Full wwPDB X-ray Structure Validation Report (i)

May 13, 2020 – 12:20 pm BST

PDB ID	:	4GVR
Title	:	X-ray structure of the Archaeoglobus fulgidus methenyl-tetrahydromethanopterin cyclohydrolase
Authors	:	Upadhyay, V.; Demmer, U.; Warkentin, E.; Moll, J.; Shima, S.; Ermler, U.
Deposited on	:	2012-08-31
Resolution	:	1.52 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
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (i)) were used in the production of this report:

|		
MolProbity	:	4.02b-467
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 1.52 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.
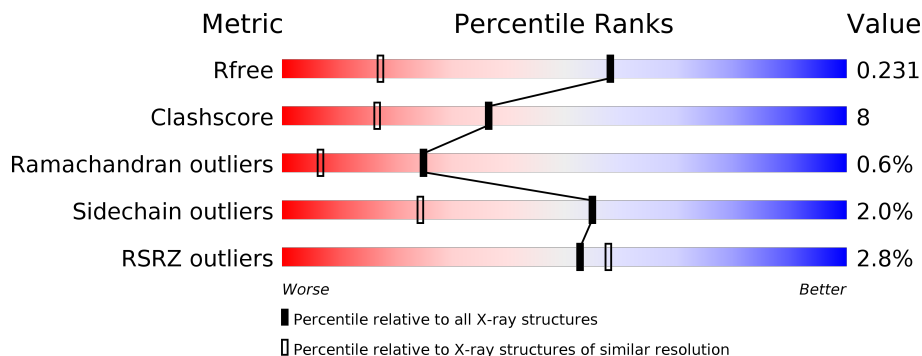
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4009 (1.54-1.50)
Clashscore	141614	4249 (1.54-1.50)
Ramachandran outliers	138981	4148 (1.54-1.50)
Sidechain outliers	138945	4146 (1.54-1.50)
RSRZ outliers	127900	3943 (1.54-1.50)

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 <=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	316	87% 12%
1	B	316	81% 16%
1	C	316	85% 15%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 8285 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 Methenyltetrahydromethanopterin cyclohydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	315	Total 2513	C 1605	N 395	O 497	S 16	0	10	0
1	B	315	Total 2496	C 1594	N 391	O 493	S 18	0	8	0
1	C	315	Total 2536	C 1615	N 398	O 507	S 16	0	12	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	186	GLN	GLU	ENGINEERED MUTATION	UNP O28344
B	186	GLN	GLU	ENGINEERED MUTATION	UNP O28344
C	186	GLN	GLU	ENGINEERED MUTATION	UNP O28344

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	268	Total 268	O 268	0	0
2	B	208	Total 208	O 208	0	0
2	C	264	Total 264	O 264	0	0

3 Residue-property plots ⓘ

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.
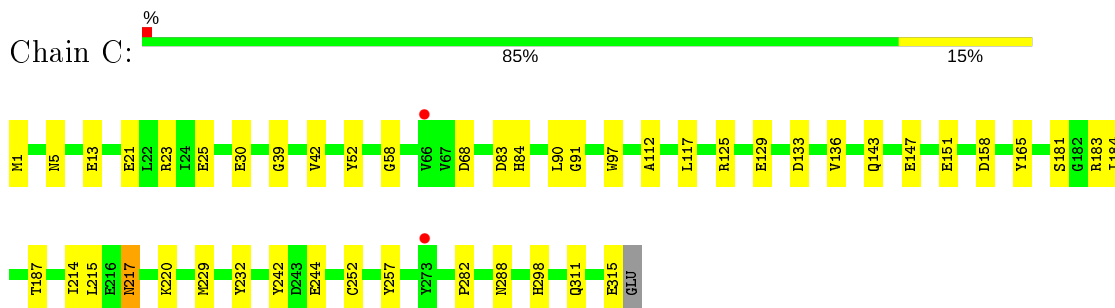
- Molecule 1: Methenyltetrahydromethanopterin cyclohydrolase
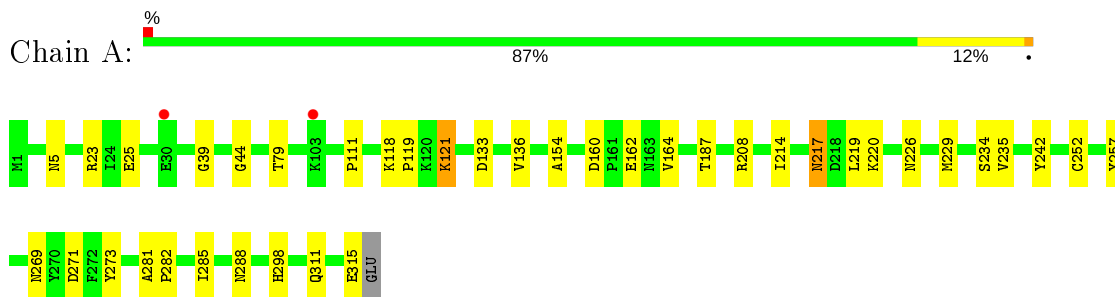
- Molecule 1: Methenyltetrahydromethanopterin cyclohydrolase
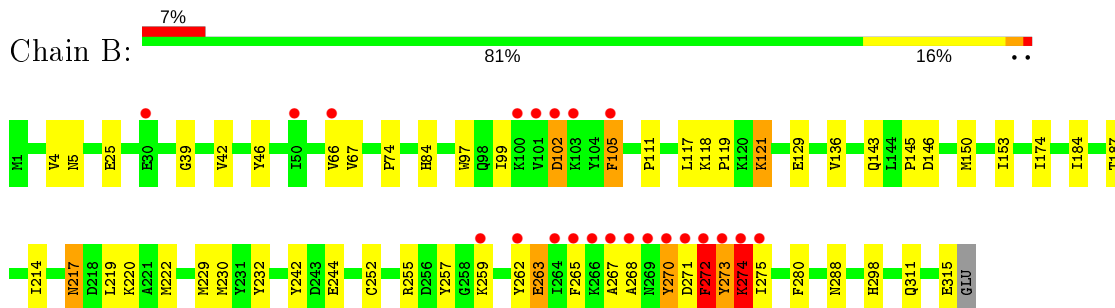
- Molecule 1: Methenyltetrahydromethanopterin cyclohydrolase

