Full wwPDB X-ray Structure Validation Report (i)

Sep 6, 2023 – 02:26 PM EDT

PDB ID	:	4FXO
Title	:	Zinc-mediated allosteric inhibiton of caspase-6
Authors	:	Velazquez-Delgado, E.M.; Hardy, J.A.
Deposited on	:	2012-07-03
Resolution	:	2.85 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 types of validation reports are described at
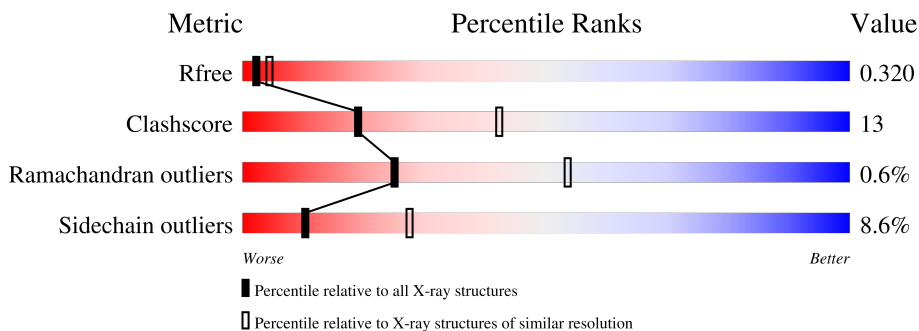http://www.wwpdb.org/validation/2017/FAQs#types.

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 2.85 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		0.320
Clashscore		13
Ramachandran outliers		0.6%
Sidechain outliers		8.6%

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	3168 (2.90-2.82)
Clashscore	141614	3438 (2.90-2.82)
Ramachandran outliers	138981	3348 (2.90-2.82)
Sidechain outliers	138945	3351 (2.90-2.82)

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%

Mol	Chain	Length	Quality of chain
1	A	299	53%　　18%　•　27%
1	B	299	57%　　17%　•　24%
1	C	299	48%　　23%　•　26%
1	D	299	49%　　21%　•　26%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 6781 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 Caspase-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	219	Total	C	N	O	S	0	1	0
			1692	1086	286	306	14			
1	B	227	Total	C	N	O	S	0	0	0
			1731	1106	300	311	14			
1	C	220	Total	C	N	O	S	0	0	0
			1680	1074	289	304	13			
1	D	220	Total	C	N	O	S	0	0	0
			1666	1064	286	303	13			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	294	HIS	-	expression tag	UNP P55212
A	295	HIS	-	expression tag	UNP P55212
A	296	HIS	-	expression tag	UNP P55212
A	297	HIS	-	expression tag	UNP P55212
A	298	HIS	-	expression tag	UNP P55212
A	299	HIS	-	expression tag	UNP P55212
B	294	HIS	-	expression tag	UNP P55212
B	295	HIS	-	expression tag	UNP P55212
B	296	HIS	-	expression tag	UNP P55212
B	297	HIS	-	expression tag	UNP P55212
B	298	HIS	-	expression tag	UNP P55212
B	299	HIS	-	expression tag	UNP P55212
C	294	HIS	-	expression tag	UNP P55212
C	295	HIS	-	expression tag	UNP P55212
C	296	HIS	-	expression tag	UNP P55212
C	297	HIS	-	expression tag	UNP P55212
C	298	HIS	-	expression tag	UNP P55212
C	299	HIS	-	expression tag	UNP P55212
D	294	HIS	-	expression tag	UNP P55212
D	295	HIS	-	expression tag	UNP P55212
D	296	HIS	-	expression tag	UNP P55212

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Chain	Residue	Modelled	Actual	Comment	Reference
D	297	HIS	-	expression tag	UNP P55212
D	298	HIS	-	expression tag	UNP P55212
D	299	HIS	-	expression tag	UNP P55212

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total 1 Zn 1	0	0
2	B	1	Total 1 Zn 1	0	0
2	C	1	Total 1 Zn 1	0	0
2	D	1	Total 1 Zn 1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total 2 O 2	0	0
3	B	2	Total 2 O 2	0	0
3	C	2	Total 2 O 2	0	0
3	D	2	Total 2 O 2	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. 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. 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: Caspase-6

Chain A:

- Molecule 1: Caspase-6

Chain B:

- Molecule 1: Caspase-6

Chain C:

