



wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 5, 2023 – 03:50 PM EST

PDB ID : 4GM3
Title : Crystal structure of human WD repeat domain 5 with compound MM-101
Authors : Karatas, H.; Townsend, E.C.; Chen, Y.; Bernard, D.; Cao, F.; Liu, L.; Lei, M.; Dou, Y.; Wang, S.
Deposited on : 2012-08-15
Resolution : 3.39 Å (reported)

This is a wwPDB X-ray Structure Validation Summary 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
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
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) : 2.36

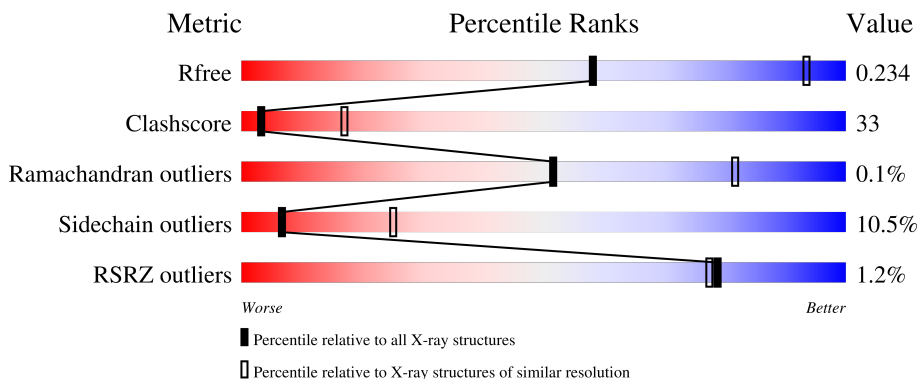
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.39 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	1026 (3.48-3.32)
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)
RSRZ outliers	127900	2173 (3.50-3.30)

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	313	
1	B	313	
1	C	313	
1	D	313	
1	E	313	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	313	
1	G	313	
1	H	313	
2	I	5	
2	J	5	
2	K	5	
2	L	5	
2	M	5	
2	N	5	
2	O	5	
2	P	5	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	AC5	L	4	-	-	X	-
2	AC5	M	4	-	-	X	-
2	AC5	O	4	-	-	X	-

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 19224 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 WD repeat-containing protein 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	304	2357	1503	393	451	10	0	0	0
1	B	304	2357	1503	393	451	10	0	0	0
1	C	304	2357	1503	393	451	10	0	0	0
1	D	304	2357	1503	393	451	10	0	0	0
1	E	304	2357	1503	393	451	10	0	0	0
1	F	304	2357	1503	393	451	10	0	0	0
1	G	304	2357	1503	393	451	10	0	0	0
1	H	304	2357	1503	393	451	10	0	0	0

- Molecule 2 is a protein called MM-101.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	I	5	46	35	7	4	0	0	0
2	J	5	46	35	7	4	0	0	0
2	K	5	46	35	7	4	0	0	0
2	L	5	46	35	7	4	0	0	0
2	M	5	46	35	7	4	0	0	0
2	N	5	46	35	7	4	0	0	0

Continued on next page...

