



Full wwPDB X-ray Structure Validation Report ⓘ

Jul 31, 2023 – 01:17 AM EDT

PDB ID : 1XGN
Title : METHIONINE AMINOPEPTIDASE FROM HYPERTHERMOPHILE PYROCOCCUS FURIOSUS
Authors : Tahirov, T.H.; Tsukihara, T.
Deposited on : 1997-11-17
Resolution : 2.90 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 ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.13
EDS : 2.34
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) : 2.34

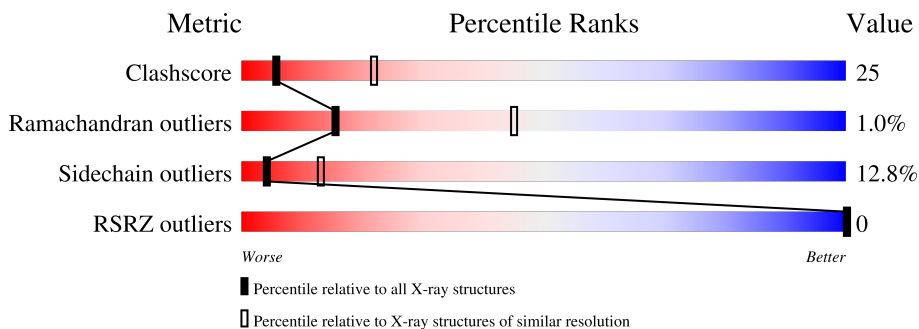
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION



The reported resolution of this entry is 2.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	295	 50% 44% 6%
1	B	295	 51% 41% 8%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 4653 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 METHIONINE AMINOPEPTIDASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	295	2312	1490	390	423	9	0	0	0
1	B	295	2312	1490	390	423	9	0	0	0

- Molecule 2 is COBALT (II) ION (three-letter code: CO) (formula: Co).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Co	0	0
			2	2		
2	B	2	Total	Co	0	0
			2	2		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	16	Total	O	0	0
			16	16		
3	B	9	Total	O	0	0
			9	9		

4 Data and refinement statistics

Property	Value	Source
Space group	P 64	Depositor
Cell constants a, b, c, α , β , γ	110.98Å 110.98Å 124.96Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	15.00 – 2.90 27.38 – 2.90	Depositor EDS
% Data completeness (in resolution range)	87.1 (15.00-2.90) 90.2 (27.38-2.90)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.10 (at 2.89Å)	Xtrriage
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.156 , 0.226 0.163 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	55.2	Xtrriage
Anisotropy	0.017	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.21 , 85.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.065 for h,-h-k,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	4653	wwPDB-VP
Average B, all atoms (Å ²)	37.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.73% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.66	0/2353	0.83	0/3176
1	B	0.63	0/2353	0.81	2/3176 (0.1%)
All	All	0.65	0/4706	0.82	2/6352 (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	B	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	B	148	VAL	N-CA-C	5.09	124.76	111.00
1	B	64	THR	N-CA-C	-5.07	97.30	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	265	TYR	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	2312	0	2407	120	0
1	B	2312	0	2407	123	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
3	A	16	0	0	1	0
3	B	9	0	0	1	0
All	All	4653	0	4814	240	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 25.

