



Full wwPDB X-ray Structure Validation Report ⓘ

Jul 12, 2016 – 08:25 PM EDT

PDB ID : 5ESD
Title : Crystal Structure of M. tuberculosis MenD bound to ThDP and Mn²⁺
Authors : Johnston, J.M.; Jirgis, E.N.M.; Bashiri, G.; Bulloch, E.M.M.; Baker, E.N.
Deposited on : 2015-11-16
Resolution : 2.25 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/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 : 1.7.1 (RC1), CSD as537be (2016)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20027790
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20027790

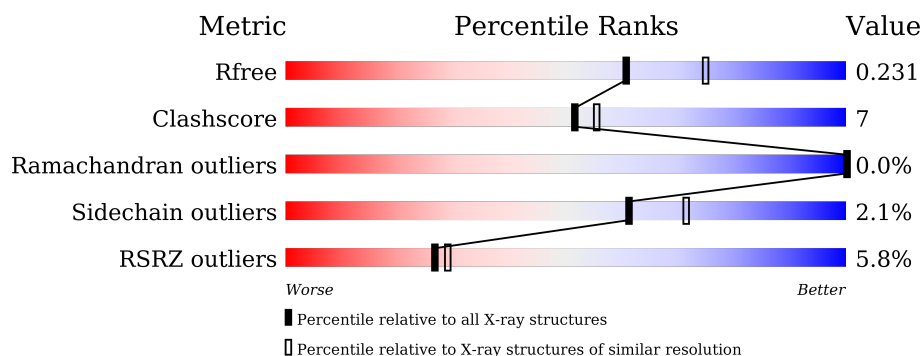
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.25 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}	91344	1640 (2.28-2.24)
Clashscore	102246	1095 (2.26-2.26)
Ramachandran outliers	100387	1063 (2.26-2.26)
Sidechain outliers	100360	1063 (2.26-2.26)
RSRZ outliers	91569	1647 (2.28-2.24)

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. 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	574	<div> <div>5%</div> <div> <div></div> <div>81%</div> <div>13%</div> <div>6%</div> </div> </div>
1	B	574	<div> <div>4%</div> <div> <div></div> <div>80%</div> <div>12%</div> <div>7%</div> </div> </div>
1	C	574	<div> <div>6%</div> <div> <div></div> <div>76%</div> <div>18%</div> <div>6%</div> </div> </div>
1	D	574	<div> <div>7%</div> <div> <div></div> <div>79%</div> <div>13%</div> <div>6%</div> </div> </div>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 16446 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 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	539	Total	C	N	O	S	0	2	0
			3968	2476	737	743	12			
1	B	532	Total	C	N	O	S	0	3	0
			3934	2454	737	732	11			
1	C	540	Total	C	N	O	S	0	1	0
			3976	2478	740	748	10			
1	D	541	Total	C	N	O	S	0	0	0
			3979	2480	741	748	10			

There are 80 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP P9WK11
A	-18	GLY	-	expression tag	UNP P9WK11
A	-17	SER	-	expression tag	UNP P9WK11
A	-16	SER	-	expression tag	UNP P9WK11
A	-15	HIS	-	expression tag	UNP P9WK11
A	-14	HIS	-	expression tag	UNP P9WK11
A	-13	HIS	-	expression tag	UNP P9WK11
A	-12	HIS	-	expression tag	UNP P9WK11
A	-11	HIS	-	expression tag	UNP P9WK11
A	-10	HIS	-	expression tag	UNP P9WK11
A	-9	SER	-	expression tag	UNP P9WK11
A	-8	SER	-	expression tag	UNP P9WK11
A	-7	GLY	-	expression tag	UNP P9WK11
A	-6	LEU	-	expression tag	UNP P9WK11
A	-5	VAL	-	expression tag	UNP P9WK11
A	-4	PRO	-	expression tag	UNP P9WK11
A	-3	ARG	-	expression tag	UNP P9WK11
A	-2	GLY	-	expression tag	UNP P9WK11
A	-1	SER	-	expression tag	UNP P9WK11
A	0	HIS	-	expression tag	UNP P9WK11

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-19	MET	-	initiating methionine	UNP P9WK11
B	-18	GLY	-	expression tag	UNP P9WK11
B	-17	SER	-	expression tag	UNP P9WK11
B	-16	SER	-	expression tag	UNP P9WK11
B	-15	HIS	-	expression tag	UNP P9WK11
B	-14	HIS	-	expression tag	UNP P9WK11
B	-13	HIS	-	expression tag	UNP P9WK11
B	-12	HIS	-	expression tag	UNP P9WK11
B	-11	HIS	-	expression tag	UNP P9WK11
B	-10	HIS	-	expression tag	UNP P9WK11
B	-9	SER	-	expression tag	UNP P9WK11
B	-8	SER	-	expression tag	UNP P9WK11
B	-7	GLY	-	expression tag	UNP P9WK11
B	-6	LEU	-	expression tag	UNP P9WK11
B	-5	VAL	-	expression tag	UNP P9WK11
B	-4	PRO	-	expression tag	UNP P9WK11
B	-3	ARG	-	expression tag	UNP P9WK11
B	-2	GLY	-	expression tag	UNP P9WK11
B	-1	SER	-	expression tag	UNP P9WK11
B	0	HIS	-	expression tag	UNP P9WK11
C	-19	MET	-	initiating methionine	UNP P9WK11
C	-18	GLY	-	expression tag	UNP P9WK11
C	-17	SER	-	expression tag	UNP P9WK11
C	-16	SER	-	expression tag	UNP P9WK11
C	-15	HIS	-	expression tag	UNP P9WK11
C	-14	HIS	-	expression tag	UNP P9WK11
C	-13	HIS	-	expression tag	UNP P9WK11
C	-12	HIS	-	expression tag	UNP P9WK11
C	-11	HIS	-	expression tag	UNP P9WK11
C	-10	HIS	-	expression tag	UNP P9WK11
C	-9	SER	-	expression tag	UNP P9WK11
C	-8	SER	-	expression tag	UNP P9WK11
C	-7	GLY	-	expression tag	UNP P9WK11
C	-6	LEU	-	expression tag	UNP P9WK11
C	-5	VAL	-	expression tag	UNP P9WK11
C	-4	PRO	-	expression tag	UNP P9WK11
C	-3	ARG	-	expression tag	UNP P9WK11
C	-2	GLY	-	expression tag	UNP P9WK11
C	-1	SER	-	expression tag	UNP P9WK11
C	0	HIS	-	expression tag	UNP P9WK11
D	-19	MET	-	initiating methionine	UNP P9WK11
D	-18	GLY	-	expression tag	UNP P9WK11