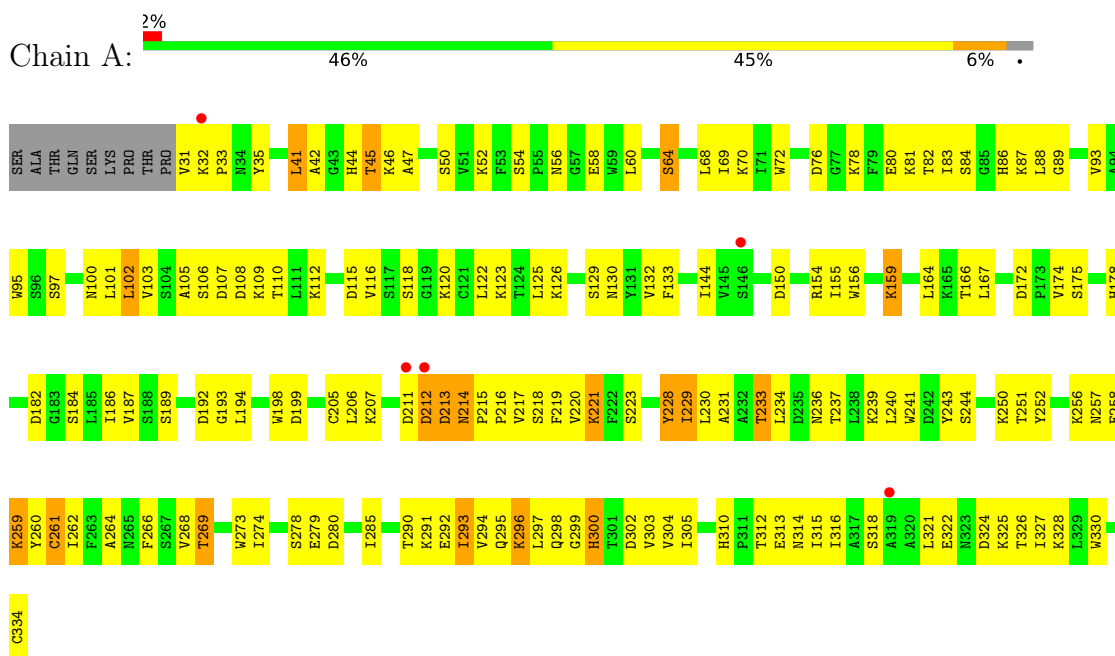
Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	O	5	Total 46	35	7	4	0	0	0
2	P	5	Total 46	35	7	4	0	0	0

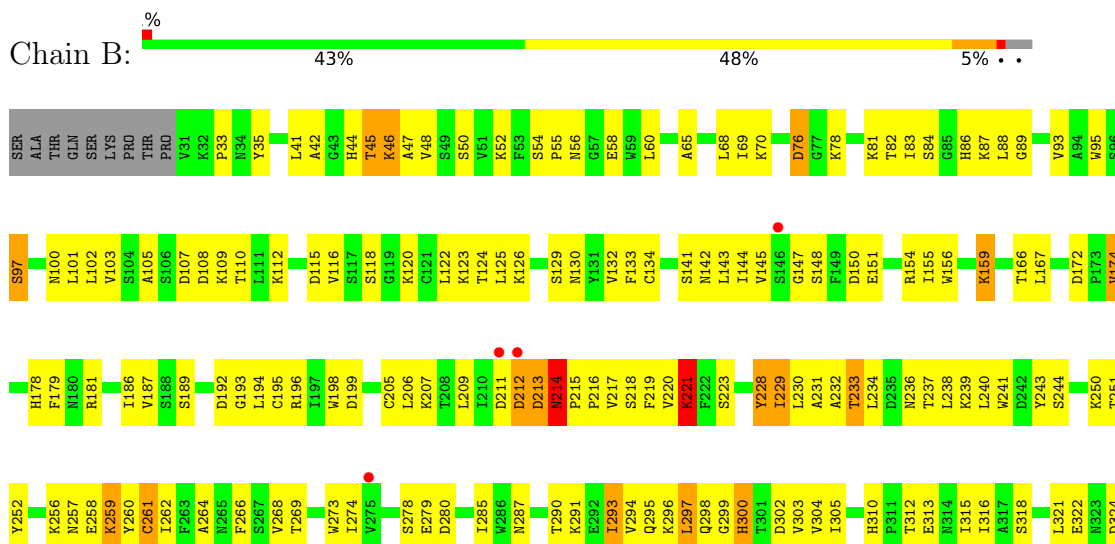
3 Residue-property plots [i](#)

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: WD repeat-containing protein 5



- Molecule 1: WD repeat-containing protein 5



K325
T326
I327
K328
L329
W330
C334

• Molecule 1: WD repeat-containing protein 5



SER ALA THR GLN SER LYS PRO THR PRO V31 K32 V32 P33 P34 V35 L41 A42 A43 H44 T45 K46 A47 S50 V51 K52 F53 S54 P55 N56 G57 E58 W59 L60 S64 L68 I69 K70 W71 W72 D76 K81 T82 I83 S84 G85 H86 K87 L88 C89 I90 S91 S92 V93 W95