PRO LEU ASP VAL VAL ASP ASN GLN THR GLU LYS LEU ASP THR ASN ILE THR GLU VAL ASP ALA ALA S196 T199 L200 P201 A202 C209 V212 A213 E214 G215 Y216 Y217 S218 H219 R220 V223 N224 G225 S226 I229 L232 C233 E234 M235 Y239 S242 L243 E247

L251 V252 N253 R254 V261 ASP PHE CYS LYS ASP PRO SER ALA ILE GLY K272 P276 S280 T283 L286 H287 S292 ASN HIS HIS HIS HIS HIS HIS

• Molecule 1: Caspase-6

Chain D:

49%   21%   •   26%

MET SER SER ALA SER GLY LEU ARG ARG GLY HIS PRO ALA GLY GLY GLU GLU ASN MET THR GLU THR ASP ALA PHE TYR LYS ARG GLU M30 P33 K36 H41 R42 R43 I49 H52 E53 R54 F55 F56 L59 T60 L61 P62 E63 R64 R65 G66 T67 C68 A69 D70 R71

D72 N73 L74 T75 R76 R77 V85 D90 L91 K92 ALA GLU GLU LEU LEU L98 K99 E102 V103 V106 S107 H108 A109 D110 A111 D112 C113 V117 H121 Y128 T138 L139 T140 G141 L142 D146 H149 S150 L151 V152 P155 I159 C163 ARG GLY ASN GLN

HIS ASP VAL PRO VAL ILE PRO LEU ASP VAL VAL ASP ASN GLN THR GLU LYS LEU ASP THR ASN ILE THR GLU VAL ASP A194 T199 L200 P201 A202 C209 V212 A213 E214 G215 Y216 Y217 S218 H219 V223 N224 G225 S226 I229 L232 C233 E234 M235 Y239 S242 L243

E247 L251 V252 N253 R254 D262 PHE CYS LYS ASP PRO SER ALA ILE G271 P276 C277 F278 L286 S292 ASN HIS HIS HIS HIS HIS HIS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	62.70Å 90.86Å 85.76Å 90.00° 90.30° 90.00°	Depositor
Resolution (Å)	30.00 – 2.85 40.14 – 2.70	Depositor EDS
% Data completeness (in resolution range)	84.2 (30.00-2.85) 87.5 (40.14-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.13	Depositor
$< I/\sigma(I) >$ [1]	1.00 (at 2.69Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.215 , 0.233 0.302 , 0.320	Depositor DCC
R_{free} test set	1184 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	36.9	Xtriage
Anisotropy	0.112	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 40.4	EDS
L-test for twinning[2]	$< |L| > = 0.51, < L^2 > = 0.36$	Xtriage
Estimated twinning fraction	0.080 for h,-k,-l	Xtriage
Reported twinning fraction	0.401 for H, K, L 0.363 for -h,-k,l 0.119 for -H, -L, -K 0.117 for -H, L, K	Depositor
Outliers	0 of 23471 reflections	Xtriage
F_o,F_c correlation	0.78	EDS
Total number of atoms	6781	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.27% 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: ZN

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	0.31	0/1734	0.40	0/2343
1	B	0.31	0/1770	0.41	0/2389
1	C	0.34	0/1717	0.46	0/2317
1	D	0.35	0/1704	0.45	1/2304 (0.0%)
All	All	0.33	0/6925	0.43	1/9353 (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	C	0	2
1	D	0	2
All	All	0	4

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	232	LEU	CA-CB-CG	5.52	128.00	115.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	223	VAL	Peptide
1	C	65	ARG	Peptide
1	D	223	VAL	Peptide

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Mol	Chain	Res	Type	Group
1	D	65	ARG	Peptide

5.2 Too-close contacts ⓘ

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	1692	0	1584	37	0
1	B	1731	0	1619	34	0
1	C	1680	0	1561	55	0
1	D	1666	0	1529	53	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
All	All	6781	0	6293	170	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 13.