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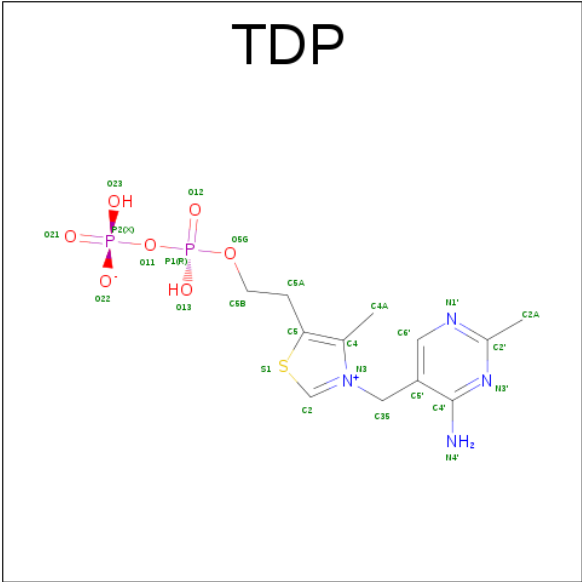
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Chain	Residue	Modelled	Actual	Comment	Reference
D	-17	SER	-	expression tag	UNP P9WK11
D	-16	SER	-	expression tag	UNP P9WK11
D	-15	HIS	-	expression tag	UNP P9WK11
D	-14	HIS	-	expression tag	UNP P9WK11
D	-13	HIS	-	expression tag	UNP P9WK11
D	-12	HIS	-	expression tag	UNP P9WK11
D	-11	HIS	-	expression tag	UNP P9WK11
D	-10	HIS	-	expression tag	UNP P9WK11
D	-9	SER	-	expression tag	UNP P9WK11
D	-8	SER	-	expression tag	UNP P9WK11
D	-7	GLY	-	expression tag	UNP P9WK11
D	-6	LEU	-	expression tag	UNP P9WK11
D	-5	VAL	-	expression tag	UNP P9WK11
D	-4	PRO	-	expression tag	UNP P9WK11
D	-3	ARG	-	expression tag	UNP P9WK11
D	-2	GLY	-	expression tag	UNP P9WK11
D	-1	SER	-	expression tag	UNP P9WK11
D	0	HIS	-	expression tag	UNP P9WK11

- Molecule 2 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total Mn 1 1	0	0
2	A	1	Total Mn 1 1	0	0
2	D	1	Total Mn 1 1	0	0
2	C	1	Total Mn 1 1	0	0

- Molecule 3 is THIAMIN DIPHOSPHATE (three-letter code: TDP) (formula: C₁₂H₁₈N₄O₇P₂S).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	S	0	0
			26	12	4	7	2	1		
3	B	1	Total	C	N	O	P	S	0	0
			26	12	4	7	2	1		
3	C	1	Total	C	N	O	P	S	0	0
			26	12	4	7	2	1		
3	D	1	Total	C	N	O	P	S	0	0
			26	12	4	7	2	1		

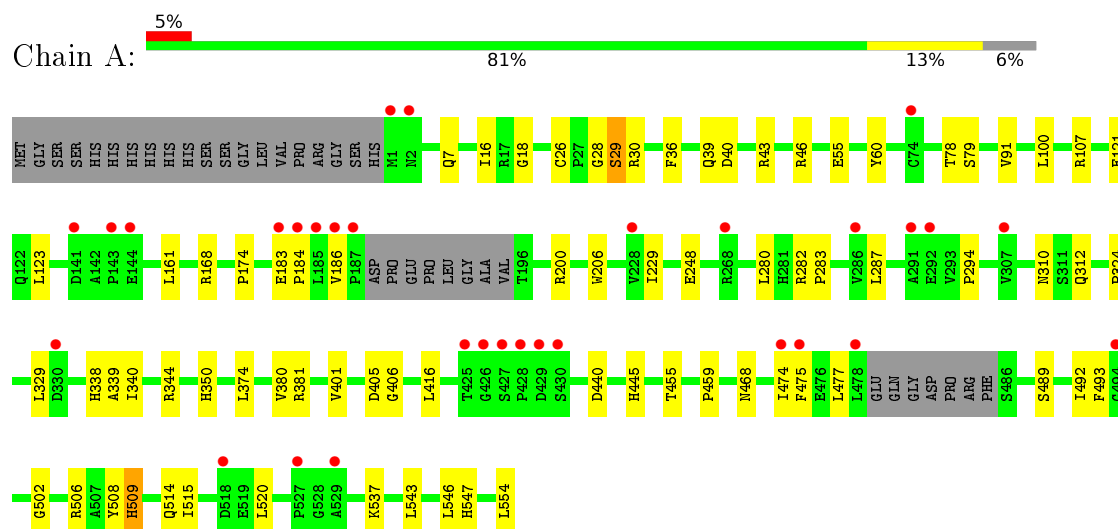
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	124	Total	O	0	0
			124	124		
4	B	125	Total	O	0	0
			125	125		
4	C	104	Total	O	0	0
			104	104		
4	D	128	Total	O	0	0
			128	128		