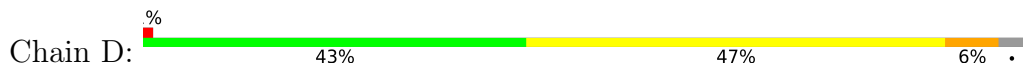
S86 S87 M100 L101 V103 S104 S106 D107 D108 C261 K109 T110 L111 K112 D115 V116 S117 S118 G119 K120 C121 L122 K123 T124 H128 S129 M130 Y131 F132 F133 P139 Q140 S141 I144 V145 G147 S148 F149 D150 E151 S84 R154 W155 W156 K159 K162 T166 L167

D172 F173 V174 S175 H178 R181 D182 G183 S184 L185 I186 V187 S188 S189 D192 G193 L194 C195 R196 I197 W198 D205 L206 S207 K207 D211 D212 D213 V214 V215 V216 V217 S218 F219 V220 K221 F222 S223 Y228 I229 L230 A231 A232 T233 L234 D235 N236 T237 L238 K239 L240 W241 Y242 Y243

S244 K250 T251 Y252 K256 E257 E258 K259 D260 C261 L262 F263 A264 M265 S266 V267 V268 T269 W273 L274 E279 D280 I285 K291 L293 L294 V294 Q295 K296 Q298 Q299 H300 D302 V303 V304 R310 P311 T312 E313 N314 I315 I316 A317 S318 A319 L321 E322 N323 D324

K325
T326
I327
K328
L329
W330
C334

• Molecule 1: WD repeat-containing protein 5



SER ALA THR GLN SER LYS PRO THR PRO V31 K32 P33 P34 V35 L41 A42 A43 H44 T45 K46 A47 V48 S49 K123 V51 K52 F53 S54 P55 N56 G57 E58 W59 L60 A65 L68 I69 K70 D76 G77 K78 K81 T82 I83 S84 G85 H86 K87 L88 C89 V93 A94 W95 S96

S97 M100 L101 V103 S104 A105 S106 D107 D108 C109 T110 L111 K112 D115 V116 S117 S118 G119 K120 C121 L122 K123 T124 L125 K126 S129 M130 Y131 F132 F133 N142 L143 I144 V145 G147 D150 E151 S152 V153 R154 I155 W156 K159 T166 P168 A169 D172 P173 V174

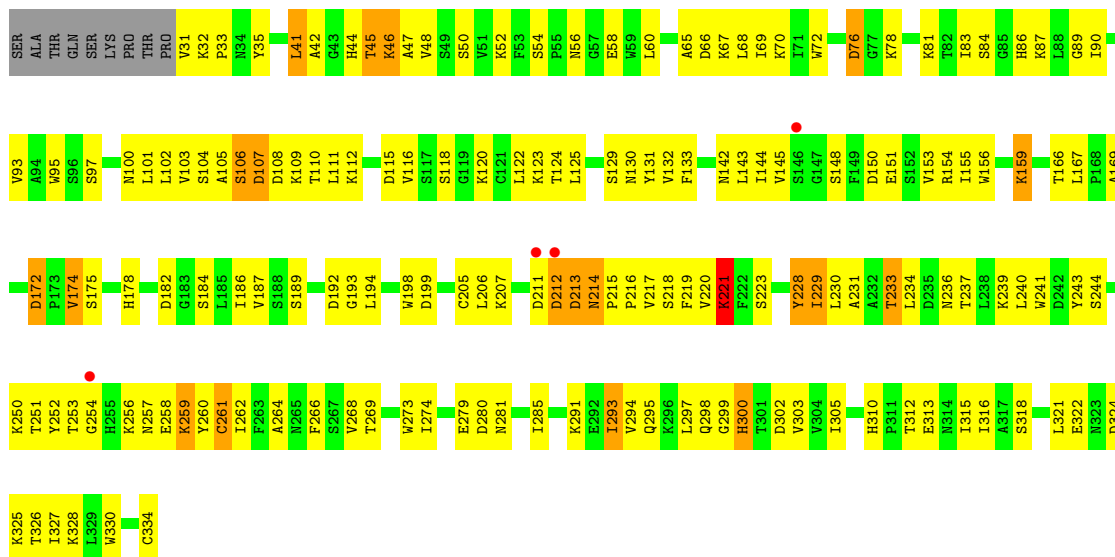
S175 H178 D182 G183 S184 L185 V187 S189 D192 G193 L194 W198 D199 C205 G206 K207 D211 D212 N214 P215 V216 V217 S218 F219 V220 K221 S222 S223 Y228 I229 L230 A231 A232 T233 L234 D235 N236 T237 L238 K239 L240 W241 D242 Y243 S244 K250 T251 T253