All (170) 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:D:74:LEU:HD12	1:D:233:CYS:SG	1.93	1.08
1:C:67:THR:OG1	1:C:121:HIS:HE1	1.39	1.06
1:D:71:ARG:O	1:D:75:THR:HG22	1.57	1.05
1:C:71:ARG:O	1:C:75:THR:HG22	1.57	1.04
1:D:67:THR:OG1	1:D:121:HIS:HE1	1.42	0.99
1:D:213:ALA:O	1:D:216:TYR:HB3	1.63	0.97
1:C:67:THR:OG1	1:C:121:HIS:CE1	2.20	0.94
1:C:74:LEU:HD12	1:C:229:ILE:HG23	1.53	0.91
1:D:67:THR:OG1	1:D:121:HIS:CE1	2.22	0.91
1:D:74:LEU:HD13	1:D:229:ILE:HG23	1.64	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:270:ILE:H	1:B:271:GLY:HA2	1.49	0.77
1:C:74:LEU:CD1	1:C:229:ILE:HG23	2.19	0.72
1:C:74:LEU:CD2	1:C:78:PHE:HE2	2.02	0.72
1:C:74:LEU:HD12	1:C:229:ILE:CG2	2.19	0.71
1:B:49:ILE:HB	1:B:87:CYS:HB3	1.75	0.69
1:D:138:THR:O	1:D:142:LEU:HB2	1.92	0.68
1:C:74:LEU:CD2	1:C:78:PHE:CE2	2.76	0.68
1:D:53:GLU:OE2	1:D:121:HIS:NE2	2.26	0.68
1:D:69:ALA:HB3	1:D:224:ASN:O	1.93	0.68
1:A:49:ILE:HB	1:A:87:CYS:HB3	1.75	0.67
1:C:53:GLU:OE2	1:C:121:HIS:NE2	2.28	0.67
1:C:138:THR:O	1:C:142:LEU:HB2	1.96	0.65
1:B:270:ILE:N	1:B:271:GLY:HA2	2.12	0.64
1:C:54:ARG:HD3	1:C:90:ASP:HB2	1.80	0.64
1:D:54:ARG:HD3	1:D:90:ASP:HB2	1.79	0.63
1:C:41:HIS:ND1	1:C:112:ASP:OD1	2.31	0.63
1:A:289:PHE:HE1	1:D:242:SER:CB	2.12	0.63
1:C:72:ASP:HA	1:C:75:THR:CG2	2.29	0.62
1:D:72:ASP:HA	1:D:75:THR:CG2	2.29	0.62
1:C:69:ALA:O	1:C:73:ASN:HB2	2.00	0.61
1:C:69:ALA:HB3	1:C:224:ASN:O	2.01	0.61
1:C:99:LYS:O	1:C:102:GLU:HG2	2.01	0.61
1:D:69:ALA:O	1:D:73:ASN:HB2	2.00	0.60
1:C:213:ALA:O	1:C:216:TYR:CB	2.49	0.60
1:A:113:CYS:HB3	1:A:155:PRO:HG2	1.84	0.59
1:C:61:LEU:HA	1:C:64:ARG:HB3	1.83	0.59
1:B:113:CYS:HB3	1:B:155:PRO:HG2	1.85	0.59
1:C:74:LEU:HD23	1:C:78:PHE:CE2	2.37	0.59
1:D:52:HIS:HD2	1:D:90:ASP:OD2	1.86	0.59
1:A:244:GLU:CD	1:A:287:HIS:HD1	2.06	0.58
1:B:244:GLU:CD	1:B:287:HIS:HD1	2.06	0.58
1:B:51:ASN:H	1:B:51:ASN:HD22	1.52	0.57
1:C:52:HIS:HD2	1:C:90:ASP:OD2	1.87	0.57
1:A:51:ASN:H	1:A:51:ASN:HD22	1.52	0.57
1:D:49:ILE:HG21	1:D:71:ARG:HG3	1.87	0.57
1:A:101:HIS:O	1:A:105:THR:N	2.38	0.56
1:C:61:LEU:HD12	1:C:64:ARG:HG2	1.88	0.56
1:C:202:ALA:HB2	1:D:214:GLU:O	2.06	0.56
1:D:251:LEU:HD23	1:D:254:ARG:HH22	1.69	0.56
1:C:49:ILE:HG21	1:C:71:ARG:HG3	1.87	0.56
1:D:61:LEU:N	1:D:62:PRO:HD2	2.21	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:243:LEU:HD23	1:D:247:GLU:CD	2.26	0.55
1:C:61:LEU:N	1:C:62:PRO:HD2	2.21	0.55
1:B:43:ARG:HH21	1:B:110:ASP:HB2	1.72	0.55
1:D:108:HIS:H	1:D:150:SER:HB2	1.72	0.55
1:C:108:HIS:H	1:C:150:SER:HB2	1.72	0.54
1:C:247:GLU:O	1:C:251:LEU:HD12	2.07	0.54
1:B:101:HIS:O	1:B:105:THR:N	2.38	0.54
