WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 10, 2021 – 04:52 PM EDT

PDB ID	:	3DNV
Title	:	MDT Protein
Authors	:	schumacher, M.A.
Deposited on	:	2008-07-02
Resolution	:	2.68 Å(reported)

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	:	2.23.2
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)	:	2.23.2

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 2.68 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	Percentile Ranks	Value
Rfree		0.284
Clashscore		20
Ramachandran outliers		1.9%
Sidechain outliers		6.2%
RSRZ outliers		4.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
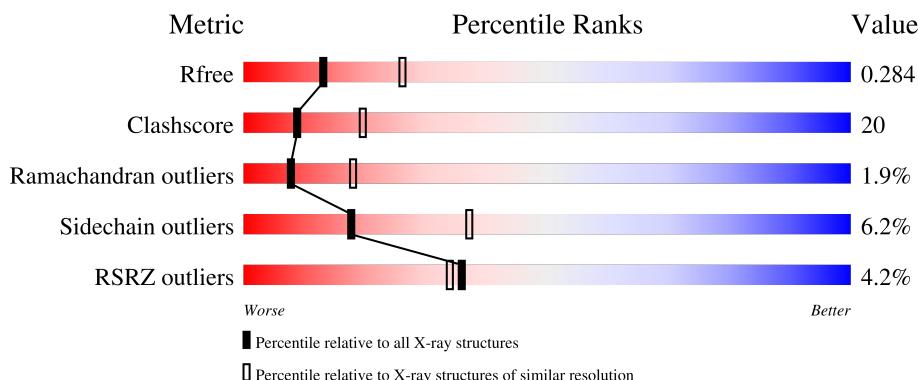
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3863 (2.70-2.66)
Clashscore	141614	4210 (2.70-2.66)
Ramachandran outliers	138981	4141 (2.70-2.66)
Sidechain outliers	138945	4141 (2.70-2.66)
RSRZ outliers	127900	3780 (2.70-2.66)

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 <=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	440	5% 56% 35% • 6%
2	B	88	60% 17% • 19%
3	T	21	48% 38% 14%
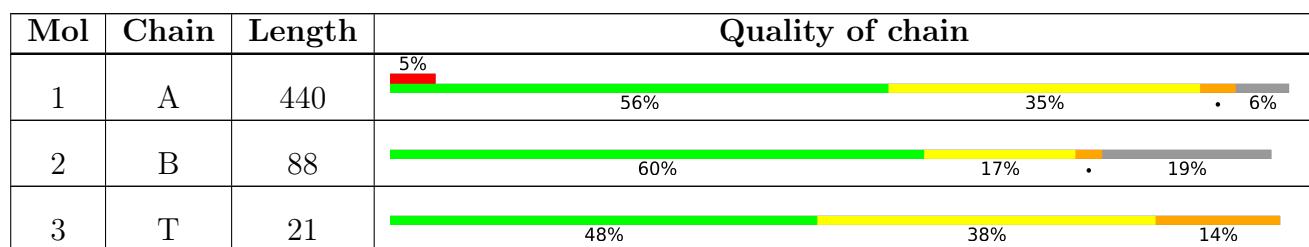
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	SO4	A	833	-	-	X	-

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 4340 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 Protein hipA.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	414	Total	C	N	O	S	Se	0	0	0
			3274	2100	570	592	10	2			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	309	GLN	ASP	engineered mutation	UNP P23874

- Molecule 2 is a protein called HTH-type transcriptional regulator hipB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	71	Total	C	N	O	S	0	0	0
			564	358	95	108	3			

- Molecule 3 is a DNA chain called DNA (5'-D(*DAP*DCP*DTP*DAP*DTP*DCP*DCP*D CP*DCP*DTP*DTP*DAP*DAP*DGP*DGP*DGP*DGP*DAP*DTP*DAP*DG)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	T	21	Total	C	N	O	P	0	0	0
			428	205	80	123	20			