G254 H256 N257 E258 Y260 C261 I262 F263 A264 M265 F266 S267 V268 T269 W273 I274 E279 D280 I285 T290 K291 E292 P293 V294 Q295 K296 L297 Q298 G299 H300 T301 D302 V303 V304 R310 P311 T312 E313 N314 I315 I316 A317 S318 L321 E322 N323 D324 K325 T326 I327 K328

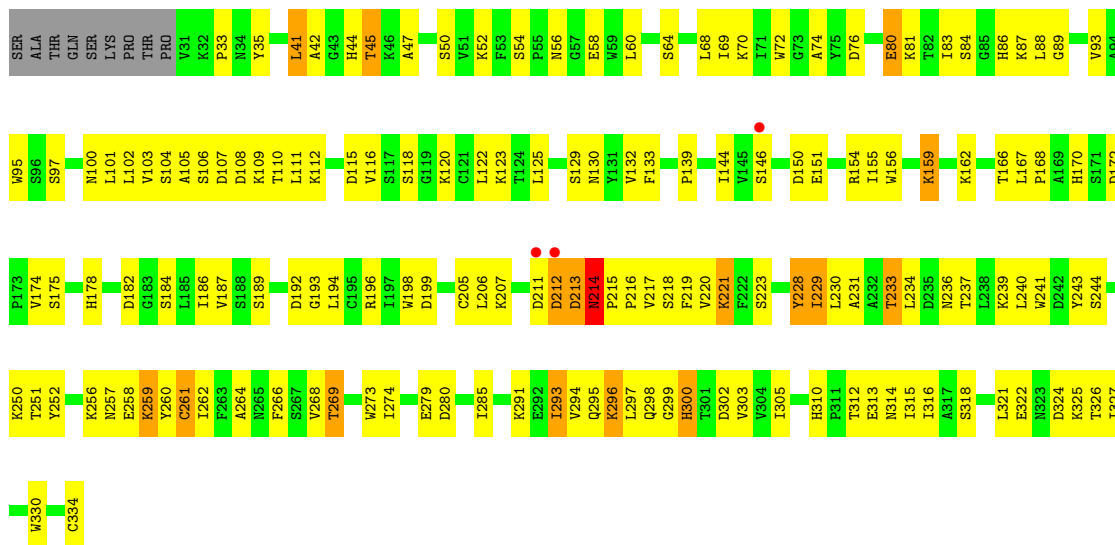
L329
W330
C334

• Molecule 1: WD repeat-containing protein 5

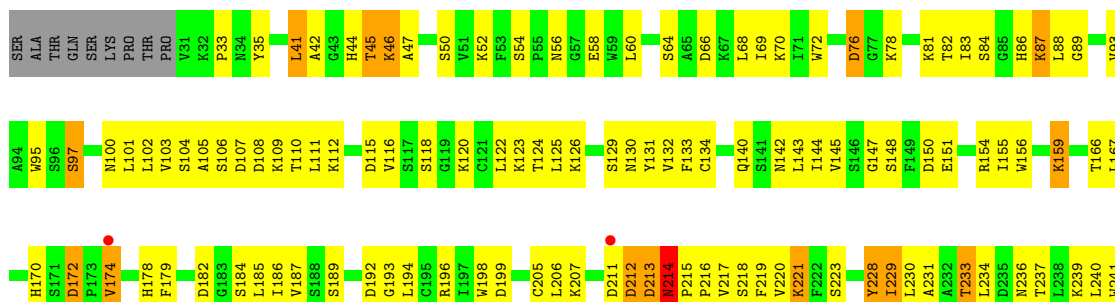


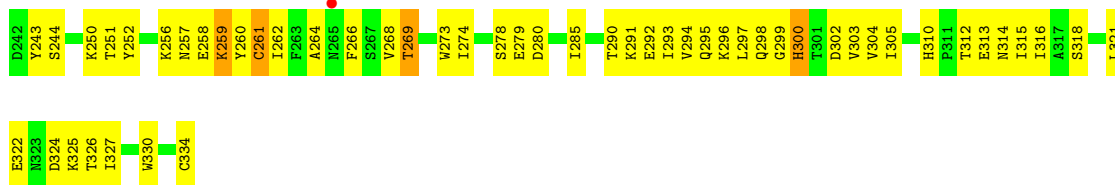


• Molecule 1: WD repeat-containing protein 5



• Molecule 1: WD repeat-containing protein 5

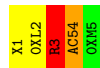
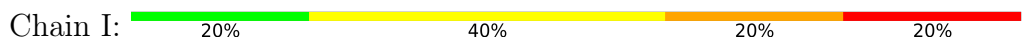




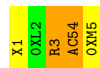
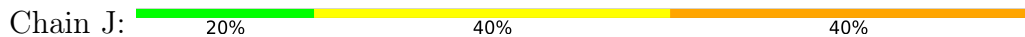
- Molecule 1: WD repeat-containing protein 5



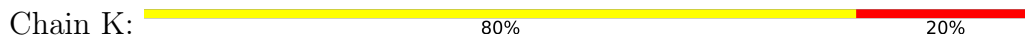
- Molecule 2: MM-101



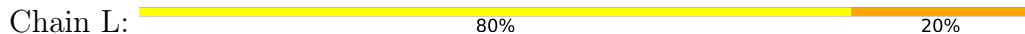
- Molecule 2: MM-101



- Molecule 2: MM-101



- Molecule 2: MM-101

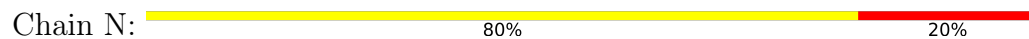




- Molecule 2: MM-101



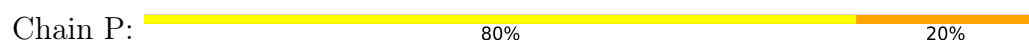
- Molecule 2: MM-101



- Molecule 2: MM-101



- Molecule 2: MM-101



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	48.94Å 105.98Å 120.91Å 90.00° 89.76° 90.03°	Depositor
Resolution (Å)	48.54 – 3.39 48.54 – 3.39	Depositor EDS
% Data completeness (in resolution range)	89.8 (48.54-3.39) 89.4 (48.54-3.39)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.28 (at 3.40Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.7_650)	Depositor