4   Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	118.54Å 122.08Å 79.39Å 90.00° 99.02° 90.00°	Depositor
Resolution (Å)	48.17 – 1.52	Depositor
	48.17 – 1.52	EDS
% Data completeness	96.3 (48.17-1.52)	Depositor
(in resolution range)	96.3 (48.17-1.52)	EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.94 (at 1.52Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.164 , 0.231	Depositor
	0.163 , 0.231	DCC
R_{free} test set	8252 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	16.8	Xtriage
Anisotropy	0.757	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 43.9	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	8285	wwPDB-VP
Average B, all atoms (Å^2)	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.73% 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)

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	0.95	0/2560	0.93	2/3476 (0.1%)
1	B	0.91	5/2543 (0.2%)	0.88	1/3452 (0.0%)
1	C	1.07	8/2583 (0.3%)	1.07	6/3507 (0.2%)
All	All	0.98	13/7686 (0.2%)	0.96	9/10435 (0.1%)

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	B	0	3

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	151	GLU	CD-OE1	11.85	1.38	1.25
1	B	263	GLU	CD-OE1	10.64	1.37	1.25
1	B	263	GLU	CD-OE2	10.10	1.36	1.25
1	C	97	TRP	CD2-CE2	6.45	1.49	1.41
1	B	232	TYR	CE1-CZ	6.10	1.46	1.38
1	B	46	TYR	CZ-OH	5.69	1.47	1.37
1	C	52	TYR	CE1-CZ	5.64	1.45	1.38
1	C	58	GLY	N-CA	5.58	1.54	1.46
1	C	91	GLY	C-O	5.47	1.32	1.23
1	B	97	TRP	CD2-CE2	5.39	1.47	1.41
1	C	232	TYR	CE2-CZ	5.28	1.45	1.38
1	C	112	ALA	N-CA	5.09	1.56	1.46
1	C	181	SER	CB-OG	5.07	1.48	1.42

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	183	ARG	NE-CZ-NH2	-16.09	112.26	120.30
1	A	208	ARG	NE-CZ-NH1	7.19	123.90	120.30
1	C	68	ASP	CB-CG-OD1	6.72	124.35	118.30
1	C	215	LEU	CB-CG-CD2	6.57	122.17	111.00
1	C	90	LEU	CB-CG-CD2	6.51	122.07	111.00
1	C	183	ARG	NH1-CZ-NH2	6.46	126.50	119.40
1	A	208	ARG	NE-CZ-NH2	-6.36	117.12	120.30
1	C	125	ARG	NE-CZ-NH2	-6.32	117.14	120.30
1	B	274	LYS	N-CA-C	5.52	125.89	111.00

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	272	PHE	Peptide
1	B	273	TYR	Peptide
1	B	274	LYS	Peptide

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	2513	0	2479	36	0
1	B	2496	0	2461	67	0
1	C	2536	0	2483	32	0
2	A	268	0	0	6	0
2	B	208	0	0	4	0
2	C	264	0	0	4	0
All	All	8285	0	7423	119	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 8.