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).
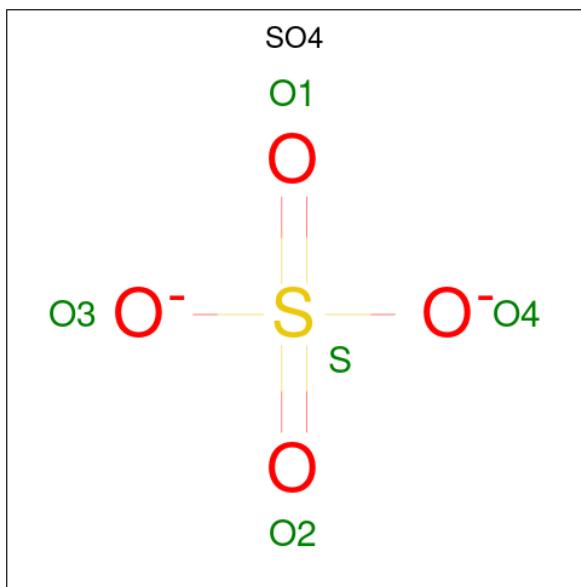
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	B	1	Total 5	O 4	S 1	0	0

- Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	23	Total 23	O 23	0	0
5	B	8	Total 8	O 8	0	0
5	T	3	Total 3	O 3	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: Protein hipA

Chain A:
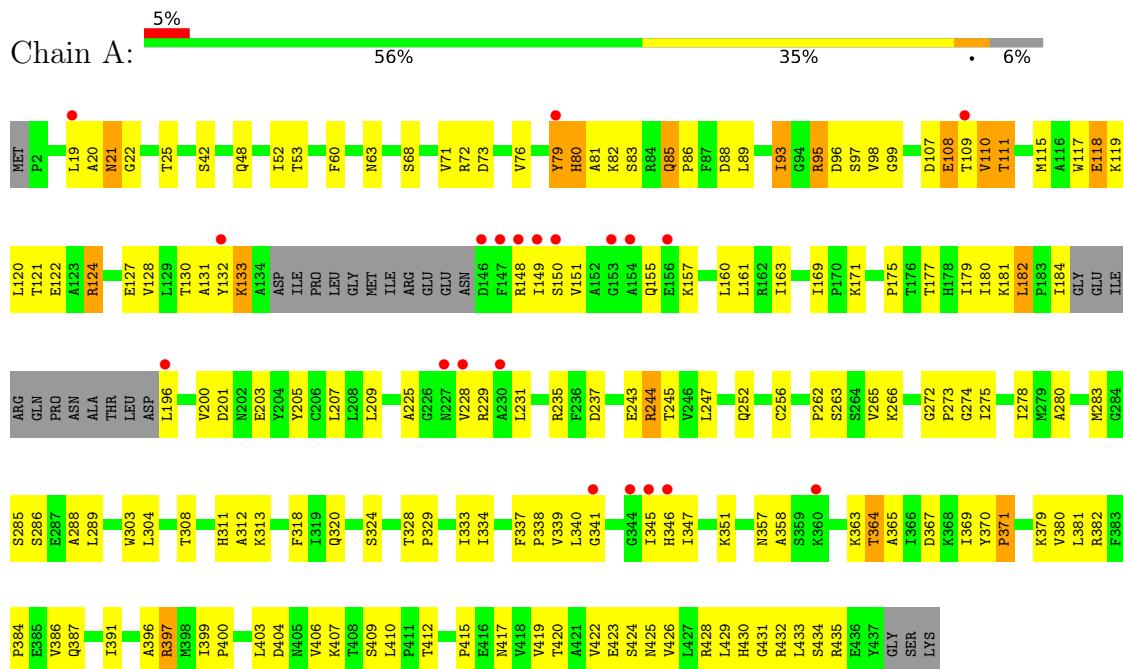
• Molecule 2: HTH-type transcriptional regulator hipB

Chain B:
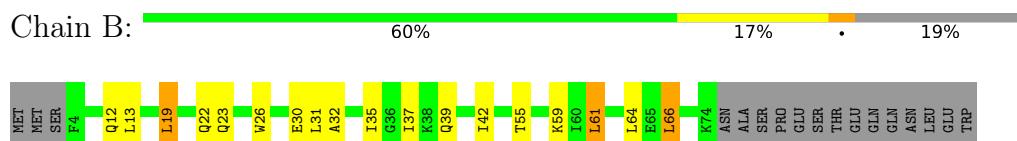
• Molecule 3: DNA (5'-D(*DAP*DCP*DTP*DAP*DTP*DCP*DCP*DCP*DCP*DTP*DTP*DAP*DAP*DGP*DGP*DGP*DGP*DAP*DTP*DAP*DG)-3')

