



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 02:58 AM UTC

PDB ID : 4MT6 / pdb_00004mt6
Title : Crystal structure of closed inactive collybistin
Authors : Schneeberger, D.; Schindelin, H.
Deposited on : 2013-09-19
Resolution : 5.50 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	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

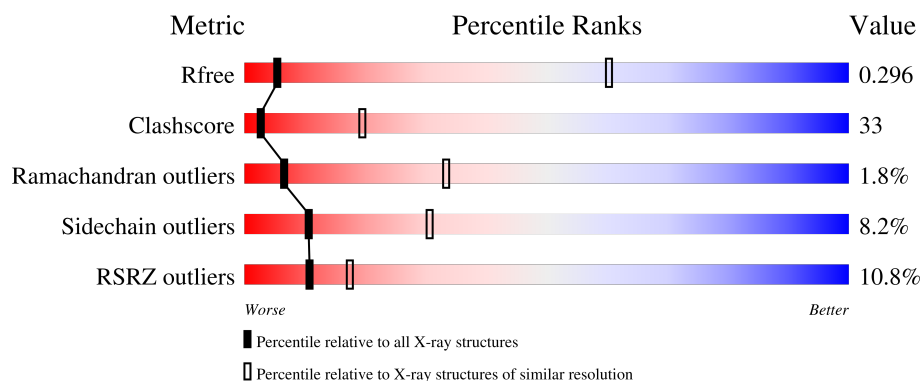
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 5.50 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1088 (7.00-4.00)
Clashscore	190562	1147 (7.00-4.00)
Ramachandran outliers	187476	1012 (7.02-3.98)
Sidechain outliers	187428	1023 (7.04-3.96)
RSRZ outliers	180081	1081 (7.00-4.00)

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	456	9% 42% 38% 5% 15%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 3298 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 Rho guanine nucleotide exchange factor 9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	389	Total	C	N	O	S	6	1	0
			3298	2096	576	604	22			

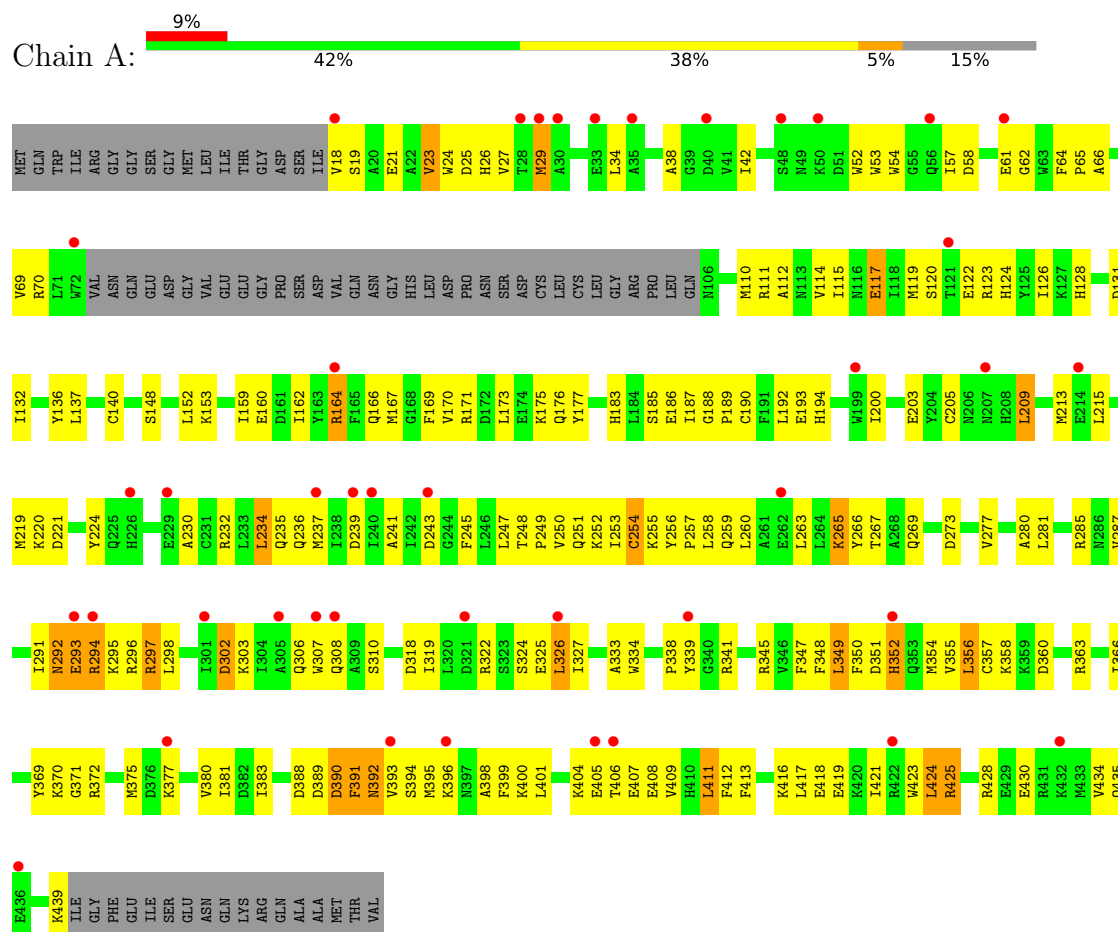
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	33	GLU	GLY	engineered mutation	UNP Q9QX73
A	34	LEU	VAL	engineered mutation	UNP Q9QX73