All (119) 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:273:TYR:HB2	1:B:275:ILE:N	1.56	1.20

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:273:TYR:CB	1:B:275:ILE:H	1.61	1.12
1:B:274:LYS:NZ	1:B:274:LYS:HB2	1.77	0.97
1:C:1:MET:HE1	2:C:547:HOH:O	1.77	0.83
1:B:273:TYR:HB2	1:B:275:ILE:H	0.72	0.82
1:B:274:LYS:HZ1	1:B:274:LYS:HB2	1.45	0.81
1:B:25:GLU:HG2	1:B:42:VAL:HG11	1.63	0.80
1:B:145:PRO:HB2	1:B:150[B]:MET:HE3	1.62	0.80
1:B:230:MET:HE3	2:B:517:HOH:O	1.84	0.76
1:B:274:LYS:NZ	1:B:274:LYS:CB	2.49	0.76
1:A:288:ASN:HD21	1:B:214:ILE:H	1.34	0.76
1:B:217:ASN:ND2	1:B:220:LYS:H	1.84	0.76
1:A:214:ILE:H	1:C:288:ASN:HD21	1.35	0.75
1:B:121:LYS:HG3	2:B:492:HOH:O	1.87	0.74
1:A:160:ASP:OD1	1:A:162:GLU:HG3	1.89	0.73
1:A:315:GLU:OE2	1:C:298:HIS:HD2	1.71	0.72
1:B:270:TYR:CB	1:B:272:PHE:O	2.37	0.72
1:B:288:ASN:HD21	1:C:214:ILE:H	1.38	0.72
1:B:268:ALA:O	1:B:270:TYR:N	2.23	0.70
1:B:265:PHE:CZ	1:B:271:ASP:HA	2.27	0.70
1:B:270:TYR:HB3	1:B:272:PHE:O	1.92	0.70
1:B:270:TYR:CG	1:B:272:PHE:O	2.45	0.69
1:B:117:LEU:HD21	1:B:129:GLU:HG3	1.77	0.66
1:C:187[A]:THR:HG21	1:C:229:MET:SD	2.36	0.65
1:B:145:PRO:CB	1:B:150[B]:MET:HE3	2.25	0.65
1:B:187[A]:THR:HG21	1:B:229:MET:SD	2.37	0.65
1:B:242:TYR:OH	1:B:298:HIS:HE1	1.80	0.64
1:C:5:ASN:HD22	1:C:136:VAL:H	1.45	0.64
1:A:154:ALA:HB2	1:A:164:VAL:HG21	1.78	0.64
1:A:298:HIS:HD2	1:B:315:GLU:OE2	1.80	0.64
1:A:187[A]:THR:HG21	1:A:229:MET:SD	2.37	0.64
1:B:265:PHE:HE1	1:B:272:PHE:H	1.41	0.63
1:C:30:GLU:HG2	1:C:147:GLU:HG2	1.80	0.63
1:C:158:ASP:HB2	2:C:638:HOH:O	1.97	0.63
1:B:298:HIS:HD2	1:C:315:GLU:OE2	1.81	0.62
1:A:214:ILE:H	1:C:288:ASN:ND2	1.98	0.62
1:B:5:ASN:HD22	1:B:136:VAL:H	1.46	0.61
1:C:25:GLU:HG3	1:C:42:VAL:HG11	1.81	0.61
1:A:288:ASN:ND2	1:B:214:ILE:H	1.98	0.60
1:A:220:LYS:NZ	1:A:311:GLN:HE22	1.99	0.60
1:A:242:TYR:OH	1:A:298:HIS:HE1	1.85	0.59
1:A:23[B]:ARG:HD3	1:A:44:GLY:O	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:217:ASN:ND2	1:A:220:LYS:H	2.01	0.59
1:B:272:PHE:HE1	1:B:280:PHE:CZ	2.21	0.58
1:C:217:ASN:ND2	1:C:220:LYS:H	2.02	0.58
1:B:230:MET:HG3	2:B:517:HOH:O	2.04	0.56
1:B:25:GLU:HG2	1:B:42:VAL:CG1	2.35	0.56
1:C:242:TYR:OH	1:C:298:HIS:HE1	1.89	0.56
1:A:23[B]:ARG:NH2	2:A:468:HOH:O	2.39	0.55
1:B:252:CYS:HA	1:B:257:TYR:CG	2.42	0.55
1:B:242:TYR:OH	1:B:298:HIS:CE1	2.60	0.55
1:B:4:VAL:HG23	1:B:111:PRO:HB3	1.88	0.54
1:C:217:ASN:HD21	1:C:220:LYS:H	1.55	0.54
1:B:145:PRO:CG	1:B:150[B]:MET:HE3	2.37	0.54
1:C:220:LYS:NZ	1:C:311:GLN:HE22	2.04	0.54
1:B:263:GLU:O	1:B:267:ALA:CB	2.55	0.53
1:B:273:TYR:CD2	1:B:275:ILE:O	2.62	0.53
1:B:263:GLU:O	1:B:267:ALA:HB2	2.09	0.52
1:B:274:LYS:HZ2	1:B:274:LYS:CB	2.22	0.52
1:A:234:SER:HB3	1:B:74:PRO:HB3	1.92	0.52
2:A:662:HOH:O	1:C:84:HIS:HD2	1.93	0.51
1:B:5:ASN:ND2	1:B:136:VAL:H	2.08	0.49