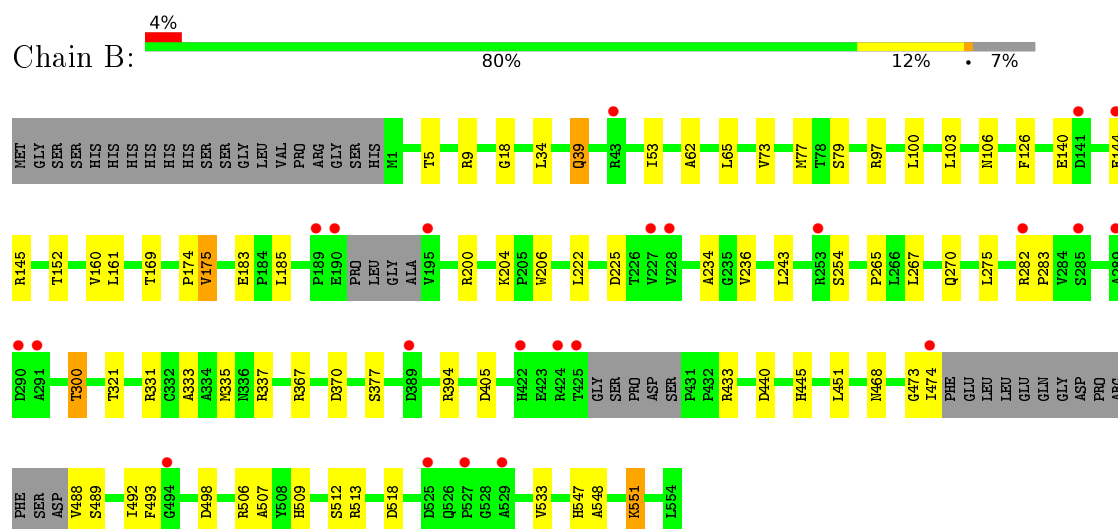
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

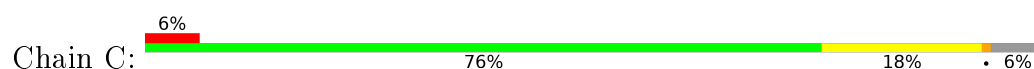
- Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

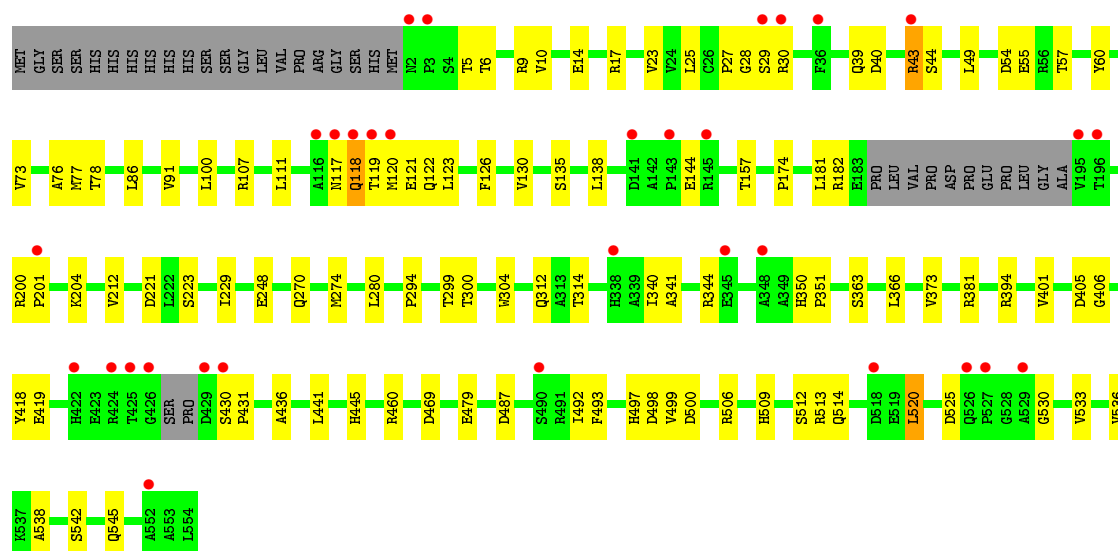


- Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

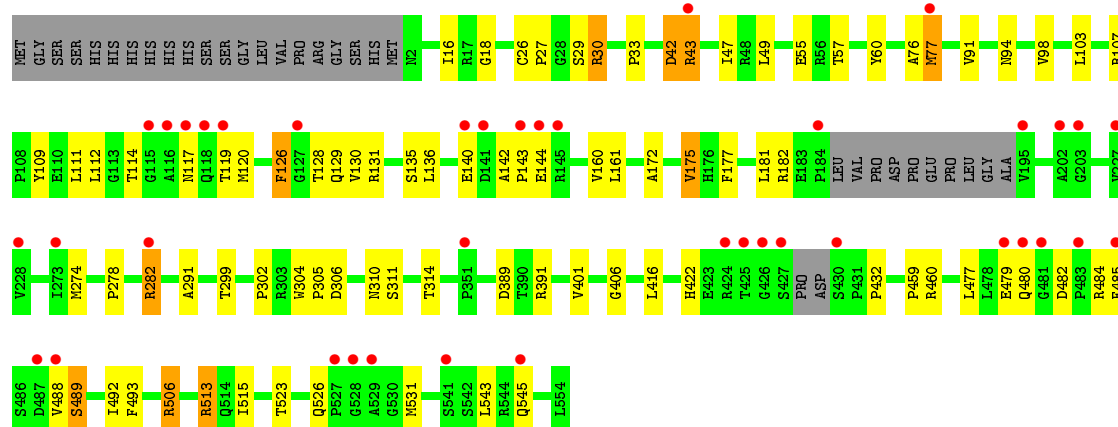
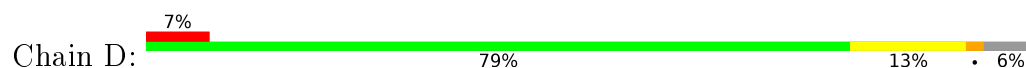


- Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase





- Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	98.62Å 138.66Å 165.39Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.81 – 2.25 19.81 – 2.25	Depositor EDS
% Data completeness (in resolution range)	99.3 (19.81-2.25) 100.0 (19.81-2.25)	Depositor EDS
R_{merge}	0.43	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.01 (at 2.26Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.210 , 0.235 0.202 , 0.231	Depositor DCC
R_{free} test set	5421 reflections (5.03%)	DCC
Wilson B-factor (Å ²)	38.7	Xtriage
Anisotropy	0.241	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 30.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16446	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.63% 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

5.1 Standard geometry

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

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	0.33	0/4056	0.50	0/5553
1	B	0.30	0/4020	0.50	0/5501
1	C	0.31	1/4059 (0.0%)	0.51	0/5555
1	D	0.32	0/4060	0.54	3/5556 (0.1%)
All	All	0.32	1/16195 (0.0%)	0.51	3/22165 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1
1	D	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	525	ASP	C-N	-5.04	1.22	1.34

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	282	ARG	NE-CZ-NH1	5.95	123.28	120.30
1	D	42	ASP	CB-CG-OD1	5.31	123.08	118.30
1	D	506	ARG	NE-CZ-NH1	5.18	122.89	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	118	GLN	Peptide
1	D	77	MET	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3968	0	4013	49	0
1	B	3934	0	3989	50	0
1	C	3976	0	4004	84	0
1	D	3979	0	4010	61	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
3	A	26	0	16	2	0
3	B	26	0	16	4	0
3	C	26	0	16	1	0
3	D	26	0	16	1	0
4	A	124	0	0	1	0
4	B	125	0	0	0	0
4	C	104	0	0	2	0
4	D	128	0	0	2	0
All	All	16446	0	16080	218	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 7.