3 Residue-property plots [i](#)

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: Rho guanine nucleotide exchange factor 9



4 Data and refinement statistics

Property	Value	Source
Space group	I 21 3	Depositor
Cell constants a, b, c, α , β , γ	217.26Å 217.26Å 217.26Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	108.63 – 5.50 108.63 – 5.50	Depositor EDS
% Data completeness (in resolution range)	99.9 (108.63-5.50) 100.0 (108.63-5.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.85 (at 5.41Å)	Xtriage
Refinement program	PHENIX 1.8_1069	Depositor
R, R_{free}	0.237 , 0.282 0.255 , 0.296	Depositor DCC
R_{free} test set	268 reflections (4.71%)	wwPDB-VP
Wilson B-factor (Å ²)	307.9	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 157.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.39$, $\langle L^2 \rangle = 0.22$	Xtriage
Estimated twinning fraction	0.075 for -l,-k,-h	Xtriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	3298	wwPDB-VP
Average B, all atoms (Å ²)	177.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.66% 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](#)

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	0.32	0/3377	0.70	1/4543 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	23	VAL	N-CA-C	-5.56	105.31	110.53

There are no chirality outliers.

There are no planarity outliers.

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	3298	0	3197	217	0
All	All	3298	0	3197	217	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 33.

All (217) 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:292:ASN:O	1:A:295:LYS:N	1.77	1.17
1:A:390:ASP:HA	1:A:391:PHE:C	1.69	1.16

