



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2018 – 01:45 am GMT

PDB ID : 1CMX
Title : STRUCTURAL BASIS FOR THE SPECIFICITY OF UBIQUITIN C-
TERMINAL HYDROLASES
Authors : Johnston, S.C.; Riddle, S.M.; Cohen, R.E.; Hill, C.P.
Deposited on : 1999-05-12
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

<https://www.wwpdb.org/validation/2017/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 : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

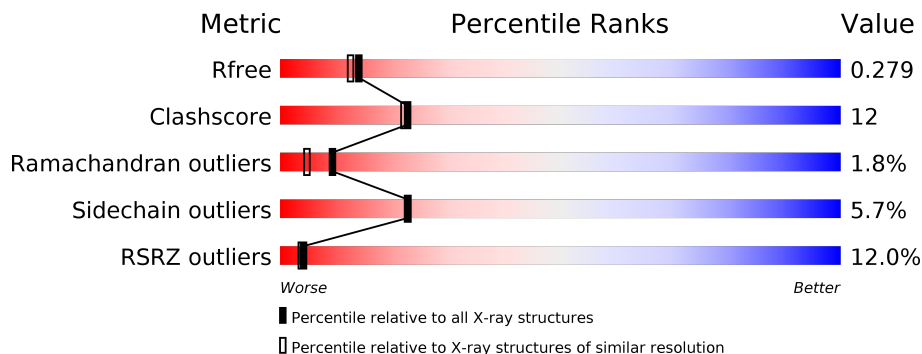
1 Overall quality at a glance

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}	111664	1178 (2.26-2.26)
Clashscore	122126	1286 (2.26-2.26)
Ramachandran outliers	120053	1253 (2.26-2.26)
Sidechain outliers	120020	1254 (2.26-2.26)
RSRZ outliers	108989	1158 (2.26-2.26)

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	235	 9% 65% 23% 9%
1	C	235	 17% 66% 22% 11%
2	B	76	 68% 30%
2	D	76	 3% 22% 78%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 4142 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 (UBIQUITIN YUH1-UBAL).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	214	Total 1684	C 1072	N 274	O 335	S 3	10	0	0
1	C	210	Total 1649	C 1052	N 266	O 328	S 3	24	0	0

- Molecule 2 is a protein called PROTEIN (UBIQUITIN YUH1-UBAL).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	76	Total 601	C 378	N 105	O 117	S 1	10	0	0
2	D	17	Total 133	C 83	N 29	O 21		6	0	0

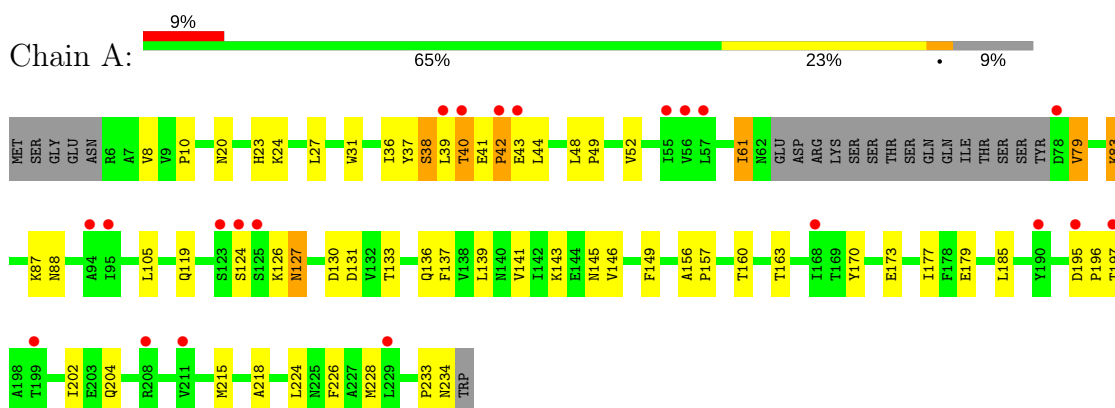
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	38	Total 38	O 38	0	0
3	B	16	Total 16	O 16	0	0
3	C	18	Total 18	O 18	0	0
3	D	3	Total 3	O 3	0	0