All (218) 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)
3:B:601:TDP:H2	3:B:601:TDP:C2	0.97	1.48
3:A:602:TDP:H2	3:A:602:TDP:C2	0.97	1.48
3:D:601:TDP:H2	3:D:601:TDP:C2	0.97	1.48
3:C:601:TDP:C2	3:C:601:TDP:H2	0.97	1.47
1:C:182:ARG:HH21	1:D:140:GLU:HG3	1.36	0.89
3:B:601:TDP:H4'1	1:C:27:PRO:HB2	1.40	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:40:ASP:OD1	1:A:43:ARG:NH1	2.15	0.80
1:A:381:ARG:HH21	1:A:474:ILE:HD13	1.47	0.80
1:B:97:ARG:HH22	1:B:300:THR:HG22	1.47	0.79
1:D:94:ASN:OD1	1:D:131:ARG:NH2	2.17	0.76
1:C:107[A]:ARG:HH22	1:C:181:LEU:HD23	1.50	0.76
1:D:55:GLU:HB3	1:D:77:MET:HE1	1.69	0.74
1:D:523:THR:O	1:D:526:GLN:HG2	1.90	0.72
1:A:183:GLU:HG3	1:A:184:PRO:HA	1.72	0.71
1:C:117:ASN:ND2	1:C:119:THR:O	2.26	0.69
1:C:107[B]:ARG:HH12	1:C:119:THR:HG22	1.58	0.68
1:C:419:GLU:HG2	1:C:431:PRO:HB2	1.76	0.67
1:B:548:ALA:HA	1:B:551:LYS:HD2	1.77	0.67
1:D:42:ASP:HB3	1:D:43:ARG:HH11	1.60	0.66
1:C:55:GLU:HB3	1:C:77:MET:HE1	1.77	0.66
1:B:144:GLU:OE1	1:B:144:GLU:N	2.23	0.66
1:B:506:ARG:HH21	1:C:506:ARG:HH11	1.44	0.65
1:A:492:ILE:HD11	1:D:27:PRO:HG3	1.78	0.65
1:B:236:VAL:HG13	1:B:254:SER:HB3	1.79	0.65
1:D:128:THR:HG23	1:D:129:GLN:HE21	1.62	0.64
1:B:488:VAL:HG21	1:C:39:GLN:HB3	1.80	0.64
3:A:602:TDP:H2A3	1:D:29:SER:HA	1.79	0.64
1:B:506:ARG:HH21	1:C:506:ARG:NH1	1.95	0.63
1:C:29:SER:HB3	1:C:118:GLN:OE1	1.98	0.63
1:D:91:VAL:HG12	1:D:401:VAL:HG21	1.81	0.62
1:A:340:ILE:HG13	1:A:344:ARG:HE	1.64	0.61
1:D:30:ARG:HG2	1:D:107:ARG:HH11	1.66	0.61
1:A:339:ALA:HA	1:A:554:LEU:HD21	1.83	0.61
3:B:601:TDP:H4'1	1:C:27:PRO:CB	2.11	0.60
1:C:312:GLN:NE2	4:C:703:HOH:O	2.34	0.60
1:C:111:LEU:CD2	1:D:136:LEU:HA	2.33	0.59
1:B:126:PHE:HA	1:C:123:LEU:HD23	1.84	0.59
1:C:40:ASP:HA	1:C:43:ARG:HD2	1.83	0.59
1:C:363:SER:HA	1:C:366:LEU:HD12	1.84	0.58
1:B:331:ARG:O	1:B:335:MET:HG2	2.03	0.58
1:A:18:GLY:HA3	1:A:161:LEU:HD13	1.86	0.58
1:C:43:ARG:HG2	1:C:44:SER:N	2.18	0.58
1:C:6:THR:O	1:C:10:VAL:HG23	2.03	0.58
1:B:370:ASP:OD2	1:B:433:ARG:NH2	2.37	0.57
1:C:545:GLN:NE2	4:C:702:HOH:O	2.34	0.57
1:B:473:GLY:O	1:B:474:ILE:HG13	2.04	0.57
1:B:53:ILE:HG12	1:C:441:LEU:HD22	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:111:LEU:HD21	1:D:136:LEU:HD23	1.85	0.56
1:D:18:GLY:HA3	1:D:161:LEU:HD13	1.86	0.56
1:B:18:GLY:HA3	1:B:161:LEU:HD13	1.87	0.56
1:D:111:LEU:HD23	1:D:114:THR:HG21	1.87	0.56
1:D:480:GLN:HG2	1:D:493:PHE:CZ	2.41	0.56
1:B:498:ASP:O	1:C:509:HIS:NE2	2.29	0.55
1:D:274:MET:CE	1:D:305:PRO:HG2	2.35	0.55
1:A:312:GLN:HA	1:C:200:ARG:HH12	1.72	0.55
1:A:374:LEU:HD13	1:A:380:VAL:HA	1.87	0.55
1:B:140:GLU:OE1	1:B:145:ARG:NH2	2.40	0.55
1:C:221:ASP:OD2	1:C:223:SER:OG	2.22	0.55
1:D:144:GLU:N	1:D:144:GLU:OE2	2.26	0.54
1:A:477:LEU:HD21	1:A:547:HIS:CG	2.43	0.54
1:B:333:ALA:O	1:B:337:ARG:HG3	2.08	0.54
1:C:111:LEU:HD23	1:D:136:LEU:HA	1.88	0.54
1:D:416:LEU:HG	1:D:459:PRO:HG3	1.88	0.53
1:D:30:ARG:NH1	1:D:119:THR:OG1	2.42	0.53
1:C:107[B]:ARG:HH12	1:C:119:THR:CG2	2.20	0.53
1:A:350:HIS:CE1	1:A:546:LEU:HB2	2.44	0.53
1:A:168:ARG:NH2	1:C:299:THR:HG23	2.24	0.53
1:A:39:GLN:HG3	1:D:488:VAL:HG13	1.89	0.53
1:C:479:GLU:OE2	1:C:479:GLU:N	2.35	0.53
1:B:225:ASP:HB2	1:B:270:GLN:HG3	1.90	0.52
1:D:389:ASP:OD1	1:D:391:ARG:HD3	2.10	0.52
1:C:91:VAL:HG12	1:C:401:VAL:HG21	1.92	0.52
1:B:222:LEU:HD22	1:B:243:LEU:HD11	1.90	0.52
1:C:120:MET:HG2	1:C:122:GLN:HG2	1.92	0.52