R, R_{free}	0.195 , 0.226 0.199 , 0.234	Depositor DCC
R_{free} test set	1554 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å ²)	34.1	Xtrriage
Anisotropy	1.547	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 27.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.409 for h,-k,-l 0.409 for -h,k,-l 0.409 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	19224	wwPDB-VP
Average B, all atoms (Å ²)	57.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 45.32 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.3439e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: 0XM, AC5, ALQ, 0XL

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	0.61	3/2413 (0.1%)	0.76	2/3272 (0.1%)
1	B	0.59	2/2413 (0.1%)	0.78	6/3272 (0.2%)
1	C	0.62	2/2413 (0.1%)	0.76	2/3272 (0.1%)
1	D	0.60	4/2413 (0.2%)	0.77	3/3272 (0.1%)
1	E	0.64	4/2413 (0.2%)	0.78	5/3272 (0.2%)
1	F	0.61	3/2413 (0.1%)	0.74	1/3272 (0.0%)
1	G	0.59	3/2413 (0.1%)	0.74	1/3272 (0.0%)
1	H	0.57	2/2413 (0.1%)	0.74	1/3272 (0.0%)
2	I	3.66	2/10 (20.0%)	6.98	2/11 (18.2%)
2	J	3.88	2/10 (20.0%)	6.62	2/11 (18.2%)
2	K	3.82	1/10 (10.0%)	6.32	2/11 (18.2%)
2	L	3.64	1/10 (10.0%)	6.63	2/11 (18.2%)
2	M	3.60	1/10 (10.0%)	6.46	2/11 (18.2%)
2	N	3.46	2/10 (20.0%)	7.11	2/11 (18.2%)
2	O	3.97	1/10 (10.0%)	5.89	2/11 (18.2%)
2	P	4.04	1/10 (10.0%)	7.02	2/11 (18.2%)
All	All	0.65	34/19384 (0.2%)	0.85	37/26264 (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	A	0	1
1	B	0	1
All	All	0	2