Chain T:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 4 2 2	Depositor
Cell constants a, b, c, α, β, γ	166.34Å 166.34Å 62.09Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	58.17 – 2.68 58.17 – 2.68	Depositor EDS
% Data completeness (in resolution range)	99.5 (58.17-2.68) 99.6 (58.17-2.68)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	3.90 (at 2.69Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.228 , 0.285 0.228 , 0.284	Depositor DCC
R_{free} test set	2476 reflections (9.90%)	wwPDB-VP
Wilson B-factor (Å^2)	52.9	Xtriage
Anisotropy	0.664	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 59.1	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	4340	wwPDB-VP
Average B, all atoms (Å^2)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.33% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: SO4

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	0.37	0/3345	0.59	0/4529
2	B	0.46	0/572	0.68	0/771
3	T	0.41	0/480	0.75	0/739
All	All	0.39	0/4397	0.62	0/6039

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
3	T	0	3

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	T	713	DG	Sidechain
3	T	714	DG	Sidechain
3	T	715	DG	Sidechain

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	3274	0	3317	143	0
2	B	564	0	577	14	0
3	T	428	0	238	20	0
4	A	35	0	0	3	0
4	B	5	0	0	0	0
5	A	23	0	0	1	0
5	B	8	0	0	1	0
5	T	3	0	0	0	0
All	All	4340	0	4132	172	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 20.