1:D:103:LEU:HD23	1:D:177:PHE:HB3	1.91	0.52
1:A:16:ILE:HD13	1:A:46:ARG:HB3	1.91	0.51
1:D:482:ASP:CG	1:D:484:ARG:HG2	2.31	0.51
1:A:502:GLY:O	1:A:506:ARG:HG3	2.10	0.51
1:C:117:ASN:O	1:C:121:GLU:HG2	2.10	0.51
1:A:477:LEU:HD21	1:A:547:HIS:CD2	2.46	0.51
1:C:497:HIS:CE1	1:C:499:VAL:HG22	2.45	0.51
1:A:248:GLU:HG2	1:A:280:LEU:HD12	1.93	0.51
1:D:482:ASP:OD1	1:D:484:ARG:HG2	2.11	0.51
1:D:33:PRO:HD2	1:D:76:ALA:HB1	1.93	0.50
1:A:405:ASP:OD1	1:A:445:HIS:NE2	2.25	0.50
1:B:405:ASP:OD1	1:B:445:HIS:NE2	2.31	0.50
1:B:169:THR:HG22	1:D:302:PRO:HB3	1.93	0.50
1:D:513:ARG:HG2	1:D:515:ILE:HG23	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:487:ASP:N	1:C:487:ASP:OD1	2.39	0.49
1:A:381:ARG:NH2	1:A:474:ILE:HD13	2.23	0.49
1:D:274:MET:HE1	1:D:305:PRO:HG2	1.93	0.49
1:D:42:ASP:HA	1:D:47:ILE:O	2.12	0.49
1:C:5:THR:O	1:C:9:ARG:HG3	2.12	0.49
1:A:36:PHE:CE2	1:A:186:VAL:HG23	2.48	0.49
1:D:299:THR:HG23	4:D:741:HOH:O	2.12	0.48
1:C:248:GLU:HG2	1:C:280:LEU:HD12	1.94	0.48
1:B:506:ARG:NH2	1:C:506:ARG:HH11	2.10	0.48
1:D:274:MET:SD	1:D:278:PRO:HG3	2.54	0.48
1:B:200:ARG:HG2	1:B:206:TRP:HA	1.95	0.48
1:C:107[A]:ARG:HG2	1:C:107[A]:ARG:HH21	1.79	0.48
1:A:475:PHE:N	1:A:475:PHE:CD1	2.79	0.48
1:B:492:ILE:HG23	1:B:493:PHE:CD1	2.48	0.48
1:A:121:GLU:OE1	1:A:121:GLU:N	2.47	0.48
1:C:381:ARG:HH21	1:C:381:ARG:HG3	1.79	0.48
1:C:350:HIS:CE1	1:C:542:SER:HG	2.27	0.48
1:D:304:TRP:CG	1:D:314:THR:HG21	2.50	0.47
1:C:40:ASP:HA	1:C:43:ARG:HH21	1.79	0.47
1:D:26:CYS:HB2	1:D:77:MET:HG2	1.96	0.47
1:C:340:ILE:HD12	1:C:341:ALA:N	2.30	0.47
1:A:28:GLY:HA3	1:A:78:THR:HB	1.95	0.47
1:C:144:GLU:H	1:C:144:GLU:HG3	1.45	0.47
1:A:60:TYR:CG	1:A:406:GLY:HA3	2.50	0.47
1:B:451:LEU:HD11	1:C:497:HIS:HB2	1.98	0.46
1:C:513:ARG:HG3	1:C:514:GLN:N	2.29	0.46
1:C:78:THR:OG1	1:C:78:THR:O	2.26	0.46
1:B:5:THR:O	1:B:9:ARG:HG3	2.15	0.46
1:A:324:PRO:HG2	1:A:329:LEU:HD11	1.97	0.46
1:A:515:ILE:HD11	1:A:520:LEU:HD13	1.97	0.46
1:B:440:ASP:HB3	1:B:468:ASN:HA	1.98	0.46
1:D:291:ALA:HA	1:D:310:ASN:OD1	2.15	0.46
1:B:160:VAL:HG13	1:B:175:VAL:CG2	2.45	0.46
1:C:126:PHE:O	1:C:130:VAL:HG22	2.16	0.46
1:C:492:ILE:HG13	1:C:493:PHE:CD2	2.51	0.46
1:B:512:SER:HA	1:B:533:VAL:O	2.16	0.45
1:D:60:TYR:CD2	1:D:406:GLY:HA3	2.51	0.45
1:D:117:ASN:OD1	1:D:120:MET:N	2.42	0.45
1:C:497:HIS:ND1	1:C:499:VAL:HG22	2.31	0.45
1:C:30:ARG:HB3	1:C:107[A]:ARG:HH11	1.81	0.45
1:D:109:TYR:CD1	1:D:182:ARG:HG3	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:17:ARG:NH1	1:C:204:LYS:O	2.49	0.45
1:D:30:ARG:HG2	1:D:107:ARG:NH1	2.29	0.45
1:C:270:GLN:O	1:C:294:PRO:HD2	2.17	0.45
1:D:126:PHE:O	1:D:130:VAL:HG22	2.17	0.45
1:A:475:PHE:HE2	1:A:493:PHE:CE2	2.35	0.45
1:C:135:SER:OG	1:D:112:LEU:HB2	2.17	0.45
1:B:160:VAL:HG13	1:B:175:VAL:HG21	1.99	0.45
1:C:200:ARG:HB3	1:C:201:PRO:HD2	1.98	0.44
1:C:120:MET:O	1:C:120:MET:HG2	2.16	0.44
1:C:512:SER:HA	1:C:533:VAL:O	2.17	0.44
1:B:445:HIS:HE1	1:C:54:ASP:HA	1.83	0.44
1:D:485:PHE:O	1:D:489:SER:HB2	2.17	0.44
1:A:475:PHE:N	1:A:475:PHE:HD1	2.16	0.44
1:B:489:SER:O	1:B:492:ILE:HG22	2.18	0.44
1:B:62:ALA:HA	1:B:65:LEU:HD12	1.99	0.44
1:D:459:PRO:HD2	1:D:531:MET:CE	2.48	0.44
1:B:234:ALA:HB1	1:B:275:LEU:HB3	2.00	0.43
1:A:186:VAL:HG22	1:D:485:PHE:CZ	2.53	0.43
1:A:440:ASP:HB3	1:A:468:ASN:HA	1.99	0.43
1:A:200:ARG:HG2	1:A:206:TRP:HA	2.01	0.43
1:C:111:LEU:HD23	1:D:135:SER:O	2.18	0.43