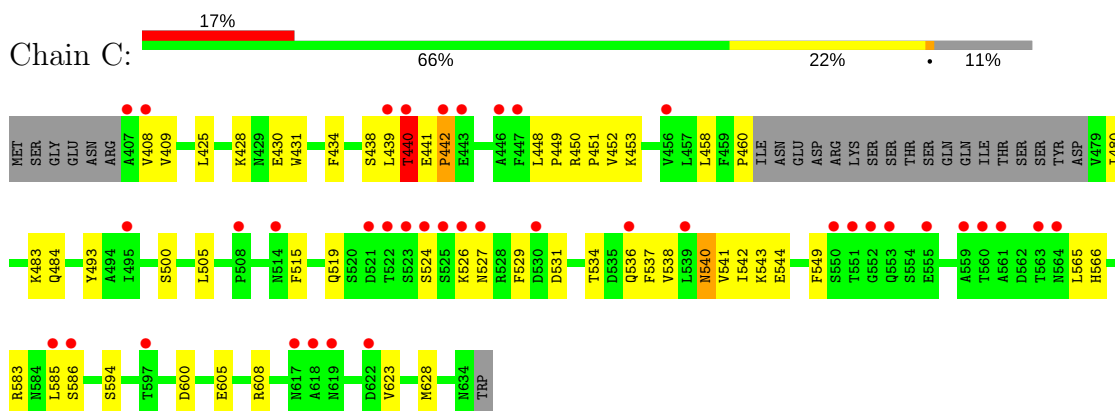
3 Residue-property plots [i](#)

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

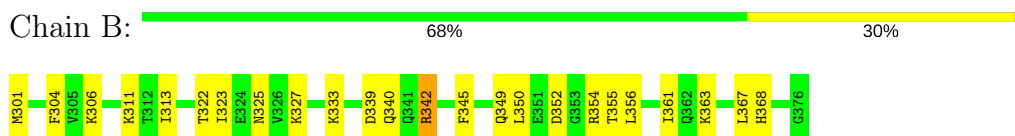
- Molecule 1: PROTEIN (UBIQUITIN YUH1-UBAL)



- Molecule 1: PROTEIN (UBIQUITIN YUH1-UBAL)



- Molecule 2: PROTEIN (UBIQUITIN YUH1-UBAL)



- Molecule 2: PROTEIN (UBIQUITIN YUH1-UBAL)



MET	
GLN	
ILE	
PHE	
LEU	
HIS	
VAL	
L766	
L770	
LYS	
THR	
ILE	
THR	
LEU	
GLU	
VAL	
GLU	
PRO	
SER	
ASP	
THR	
ILE	
GLU	
ASN	
VAL	
LYS	
ALA	
LYS	
ILE	
GLN	
ASP	
LYS	
GLU	
GLY	
ILE	
PRO	
PRO	
ASP	
Q740	
L743	
ILE	
PHE	
ALA	
GLY	
LYS	
GLN	
LEU	
GLU	
ASP	
GLY	
ARG	
THR	
LEU	
SER	
ASP	
TYR	
ASN	
ILE	
GLN	
LYS	

GLU	
SER	
THR	
LEU	
HIS	
L769	
L776	

4 Data and refinement statistics i

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α , β , γ	199.30Å 199.30Å 36.80Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	30.00 – 2.25 28.77 – 2.23	Depositor EDS
% Data completeness (in resolution range)	99.0 (30.00-2.25) 97.7 (28.77-2.23)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.04	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.29 (at 2.22Å)	Xtrriage
Refinement program	X-PLOR 98.0	Depositor
R, R_{free}	0.248 , 0.285 0.242 , 0.279	Depositor DCC
R_{free} test set	1262 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å ²)	46.1	Xtrriage
Anisotropy	0.344	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 55.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.022 for h,-h-k,-l	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	4142	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.29% 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: GLZ

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	0.71	0/1719	0.86	0/2340
1	C	0.63	0/1684	0.83	1/2293 (0.0%)
2	B	0.85	0/603	0.89	0/811
2	D	0.65	0/126	0.89	0/163
All	All	0.70	0/4132	0.86	1/5607 (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	C	440	THR	N-CA-CB	6.76	123.14	110.30

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	1684	0	1634	53	0
1	C	1649	0	1600	39	0
2	B	601	0	625	15	0
2	D	133	0	151	0	0
3	A	38	0	0	0	0
3	B	16	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	18	0	0	1	0
3	D	3	0	0	0	0
All	All	4142	0	4010	99	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 12.