1:A:43:ARG:HH21	1:A:110:ASP:HB2	1.72	0.54
1:C:243:LEU:HD23	1:C:247:GLU:CD	2.28	0.54
1:B:52:HIS:HE1	1:B:128:TYR:O	1.91	0.54
1:A:289:PHE:HE1	1:D:242:SER:HB2	1.72	0.53
1:B:41:HIS:O	1:B:291:LYS:NZ	2.41	0.53
1:D:212:VAL:CG2	1:D:216:TYR:HB2	2.38	0.53
1:A:41:HIS:O	1:A:291:LYS:NZ	2.41	0.53
1:C:251:LEU:HD23	1:C:254:ARG:HH22	1.74	0.53
1:B:74:LEU:HD13	1:B:117:VAL:HG11	1.91	0.53
1:D:212:VAL:HG22	1:D:216:TYR:HB2	1.90	0.53
1:A:74:LEU:HD13	1:A:117:VAL:HG11	1.90	0.53
1:B:52:HIS:HD2	1:B:90:ASP:OD2	1.93	0.53
1:C:74:LEU:HG	1:C:233:CYS:SG	2.48	0.53
1:D:72:ASP:HA	1:D:75:THR:HG22	1.91	0.53
1:A:52:HIS:HE1	1:A:128:TYR:O	1.91	0.52
1:C:72:ASP:HA	1:C:75:THR:HG22	1.91	0.52
1:D:247:GLU:O	1:D:251:LEU:HD12	2.09	0.52
1:A:100:ILE:HD11	1:A:139:LEU:HD13	1.92	0.52
1:A:259:ARG:O	1:A:259:ARG:HG2	2.10	0.52
1:A:108:HIS:H	1:A:150:SER:CB	2.24	0.51
1:C:242:SER:C	1:C:287:HIS:HE2	2.14	0.51
1:C:214:GLU:O	1:D:202:ALA:HB2	2.09	0.51
1:D:64:ARG:HD3	1:D:64:ARG:C	2.30	0.51
1:A:245:PHE:HB2	1:A:286:LEU:HD23	1.93	0.51
1:A:52:HIS:HD2	1:A:90:ASP:OD2	1.93	0.51
1:B:60:THR:HB	1:B:62:PRO:HD2	1.92	0.51
1:A:60:THR:HB	1:A:62:PRO:HD2	1.93	0.51
1:B:259:ARG:O	1:B:259:ARG:HG2	2.10	0.51
1:A:51:ASN:H	1:A:51:ASN:ND2	2.09	0.50
1:A:159:ILE:HD13	1:A:232[A]:LEU:HD21	1.94	0.50
1:B:51:ASN:H	1:B:51:ASN:ND2	2.09	0.50
1:B:108:HIS:H	1:B:150:SER:CB	2.24	0.50
1:A:56:PHE:CD2	1:A:59:LEU:HD12	2.48	0.49
1:B:245:PHE:HB2	1:B:286:LEU:HD23	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:71:ARG:O	1:D:75:THR:CG2	2.46	0.49
1:C:239:TYR:HB3	1:C:243:LEU:HD12	1.95	0.49
1:A:33:PRO:HG2	1:C:36:LYS:HE3	1.94	0.48
1:C:243:LEU:CD2	1:C:247:GLU:CD	2.81	0.48
1:B:286:LEU:HD21	1:B:288:PHE:CZ	2.48	0.48
1:C:67:THR:HG1	1:C:121:HIS:HE1	1.51	0.48
1:A:286:LEU:HD21	1:A:288:PHE:CZ	2.48	0.48
1:C:113:CYS:SG	1:C:155:PRO:HG2	2.54	0.48
1:C:239:TYR:HB3	1:C:243:LEU:CD1	2.44	0.47
1:B:59:LEU:CD2	1:B:64:ARG:HB2	2.45	0.47
1:D:213:ALA:O	1:D:216:TYR:CB	2.50	0.47
1:A:140:THR:HG21	1:A:208:MET:HE1	1.97	0.47
1:A:241:SER:HB2	1:A:290:PRO:HD3	1.97	0.47
1:D:74:LEU:HD22	1:D:117:VAL:HG11	1.95	0.47
1:D:77:ARG:HH11	1:D:233:CYS:HB3	1.79	0.47
1:D:113:CYS:SG	1:D:155:PRO:HG2	2.55	0.47
1:B:140:THR:HG21	1:B:208:MET:HE1	1.97	0.46
1:C:102:GLU:O	1:C:106:VAL:HG23	2.15	0.46
1:D:219:HIS:CE1	1:D:226:SER:HB2	2.51	0.46
1:B:241:SER:HB2	1:B:290:PRO:HD3	1.96	0.46
1:C:71:ARG:O	1:C:75:THR:CG2	2.46	0.46
1:C:43:ARG:O	1:C:111:ALA:HA	2.16	0.46
1:C:280:SER:HB3	1:D:278:PHE:CZ	2.51	0.45
1:C:283:THR:HB	1:D:254:ARG:HG3	1.98	0.45
1:C:219:HIS:CE1	1:C:226:SER:HB2	2.51	0.45