1:D:160:VAL:HG13	1:D:175:VAL:HG21	1.99	0.43
1:B:267:LEU:HD21	1:B:335:MET:HG3	1.99	0.43
1:A:294:PRO:HA	1:A:310:ASN:OD1	2.19	0.43
1:B:493:PHE:CZ	3:B:601:TDP:H4A3	2.53	0.43
1:B:79:SER:HB3	1:B:106:ASN:HA	2.00	0.43
1:D:422:HIS:CG	1:D:432:PRO:HD3	2.54	0.43
1:B:367:ARG:HG2	1:B:433:ARG:NH2	2.33	0.43
1:D:306:ASP:OD2	1:D:311:SER:HB3	2.18	0.43
1:D:492:ILE:HG13	1:D:493:PHE:CD2	2.54	0.43
1:C:138:LEU:HD23	1:C:138:LEU:HA	1.82	0.43
1:C:60:TYR:CG	1:C:406:GLY:HA3	2.54	0.42
1:C:304:TRP:CG	1:C:314:THR:HG21	2.54	0.42
1:A:26:CYS:SG	1:A:55:GLU:HG3	2.59	0.42
1:A:474:ILE:HG23	1:A:475:PHE:CD1	2.53	0.42
1:A:508:TYR:C	1:A:509[A]:HIS:CG	2.92	0.42
1:A:91:VAL:HG12	1:A:401:VAL:HG11	2.00	0.42
1:C:405:ASP:HB3	1:C:445:HIS:CE1	2.55	0.42
1:B:34:LEU:HD22	1:B:103:LEU:HD21	2.02	0.42
1:C:469:ASP:HA	1:C:538:ALA:O	2.20	0.42
1:D:42:ASP:HB2	1:D:49:LEU:HG	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:477:LEU:HD11	1:D:543:LEU:HG	2.01	0.42
1:B:100:LEU:O	1:B:174:PRO:HA	2.19	0.42
1:A:7:GLN:NE2	4:A:703:HOH:O	2.37	0.42
1:B:509[B]:HIS:CE1	1:C:498:ASP:O	2.72	0.42
1:C:394:ARG:HD2	1:C:418:TYR:CE1	2.55	0.42
1:D:274:MET:HE3	1:D:305:PRO:HG2	2.02	0.42
1:B:204:LYS:HD3	1:B:204:LYS:HA	1.59	0.42
1:B:518:ASP:N	1:B:518:ASP:OD1	2.46	0.42
1:C:373:VAL:O	1:C:436:ALA:HA	2.19	0.42
1:B:169:THR:CG2	1:D:302:PRO:HB3	2.50	0.42
1:D:460:ARG:HE	1:D:460:ARG:HB3	1.63	0.42
1:A:338:HIS:NE2	1:A:554:LEU:O	2.27	0.42
1:C:28:GLY:HA3	1:C:78:THR:HG1	1.85	0.42
1:C:107[A]:ARG:NH2	1:C:181:LEU:HD23	2.26	0.41
1:D:142:ALA:HA	1:D:143:PRO:HD3	1.94	0.41
1:C:107[A]:ARG:NH2	1:C:181:LEU:HB3	2.36	0.41
1:C:430:SER:OG	1:C:431:PRO:HD2	2.19	0.41
1:D:131:ARG:NH1	1:D:172:ALA:O	2.53	0.41
1:D:16:ILE:O	4:D:701:HOH:O	2.21	0.41
1:A:100:LEU:O	1:A:174:PRO:HA	2.20	0.41
1:C:14:GLU:HB3	1:C:157:THR:HG21	2.02	0.41
1:C:25:LEU:CD2	1:C:76:ALA:HB3	2.51	0.41
1:A:543:LEU:HA	1:A:543:LEU:HD12	1.88	0.41
1:C:60:TYR:CD2	1:C:406:GLY:HA3	2.56	0.41
1:C:111:LEU:HD21	1:D:136:LEU:HA	2.00	0.41
1:B:39:GLN:HG3	1:C:492:ILE:CG2	2.51	0.41
1:C:182:ARG:NH2	1:D:140:GLU:HG3	2.18	0.41
1:A:29:SER:OG	1:D:480:GLN:NE2	2.50	0.41
1:B:548:ALA:HA	1:B:551:LYS:CD	2.49	0.41
1:B:488:VAL:HG22	1:C:39:GLN:NE2	2.35	0.41
1:A:186:VAL:HG11	1:D:479:GLU:HB3	2.02	0.41
1:A:30:ARG:CZ	1:A:107:ARG:HD3	2.51	0.41
1:C:100:LEU:O	1:C:174:PRO:HA	2.20	0.41
1:A:416:LEU:HG	1:A:459:PRO:HG3	2.03	0.41
1:B:183:GLU:HG3	1:B:185:LEU:HG	2.03	0.41
1:C:460:ARG:O	1:C:530:GLY:HA2	2.21	0.41
1:A:282:ARG:N	1:A:283:PRO:HD2	2.36	0.40
1:C:520:LEU:HD11	1:C:536:VAL:HG21	2.02	0.40
1:A:123:LEU:HD12	1:A:123:LEU:HA	1.86	0.40
1:A:514:GLN:NE2	1:A:537:LYS:NZ	2.69	0.40
1:B:547:HIS:O	1:B:551:LYS:HD2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:23:VAL:HB	1:C:49:LEU:HD23	2.03	0.40
1:C:229:ILE:O	1:C:274:MET:HA	2.21	0.40
1:B:507:ALA:HA	1:C:500:ASP:HB3	2.03	0.40
1:C:77:MET:HG3	1:C:86:LEU:HD11	2.04	0.40
1:A:229:ILE:HD11	1:A:287:LEU:HD23	2.02	0.40
1:A:78:THR:HG23	1:A:79:SER:O	2.22	0.40
1:B:265:PRO:HG3	1:B:283:PRO:HB3	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	535/574 (93%)	529 (99%)	6 (1%)	0	100	100
1	B	527/574 (92%)	517 (98%)	10 (2%)	0	100	100
1	C	535/574 (93%)	518 (97%)	16 (3%)	1 (0%)	52	61
1	D	535/574 (93%)	518 (97%)	17 (3%)	0	100	100
All	All	2132/2296 (93%)	2082 (98%)	49 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	351	PRO