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:252:LYS:HD2	1:A:256:TYR:CE1	1.89	1.07
1:A:254:CYS:O	1:A:257:PRO:HD2	1.60	1.02
1:A:292:ASN:O	1:A:294:ARG:N	1.95	0.98
1:A:326:LEU:HD22	1:A:327:ILE:H	1.39	0.88
1:A:363:ARG:HG3	1:A:363:ARG:HH11	1.39	0.86
1:A:406:THR:HG22	1:A:407:GLU:H	1.41	0.84
1:A:351:ASP:O	1:A:352:HIS:HB2	1.77	0.84
1:A:326:LEU:HD22	1:A:327:ILE:N	1.93	0.82
1:A:302:ASP:O	1:A:306:GLN:HB2	1.84	0.77
1:A:235:GLN:HB3	1:A:237:MET:HE3	1.65	0.77
1:A:424:LEU:O	1:A:428:ARG:HG3	1.84	0.77
1:A:390:ASP:HA	1:A:392:ASN:N	1.99	0.77
1:A:251:GLN:O	1:A:255:LYS:HG3	1.86	0.76
1:A:341:ARG:HB2	1:A:341:ARG:NH1	2.00	0.75
1:A:265:LYS:HZ3	1:A:265:LYS:HB3	1.52	0.75
1:A:406:THR:HG22	1:A:407:GLU:N	2.02	0.73
1:A:131:ASP:HB3	1:A:237:MET:HE2	1.72	0.72
1:A:176:GLN:NE2	1:A:186:GLU:O	2.22	0.72
1:A:265:LYS:HB3	1:A:265:LYS:NZ	2.05	0.72
1:A:115:ILE:O	1:A:119:MET:HG2	1.89	0.71
1:A:435:GLN:O	1:A:439:LYS:HB3	1.90	0.71
1:A:24:TRP:CZ3	1:A:292:ASN:HB2	2.27	0.70
1:A:110:MET:O	1:A:114:VAL:HG23	1.91	0.70
1:A:232:ARG:NH1	1:A:239:ASP:HA	2.06	0.69
1:A:119:MET:O	1:A:123:ARG:HG3	1.93	0.68
1:A:319:ILE:HD11	1:A:350:PHE:CD2	2.29	0.67
1:A:252:LYS:HD2	1:A:256:TYR:CZ	2.28	0.67
1:A:21:GLU:OE1	1:A:258:LEU:HD21	1.94	0.67
1:A:215:LEU:O	1:A:219:MET:HG2	1.95	0.66
1:A:120:SER:O	1:A:124:HIS:ND1	2.28	0.66
1:A:333:ALA:HB3	1:A:413:PHE:HB2	1.78	0.66
1:A:355:VAL:HG13	1:A:371:GLY:O	1.96	0.66
1:A:263:LEU:O	1:A:267:THR:OG1	2.09	0.66
1:A:292:ASN:C	1:A:294:ARG:N	2.54	0.65
1:A:294:ARG:O	1:A:298:LEU:HD13	1.95	0.65
1:A:25:ASP:OD2	1:A:27:VAL:HG13	1.96	0.65
1:A:292:ASN:CG	1:A:293:GLU:N	2.48	0.65
1:A:292:ASN:O	1:A:294:ARG:C	2.40	0.65
1:A:209:LEU:O	1:A:213:MET:HG3	1.95	0.65
1:A:400:LYS:HD3	1:A:409:VAL:CG2	2.28	0.64
1:A:252:LYS:HG3	1:A:256:TYR:CZ	2.33	0.64