All (240) 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:30:LEU:HD12	1:B:54:LEU:HD13	1.51	0.93
1:A:208:TYR:HA	1:A:262:ILE:HG22	1.50	0.93
1:A:19:LYS:HD2	1:A:40:MET:SD	2.13	0.88
1:A:11:GLU:O	1:A:15:LYS:HG2	1.73	0.88
1:A:56:ILE:HD13	1:A:56:ILE:H	1.40	0.87
1:A:287:LYS:H	1:A:287:LYS:HD2	1.36	0.86
1:A:2:ASP:HB3	1:A:5:LYS:HD3	1.55	0.85
1:B:187:GLU:HB3	1:B:280:GLU:HG3	1.60	0.83
1:B:182:ASP:HB3	1:B:184:PHE:HE2	1.47	0.78
1:B:197:VAL:CG1	1:B:268:LEU:HB3	2.14	0.76
1:B:219:ALA:HB1	1:B:256:LEU:HD13	1.67	0.76
1:B:180:GLU:HG2	1:B:287:LYS:HG2	1.66	0.76
1:A:186:ILE:HD11	1:A:283:ILE:HD13	1.69	0.74
1:B:131:LEU:HD12	1:B:166:ILE:HD13	1.70	0.73
1:A:64:THR:O	1:A:204:LEU:HD23	1.87	0.73
1:A:281:HIS:CE1	1:A:295:GLU:HB2	2.22	0.73
1:B:197:VAL:HG11	1:B:268:LEU:HB3	1.70	0.73
1:A:35:GLU:O	1:A:39:LYS:HD3	1.89	0.73
1:A:107:LEU:HD13	1:A:277:ALA:HB2	1.72	0.72
1:B:178:LEU:HD22	1:B:285:VAL:HG21	1.72	0.71
1:B:285:VAL:HA	1:B:290:VAL:HG12	1.72	0.71
1:B:139:ILE:HD13	1:B:190:ALA:HB2	1.72	0.71
1:B:214:VAL:HG21	1:B:219:ALA:HB3	1.73	0.70
1:B:35:GLU:O	1:B:39:LYS:HD2	1.93	0.69
1:B:199:GLU:HB2	1:B:266:PRO:HG2	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:39:LYS:HZ2	1:B:39:LYS:HA	1.58	0.68
1:B:17:ARG:HH22	1:B:295:GLU:HB2	1.59	0.68
1:B:163:GLY:O	1:B:164:ILE:HG13	1.94	0.68
1:A:247:GLY:O	1:A:251:LEU:HD23	1.94	0.67
1:B:66:TYR:O	1:B:69:ASP:HB2	1.93	0.67
1:A:202:PRO:HG2	1:A:204:LEU:CD1	2.25	0.67
1:B:147:ILE:HA	1:B:195:GLY:O	1.95	0.66
1:A:269:LYS:HB3	1:A:269:LYS:HZ2	1.60	0.66
1:B:86:HIS:HD2	1:B:89:GLY:N	1.94	0.66
1:B:202:PRO:O	1:B:267:VAL:HG23	1.96	0.65
1:A:47:LYS:HZ2	1:A:48:PRO:HD2	1.61	0.65
1:A:222:LEU:HD12	1:A:252:ALA:HB1	1.78	0.65
1:A:278:GLN:HG2	1:A:279:PHE:N	2.12	0.64
1:A:196:GLN:HE21	1:B:196:GLN:HE21	1.45	0.64
1:B:11:GLU:O	1:B:14:LYS:HG2	1.98	0.64
1:B:64:THR:HG22	1:B:204:LEU:HB3	1.80	0.64
1:A:25:ARG:HB2	1:A:25:ARG:NH1	2.14	0.63
1:A:41:ILE:HG12	1:A:85:VAL:HG12	1.79	0.63
1:A:123:ARG:O	1:A:126:VAL:HG12	1.99	0.63
1:A:156:GLU:HG3	1:A:162:ALA:HB2	1.80	0.62
1:A:287:LYS:H	1:A:287:LYS:CD	2.07	0.62
1:A:171:ARG:HB2	1:A:174:ASP:OD2	2.00	0.62