1:C:187[B]:THR:HG23	1:C:282:PRO:HD3	1.95	0.49
1:B:230:MET:HE2	1:B:280:PHE:CD1	2.48	0.49
1:A:242:TYR:OH	1:A:298:HIS:CE1	2.63	0.49
1:A:187[A]:THR:CG2	1:A:229:MET:SD	3.02	0.48
1:B:219:LEU:HD22	1:B:262:TYR:HE1	1.78	0.48
1:B:298:HIS:CD2	1:C:315:GLU:OE2	2.66	0.48
1:A:217:ASN:HD21	1:A:220:LYS:H	1.61	0.48
1:A:298:HIS:CD2	1:B:315:GLU:OE2	2.65	0.47
1:A:23[B]:ARG:HD2	1:C:83:ASP:HB3	1.95	0.47
1:B:99:ILE:O	1:B:105:PHE:HA	2.14	0.47
1:A:5:ASN:HD22	1:A:136:VAL:H	1.63	0.47
1:B:146:ASP:HB2	2:B:595:HOH:O	2.14	0.47
1:C:187[A]:THR:CG2	1:C:229:MET:SD	3.03	0.47
1:A:220:LYS:HZ3	1:A:311:GLN:HE22	1.64	0.46
1:A:281:ALA:HB1	1:A:282:PRO:HD2	1.97	0.46
1:B:220:LYS:NZ	1:B:311:GLN:HE22	2.14	0.46
1:B:150[B]:MET:HE2	1:B:153:ILE:HD12	1.98	0.46
1:C:184:ILE:O	1:C:187[B]:THR:HG22	2.15	0.46
1:B:66[B]:VAL:HG12	1:B:67:VAL:N	2.30	0.46
1:B:255:ARG:HH21	1:B:274:LYS:HG2	1.80	0.45
1:B:288:ASN:ND2	1:C:214:ILE:H	2.08	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:217:ASN:HD22	1:B:220:LYS:H	1.60	0.45
1:A:271:ASP:O	1:A:271:ASP:CG	2.54	0.45
1:B:184:ILE:O	1:B:187[B]:THR:HG22	2.15	0.45
1:C:252:CYS:HA	1:C:257:TYR:CG	2.51	0.45
1:B:270:TYR:CD2	1:B:272:PHE:O	2.69	0.45
1:B:102:ASP:O	1:B:105:PHE:CE1	2.69	0.45
1:A:217:ASN:HD22	1:A:217:ASN:C	2.20	0.45
1:B:66[A]:VAL:O	1:B:66[A]:VAL:HG13	2.18	0.44
1:B:118:LYS:HA	1:B:119:PRO:HA	1.90	0.44
1:C:5:ASN:ND2	1:C:136:VAL:H	2.11	0.44
1:A:252:CYS:HA	1:A:257:TYR:CG	2.52	0.44
1:B:268:ALA:C	1:B:270:TYR:H	2.20	0.44
1:B:145:PRO:CG	1:B:150[B]:MET:CE	2.95	0.44
1:C:244:GLU:HG3	2:C:632:HOH:O	2.18	0.43
1:A:5:ASN:ND2	1:A:136:VAL:H	2.16	0.43
1:B:84:HIS:HE1	1:C:21:GLU:O	2.00	0.43
1:C:23[A]:ARG:NH1	2:C:661:HOH:O	2.51	0.43
1:A:226:ASN:ND2	2:A:577:HOH:O	2.51	0.43
1:B:220:LYS:HD2	1:B:311:GLN:HE22	1.83	0.43
1:A:315:GLU:OE2	1:C:298:HIS:CD2	2.60	0.43
1:A:79:THR:HG21	1:B:66[B]:VAL:HG13	1.99	0.43
1:B:265:PHE:HE1	1:B:272:PHE:N	2.14	0.43
1:B:217:ASN:HD21	1:B:220:LYS:H	1.65	0.42
1:A:269:ASN:HA	1:A:273:TYR:CE1	2.54	0.42
1:B:187[A]:THR:CG2	1:B:229:MET:SD	3.06	0.42
1:C:117:LEU:HD21	1:C:129:GLU:HG3	2.00	0.42
1:A:121:LYS:HD2	2:A:590:HOH:O	2.20	0.41
1:A:235:VAL:O	1:A:285:ILE:HA	2.20	0.41
1:C:13:GLU:OE2	1:C:165:TYR:OH	2.22	0.41
1:C:220:LYS:HZ3	1:C:311:GLN:HE22	1.69	0.41
1:C:242:TYR:OH	1:C:298:HIS:CE1	2.70	0.40
1:A:25:GLU:HG2	2:A:476:HOH:O	2.20	0.40
2:A:565:HOH:O	1:B:174:ILE:HG12	2.21	0.40
1:A:5:ASN:ND2	1:A:111:PRO:HB2	2.36	0.40
1:A:118:LYS:HA	1:A:119:PRO:HA	1.96	0.40
1:B:272:PHE:HB3	1:B:273:TYR:HD1	1.86	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	323/316 (102%)	314 (97%)	8 (2%)	1 (0%)	41	18
1	B	321/316 (102%)	308 (96%)	9 (3%)	4 (1%)	13	2
1	C	325/316 (103%)	316 (97%)	8 (2%)	1 (0%)	41	18
All	All	969/948 (102%)	938 (97%)	25 (3%)	6 (1%)	25	7