All (99) 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:C:439:LEU:O	1:C:440:THR:HG23	1.65	0.95
1:A:41:GLU:HG2	1:A:44:LEU:HD12	1.62	0.80
1:A:83:LYS:NZ	1:A:185:LEU:HD22	1.98	0.79
1:A:48:LEU:HD21	1:A:202:ILE:CD1	2.18	0.73
1:A:40:THR:HG23	1:C:440:THR:HB	1.71	0.73
1:C:458:LEU:HD11	1:C:565:LEU:HB3	1.71	0.72
1:A:42:PRO:HG2	1:A:43:GLU:H	1.56	0.71
1:C:529:PHE:HB3	1:C:534:THR:HG21	1.73	0.70
1:C:538:VAL:O	1:C:542:ILE:HG13	1.91	0.69
1:A:224:LEU:HD21	2:B:311:LYS:HD3	1.76	0.67
1:C:515:PHE:HZ	1:C:534:THR:HG22	1.61	0.67
2:B:361:ILE:HD13	2:B:367:LEU:HD21	1.79	0.63
1:A:83:LYS:HZ1	1:A:185:LEU:HD22	1.63	0.62
1:A:83:LYS:HZ3	1:A:185:LEU:HD22	1.66	0.60
1:A:48:LEU:HD21	1:A:202:ILE:HD13	1.83	0.59
1:A:79:VAL:HG12	1:A:173:GLU:HG3	1.85	0.59
1:C:428:LYS:HB3	1:C:430:GLU:OE1	2.03	0.58
1:A:39:LEU:HD22	1:A:228:MET:HE1	1.84	0.58
1:C:439:LEU:O	1:C:440:THR:CG2	2.48	0.58
1:A:10:PRO:HD3	1:A:88:ASN:ND2	2.19	0.58
1:A:39:LEU:HD22	1:A:228:MET:CE	2.34	0.57
1:A:40:THR:O	1:A:40:THR:HG22	2.05	0.57
1:A:37:TYR:HE1	1:A:44:LEU:HD22	1.69	0.56
1:C:439:LEU:HD11	1:C:628:MET:CE	2.35	0.56
1:A:31:TRP:CE2	1:A:105:LEU:HD22	2.41	0.56
1:A:8:VAL:CG1	1:A:149:PHE:CD2	2.89	0.56
2:B:323:ILE:HB	2:B:352:ASP:HA	1.89	0.55
1:A:10:PRO:HD3	1:A:88:ASN:HD22	1.71	0.54
1:A:40:THR:HG21	1:C:440:THR:HG22	1.88	0.54
1:C:434:PHE:CD1	1:C:448:LEU:HD22	2.43	0.54
1:A:8:VAL:HG11	1:A:149:PHE:CE2	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:434:PHE:HZ	1:C:452:VAL:HG22	1.72	0.53
1:A:24:LYS:HD3	1:A:145:ASN:OD1	2.08	0.53
1:A:40:THR:HG22	1:C:608:ARG:NH1	2.23	0.53
1:C:458:LEU:HD12	1:C:566:HIS:O	2.08	0.53
2:B:325:ASN:ND2	3:B:871:HOH:O	2.34	0.53
1:C:408:VAL:HG11	1:C:549:PHE:CD2	2.44	0.52
1:C:408:VAL:HG12	1:C:409:VAL:N	2.25	0.52
2:B:345:PHE:HB3	2:B:350:LEU:HD21	1.92	0.52
1:A:177:ILE:HD11	1:A:204:GLN:OE1	2.09	0.52
1:C:441:GLU:CD	1:C:442:PRO:HD2	2.31	0.51
1:A:8:VAL:HG11	1:A:149:PHE:CD2	2.45	0.51
1:A:218:ALA:HB2	1:A:226:PHE:CE1	2.46	0.51
1:A:36:ILE:HG21	1:A:228:MET:HE2	1.92	0.51
1:C:519:GLN:OE1	1:C:529:PHE:CE1	2.64	0.51
1:A:170:TYR:CE2	1:A:179:GLU:HG3	2.47	0.50
1:C:408:VAL:HG12	1:C:409:VAL:H	1.77	0.50
1:C:537:PHE:O	1:C:541:VAL:HG23	2.10	0.50
1:A:44:LEU:HD11	2:B:368:HIS:NE2	2.27	0.49
1:A:83:LYS:HZ3	1:A:185:LEU:CD2	2.25	0.49
1:C:540:ASN:O	1:C:544:GLU:HG3	2.11	0.49
2:B:322:THR:HA	2:B:355:THR:HA	1.93	0.49