1:A:33:LEU:O	1:A:37:ILE:HG13	1.99	0.62
1:A:75:GLU:HA	1:A:100:VAL:HG12	1.81	0.62
1:B:200:VAL:HB	1:B:201:PRO:HD2	1.82	0.62
1:B:182:ASP:HB3	1:B:184:PHE:CE2	2.31	0.61
1:B:180:GLU:CG	1:B:287:LYS:HG2	2.30	0.61
1:A:1:MET:SD	1:A:2:ASP:N	2.74	0.61
1:B:61:ALA:O	1:B:62:HIS:HB2	2.01	0.61
1:A:73:LEU:HD21	1:A:79:LEU:HD22	1.83	0.60
1:A:202:PRO:HG2	1:A:204:LEU:HD11	1.83	0.60
1:A:56:ILE:HD13	1:A:56:ILE:N	2.13	0.60
1:B:199:GLU:HA	1:B:268:LEU:HD23	1.84	0.60
1:B:86:HIS:HD2	1:B:89:GLY:H	1.49	0.59
1:A:10:GLY:O	1:A:13:ALA:HB3	2.03	0.58
1:A:10:GLY:HA2	1:A:294:THR:HG22	1.84	0.58
1:B:237:TYR:OH	1:B:250:LYS:HG3	2.04	0.58
1:A:196:GLN:HG2	1:B:196:GLN:NE2	2.18	0.57
1:B:2:ASP:HB3	1:B:5:LYS:HB2	1.86	0.57
1:B:183:VAL:HG23	1:B:283:ILE:O	2.03	0.57
1:A:7:MET:SD	1:A:291:ILE:HD11	2.45	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:244:MET:HG3	1:B:249:LEU:HB2	1.88	0.56
1:A:86:HIS:HD2	1:A:89:GLY:H	1.53	0.55
1:A:258:LYS:NZ	1:A:258:LYS:HB3	2.21	0.55
1:A:187:GLU:HB3	1:A:280:GLU:HB2	1.88	0.55
1:B:53:ASN:N	1:B:53:ASN:HD22	2.04	0.55
1:B:95:ALA:N	1:B:280:GLU:HB3	2.22	0.55
1:B:29:LEU:HA	1:B:72:VAL:HG12	1.88	0.54
1:A:47:LYS:NZ	1:A:47:LYS:HB3	2.22	0.54
1:B:17:ARG:HE	1:B:94:THR:HG21	1.71	0.54
1:A:19:LYS:O	1:A:23:LEU:HD12	2.08	0.54
1:A:223:LEU:HB2	1:A:256:LEU:HD11	1.90	0.54
1:B:8:LYS:HG3	1:B:12:ILE:HD11	1.89	0.54
1:B:12:ILE:O	1:B:16:VAL:HG12	2.08	0.54
1:B:86:HIS:HA	1:B:90:PHE:O	2.07	0.54
1:B:116:ASN:O	1:B:119:ILE:HB	2.08	0.53
1:A:284:ILE:HB	1:A:291:ILE:HG23	1.90	0.53
1:B:16:VAL:HG23	1:B:37:ILE:HG23	1.90	0.53
1:A:141:LYS:HE2	1:A:142:ARG:NH1	2.24	0.53
1:A:208:TYR:OH	1:A:211:ASP:HB2	2.09	0.53
1:B:64:THR:HG22	1:B:204:LEU:CB	2.39	0.52
1:A:40:MET:O	1:A:44:LEU:HD23	2.09	0.52
1:A:67:LYS:HB2	1:A:241:GLN:OE1	2.09	0.52
1:A:137:ASN:O	1:A:141:LYS:HB3	2.09	0.52
1:B:30:LEU:HD12	1:B:54:LEU:CD1	2.33	0.52
1:B:256:LEU:HB3	1:B:262:ILE:HG12	1.92	0.52
1:B:155:ILE:O	1:B:183:VAL:HG13	2.10	0.52
1:A:188:PRO:HD2	1:A:279:PHE:O	2.10	0.51
1:A:286:GLU:HG2	1:A:287:LYS:NZ	2.25	0.51
1:A:18:GLU:O	1:A:21:ILE:HB	2.10	0.51
1:A:10:GLY:HA2	1:A:92:ALA:HB1	1.93	0.51
1:A:47:LYS:NZ	1:A:48:PRO:HD2	2.26	0.51