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:248:THR:OG1	1:A:249:PRO:HD3	2.00	0.62
1:A:292:ASN:O	1:A:293:GLU:C	2.42	0.62
1:A:230:ALA:O	1:A:234:LEU:HD22	2.01	0.61
1:A:380:VAL:HG22	1:A:401:LEU:HD21	1.82	0.61
1:A:388:ASP:OD1	1:A:389:ASP:N	2.33	0.61
1:A:358:LYS:HD2	1:A:370:LYS:HE3	1.82	0.61
1:A:110:MET:HE2	1:A:266:TYR:CZ	2.35	0.61
1:A:356:LEU:HD13	1:A:356:LEU:H	1.65	0.60
1:A:327:ILE:CD1	1:A:430:GLU:CB	2.78	0.60
1:A:319:ILE:HD12	1:A:350:PHE:CZ	2.37	0.60
1:A:319:ILE:HD11	1:A:350:PHE:CE2	2.36	0.60
1:A:110:MET:HE2	1:A:266:TYR:OH	2.01	0.60
1:A:292:ASN:O	1:A:294:ARG:CA	2.50	0.59
1:A:24:TRP:CH2	1:A:292:ASN:HB2	2.37	0.59
1:A:391:PHE:O	1:A:392:ASN:HB3	2.03	0.59
1:A:122:GLU:OE1	1:A:252:LYS:NZ	2.34	0.59
1:A:256:TYR:HB2	1:A:257:PRO:HD3	1.85	0.59
1:A:166:GLN:O	1:A:170:VAL:HG23	2.03	0.59
1:A:319:ILE:CD1	1:A:350:PHE:CZ	2.85	0.58
1:A:400:LYS:HD3	1:A:409:VAL:HG21	1.83	0.58
1:A:265:LYS:NZ	1:A:265:LYS:CB	2.66	0.58
1:A:281:LEU:O	1:A:285:ARG:HG3	2.03	0.58
1:A:235:GLN:CB	1:A:237:MET:HE3	2.34	0.58
1:A:252:LYS:CG	1:A:256:TYR:CZ	2.87	0.58
1:A:391:PHE:O	1:A:392:ASN:CB	2.52	0.58
1:A:319:ILE:CD1	1:A:350:PHE:CE2	2.86	0.58
1:A:341:ARG:HB2	1:A:341:ARG:HH11	1.68	0.58
1:A:363:ARG:HH11	1:A:363:ARG:CG	2.14	0.57
1:A:192:LEU:HD21	1:A:280:ALA:HA	1.87	0.57
1:A:363:ARG:HB2	1:A:366:ILE:HD12	1.87	0.57
1:A:363:ARG:HG3	1:A:363:ARG:NH1	2.12	0.56
1:A:363:ARG:NH1	1:A:366:ILE:HD11	2.20	0.56
1:A:406:THR:CG2	1:A:407:GLU:H	2.17	0.56
1:A:425:ARG:HD2	1:A:425:ARG:O	2.06	0.56
1:A:247:LEU:O	1:A:251:GLN:HG3	2.06	0.56
1:A:351:ASP:O	1:A:352:HIS:CB	2.52	0.55
1:A:29:MET:CE	1:A:306:GLN:NE2	2.70	0.55
1:A:169:PHE:CE2	1:A:173:LEU:HD11	2.41	0.55
1:A:417:LEU:HD23	1:A:417:LEU:O	2.06	0.55
1:A:187:ILE:C	1:A:189:PRO:HD2	2.31	0.55
1:A:360:ASP:HB2	1:A:366:ILE:HB	1.87	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:ILE:O	1:A:119:MET:CG	2.55	0.54
1:A:319:ILE:HD12	1:A:350:PHE:CE1	2.42	0.54
1:A:57:ILE:HG22	1:A:58:ASP:N	2.22	0.54
1:A:164:ARG:HA	1:A:167:MET:HE2	1.89	0.54
1:A:356:LEU:O	1:A:356:LEU:HD22	2.07	0.54
1:A:70:ARG:CB	1:A:258:LEU:HD13	2.37	0.54
1:A:205:CYS:SG	1:A:291:ILE:CG2	2.95	0.54
1:A:252:LYS:HG3	1:A:256:TYR:CE2	2.42	0.54
1:A:263:LEU:O	1:A:263:LEU:HG	2.07	0.54
1:A:327:ILE:HD12	1:A:430:GLU:CB	2.37	0.54
1:A:188:GLY:N	1:A:189:PRO:CD	2.71	0.53
1:A:117:GLU:OE2	1:A:259:GLN:NE2	2.42	0.53
1:A:254:CYS:C	1:A:257:PRO:HD2	2.31	0.53
1:A:169:PHE:CZ	1:A:173:LEU:HD11	2.44	0.53
1:A:122:GLU:OE1	1:A:256:TYR:HE1	1.92	0.52
1:A:260:LEU:HD13	1:A:281:LEU:HA	1.91	0.52
1:A:205:CYS:SG	1:A:291:ILE:HG23	2.49	0.52