All (172) 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:A:124:ARG:HH11	1:A:124:ARG:HB3	1.07	1.11
2:B:39:GLN:HE22	3:T:702:DA:H62	1.07	0.97
3:T:718:DA:H2”	3:T:719:DG:H5”	1.45	0.96
1:A:124:ARG:HB3	1:A:124:ARG:NH1	1.82	0.95
2:B:12:GLN:NE2	5:B:409:HOH:O	2.00	0.90
1:A:345:ILE:H	1:A:345:ILE:HD12	1.41	0.85
1:A:399:ILE:HB	1:A:430:HIS:HD2	1.44	0.82
3:T:702:DA:H2”	3:T:703:DT:H5”	1.62	0.80
1:A:399:ILE:HB	1:A:430:HIS:CD2	2.19	0.77
1:A:99:GLY:HA2	1:A:252:GLN:HG2	1.66	0.76
1:A:25:THR:HG22	1:A:53:THR:HG22	1.69	0.75
2:B:39:GLN:NE2	3:T:702:DA:H62	1.83	0.75
3:T:702:DA:H2”	3:T:703:DT:C5’	2.18	0.73
1:A:347:ILE:HG13	1:A:367:ASP:HB2	1.71	0.73
1:A:149:ILE:HG22	1:A:150:SER:H	1.54	0.72
1:A:429:LEU:HD23	1:A:432:ARG:NH1	2.05	0.71
1:A:68:SER:HB3	1:A:71:VAL:HG23	1.74	0.69
1:A:175:PRO:HB2	1:A:247:LEU:HD23	1.72	0.69
1:A:422:VAL:O	1:A:426:VAL:HG23	1.94	0.68
3:T:702:DA:C2’	3:T:703:DT:H5”	2.22	0.68
1:A:428:ARG:HG2	1:A:428:ARG:HH11	1.60	0.67
1:A:130:THR:HA	1:A:133:LYS:NZ	2.09	0.66
1:A:308:THR:HG22	1:A:351:LYS:O	1.96	0.66
1:A:429:LEU:HD23	1:A:432:ARG:HH12	1.60	0.66
1:A:420:THR:O	1:A:424:SER:HB3	1.97	0.64
1:A:320:GLN:NE2	1:A:324:SER:HB3	2.13	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:T:718:DA:C2'	3:T:719:DG:H5"	2.25	0.62
1:A:244:ARG:HG2	1:A:244:ARG:HH11	1.65	0.61
3:T:703:DT:H2"	3:T:704:DC:H5'	1.82	0.61
1:A:303:TRP:HE1	1:A:369:ILE:HB	1.66	0.61
1:A:200:VAL:HG13	1:A:231:LEU:HB2	1.83	0.60
1:A:370:TYR:CE2	1:A:432:ARG:HD3	2.35	0.60
1:A:25:THR:CG2	1:A:53:THR:HG22	2.31	0.60
1:A:93:ILE:H	1:A:93:ILE:HD13	1.66	0.60
1:A:19:LEU:HB2	1:A:21:ASN:HD21	1.66	0.59
1:A:42:SER:HB2	1:A:60:PHE:CE1	2.38	0.59
1:A:115:MET:HE1	1:A:247:LEU:H	1.66	0.59
1:A:379:LYS:O	1:A:379:LYS:HD3	2.02	0.59
3:T:714:DG:H2"	3:T:715:DG:C5'	2.32	0.59
1:A:76:VAL:HG13	1:A:81:ALA:HB3	1.85	0.58
1:A:303:TRP:NE1	1:A:369:ILE:HB	2.17	0.58
1:A:403:LEU:HD13	1:A:423:GLU:HG3	1.85	0.58
1:A:97:SER:HA	1:A:150:SER:HB3	1.85	0.57
1:A:132:TYR:O	1:A:133:LYS:HG3	2.05	0.57
1:A:182:LEU:HD22	1:A:182:LEU:N	2.21	0.56
1:A:120:LEU:HD11	1:A:169:ILE:HG13	1.86	0.56
1:A:205:TYR:HD1	1:A:410:LEU:HD21	1.71	0.56
2:B:26:TRP:HA	2:B:30:GLU:OE1	2.05	0.56
1:A:365:ALA:O	1:A:369:ILE:HG12	2.05	0.55
1:A:363:LYS:NZ	4:A:833:SO4:S	2.77	0.55
1:A:98:VAL:HG12	1:A:99:GLY:N	2.21	0.55
1:A:406:VAL:O	1:A:409:SER:HB2	2.05	0.55
1:A:399:ILE:CB	1:A:430:HIS:HD2	2.16	0.55
1:A:118:GLU:HB2	1:A:171:LYS:HD2	1.87	0.54
1:A:160:LEU:HG	1:A:180:ILE:HD12	1.88	0.54
1:A:98:VAL:HG12	1:A:99:GLY:H	1.71	0.54
1:A:318:PHE:CD1	1:A:328:THR:HG22	2.43	0.54
1:A:320:GLN:HE21	1:A:324:SER:HB3	1.71	0.54
