
2	N	1172	3MQ	C08-S09	-5.91	1.66	1.72
2	S	1172	3MQ	C06-C03	5.76	1.60	1.51
2	H	1172	3MQ	C08-S09	-5.39	1.67	1.72

The worst 5 of 75 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	T	1172	3MQ	C11-C10-S09	-10.04	104.83	112.98
2	G	1172	3MQ	C11-C10-S09	-9.94	104.91	112.98
2	M	1172	3MQ	C11-C10-S09	-9.44	105.32	112.98
2	O	1172	3MQ	C11-C10-S09	-9.21	105.51	112.98
2	L	1172	3MQ	C11-C10-S09	-9.17	105.54	112.98

There are no chirality outliers.

5 of 19 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	I	1172	3MQ	C02-C01-C08-S09
2	O	1172	3MQ	C02-C01-C08-S09
2	B	1172	3MQ	C02-C01-C08-S09

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Mol	Chain	Res	Type	Atoms
2	M	1172	3MQ	C02-C01-C08-S09
2	F	1172	3MQ	C02-C01-C08-S09

There are no ring outliers.

12 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	I	1172	3MQ	1	0
2	M	1172	3MQ	1	0
2	S	1172	3MQ	3	0
2	Q	1172	3MQ	2	0
2	D	1172	3MQ	1	0
2	H	1172	3MQ	1	0
2	R	1172	3MQ	3	0
2	P	1172	3MQ	3	0
2	A	1172	3MQ	3	0
2	T	1172	3MQ	2	0
2	G	1172	3MQ	2	0
2	K	1172	3MQ	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	167/171 (97%)	0.14	6 (3%) 42 46	37, 49, 65, 106	0
1	B	170/171 (99%)	0.35	10 (5%) 22 23	37, 51, 72, 138	0
1	C	168/171 (98%)	0.23	8 (4%) 30 32	43, 55, 75, 104	0
1	D	170/171 (99%)	0.47	13 (7%) 13 14	43, 58, 92, 133	0
1	E	168/171 (98%)	0.32	7 (4%) 36 39	40, 51, 72, 109	0
1	F	169/171 (98%)	0.18	6 (3%) 42 46	39, 51, 71, 129	0
1	G	166/171 (97%)	0.36	9 (5%) 25 27	45, 57, 76, 125	0
1	H	167/171 (97%)	0.29	6 (3%) 42 46	44, 56, 76, 119	0
1	I	169/171 (98%)	0.28	7 (4%) 37 40	36, 47, 65, 125	0
1	J	168/171 (98%)	0.07	4 (2%) 59 62	35, 46, 64, 103	0
1	K	169/171 (98%)	0.33	10 (5%) 22 23	41, 55, 75, 148	0
1	L	170/171 (99%)	0.24	10 (5%) 22 23	39, 51, 68, 129	0
1	M	168/171 (98%)	0.23	10 (5%) 21 22	38, 48, 67, 107	0
1	N	168/171 (98%)	0.14	4 (2%) 59 62	37, 48, 70, 126	0
1	O	170/171 (99%)	0.49	12 (7%) 16 16	43, 56, 83, 133	0
1	P	170/171 (99%)	0.45	10 (5%) 22 23	46, 55, 75, 125	0
1	Q	168/171 (98%)	0.45	9 (5%) 25 27	39, 55, 80, 138	0
1	R	167/171 (97%)	0.27	10 (5%) 21 22	40, 54, 75, 117	0
1	S	167/171 (97%)	0.61	16 (9%) 8 7	49, 62, 82, 107	0
1	T	167/171 (97%)	0.51	13 (7%) 13 13	44, 59, 88, 140	0
All	All	3366/3420 (98%)	0.32	180 (5%) 26 28	35, 53, 78, 148	0

The worst 5 of 180 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	2	THR	8.2
1	P	136	ARG	8.2
1	T	2	THR	7.3
1	B	136	ARG	6.8
1	Q	2	THR	6.5

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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	3MQ	S	1172	12/12	0.73	0.27	61,73,76,76	0
2	3MQ	Q	1172	12/12	0.80	0.23	56,63,68,70	0
2	3MQ	R	1172	12/12	0.84	0.20	58,64,69,72	0
2	3MQ	T	1172	12/12	0.84	0.23	65,75,77,80	0
2	3MQ	H	1172	12/12	0.85	0.20	57,61,65,65	0
2	3MQ	F	1172	12/12	0.85	0.20	53,57,66,69	0
2	3MQ	P	1172	12/12	0.85	0.21	52,65,70,76	0
2	3MQ	J	1172	12/12	0.85	0.20	43,51,63,65	0
2	3MQ	N	1172	12/12	0.86	0.22	48,53,60,66	0
2	3MQ	G	1172	12/12	0.86	0.25	49,61,65,66	0
2	3MQ	D	1172	12/12	0.87	0.20	53,57,62,67	0
2	3MQ	M	1172	12/12	0.88	0.20	41,54,63,75	0
2	3MQ	B	1172	12/12	0.89	0.18	49,54,60,75	0
2	3MQ	A	1172	12/12	0.89	0.18	39,49,61,73	0
2	3MQ	O	1172	12/12	0.91	0.18	51,60,66,67	0
2	3MQ	E	1172	12/12	0.92	0.19	49,58,61,64	0
2	3MQ	K	1172	12/12	0.92	0.17	53,55,58,61	0
2	3MQ	L	1172	12/12	0.93	0.17	53,56,60,70	0
2	3MQ	I	1172	12/12	0.93	0.13	47,52,57,63	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	3MQ	C	1172	12/12	0.94	0.15	49,60,66,72	0

6.5 Other polymers [i](#)

There are no such residues in this entry.