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	102	ASP
1	A	39	GLY
1	B	274	LYS
1	B	39	GLY
1	C	39	GLY
1	B	272	PHE

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	275/266 (103%)	271 (98%)	4 (2%)	65	38
1	B	273/266 (103%)	263 (96%)	10 (4%)	34	8
1	C	277/266 (104%)	274 (99%)	3 (1%)	73	52
All	All	825/798 (103%)	808 (98%)	17 (2%)	55	22

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	121	LYS
1	A	133	ASP
1	A	217	ASN
1	A	219	LEU
1	B	105	PHE
1	B	121	LYS
1	B	143	GLN
1	B	217	ASN
1	B	222[A]	MET
1	B	222[B]	MET
1	B	244	GLU
1	B	259	LYS
1	B	270	TYR
1	B	274	LYS
1	C	133	ASP
1	C	143	GLN
1	C	217	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	ASN
1	A	98	GLN
1	A	143	GLN
1	A	217	ASN
1	A	226	ASN
1	A	288	ASN
1	A	298	HIS
1	A	311	GLN
1	B	5	ASN
1	B	41	ASN
1	B	98	GLN
1	B	217	ASN
1	B	226	ASN
1	B	288	ASN
1	B	298	HIS
1	B	311	GLN
1	C	5	ASN
1	C	84	HIS
1	C	217	ASN
1	C	288	ASN

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Mol	Chain	Res	Type
1	C	298	HIS
1	C	311	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 carbohydrates in this entry.

5.6   Ligand geometry (i)

There are no ligands in this entry.

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	315/316 (99%)	-0.43	2 (0%)	89	91	12, 20, 37, 58	0
1	B	315/316 (99%)	0.04	22 (6%)	16	17	13, 25, 47, 79	0
1	C	315/316 (99%)	-0.47	2 (0%)	89	91	12, 17, 37, 51	0
All	All	945/948 (99%)	-0.29	26 (2%)	53	58	12, 21, 41, 79	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	273	TYR	15.5
1	B	270	TYR	9.7
1	B	272	PHE	9.1
1	B	268	ALA	7.8
1	B	267	ALA	7.4
1	B	105	PHE	7.2
1	B	269	ASN	6.6
1	B	274	LYS	6.6
1	B	271	ASP	4.7
1	B	264	ILE	3.6
1	B	275	ILE	3.4
1	B	262	TYR	3.1
1	C	273	TYR	3.0
1	B	265	PHE	2.7
1	B	100	LYS	2.7
1	B	266	LYS	2.6
1	B	30	GLU	2.6
1	B	101	VAL	2.6
1	B	103	LYS	2.5
1	B	102	ASP	2.5
1	B	259	LYS	2.4
1	B	50	ILE	2.2
1	A	103	LYS	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	30	GLU	2.1
1	B	66[A]	VAL	2.1
1	C	66[A]	VAL	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)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.