1:C:450:ARG:NE	1:C:600:ASP:OD2	2.44	0.49
1:A:38:SER:HB3	1:A:41:GLU:HB2	1.95	0.49
1:A:38:SER:HB3	1:A:41:GLU:CB	2.42	0.49
1:A:119:GLN:NE2	1:A:133:THR:HG21	2.28	0.48
1:C:480:ILE:HD12	1:C:500:SER:O	2.13	0.48
1:C:439:LEU:HD11	1:C:628:MET:HE3	1.96	0.47
2:B:301:MET:HE1	3:B:838:HOH:O	2.13	0.47
1:A:141:VAL:O	1:A:145:ASN:ND2	2.37	0.47
2:B:339:ASP:OD1	2:B:340:GLN:HG3	2.15	0.47
1:C:431:TRP:CE2	1:C:505:LEU:HD22	2.50	0.47
1:A:139:LEU:O	1:A:143:LYS:HG3	2.15	0.47
1:A:23:HIS:HD2	1:A:27:LEU:O	1.96	0.47
1:C:425:LEU:HD21	1:C:541:VAL:HG11	1.97	0.46
1:A:215:MET:O	1:A:218:ALA:HB3	2.14	0.46
1:A:52:VAL:HG21	1:A:202:ILE:HD12	1.98	0.46
1:C:519:GLN:OE1	1:C:529:PHE:CD1	2.69	0.45
1:A:79:VAL:O	1:A:127:ASN:HB2	2.16	0.45
1:A:48:LEU:HA	1:A:49:PRO:HD3	1.73	0.45
1:C:448:LEU:HA	1:C:449:PRO:HD3	1.83	0.45
1:C:549:PHE:HB2	3:C:824:HOH:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:119:GLN:HE22	1:A:133:THR:HG21	1.80	0.44
1:A:42:PRO:CG	1:A:43:GLU:H	2.29	0.44
2:B:356:LEU:HD22	2:B:361:ILE:HD12	1.99	0.44
1:C:458:LEU:HA	1:C:566:HIS:O	2.17	0.44
2:B:333:LYS:HB3	2:B:333:LYS:HE2	1.69	0.44
1:C:451:PRO:CG	1:C:453:LYS:HE2	2.48	0.43
1:C:529:PHE:CB	1:C:534:THR:HG21	2.46	0.43
1:A:177:ILE:HD11	1:A:204:GLN:CD	2.39	0.43
1:A:39:LEU:HD22	1:A:228:MET:SD	2.59	0.43
1:A:37:TYR:CE1	1:A:44:LEU:HD22	2.52	0.42
1:A:156:ALA:HA	1:A:157:PRO:HD3	1.85	0.42
1:A:137:PHE:O	1:A:141:VAL:HG23	2.20	0.42
1:A:87:LYS:NZ	1:A:160:THR:O	2.50	0.42
2:B:304:PHE:HA	2:B:313:ILE:O	2.20	0.42
1:A:233:PRO:O	1:A:234:ASN:HB3	2.20	0.42
2:B:306:LYS:HZ1	1:C:605:GLU:HG3	1.85	0.42
1:C:460:PRO:HG2	1:C:623:VAL:HG11	2.02	0.41
1:C:515:PHE:CZ	1:C:534:THR:HG22	2.48	0.41
1:A:41:GLU:HG2	1:A:44:LEU:CD1	2.43	0.41
1:A:195:ASP:HA	1:A:196:PRO:HD2	1.72	0.41
1:A:83:LYS:NZ	1:A:185:LEU:CD2	2.76	0.41
2:B:342:ARG:HD3	2:B:349:GLN:OE1	2.21	0.41
2:B:323:ILE:HG22	2:B:327:LYS:HE3	2.01	0.41
1:A:40:THR:CG2	1:C:608:ARG:CZ	2.99	0.41
1:A:40:THR:OG1	1:C:440:THR:HG21	2.20	0.40
1:C:408:VAL:HG11	1:C:549:PHE:CE2	2.56	0.40
1:C:484:GLN:HA	1:C:493:TYR:CZ	2.56	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	210/235 (89%)	191 (91%)	14 (7%)	5 (2%)	6	3
1	C	206/235 (88%)	193 (94%)	9 (4%)	4 (2%)	9	4
2	B	74/76 (97%)	72 (97%)	2 (3%)	0	100	100
2	D	11/76 (14%)	9 (82%)	2 (18%)	0	100	100
All	All	501/622 (80%)	465 (93%)	27 (5%)	9 (2%)	9	5