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	418/445 (94%)	413 (99%)	5 (1%)	78	87
1	B	413/445 (93%)	400 (97%)	13 (3%)	47	58
1	C	416/445 (94%)	409 (98%)	7 (2%)	68	79
1	D	417/445 (94%)	405 (97%)	12 (3%)	50	60
All	All	1664/1780 (94%)	1627 (98%)	37 (2%)	61	70

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	SER
1	A	455	THR
1	A	489	SER
1	A	509[A]	HIS
1	A	509[B]	HIS
1	B	39	GLN
1	B	73	VAL
1	B	77	MET
1	B	152	THR
1	B	175	VAL
1	B	282	ARG
1	B	300	THR
1	B	321	THR
1	B	377	SER
1	B	394	ARG
1	B	513[A]	ARG
1	B	513[B]	ARG
1	B	551	LYS
1	C	43	ARG
1	C	57	THR
1	C	73	VAL
1	C	212	VAL
1	C	300	THR
1	C	344	ARG
1	C	520	LEU
1	D	30	ARG
1	D	43	ARG
1	D	57	THR
1	D	98	VAL
1	D	126	PHE

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Mol	Chain	Res	Type
1	D	175	VAL
1	D	181	LEU
1	D	282	ARG
1	D	489	SER
1	D	506	ARG
1	D	513	ARG
1	D	545	GLN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	514	GLN
1	C	39	GLN
1	C	117	ASN
1	D	31	ASN
1	D	350	HIS
1	D	526	GLN
1	D	545	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	TDP	A	602	2	21,27,27	1.74	2 (9%)	30,40,40	2.47	8 (26%)
3	TDP	B	601	2	21,27,27	1.33	2 (9%)	30,40,40	2.06	9 (30%)
3	TDP	C	601	2	21,27,27	1.34	2 (9%)	30,40,40	1.71	8 (26%)
3	TDP	D	601	2	21,27,27	1.41	2 (9%)	30,40,40	1.78	7 (23%)

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	TDP	A	602	2	-	0/16/17/17	0/2/2/2
3	TDP	B	601	2	-	0/16/17/17	0/2/2/2
3	TDP	C	601	2	-	0/16/17/17	0/2/2/2
3	TDP	D	601	2	-	0/16/17/17	0/2/2/2

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	TDP	C4-N3	-6.75	1.33	1.39
3	D	601	TDP	C4-N3	-4.76	1.35	1.39
3	B	601	TDP	C4-N3	-4.67	1.35	1.39
3	C	601	TDP	C4-N3	-4.52	1.35	1.39
3	B	601	TDP	C5'-C4'	2.59	1.47	1.42
3	A	602	TDP	C5'-C4'	3.17	1.48	1.42
3	C	601	TDP	C5'-C4'	3.26	1.48	1.42
3	D	601	TDP	C5'-C4'	3.56	1.49	1.42

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	602	TDP	C5'-C35-N3	-9.93	95.95	113.37
3	B	601	TDP	C5'-C4'-N4'	-3.65	116.87	122.27
3	D	601	TDP	C5A-C5-S1	-3.02	116.01	120.24
3	B	601	TDP	C5A-C5-S1	-2.97	116.08	120.24
3	A	602	TDP	C5'-C6'-N1'	-2.84	118.91	123.86
3	A	602	TDP	C5A-C5-S1	-2.76	116.37	120.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	601	TDP	C5'-C6'-N1'	-2.66	119.22	123.86
3	C	601	TDP	C5'-C6'-N1'	-2.60	119.31	123.86
3	C	601	TDP	C5A-C5-S1	-2.54	116.68	120.24
3	C	601	TDP	C4A-C4-C5	-2.49	123.63	128.91
3	B	601	TDP	C5'-C6'-N1'	-2.45	119.58	123.86
3	B	601	TDP	C4A-C4-C5	-2.44	123.75	128.91
3	D	601	TDP	C4A-C4-C5	-2.29	124.05	128.91
3	D	601	TDP	N1'-C2'-N3'	-2.26	121.26	125.50
3	B	601	TDP	N1'-C2'-N3'	-2.16	121.45	125.50
3	C	601	TDP	N1'-C2'-N3'	-2.13	121.50	125.50
3	A	602	TDP	C5'-C4'-N3'	-2.04	117.78	121.24
3	D	601	TDP	N4'-C4'-N3'	2.27	120.25	116.92
3	A	602	TDP	C6'-C5'-C4'	2.43	119.08	115.65
3	C	601	TDP	C4A-C4-N3	2.46	125.45	122.43
3	B	601	TDP	C4A-C4-N3	2.51	125.51	122.43
3	C	601	TDP	N4'-C4'-N3'	2.63	120.78	116.92
3	A	602	TDP	N4'-C4'-N3'	2.97	121.27	116.92
3	A	602	TDP	C6'-N1'-C2'	3.11	121.83	115.92
3	B	601	TDP	C6'-N1'-C2'	3.29	122.17	115.92
3	C	601	TDP	C6'-N1'-C2'	3.40	122.38	115.92
3	D	601	TDP	C6'-N1'-C2'	3.72	122.99	115.92
3	A	602	TDP	C5A-C5-C4	4.14	131.99	127.34
3	C	601	TDP	C5A-C5-C4	4.48	132.36	127.34
3	B	601	TDP	N4'-C4'-N3'	4.79	123.94	116.92
3	B	601	TDP	C5A-C5-C4	5.12	133.08	127.34
3	D	601	TDP	C5A-C5-C4	5.12	133.08	127.34