1:A:387:GLN:O	1:A:391:ILE:HG13	2.08	0.54
3:T:713:DG:H2"	3:T:714:DG:H5'	1.89	0.53
1:A:107:ASP:O	1:A:108:GLU:HB2	2.06	0.53
3:T:717:DT:H2"	3:T:718:DA:C8	2.44	0.53
1:A:320:GLN:HE21	1:A:324:SER:CB	2.21	0.53
1:A:337:PHE:CD1	1:A:425:ASN:HB2	2.44	0.52
1:A:83:SER:HB3	1:A:88:ASP:OD2	2.09	0.52
1:A:340:LEU:HD23	1:A:345:ILE:HG22	1.91	0.52
1:A:399:ILE:HG22	1:A:400:PRO:N	2.23	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:19:LEU:HB2	1:A:21:ASN:ND2	2.25	0.52
2:B:32:ALA:HB1	2:B:37:ILE:O	2.10	0.52
1:A:203:GLU:HG2	1:A:231:LEU:HD21	1.92	0.51
1:A:124:ARG:O	1:A:128:VAL:HG23	2.10	0.51
1:A:225:ALA:O	1:A:228:VAL:HG12	2.10	0.51
1:A:85:GLN:HE21	1:A:86:PRO:HD2	1.75	0.51
1:A:48:GLN:HB2	2:B:22:GLN:HE22	1.76	0.51
1:A:209:LEU:HA	1:A:406:VAL:HG21	1.92	0.51
1:A:358:ALA:HB1	4:A:833:SO4:O3	2.11	0.50
1:A:72:ARG:O	1:A:76:VAL:HG23	2.11	0.50
1:A:177:THR:O	1:A:235:ARG:HG3	2.11	0.50
3:T:714:DG:H2"	3:T:715:DG:H5'	1.92	0.50
1:A:407:LYS:C	1:A:409:SER:H	2.15	0.50
1:A:280:ALA:O	1:A:283:MSE:HB2	2.11	0.50
1:A:179:ILE:HD11	1:A:235:ARG:CZ	2.42	0.50
1:A:339:VAL:O	1:A:339:VAL:HG12	2.12	0.50
1:A:42:SER:HB2	1:A:60:PHE:CD1	2.47	0.50
1:A:48:GLN:NE2	1:A:52:ILE:HD12	2.27	0.50
1:A:124:ARG:HH11	1:A:124:ARG:CB	1.99	0.50
1:A:328:THR:HB	1:A:329:PRO:CD	2.42	0.50
2:B:35:ILE:HG21	2:B:59:LYS:O	2.11	0.50
3:T:714:DG:H2"	3:T:715:DG:O5'	2.11	0.50
1:A:274:GLY:O	1:A:278:ILE:HG12	2.12	0.49
1:A:379:LYS:HD3	1:A:379:LYS:C	2.33	0.49
1:A:382:ARG:NH1	3:T:713:DG:H5"	2.27	0.49
1:A:151:VAL:HG12	1:A:157:LYS:HE3	1.93	0.49
1:A:384:PRO:HG2	1:A:387:GLN:NE2	2.27	0.49
1:A:110:VAL:O	1:A:111:THR:C	2.49	0.49
1:A:76:VAL:HG22	1:A:89:LEU:HD21	1.94	0.49
1:A:120:LEU:HD22	1:A:124:ARG:HH11	1.77	0.49
1:A:149:ILE:HG22	1:A:150:SER:N	2.26	0.49
2:B:31:LEU:O	2:B:35:ILE:HG12	2.12	0.49
1:A:68:SER:HB3	1:A:71:VAL:CG2	2.42	0.49
1:A:128:VAL:O	1:A:131:ALA:HB3	2.13	0.49
1:A:370:TYR:CD2	1:A:432:ARG:HD3	2.47	0.49
2:B:19:LEU:HD22	2:B:23:GLN:CG	2.43	0.49
1:A:428:ARG:HG2	1:A:428:ARG:NH1	2.26	0.48
1:A:207:LEU:HD23	1:A:333:ILE:HD12	1.95	0.48
1:A:262:PRO:O	1:A:265:VAL:HG22	2.14	0.48
1:A:431:GLY:O	1:A:435:ARG:HB2	2.14	0.48
1:A:357:ASN:ND2	1:A:380:VAL:HG21	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:LEU:HD22	1:A:124:ARG:NH1	2.29	0.47
1:A:371:PRO:HG3	1:A:433:LEU:HD23	1.96	0.47
1:A:429:LEU:O	1:A:432:ARG:HB2	2.14	0.47
2:B:19:LEU:HD22	2:B:23:GLN:HG2	1.97	0.47
1:A:79:TYR:O	1:A:80:HIS:C	2.53	0.47
1:A:396:ALA:O	1:A:430:HIS:NE2	2.46	0.47
1:A:175:PRO:HG2	1:A:247:LEU:O	2.15	0.46
1:A:161:LEU:HD11	1:A:163:ILE:HD11	1.98	0.46
1:A:339:VAL:O	1:A:345:ILE:HB	2.16	0.46