1:B:115:LEU:O	1:B:115:LEU:HD12	2.11	0.51
1:A:10:GLY:CA	1:A:294:THR:HG22	2.41	0.51
1:B:99:ARG:HB2	1:B:108:MET:SD	2.51	0.50
1:B:5:LYS:HG3	1:B:87:ILE:HG22	1.92	0.50
1:B:33:LEU:O	1:B:37:ILE:HG13	2.12	0.50
1:A:199:GLU:HG2	1:A:266:PRO:HG2	1.95	0.49
1:B:148:VAL:HG22	1:B:195:GLY:O	2.12	0.49
1:A:99:ARG:HD2	1:A:102:MET:HB2	1.94	0.49
1:B:202:PRO:HD2	1:B:267:VAL:HG21	1.94	0.49
1:B:112:LYS:O	1:B:115:LEU:HB3	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:244:MET:SD	1:A:249:LEU:HA	2.53	0.49
1:A:34:ALA:HB2	1:A:65:PRO:HG3	1.94	0.49
1:A:202:PRO:CG	1:A:204:LEU:HD11	2.43	0.49
1:A:138:GLU:O	1:A:142:ARG:HD2	2.12	0.49
1:B:135:ILE:HG23	1:B:188:PRO:HB3	1.94	0.49
1:B:168:ASN:ND2	1:B:188:PRO:HA	2.27	0.49
1:B:16:VAL:CG2	1:B:37:ILE:HG23	2.43	0.49
1:A:207:MET:O	1:A:262:ILE:HA	2.13	0.48
1:A:1:MET:SD	1:A:2:ASP:CG	2.91	0.48
1:B:41:ILE:HD13	1:B:85:VAL:HG12	1.94	0.48
1:A:202:PRO:HG2	1:A:204:LEU:HD13	1.94	0.48
1:B:180:GLU:CD	1:B:287:LYS:HG2	2.32	0.48
1:A:33:LEU:CD2	1:A:37:ILE:HD11	2.44	0.48
1:B:86:HIS:HD2	1:B:89:GLY:CA	2.25	0.48
1:A:131:LEU:H	1:A:131:LEU:CD2	2.25	0.48
1:B:238:ARG:HH21	1:B:239:TRP:HE1	1.60	0.48
1:B:156:GLU:HB2	1:B:159:LYS:HB2	1.95	0.48
1:B:186:ILE:HG22	1:B:188:PRO:HD3	1.96	0.48
1:B:33:LEU:HD12	1:B:73:LEU:HD11	1.96	0.48
1:A:292:VAL:HG23	1:A:292:VAL:O	2.14	0.47
1:B:166:ILE:HD11	1:B:184:PHE:CD1	2.49	0.47
1:B:33:LEU:HD22	1:B:37:ILE:HD11	1.97	0.47
1:A:2:ASP:HB3	1:A:5:LYS:CD	2.35	0.47
1:A:63:TYR:CD1	1:A:63:TYR:C	2.88	0.47
1:B:10:GLY:HA3	1:B:293:THR:O	2.14	0.47
1:B:41:ILE:HG22	1:B:46:GLY:O	2.15	0.46
1:B:5:LYS:HE2	1:B:88:ASP:OD1	2.16	0.46
1:A:38:GLU:HA	1:A:41:ILE:CD1	2.45	0.46
1:A:42:MET:HA	1:A:46:GLY:O	2.16	0.46
1:B:113:GLU:HG2	1:B:142:ARG:HH12	1.80	0.46
1:B:161:HIS:HD2	1:B:163:GLY:H	1.63	0.46
1:A:282:THR:HG21	3:A:312:HOH:O	2.15	0.46
1:B:168:ASN:CG	1:B:188:PRO:HA	2.37	0.46
1:B:281:HIS:CE1	1:B:295:GLU:HB3	2.51	0.46
1:A:244:MET:HG3	1:A:249:LEU:HB2	1.97	0.45
1:A:269:LYS:HB3	1:A:269:LYS:NZ	2.24	0.45
1:A:27:GLY:O	1:A:72:VAL:HG13	2.16	0.45
1:B:214:VAL:HG21	1:B:219:ALA:CB	2.43	0.45
1:B:91:ILE:HG22	1:B:92:ALA:N	2.31	0.45
1:B:148:VAL:HG12	1:B:169:ILE:HG13	1.98	0.45