The worst 5 of 34 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	O	3	ARG	NE-CZ	10.94	1.47	1.33
2	P	3	ARG	NE-CZ	10.90	1.47	1.33
2	L	3	ARG	NE-CZ	10.49	1.46	1.33
2	K	3	ARG	NE-CZ	9.94	1.46	1.33
2	M	3	ARG	NE-CZ	9.84	1.45	1.33

The worst 5 of 37 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	N	3	ARG	NE-CZ-NH1	18.96	129.78	120.30
2	J	3	ARG	NE-CZ-NH1	18.83	129.72	120.30
2	I	3	ARG	NE-CZ-NH1	18.41	129.51	120.30
2	P	3	ARG	NE-CZ-NH1	17.59	129.09	120.30
2	L	3	ARG	NE-CZ-NH1	17.47	129.03	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	126	LYS	Mainchain
1	B	126	LYS	Mainchain

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	2357	0	2339	149	0
1	B	2357	0	2339	146	0
1	C	2357	0	2339	156	0
1	D	2357	0	2339	168	0
1	E	2357	0	2338	169	0
1	F	2357	0	2339	157	0
1	G	2357	0	2339	164	0
1	H	2357	0	2339	155	0
2	I	46	0	38	18	0
2	J	46	0	38	12	0
2	K	46	0	39	24	0
2	L	46	0	39	23	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	M	46	0	39	24	0
2	N	46	0	39	19	0
2	O	46	0	39	24	0
2	P	46	0	39	28	0
All	All	19224	0	19021	1265	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.

The worst 5 of 1265 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)
2:M:1:ALQ:HM1	2:M:4:AC5:HB22	1.27	1.10
1:H:321:LEU:HD22	2:P:4:AC5:HG12	1.24	1.08
1:E:321:LEU:HD22	2:M:4:AC5:CG1	1.84	1.07
2:L:1:ALQ:HM1	2:L:4:AC5:HB22	1.35	1.06
1:D:253:THR:HG21	1:E:253:THR:HG21	1.05	1.05

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	302/313 (96%)	274 (91%)	28 (9%)	0	100	100
1	B	302/313 (96%)	275 (91%)	27 (9%)	0	100	100
1	C	302/313 (96%)	273 (90%)	29 (10%)	0	100	100
1	D	302/313 (96%)	275 (91%)	27 (9%)	0	100	100
1	E	302/313 (96%)	273 (90%)	29 (10%)	0	100	100
1	F	302/313 (96%)	276 (91%)	26 (9%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	G	302/313 (96%)	273 (90%)	29 (10%)	0	100	100
1	H	302/313 (96%)	275 (91%)	27 (9%)	0	100	100
2	I	1/5 (20%)	0	0	1 (100%)	0	0
2	J	1/5 (20%)	1 (100%)	0	0	100	100
2	K	1/5 (20%)	0	1 (100%)	0	100	100
2	L	1/5 (20%)	1 (100%)	0	0	100	100
2	M	1/5 (20%)	1 (100%)	0	0	100	100
2	N	1/5 (20%)	0	0	1 (100%)	0	0
2	O	1/5 (20%)	1 (100%)	0	0	100	100
2	P	1/5 (20%)	0	1 (100%)	0	100	100
All	All	2424/2544 (95%)	2198 (91%)	224 (9%)	2 (0%)	51	82

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	I	3	ARG
2	N	3	ARG

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	266/274 (97%)	239 (90%)	27 (10%)	7	26
1	B	266/274 (97%)	239 (90%)	27 (10%)	7	26
1	C	266/274 (97%)	238 (90%)	28 (10%)	7	25
1	D	266/274 (97%)	236 (89%)	30 (11%)	6	21
1	E	266/274 (97%)	239 (90%)	27 (10%)	7	26
1	F	266/274 (97%)	238 (90%)	28 (10%)	7	25
1	G	266/274 (97%)	237 (89%)	29 (11%)	6	23
1	H	266/274 (97%)	239 (90%)	27 (10%)	7	26