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	602	TDP	2	0
3	B	601	TDP	4	0
3	C	601	TDP	1	0
3	D	601	TDP	1	0

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	539/574 (93%)	0.11	31 (5%) 26 29	22, 35, 60, 80	0
1	B	532/574 (92%)	-0.00	23 (4%) 39 43	23, 35, 59, 76	0
1	C	540/574 (94%)	0.19	32 (5%) 26 28	24, 38, 65, 84	0
1	D	541/574 (94%)	0.14	39 (7%) 18 20	24, 35, 65, 86	0
All	All	2152/2296 (93%)	0.11	125 (5%) 26 29	22, 35, 62, 86	0

All (125) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	428	PRO	6.5
1	A	478	LEU	6.1
1	D	426	GLY	5.6
1	C	529	ALA	5.5
1	A	426	GLY	5.5
1	B	527	PRO	5.5
1	D	118	GLN	5.3
1	D	184	PRO	5.1
1	A	185	LEU	4.5
1	D	425	THR	4.5
1	B	494	GLY	4.4
1	A	186	VAL	4.3
1	D	195	VAL	4.2
1	C	118	GLN	4.1
1	C	195	VAL	4.1
1	D	427	SER	4.1
1	D	119	THR	4.0
1	D	127	GLY	4.0
1	D	485	PHE	4.0
1	D	529	ALA	4.0
1	C	119	THR	3.8

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Mol	Chain	Res	Type	RSRZ
1	C	527	PRO	3.8
1	D	143	PRO	3.8
1	C	143	PRO	3.8
1	A	425	THR	3.7
1	C	3	PRO	3.7
1	C	120	MET	3.7
1	A	184	PRO	3.7
1	D	528	GLY	3.7
1	C	29	SER	3.7
1	D	479	GLU	3.6
1	B	282	ARG	3.5
1	D	116	ALA	3.5
1	B	144	GLU	3.4
1	C	30	ARG	3.4
1	D	43	ARG	3.4
1	D	487	ASP	3.4
1	D	430	SER	3.4
1	C	426	GLY	3.3
1	C	425	THR	3.3
1	B	525	ASP	3.2
1	C	117	ASN	3.2
1	A	74[A]	CYS	3.1
1	A	183	GLU	3.1
1	C	2	ASN	3.0
1	D	480	GLN	3.0
1	A	268	ARG	3.0
1	A	291	ALA	2.9
1	A	527	PRO	2.9
1	D	483	PRO	2.9
1	D	488	VAL	2.9
1	A	286	VAL	2.9
1	B	291	ALA	2.9
1	C	429	ASP	2.8
1	C	36	PHE	2.8
1	C	141	ASP	2.8
1	D	144	GLU	2.8
1	D	527	PRO	2.8
1	A	429	ASP	2.8
1	B	529	ALA	2.7
1	C	145	ARG	2.8
1	D	141	ASP	2.7
1	D	227	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	422	HIS	2.7
1	A	143	PRO	2.7
1	A	1	MET	2.7
1	A	144	GLU	2.7
1	B	43	ARG	2.6
1	C	196	THR	2.6
1	D	282	ARG	2.6
1	A	427	SER	2.6
1	B	289	ALA	2.6
1	C	116	ALA	2.6
1	A	228	VAL	2.6
1	D	77	MET	2.6
1	B	474	ILE	2.6
1	B	253[A]	ARG	2.6
1	B	195	VAL	2.6
1	C	348	ALA	2.6
1	D	228	VAL	2.5
1	C	490	SER	2.5
1	D	203	GLY	2.5
1	A	430	SER	2.4
1	C	422	HIS	2.4
1	D	424	ARG	2.4
1	D	541	SER	2.4
1	C	424	ARG	2.4
1	D	145	ARG	2.4
1	A	475	PHE	2.4
1	A	529	ALA	2.3
1	C	201	PRO	2.3
1	A	494	GLY	2.3
1	D	115	GLY	2.3
1	A	330	ASP	2.3
1	C	526	GLN	2.3
1	D	202	ALA	2.3
1	A	292	GLU	2.3
1	B	290	ASP	2.3
1	B	424	ARG	2.3
1	A	2	ASN	2.3
1	D	117	ASN	2.3
1	A	474	ILE	2.3
1	C	552	ALA	2.3
1	D	140	GLU	2.2
1	B	141	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	43	ARG	2.2
1	A	518	ASP	2.2
1	B	190	GLU	2.2
1	B	228	VAL	2.2
1	C	430	SER	2.1
1	A	187	PRO	2.1
1	B	189	PRO	2.1
1	B	285	SER	2.1
1	D	481	GLY	2.1
1	A	141	ASP	2.1
1	C	518	ASP	2.1
1	A	307	VAL	2.1
1	D	273	ILE	2.1
1	B	425	THR	2.1
1	D	351	PRO	2.1
1	C	345	GLU	2.0
1	D	545	GLN	2.0
1	B	389	ASP	2.0
1	B	227	VAL	2.0
1	C	338	HIS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
3	TDP	B	601	26/26	0.94	0.18	0.49	31,50,64,68	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
3	TDP	A	602	26/26	0.94	0.18	0.30	31,57,72,72	0
3	TDP	C	601	26/26	0.96	0.09	-1.02	31,34,39,40	0
3	TDP	D	601	26/26	0.98	0.09	-1.20	27,31,34,34	0
2	MN	A	601	1/1	0.99	0.07	-1.71	34,34,34,34	0
2	MN	B	602	1/1	0.98	0.05	-1.89	34,34,34,34	0
2	MN	C	602	1/1	0.99	0.02	-3.86	35,35,35,35	0
2	MN	D	602	1/1	1.00	0.04	-4.63	29,29,29,29	0

6.5 Other polymers [i](#)

There are no such residues in this entry.