1:A:29:LEU:HD23	1:A:71:THR:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:HIS:O	1:A:87:ILE:HD13	2.17	0.45
1:B:166:ILE:HD12	1:B:186:ILE:HD13	1.97	0.45
1:B:122:ALA:HB3	1:B:290:VAL:HG21	1.99	0.45
1:B:17:ARG:HH22	1:B:295:GLU:CB	2.28	0.45
1:B:51:PRO:O	1:B:53:ASN:ND2	2.50	0.45
1:B:284:ILE:HB	1:B:291:ILE:HG13	1.98	0.45
1:B:13:ALA:O	1:B:16:VAL:HG13	2.17	0.45
1:B:79:LEU:HD23	1:B:81:ILE:HD11	1.99	0.45
1:B:89:GLY:HA3	1:B:158:TYR:CE2	2.52	0.45
1:A:222:LEU:HD12	1:A:252:ALA:CB	2.46	0.44
1:A:106:GLU:CD	1:A:106:GLU:H	2.21	0.44
1:A:169:ILE:HD13	1:A:169:ILE:HA	1.79	0.44
1:A:206:TYR:HB2	1:A:235:PHE:CZ	2.52	0.44
1:B:29:LEU:HD22	1:B:72:VAL:CG1	2.48	0.44
1:B:154:LYS:HB2	1:B:184:PHE:CE1	2.52	0.44
1:B:232:THR:O	1:B:233:LEU:HD23	2.17	0.44
1:B:292:VAL:C	1:B:294:THR:H	2.19	0.44
1:B:30:LEU:HD23	1:B:71:THR:HB	1.99	0.44
1:B:146:PRO:HG3	1:B:169:ILE:HD11	1.99	0.44
1:A:80:LYS:HD3	1:A:276:VAL:O	2.18	0.44
1:A:125:GLY:HA2	1:A:177:VAL:CG2	2.46	0.44
1:B:29:LEU:HD13	1:B:72:VAL:CG1	2.47	0.44
1:B:116:ASN:HA	1:B:119:ILE:HD12	2.00	0.44
1:A:30:LEU:HD13	1:A:73:LEU:HD11	1.99	0.44
1:A:51:PRO:O	1:A:53:ASN:ND2	2.51	0.44
1:B:193:GLY:HA3	1:B:270:GLU:OE1	2.18	0.44
1:B:6:LEU:O	1:B:9:ALA:HB3	2.18	0.44
1:B:12:ILE:O	1:B:15:LYS:HB2	2.18	0.44
1:B:168:ASN:O	1:B:169:ILE:HD13	2.18	0.44
1:A:74:LYS:HE3	1:A:77:ASP:OD2	2.17	0.43
1:A:128:ILE:HG21	1:A:166:ILE:HA	2.00	0.43
1:B:29:LEU:HD13	1:B:72:VAL:HG13	2.00	0.43
1:B:94:THR:OG1	1:B:294:THR:HG21	2.18	0.43
1:A:264:GLY:O	1:A:266:PRO:HD3	2.19	0.43
1:A:12:ILE:O	1:A:16:VAL:HG12	2.19	0.43
1:A:25:ARG:HB2	1:A:25:ARG:HH11	1.83	0.43
1:B:2:ASP:CB	1:B:5:LYS:HB2	2.49	0.43
1:A:173:HIS:HB3	3:B:303:HOH:O	2.18	0.43
1:B:86:HIS:CD2	1:B:89:GLY:HA2	2.54	0.43
1:B:121:VAL:O	1:B:126:VAL:HG21	2.18	0.43
1:A:91:ILE:HG22	1:A:92:ALA:N	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:91:ILE:HB	1:B:155:ILE:HG21	2.01	0.43
1:B:197:VAL:HA	1:B:269:LYS:O	2.17	0.43
1:A:151:SER:HB3	1:A:167:PRO:HA	2.01	0.43
1:B:17:ARG:HH12	1:B:295:GLU:HB2	1.83	0.43
1:B:17:ARG:NE	1:B:94:THR:HG21	2.34	0.43
1:A:230:TYR:HE2	1:A:240:LEU:HD21	1.84	0.43