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	I	1/1 (100%)	1 (100%)	0	100	100
2	J	1/1 (100%)	1 (100%)	0	100	100
2	K	1/1 (100%)	0	1 (100%)	0	0
2	L	1/1 (100%)	1 (100%)	0	100	100
2	M	1/1 (100%)	1 (100%)	0	100	100
2	N	1/1 (100%)	1 (100%)	0	100	100
2	O	1/1 (100%)	1 (100%)	0	100	100
2	P	1/1 (100%)	1 (100%)	0	100	100
All	All	2136/2200 (97%)	1912 (90%)	224 (10%)	7	25

5 of 224 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	50	SER
1	H	300	HIS
1	F	64	SER
1	H	296	LYS
1	H	50	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	136	ASN
1	F	214	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

16 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	0XL	N	2	2	3,7,8	0.89	0	1,9,11	0.52	0
2	AC5	P	4	2	6,8,9	0.69	0	5,11,13	0.72	0
2	0XL	K	2	2	3,7,8	0.27	0	1,9,11	0.58	0
2	0XL	P	2	2	3,7,8	0.45	0	1,9,11	1.53	0
2	0XL	L	2	2	3,7,8	0.44	0	1,9,11	1.65	0
2	0XL	I	2	2	3,7,8	0.59	0	1,9,11	0.84	0
2	AC5	N	4	2	6,8,9	0.78	0	5,11,13	1.02	0
2	AC5	K	4	2	6,8,9	0.79	0	5,11,13	0.90	0
2	AC5	J	4	2	6,8,9	1.96	2 (33%)	5,11,13	0.84	0
2	AC5	M	4	2	6,8,9	1.31	1 (16%)	5,11,13	0.76	0
2	0XL	O	2	2	3,7,8	0.45	0	1,9,11	2.07	1 (100%)
2	AC5	I	4	2	6,8,9	1.32	1 (16%)	5,11,13	0.63	0
2	AC5	L	4	2	6,8,9	1.21	0	5,11,13	0.75	0
2	0XL	J	2	2	3,7,8	0.71	0	1,9,11	0.82	0
2	AC5	O	4	2	6,8,9	1.46	1 (16%)	5,11,13	1.33	1 (20%)
2	0XL	M	2	2	3,7,8	0.50	0	1,9,11	0.27	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	0XL	N	2	2	-	3/4/9/12	-
2	AC5	P	4	2	-	2/2/12/15	0/1/1/1
2	0XL	K	2	2	-	3/4/9/12	-
2	0XL	P	2	2	-	3/4/9/12	-
2	0XL	L	2	2	-	2/4/9/12	-
2	0XL	I	2	2	-	4/4/9/12	-
2	AC5	N	4	2	-	2/2/12/15	0/1/1/1
2	AC5	K	4	2	-	2/2/12/15	0/1/1/1
2	AC5	J	4	2	-	2/2/12/15	0/1/1/1
2	AC5	M	4	2	-	2/2/12/15	0/1/1/1
2	0XL	O	2	2	-	2/4/9/12	-
2	AC5	I	4	2	-	2/2/12/15	0/1/1/1
2	AC5	L	4	2	-	2/2/12/15	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	0XL	J	2	2	-	2/4/9/12	-
2	AC5	O	4	2	-	1/2/12/15	0/1/1/1
2	0XL	M	2	2	-	1/4/9/12	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	4	AC5	CB1-CA	-3.31	1.50	1.54
2	J	4	AC5	CB2-CA	3.08	1.58	1.54
2	O	4	AC5	CB1-CA	-2.79	1.51	1.54
2	M	4	AC5	CB1-CA	-2.56	1.51	1.54
2	I	4	AC5	CB1-CA	-2.31	1.51	1.54

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	O	4	AC5	CG2-CB2-CA	2.31	108.34	104.03
2	O	2	0XL	CAZ-CA-CBA	2.07	115.15	111.96

There are no chirality outliers.