1:D:43:ARG:O	1:D:111:ALA:HA	2.17	0.45
1:A:51:ASN:HD22	1:A:51:ASN:N	2.14	0.44
1:D:159:ILE:HA	1:D:209:CYS:HB2	2.00	0.44
1:D:239:TYR:HB3	1:D:243:LEU:HD13	1.99	0.44
1:A:32:ASP:HA	1:A:33:PRO:HD2	1.86	0.44
1:A:78:PHE:O	1:A:83:PHE:HB2	2.18	0.44
1:B:51:ASN:HD22	1:B:51:ASN:N	2.14	0.44
1:C:251:LEU:HD21	1:D:33:PRO:HA	2.00	0.44
1:D:74:LEU:CD2	1:D:117:VAL:HG21	2.47	0.44
1:B:159:ILE:HD13	1:B:232:LEU:HD21	1.99	0.44
1:D:102:GLU:O	1:D:106:VAL:HG23	2.17	0.44
1:B:56:PHE:CD2	1:B:59:LEU:HD12	2.53	0.43
1:B:78:PHE:O	1:B:83:PHE:HB2	2.18	0.43
1:C:159:ILE:HA	1:C:209:CYS:HB2	1.99	0.43
1:D:56:PHE:CE1	1:D:121:HIS:HB2	2.54	0.43
1:C:74:LEU:HD23	1:C:78:PHE:CD2	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:44:ARG:HD2	1:B:81:LEU:O	2.19	0.42
1:B:212:VAL:HG21	1:B:218:SER:HB2	2.01	0.42
1:B:236:LEU:HD21	1:B:245:PHE:HE1	1.85	0.42
1:D:243:LEU:HD23	1:D:247:GLU:CG	2.49	0.42
1:C:56:PHE:CE1	1:C:121:HIS:HB2	2.54	0.42
1:A:57:TRP:HA	1:A:58:HIS:HA	1.70	0.42
1:A:212:VAL:HG21	1:A:218:SER:HB2	2.01	0.42
1:B:70:ASP:OD2	1:B:221:GLU:OE2	2.38	0.42
1:A:44:ARG:HD2	1:A:81:LEU:O	2.19	0.42
1:A:289:PHE:CE1	1:D:242:SER:CB	2.97	0.42
1:A:70:ASP:OD2	1:A:221:GLU:OE2	2.38	0.42
1:D:253:ASN:HA	1:D:276:PRO:HG2	2.01	0.42
1:D:59:LEU:HD11	1:D:63:GLU:HB2	2.02	0.42
1:D:54:ARG:O	1:D:128:TYR:HD1	2.03	0.41
1:C:149:HIS:HA	1:C:152:VAL:HG23	2.02	0.41
1:A:61:LEU:N	1:A:62:PRO:HD2	2.35	0.41
1:A:37:TYR:CD1	1:A:155:PRO:HD3	2.56	0.41
1:C:253:ASN:HA	1:C:276:PRO:HG2	2.02	0.41
1:A:236:LEU:HD21	1:A:245:PHE:HE1	1.85	0.41
1:D:75:THR:CB	1:D:85:VAL:HG11	2.51	0.41
1:A:56:PHE:HD2	1:A:59:LEU:HD12	1.86	0.41
1:C:54:ARG:O	1:C:128:TYR:HD1	2.03	0.41
1:C:75:THR:CB	1:C:85:VAL:HG11	2.51	0.41
1:B:61:LEU:N	1:B:62:PRO:HD2	2.36	0.41
1:C:59:LEU:HD11	1:C:63:GLU:HB2	2.02	0.41
1:C:99:LYS:O	1:C:103:VAL:HG23	2.20	0.41
1:C:212:VAL:HG22	1:C:216:TYR:CB	2.51	0.41
1:D:74:LEU:CD2	1:D:117:VAL:HG11	2.51	0.41
1:A:219:HIS:CE1	1:A:274:GLN:HE22	2.39	0.40
1:B:56:PHE:HD2	1:B:59:LEU:HD12	1.85	0.40
1:D:59:LEU:HD11	1:D:63:GLU:CB	2.51	0.40
1:B:37:TYR:CD1	1:B:155:PRO:HD3	2.55	0.40
1:D:149:HIS:HA	1:D:152:VAL:HG23	2.02	0.40
1:B:30:MET:HB3	1:B:31:PHE:H	1.71	0.40
1:B:32:ASP:HA	1:B:33:PRO:HD2	1.86	0.40
1:D:52:HIS:HE1	1:D:128:TYR:O	2.04	0.40
1:D:99:LYS:O	1:D:103:VAL:HG23	2.21	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	212/299 (71%)	203 (96%)	8 (4%)	1 (0%)	29	57
1	B	219/299 (73%)	211 (96%)	7 (3%)	1 (0%)	29	57
1	C	212/299 (71%)	200 (94%)	11 (5%)	1 (0%)	29	57
1	D	212/299 (71%)	200 (94%)	10 (5%)	2 (1%)	17	43
All	All	855/1196 (72%)	814 (95%)	36 (4%)	5 (1%)	25	53