1:A:54:TRP:CH2	1:A:62:GLY:HA2	2.45	0.52
1:A:406:THR:CG2	1:A:407:GLU:N	2.73	0.52
1:A:380:VAL:HG22	1:A:401:LEU:CD2	2.39	0.52
1:A:381:ILE:HB	1:A:400:LYS:HB3	1.91	0.52
1:A:355:VAL:HG13	1:A:369:TYR:CE1	2.46	0.51
1:A:162:ILE:HA	1:A:200:ILE:HD11	1.93	0.51
1:A:70:ARG:HG3	1:A:258:LEU:HD12	1.92	0.51
1:A:383:ILE:HG21	1:A:395:MET:SD	2.51	0.51
1:A:230:ALA:O	1:A:234:LEU:CD2	2.59	0.51
1:A:360:ASP:CB	1:A:366:ILE:HB	2.42	0.50
1:A:53:TRP:CZ3	1:A:66:ALA:HB1	2.47	0.50
1:A:110:MET:HE3	1:A:266:TYR:CE2	2.47	0.50
1:A:245:PHE:C	1:A:247:LEU:H	2.19	0.50
1:A:390:ASP:CA	1:A:391:PHE:C	2.59	0.50
1:A:348:PHE:O	1:A:354:MET:HG3	2.12	0.50
1:A:140:CYS:HB3	1:A:152:LEU:HD21	1.94	0.50
1:A:389:ASP:O	1:A:390:ASP:C	2.55	0.50
1:A:132:ILE:O	1:A:136:TYR:HB2	2.12	0.50
1:A:119:MET:HE2	1:A:177:TYR:HB2	1.94	0.50
1:A:363:ARG:CG	1:A:363:ARG:NH1	2.72	0.49
1:A:251:GLN:HB3	1:A:255:LYS:HE3	1.93	0.49
1:A:425:ARG:O	1:A:425:ARG:CD	2.61	0.49
1:A:391:PHE:CE1	1:A:411:LEU:HB2	2.47	0.49
1:A:356:LEU:HD13	1:A:371:GLY:C	2.37	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:112:ALA:HB2	1:A:183:HIS:HB3	1.94	0.49
1:A:355:VAL:HA	1:A:372:ARG:HA	1.95	0.49
1:A:27:VAL:HG23	1:A:303:LYS:HG3	1.93	0.49
1:A:248:THR:N	1:A:249:PRO:CD	2.76	0.49
1:A:148:SER:O	1:A:152:LEU:HG	2.13	0.48
1:A:176:GLN:HG3	1:A:190:CYS:SG	2.53	0.48
1:A:192:LEU:HD21	1:A:280:ALA:CA	2.42	0.48
1:A:327:ILE:CD1	1:A:430:GLU:HB3	2.44	0.48
1:A:395:MET:O	1:A:396:LYS:HG2	2.13	0.48
1:A:23:VAL:HG23	1:A:69:VAL:HA	1.95	0.48
1:A:241:ALA:O	1:A:245:PHE:HD2	1.97	0.47
1:A:297:ARG:HG2	1:A:298:LEU:CD1	2.43	0.47
1:A:189:PRO:O	1:A:192:LEU:N	2.47	0.47
1:A:159:ILE:HG23	1:A:160:GLU:N	2.28	0.47
1:A:57:ILE:CG2	1:A:58:ASP:N	2.77	0.47
1:A:70:ARG:HB3	1:A:258:LEU:HD13	1.97	0.47
1:A:111:ARG:O	1:A:114:VAL:HB	2.14	0.47
1:A:375:MET:HB3	1:A:430:GLU:OE2	2.15	0.47
1:A:287:VAL:O	1:A:291:ILE:HG13	2.14	0.47
1:A:308:GLN:OE1	1:A:319:ILE:HG22	2.15	0.47
1:A:398:ALA:HB2	1:A:413:PHE:CD1	2.49	0.46
1:A:327:ILE:HD12	1:A:430:GLU:HB3	1.97	0.46
1:A:123:ARG:O	1:A:126:ILE:HG22	2.15	0.46
1:A:29:MET:HE3	1:A:306:GLN:NE2	2.31	0.46
1:A:252:LYS:CD	1:A:256:TYR:CZ	2.96	0.46
1:A:38:ALA:H	1:A:296[A]:ARG:HH22	1.63	0.46
1:A:205:CYS:SG	1:A:291:ILE:HG21	2.56	0.46
1:A:273:ASP:CG	1:A:277:VAL:HG23	2.41	0.46
1:A:308:GLN:HE22	1:A:318:ASP:HA	1.80	0.46
1:A:391:PHE:CZ	1:A:411:LEU:HB2	2.51	0.46
1:A:18:VAL:HG12	1:A:19:SER:N	2.31	0.46
1:A:110:MET:CE	1:A:266:TYR:CE2	2.99	0.46
1:A:203:GLU:O	1:A:203:GLU:HG2	2.15	0.45
1:A:347:PHE:CE2	1:A:412:PHE:HE2	2.34	0.45
1:A:252:LYS:HA	1:A:255:LYS:HD2	1.97	0.45
1:A:356:LEU:HD13	1:A:356:LEU:N	2.31	0.45