1:A:130:THR:HA	1:A:133:LYS:HZ1	1.78	0.45
3:T:716:DA:H2"	3:T:717:DT:OP2	2.16	0.45
1:A:304:LEU:O	1:A:429:LEU:HD12	2.17	0.45
1:A:96:ASP:HB3	1:A:149:ILE:HG23	1.99	0.44
1:A:370:TYR:CZ	1:A:432:ARG:NE	2.82	0.44
2:B:64:LEU:O	2:B:66:LEU:HD13	2.17	0.44
1:A:363:LYS:NZ	4:A:833:SO4:O4	2.46	0.44
1:A:243:GLU:HB3	1:A:245:THR:HG23	1.99	0.44
1:A:244:ARG:HG2	1:A:244:ARG:NH1	2.30	0.44
1:A:285:SER:HB3	1:A:288:ALA:HA	2.00	0.44
1:A:399:ILE:CB	1:A:430:HIS:CD2	2.96	0.44
1:A:20:ALA:C	1:A:22:GLY:H	2.21	0.44
1:A:337:PHE:HB2	1:A:338:PRO:HD3	1.99	0.44
1:A:370:TYR:CE2	1:A:432:ARG:CD	3.00	0.44
1:A:63:ASN:OD1	1:A:263:SER:HB3	2.17	0.43
1:A:157:LYS:CD	1:A:181:LYS:HE2	2.48	0.43
1:A:397:ARG:HH11	1:A:397:ARG:HG2	1.82	0.43
1:A:275:ILE:CG2	1:A:381:LEU:HD11	2.48	0.43
1:A:386:VAL:HG12	5:A:845:HOH:O	2.17	0.43
1:A:235:ARG:HB3	1:A:237:ASP:OD1	2.18	0.43
1:A:430:HIS:CE1	1:A:434:SER:HB3	2.53	0.43
1:A:99:GLY:HA2	1:A:252:GLN:CG	2.45	0.43
1:A:127:GLU:O	1:A:131:ALA:HB2	2.19	0.43
1:A:308:THR:CG2	1:A:351:LYS:O	2.66	0.43
1:A:410:LEU:HD13	1:A:419:VAL:HG22	2.01	0.43
1:A:184:ILE:HD12	1:A:196:LEU:HB2	2.00	0.43
1:A:82:LYS:O	1:A:83:SER:HB2	2.19	0.43
2:B:37:ILE:HD11	2:B:42:ILE:HD11	2.01	0.42
3:T:716:DA:C8	3:T:717:DT:H72	2.54	0.42
1:A:21:ASN:N	1:A:21:ASN:HD22	2.16	0.42
1:A:382:ARG:CZ	3:T:713:DG:H5"	2.49	0.42
2:B:12:GLN:HE21	2:B:12:GLN:HB2	1.47	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:265:VAL:O	1:A:272:GLY:CA	2.68	0.42
1:A:328:THR:HB	1:A:329:PRO:HD2	2.02	0.42
1:A:351:LYS:HA	1:A:364:THR:O	2.20	0.42
1:A:275:ILE:HG21	1:A:381:LEU:HD11	2.01	0.42
1:A:21:ASN:ND2	1:A:21:ASN:N	2.67	0.42
1:A:182:LEU:HD22	1:A:182:LEU:H	1.84	0.42
3:T:703:DT:C2'	3:T:704:DC:H5'	2.50	0.41
1:A:117:TRP:HB3	1:A:161:LEU:HD23	2.01	0.41
1:A:351:LYS:HD3	1:A:365:ALA:HA	2.03	0.41
1:A:109:THR:O	1:A:110:VAL:C	2.59	0.41
1:A:157:LYS:HD3	1:A:181:LYS:HE2	2.01	0.41
1:A:380:VAL:HG23	1:A:381:LEU:N	2.35	0.41
3:T:702:DA:H2"	3:T:703:DT:H5'	2.00	0.41
1:A:256:CYS:SG	1:A:313:LYS:HG3	2.60	0.41
1:A:120:LEU:HD11	1:A:169:ILE:CG1	2.50	0.41
3:T:699:DA:H8	3:T:699:DA:O5'	2.03	0.41
1:A:115:MET:CE	1:A:247:LEU:H	2.33	0.41
1:A:201:ASP:OD1	1:A:229:ARG:CZ	2.69	0.41
1:A:266:LYS:HD2	1:A:311:HIS:CE1	2.56	0.40
1:A:95:ARG:HD2	1:A:148:ARG:HB2	2.02	0.40
1:A:121:THR:OG1	1:A:124:ARG:HG3	2.20	0.40
1:A:273:PRO:HG2	1:A:312:ALA:HB2	2.03	0.40
2:B:61:LEU:HD22	2:B:66:LEU:HB3	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	408/440 (93%)	362 (89%)	37 (9%)	9 (2%)	6	15
2	B	69/88 (78%)	68 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	477/528 (90%)	430 (90%)	38 (8%)	9 (2%)	8 18