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	201	PRO
1	D	201	PRO
1	D	223	VAL
1	A	201	PRO
1	B	201	PRO

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	172/261 (66%)	161 (94%)	11 (6%)	17	41
1	B	173/261 (66%)	161 (93%)	12 (7%)	15	38
1	C	168/261 (64%)	151 (90%)	17 (10%)	7	20
1	D	164/261 (63%)	146 (89%)	18 (11%)	6	17
All	All	677/1044 (65%)	619 (91%)	58 (9%)	10	27

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	ASN
1	A	59	LEU
1	A	61	LEU
1	A	77	ARG
1	A	79	SER
1	A	163	CYS
1	A	212	VAL
1	A	220	ARG
1	A	255	LYS
1	A	286	LEU
1	A	287	HIS
1	B	51	ASN
1	B	59	LEU
1	B	61	LEU
1	B	77	ARG
1	B	79	SER
1	B	163	CYS
1	B	212	VAL
1	B	220	ARG
1	B	221	GLU
1	B	255	LYS
1	B	286	LEU
1	B	287	HIS
1	C	36	LYS
1	C	41	HIS
1	C	74	LEU
1	C	76	ARG
1	C	110	ASP
1	C	142	LEU
1	C	144	LYS
1	C	146	ASP
1	C	199	THR
1	C	217	TYR
1	C	219	HIS
1	C	220	ARG
1	C	232	LEU
1	C	235	MET
1	C	243	LEU
1	C	251	LEU
1	C	286	LEU
1	D	36	LYS
1	D	41	HIS

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Mol	Chain	Res	Type
1	D	64	ARG
1	D	74	LEU
1	D	76	ARG
1	D	77	ARG
1	D	110	ASP
1	D	140	THR
1	D	142	LEU
1	D	146	ASP
1	D	199	THR
1	D	217	TYR
1	D	219	HIS
1	D	232	LEU
1	D	235	MET
1	D	243	LEU
1	D	251	LEU
1	D	286	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	51	ASN
1	A	52	HIS
1	A	89	ASN
1	A	258	GLN
1	A	274	GLN
1	B	51	ASN
1	B	52	HIS
1	B	89	ASN
1	B	258	GLN
1	B	274	GLN
1	C	52	HIS
1	C	108	HIS
1	C	121	HIS
1	C	219	HIS
1	C	258	GLN
1	D	52	HIS
1	D	108	HIS
1	D	121	HIS
1	D	219	HIS
1	D	258	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

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 ⓘ

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 ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.