1:A:404:LYS:HD2	1:A:404:LYS:O	2.15	0.45
1:A:34:LEU:HD13	1:A:61:GLU:C	2.42	0.45
1:A:187:ILE:C	1:A:189:PRO:CD	2.90	0.45
1:A:292:ASN:ND2	1:A:293:GLU:N	2.64	0.45
1:A:327:ILE:CD1	1:A:430:GLU:HA	2.46	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:26:HIS:CE1	1:A:65:PRO:HD3	2.52	0.45
1:A:430:GLU:O	1:A:434:VAL:HG23	2.16	0.45
1:A:128:HIS:O	1:A:132:ILE:HG13	2.17	0.45
1:A:162:ILE:HG12	1:A:200:ILE:CD1	2.46	0.45
1:A:221:ASP:HB3	1:A:224:TYR:HD2	1.81	0.45
1:A:171:ARG:O	1:A:175:LYS:HG3	2.17	0.45
1:A:338:PRO:O	1:A:339:TYR:HB2	2.17	0.45
1:A:341:ARG:HB2	1:A:341:ARG:CZ	2.47	0.45
1:A:292:ASN:OD1	1:A:296[A]:ARG:HB2	2.18	0.44
1:A:297:ARG:HG2	1:A:298:LEU:HD12	1.99	0.44
1:A:425:ARG:HA	1:A:425:ARG:HD3	1.75	0.44
1:A:307:TRP:O	1:A:310:SER:OG	2.26	0.44
1:A:215:LEU:HD13	1:A:243:ASP:HB3	1.99	0.43
1:A:250:VAL:HG12	1:A:250:VAL:O	2.18	0.43
1:A:253:ILE:HA	1:A:256:TYR:CD2	2.54	0.43
1:A:327:ILE:HD13	1:A:430:GLU:CA	2.49	0.43
1:A:209:LEU:HD22	1:A:209:LEU:HA	1.88	0.43
1:A:293:GLU:O	1:A:297:ARG:HB3	2.19	0.43
1:A:162:ILE:HA	1:A:200:ILE:CD1	2.49	0.43
1:A:245:PHE:C	1:A:247:LEU:N	2.76	0.43
1:A:132:ILE:HD11	1:A:245:PHE:HB3	2.00	0.42
1:A:115:ILE:HD12	1:A:185:SER:HB2	2.01	0.42
1:A:119:MET:CE	1:A:177:TYR:HB2	2.48	0.42
1:A:256:TYR:N	1:A:257:PRO:CD	2.83	0.42
1:A:357:CYS:SG	1:A:369:TYR:HA	2.59	0.42
1:A:29:MET:HE1	1:A:306:GLN:NE2	2.35	0.42
1:A:167:MET:HE3	1:A:167:MET:HB2	1.94	0.42
1:A:235:GLN:O	1:A:236:GLN:HB2	2.19	0.42
1:A:52:TRP:C	1:A:53:TRP:CD1	2.98	0.42
1:A:349:LEU:C	1:A:349:LEU:CD2	2.93	0.41
1:A:64:PHE:HB2	1:A:65:PRO:HD2	2.02	0.41
1:A:111:ARG:NH1	1:A:263:LEU:HD11	2.35	0.41
1:A:193:GLU:HG3	1:A:194:HIS:ND1	2.36	0.41
1:A:333:ALA:O	1:A:413:PHE:N	2.47	0.41
1:A:303:LYS:HA	1:A:303:LYS:HD3	1.90	0.41
1:A:122:GLU:OE1	1:A:252:LYS:CE	2.68	0.41
1:A:322:ARG:NH2	1:A:352:HIS:O	2.53	0.41
1:A:377:LYS:O	1:A:404:LYS:N	2.54	0.41
1:A:115:ILE:CD1	1:A:187:ILE:HD13	2.51	0.41
1:A:358:LYS:CD	1:A:370:LYS:HE3	2.51	0.41
1:A:114:VAL:HG11	1:A:263:LEU:HB2	2.03	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:399:PHE:O	1:A:411:LEU:HD23	2.21	0.40
1:A:419:GLU:O	1:A:423:TRP:HD1	2.03	0.40
1:A:42:ILE:HD12	1:A:42:ILE:N	2.37	0.40
1:A:70:ARG:CB	1:A:258:LEU:CD1	2.99	0.40
1:A:192:LEU:CD2	1:A:280:ALA:HA	2.50	0.40
1:A:383:ILE:HG21	1:A:395:MET:CE	2.51	0.40
1:A:209:LEU:O	1:A:209:LEU:HD13	2.20	0.40
1:A:355:VAL:CG1	1:A:369:TYR:CE1	3.04	0.40
1:A:383:ILE:HG21	1:A:395:MET:HE1	2.03	0.40
1:A:345:ARG:NH1	1:A:358:LYS:HD2	2.37	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	386/456 (85%)	350 (91%)	29 (8%)	7 (2%)	6	33