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	40	THR
1	C	440	THR
1	C	524	SER
1	C	527	ASN
1	A	61	ILE
1	A	124	SER
1	A	127	ASN
1	A	42	PRO
1	C	442	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	189/209 (90%)	177 (94%)	12 (6%)	20	19
1	C	185/209 (88%)	174 (94%)	11 (6%)	21	21
2	B	68/68 (100%)	65 (96%)	3 (4%)	31	35
2	D	14/68 (21%)	14 (100%)	0	100	100
All	All	456/554 (82%)	430 (94%)	26 (6%)	23	23

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

Mol	Chain	Res	Type
1	A	20	ASN
1	A	38	SER

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Mol	Chain	Res	Type
1	A	61	ILE
1	A	79	VAL
1	A	83	LYS
1	A	126	LYS
1	A	130	ASP
1	A	131	ASP
1	A	136	GLN
1	A	146	VAL
1	A	163	THR
1	A	197	THR
2	B	342	ARG
2	B	354	ARG
2	B	363	LYS
1	C	438	SER
1	C	483	LYS
1	C	526	LYS
1	C	531	ASP
1	C	536	GLN
1	C	540	ASN
1	C	543	LYS
1	C	583	ARG
1	C	585	LEU
1	C	586	SER
1	C	594	SER

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

Mol	Chain	Res	Type
1	A	23	HIS
2	B	340	GLN
1	C	420	ASN
1	C	519	GLN
2	D	740	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](#)

2 non-standard protein/DNA/RNA residues 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
2	GLZ	B	376	1,2	3,3,3	0.80	0	1,2,2	2.59	1 (100%)
2	GLZ	D	776	1,2	3,3,3	0.75	0	1,2,2	1.66	0

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
2	GLZ	B	376	1,2	-	0/0/1/1	0/0/0/0
2	GLZ	D	776	1,2	-	0/0/1/1	0/0/0/0

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	376	GLZ	O-C-CA	-2.59	113.30	125.36

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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

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	214/235 (91%)	0.33	21 (9%) 7 8	23, 48, 92, 100	2 (0%)
1	C	210/235 (89%)	1.00	39 (18%) 1 1	25, 58, 100, 100	5 (2%)
2	B	75/76 (98%)	-0.44	0 100 100	25, 38, 57, 63	2 (2%)
2	D	16/76 (21%)	0.76	2 (12%) 4 3	47, 66, 87, 92	1 (6%)
All	All	515/622 (82%)	0.50	62 (12%) 4 4	23, 50, 98, 100	10 (1%)

All (62) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	552	GLY	10.0
1	C	524	SER	10.0
1	C	522	THR	9.5
1	C	521	ASP	9.0
1	C	560	THR	7.8
1	C	525	SER	7.5
1	C	523	SER	7.1
1	C	618	ALA	6.4
1	C	443	GLU	6.3
1	C	440	THR	6.1
1	A	123	SER	6.0
1	A	39	LEU	5.8
1	C	527	ASN	5.2
1	C	446	ALA	5.0
1	A	40	THR	4.9
1	C	439	LEU	4.5
1	C	553	GLN	4.5
1	C	442	PRO	4.3
1	C	551	THR	4.1
1	A	124	SER	4.0
1	C	563	THR	3.9

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Mol	Chain	Res	Type	RSRZ
1	A	43	GLU	3.8
1	A	56	VAL	3.7
1	C	407	ALA	3.7
1	C	447	PHE	3.5
1	C	526	LYS	3.5
1	C	619	ASN	3.3
1	C	408	VAL	3.2
1	C	597	THR	3.0
1	A	78	ASP	2.9
1	C	586	SER	2.9
1	C	564	ASN	2.9
1	A	57	LEU	2.9
1	A	195	ASP	2.8
2	D	710	GLY	2.8
1	C	617	ASN	2.7
1	A	55	ILE	2.6
1	A	190	TYR	2.6
1	A	95	ILE	2.6
1	C	539	LEU	2.5
1	C	585	LEU	2.5
1	C	559	ALA	2.5
1	A	197	THR	2.5
1	C	622	ASP	2.5
1	C	508	PRO	2.5
1	A	208	ARG	2.5
1	A	42	PRO	2.5
2	D	706	LYS	2.4
1	C	561	ALA	2.3
1	A	229	LEU	2.3
1	C	456	VAL	2.3
1	A	199	THR	2.2
1	C	536	GLN	2.2
1	C	530	ASP	2.2
1	A	211	VAL	2.1
1	A	168	ILE	2.1
1	C	514	ASN	2.1
1	C	555	GLU	2.1
1	A	125	SER	2.1
1	C	495	ILE	2.0
1	A	94	ALA	2.0
1	C	550	SER	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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	GLZ	D	776	4/4	0.91	0.13	57,61,62,66	0
2	GLZ	B	376	4/4	0.98	0.08	26,32,32,32	0

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.