5 of 35 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	I	2	0XL	C-CA-CAZ-CBE
2	I	2	0XL	CBA-CA-CAZ-CBE
2	I	2	0XL	C-CA-CBA-CBD
2	I	2	0XL	CAZ-CA-CBA-CBD
2	J	2	0XL	C-CA-CAZ-CBE

There are no ring outliers.

15 monomers are involved in 60 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	N	2	0XL	2	0
2	P	4	AC5	5	0
2	K	2	0XL	3	0
2	P	2	0XL	2	0
2	L	2	0XL	2	0
2	I	2	0XL	1	0
2	N	4	AC5	4	0
2	K	4	AC5	3	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	J	4	AC5	4	0
2	M	4	AC5	9	0
2	O	2	0XL	4	0
2	I	4	AC5	4	0
2	L	4	AC5	7	0
2	O	4	AC5	9	0
2	M	2	0XL	2	0

5.5 Carbohydrates [i](#)

There are no monosaccharides 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	304/313 (97%)	0.08	5 (1%) 72 70	34, 53, 85, 128	0
1	B	304/313 (97%)	-0.01	4 (1%) 77 76	32, 53, 84, 132	0
1	C	304/313 (97%)	0.03	5 (1%) 72 70	34, 54, 85, 130	0
1	D	304/313 (97%)	0.02	2 (0%) 87 87	32, 53, 85, 135	0
1	E	304/313 (97%)	-0.02	4 (1%) 77 76	28, 53, 84, 136	0
1	F	304/313 (97%)	0.03	3 (0%) 82 81	34, 54, 84, 130	0
1	G	304/313 (97%)	0.00	3 (0%) 82 81	32, 52, 84, 133	0
1	H	304/313 (97%)	0.03	3 (0%) 82 81	34, 54, 84, 127	0
2	I	1/5 (20%)	0.19	0 100 100	44, 44, 44, 44	0
2	J	1/5 (20%)	-0.50	0 100 100	37, 37, 37, 37	0
2	K	1/5 (20%)	0.17	0 100 100	42, 42, 42, 42	0
2	L	1/5 (20%)	-0.50	0 100 100	34, 34, 34, 34	0
2	M	1/5 (20%)	-0.26	0 100 100	37, 37, 37, 37	0
2	N	1/5 (20%)	-0.58	0 100 100	39, 39, 39, 39	0
2	O	1/5 (20%)	-0.73	0 100 100	36, 36, 36, 36	0
2	P	1/5 (20%)	-0.18	0 100 100	42, 42, 42, 42	0
All	All	2440/2544 (95%)	0.02	29 (1%) 79 77	28, 53, 85, 136	0

The worst 5 of 29 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	211	ASP	4.7
1	D	211	ASP	4.6
1	G	211	ASP	4.3
1	B	211	ASP	4.2
1	C	211	ASP	4.1

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	0XL	I	2	8/9	0.95	0.24	37,49,57,59	0
2	0XL	P	2	8/9	0.95	0.24	24,42,51,51	0
2	0XL	M	2	8/9	0.96	0.20	39,42,50,55	0
2	0XL	J	2	8/9	0.96	0.25	38,44,48,53	0
2	AC5	M	4	8/9	0.96	0.20	26,33,53,64	0
2	0XL	N	2	8/9	0.97	0.18	40,48,49,52	0
2	0XL	L	2	8/9	0.97	0.20	36,41,46,57	0
2	AC5	I	4	8/9	0.97	0.19	36,45,51,52	0
2	AC5	K	4	8/9	0.97	0.18	40,44,50,54	0
2	AC5	L	4	8/9	0.97	0.18	27,37,45,55	0
2	0XL	K	2	8/9	0.97	0.21	30,38,50,50	0
2	AC5	P	4	8/9	0.97	0.18	28,42,54,59	0
2	0XL	O	2	8/9	0.98	0.25	36,38,47,52	0
2	AC5	N	4	8/9	0.98	0.19	26,38,45,48	0
2	AC5	O	4	8/9	0.98	0.18	29,38,46,54	0
2	AC5	J	4	8/9	0.98	0.18	20,31,42,53	0

6.3 Carbohydrates [i](#)

There are no monosaccharides 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.