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	293	GLU
1	A	324	SER
1	A	391	PHE
1	A	392	ASN
1	A	292	ASN
1	A	352	HIS
1	A	390	ASP

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	353/408 (86%)	324 (92%)	29 (8%)	10	30

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	MET
1	A	117	GLU
1	A	137	LEU
1	A	153	LYS
1	A	164	ARG
1	A	209	LEU
1	A	220	LYS
1	A	234	LEU
1	A	254	CYS
1	A	265	LYS
1	A	269	GLN
1	A	294	ARG
1	A	297	ARG
1	A	302	ASP
1	A	325	GLU
1	A	326	LEU
1	A	334	TRP
1	A	349	LEU
1	A	356	LEU
1	A	393	VAL
1	A	394	SER
1	A	405	GLU
1	A	408	GLU
1	A	411	LEU
1	A	416	LYS
1	A	418	GLU
1	A	421	ILE
1	A	424	LEU
1	A	425	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	106	ASN
1	A	178	ASN
1	A	286	ASN
1	A	306	GLN
1	A	343	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 oligosaccharides 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

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	389/456 (85%)	0.68	42 (10%)	11 17	70, 167, 273, 399	1 (0%)

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	28	THR	9.8
1	A	29	MET	7.7
1	A	48	SER	5.2
1	A	239	ASP	4.2
1	A	405	GLU	3.8
1	A	293	GLU	3.7
1	A	406	THR	3.4
1	A	40	ASP	3.4
1	A	262	GLU	3.3
1	A	308	GLN	3.3
1	A	240	ILE	3.1
1	A	301	ILE	3.0
1	A	307	TRP	2.9
1	A	18	VAL	2.8
1	A	305	ALA	2.7
1	A	436	GLU	2.7
1	A	226	HIS	2.6
1	A	50	LYS	2.6
1	A	56	GLN	2.6
1	A	207	ASN	2.6
1	A	243	ASP	2.5
1	A	422	ARG	2.4
1	A	321	ASP	2.4
1	A	432	LYS	2.4
1	A	214	GLU	2.4
1	A	352	HIS	2.3
1	A	61	GLU	2.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	72	TRP	2.3
1	A	237	MET	2.3
1	A	393	VAL	2.3
1	A	30	ALA	2.2
1	A	396	LYS	2.2
1	A	35	ALA	2.2
1	A	164	ARG	2.2
1	A	294	ARG	2.2
1	A	339	TYR	2.1
1	A	326	LEU	2.0
1	A	33	GLU	2.0
1	A	199	TRP	2.0
1	A	229	GLU	2.0
1	A	121	THR	2.0
1	A	377	LYS	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 oligosaccharides 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.