1:A:252:ALA:O	1:A:256:LEU:HD22	2.19	0.43
1:A:65:PRO:O	1:A:238:ARG:HD3	2.18	0.42
1:A:131:LEU:H	1:A:131:LEU:HD23	1.83	0.42
1:A:208:TYR:CA	1:A:262:ILE:HG22	2.36	0.42
1:A:14:LYS:O	1:A:17:ARG:HB3	2.20	0.42
1:A:79:LEU:HG	1:A:81:ILE:HG13	2.01	0.42
1:B:244:MET:HB2	1:B:245:PRO:HD2	2.02	0.42
1:A:210:ARG:HG2	1:A:212:VAL:HG13	2.02	0.42
1:A:74:LYS:HE3	1:A:74:LYS:HB2	1.90	0.42
1:A:96:VAL:HG22	1:A:279:PHE:CE1	2.55	0.42
1:A:153:HIS:CD2	1:A:153:HIS:N	2.88	0.42
1:A:199:GLU:HA	1:A:268:LEU:HD23	2.02	0.42
1:B:1:MET:SD	1:B:2:ASP:N	2.93	0.42
1:B:95:ALA:HB3	1:B:280:GLU:HB2	1.99	0.42
1:A:282:THR:HB	1:A:293:THR:OG1	2.19	0.42
1:A:30:LEU:HD12	1:A:30:LEU:HA	1.78	0.42
1:B:5:LYS:HG3	1:B:87:ILE:CG2	2.49	0.42
1:B:169:ILE:HD13	1:B:169:ILE:HA	1.62	0.42
1:A:160:LEU:HA	1:A:160:LEU:HD12	1.76	0.42
1:A:164:ILE:HA	1:A:164:ILE:HD13	1.78	0.42
1:B:200:VAL:O	1:B:266:PRO:HB2	2.20	0.41
1:A:80:LYS:HA	1:A:97:THR:HA	2.03	0.41
1:A:196:GLN:HG2	1:B:196:GLN:HE22	1.83	0.41
1:B:214:VAL:HG11	1:B:220:ARG:HA	2.02	0.41
1:A:131:LEU:CD2	1:A:131:LEU:N	2.84	0.41
1:B:29:LEU:HA	1:B:29:LEU:HD13	1.76	0.41
1:B:222:LEU:HD12	1:B:222:LEU:HA	1.86	0.41
1:B:17:ARG:NH2	1:B:295:GLU:HB2	2.33	0.41
1:A:16:VAL:HG22	1:A:37:ILE:HG23	2.02	0.41
1:A:38:GLU:HA	1:A:41:ILE:HD12	2.02	0.41
1:A:84:GLY:HA2	1:A:92:ALA:O	2.20	0.41
1:A:53:ASN:N	1:A:53:ASN:HD22	2.19	0.41
1:A:128:ILE:HD13	1:A:166:ILE:HG12	2.02	0.41
1:A:17:ARG:NH1	1:A:18:GLU:OE2	2.54	0.41
1:A:87:ILE:O	1:A:89:GLY:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:222:LEU:HD23	1:A:222:LEU:HA	1.76	0.41
1:B:29:LEU:HD22	1:B:72:VAL:HG12	2.03	0.41
1:A:194:ALA:HB2	1:A:272:ARG:HG3	2.03	0.40
1:B:33:LEU:CD2	1:B:37:ILE:HD11	2.52	0.40
1:B:179:LYS:HE3	1:B:179:LYS:HB2	1.78	0.40
1:A:50:PHE:HD2	1:A:51:PRO:O	2.04	0.40
1:B:39:LYS:O	1:B:42:MET:HB2	2.21	0.40
1:B:251:LEU:HD22	1:B:251:LEU:HA	1.78	0.40
1:A:249:LEU:O	1:A:252:ALA:HB3	2.22	0.40
1:B:180:GLU:HA	1:B:285:VAL:O	2.21	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	293/295 (99%)	274 (94%)	16 (6%)	3 (1%)	15	45
1	B	293/295 (99%)	247 (84%)	43 (15%)	3 (1%)	15	45
All	All	586/590 (99%)	521 (89%)	59 (10%)	6 (1%)	15	45