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	108	GLU
1	A	80	HIS
1	A	111	THR
1	A	119	LYS
1	A	133	LYS
1	A	415	PRO
1	A	95	ARG
1	A	110	VAL
1	A	341	GLY

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	352/372 (95%)	331 (94%)	21 (6%)	19 39
2	B	64/80 (80%)	59 (92%)	5 (8%)	12 27
All	All	416/452 (92%)	390 (94%)	26 (6%)	18 37

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	ASN
1	A	73	ASP
1	A	79	TYR
1	A	85	GLN
1	A	93	ILE
1	A	118	GLU
1	A	122	GLU
1	A	124	ARG
1	A	155	GLN

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Mol	Chain	Res	Type
1	A	182	LEU
1	A	244	ARG
1	A	286	SER
1	A	289	LEU
1	A	334	ILE
1	A	346	HIS
1	A	364	THR
1	A	371	PRO
1	A	397	ARG
1	A	404	ASP
1	A	412	THR
1	A	417	ASN
2	B	13	LEU
2	B	19	LEU
2	B	55	THR
2	B	61	LEU
2	B	66	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	10	ASN
1	A	21	ASN
1	A	48	GLN
1	A	85	GLN
1	A	216	ASN
1	A	320	GLN
1	A	357	ASN
1	A	425	ASN
2	B	12	GLN
2	B	22	GLN
2	B	23	GLN
2	B	39	GLN

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)

8 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	$\#|Z| > 2$
4	SO4	A	835	-	4,4,4	0.25	0	6,6,6	0.12	0
4	SO4	A	833	-	4,4,4	0.28	0	6,6,6	0.14	0
4	SO4	A	837	-	4,4,4	0.27	0	6,6,6	0.07	0
4	SO4	A	836	-	4,4,4	0.25	0	6,6,6	0.08	0
4	SO4	A	838	-	4,4,4	0.27	0	6,6,6	0.07	0
4	SO4	B	840	-	4,4,4	0.33	0	6,6,6	0.09	0
4	SO4	A	834	-	4,4,4	0.30	0	6,6,6	0.09	0
4	SO4	A	839	-	4,4,4	0.29	0	6,6,6	0.09	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	833	SO4	3	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(Å²)	Q<0.9
1	A	412/440 (93%)	0.39	21 (5%)	28	26	27, 56, 103, 125	0
2	B	71/88 (80%)	0.10	0	100	100	26, 35, 58, 89	0
3	T	21/21 (100%)	-0.22	0	100	100	36, 59, 74, 76	0
All	All	504/549 (91%)	0.32	21 (4%)	36	34	26, 52, 100, 125	0

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	147	PHE	6.4
1	A	149	ILE	5.9
1	A	132	TYR	5.2
1	A	345	ILE	4.3
1	A	153	GLY	4.0
1	A	150	SER	4.0
1	A	154	ALA	3.6
1	A	19	LEU	3.5
1	A	196	LEU	3.2
1	A	146	ASP	3.2
1	A	109	THR	2.9
1	A	148	ARG	2.9
1	A	79	TYR	2.7
1	A	346	HIS	2.7
1	A	227	ASN	2.7
1	A	341	GLY	2.5
1	A	228	VAL	2.4
1	A	344	GLY	2.3
1	A	230	ALA	2.2
1	A	156	GLU	2.2
1	A	360	LYS	2.1

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 monosaccharides 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(Å^2)	Q<0.9
4	SO4	A	839	5/5	0.76	0.28	131,131,134,135	0
4	SO4	A	838	5/5	0.83	0.20	120,120,122,123	0
4	SO4	A	835	5/5	0.88	0.17	114,115,116,116	0
4	SO4	A	837	5/5	0.88	0.20	126,127,127,127	0
4	SO4	A	836	5/5	0.90	0.15	116,117,119,119	0
4	SO4	A	834	5/5	0.91	0.15	95,97,101,102	0
4	SO4	B	840	5/5	0.91	0.20	91,91,96,98	0
4	SO4	A	833	5/5	0.97	0.11	86,88,93,95	0

6.5 Other polymers ⓘ

There are no such residues in this entry.