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	24	ALA
1	A	100	VAL
1	A	246	GLU
1	B	62	HIS
1	B	232	THR
1	B	164	ILE

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	243/243 (100%)	217 (89%)	26 (11%)	6	20
1	B	243/243 (100%)	207 (85%)	36 (15%)	3	9
All	All	486/486 (100%)	424 (87%)	62 (13%)	4	13

All (62) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	23	LEU
1	A	29	LEU
1	A	56	ILE
1	A	59	ILE
1	A	83	VAL
1	A	96	VAL
1	A	99	ARG
1	A	105	ASP
1	A	107	LEU
1	A	131	LEU
1	A	142	ARG
1	A	169	ILE
1	A	177	VAL
1	A	199	GLU
1	A	203	THR
1	A	214	VAL
1	A	222	LEU
1	A	229	GLU
1	A	232	THR
1	A	250	LYS
1	A	253	LEU
1	A	269	LYS
1	A	287	LYS
1	A	288	ASP
1	A	291	ILE
1	B	1	MET

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Mol	Chain	Res	Type
1	B	16	VAL
1	B	23	LEU
1	B	28	MET
1	B	30	LEU
1	B	31	LEU
1	B	33	LEU
1	B	39	LYS
1	B	40	MET
1	B	53	ASN
1	B	55	SER
1	B	56	ILE
1	B	71	THR
1	B	85	VAL
1	B	96	VAL
1	B	105	ASP
1	B	107	LEU
1	B	121	VAL
1	B	145	LYS
1	B	169	ILE
1	B	175	ASN
1	B	183	VAL
1	B	202	PRO
1	B	203	THR
1	B	204	LEU
1	B	214	VAL
1	B	216	VAL
1	B	221	PHE
1	B	243	ASP
1	B	251	LEU
1	B	256	LEU
1	B	272	ARG
1	B	278	GLN
1	B	286	GLU
1	B	290	VAL
1	B	292	VAL

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	86	HIS
1	A	161	HIS
1	A	168	ASN

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Mol	Chain	Res	Type
1	A	281	HIS
1	B	53	ASN
1	B	86	HIS
1	B	161	HIS
1	B	168	ASN
1	B	173	HIS
1	B	175	ASN
1	B	196	GLN
1	B	278	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](#)

Of 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

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.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

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 [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	295/295 (100%)	-1.11	0 100 100	5, 28, 67, 107	0
1	B	295/295 (100%)	-0.94	0 100 100	7, 36, 76, 105	0
All	All	590/590 (100%)	-1.03	0 100 100	5, 32, 72, 107	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CO	A	296	1/1	0.98	0.14	24,24,24,24	0
2	CO	A	297	1/1	0.99	0.12	14,14,14,14	0
2	CO	B	296	1/1	0.99	0.11	27,27,27,27	0
2	CO	B	297	1/1	1.00	0.11	24,24,24,24	0

6.5 Other polymers [i](#)

There are no such residues in this entry.