WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Feb 18, 2024 – 06:47 PM EST

PDB ID	:	4IGN
Title	:	2.32 Angstrom X-ray Crystal structure of R47A mutant of human ACMSD
Authors	:	Liu, F.; Liu, A.
Deposited on	:	2012-12-17
Resolution	:	2.33 Å(reported)

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

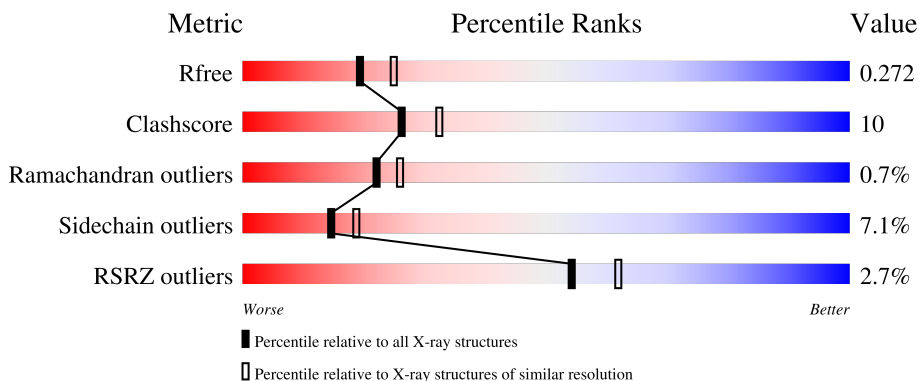|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 2.33 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.
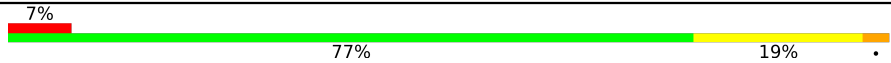
Metric	Percentile Ranks	Value
Rfree		0.272
Clashscore		10
Ramachandran outliers		0.7%
Sidechain outliers		7.1%
RSRZ outliers		2.7%

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	5974 (2.34-2.30)
Clashscore	141614	6604 (2.34-2.30)
Ramachandran outliers	138981	6523 (2.34-2.30)
Sidechain outliers	138945	6523 (2.34-2.30)
RSRZ outliers	127900	5855 (2.34-2.30)

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 <=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	332	74% 22%
1	B	332	77% 19%
1	C	332	74% 22%
1	D	332	78% 18%
1	E	332	81% 17%

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Mol	Chain	Length	Quality of chain
1	F	332	

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 16601 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 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			
1	B	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			
1	C	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			
1	D	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			
1	E	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			
1	F	332	Total	C	N	O	S	0	0	0
			2629	1700	440	468	21			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	47	ALA	ARG	engineered mutation	UNP Q8TDX5
B	47	ALA	ARG	engineered mutation	UNP Q8TDX5
C	47	ALA	ARG	engineered mutation	UNP Q8TDX5
D	47	ALA	ARG	engineered mutation	UNP Q8TDX5
E	47	ALA	ARG	engineered mutation	UNP Q8TDX5
F	47	ALA	ARG	engineered mutation	UNP Q8TDX5

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

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

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	D	1	Total 1	Zn 1	0	0
2	E	1	Total 1	Zn 1	0	0
2	F	1	Total 1	Zn 1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	142	Total 142	O 142	0	0
3	B	175	Total 175	O 175	0	0
3	C	148	Total 148	O 148	0	0
3	D	145	Total 145	O 145	0	0
3	E	129	Total 129	O 129	0	0
3	F	82	Total 82	O 82	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 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: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain A:

- Molecule 1: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain B:

- Molecule 1: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain C:

K256 K257 D265 D284 T290 D291 Y292 P293 F294 P295 L296 G297 E306 K318 L319 K320 A321 A326 R332

• Molecule 1: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain D:

2%

78% 18%

M1 K2 I3 D4 K12 E13 R20 W26 V27 Q30 H31 H32 S33 L39 L40 K41 D42 R50 W54 D55 P56 R59 M63 K66 V70 W83 P86 N91 N98 D99 L100 V105 P108 R109 R110 F111 A121 K127 E130 R131

K134 I143 E149 W150 L167 W176 D177 M178 W188 L189 P190 M195 H224 R235 H238 S241 Q249 M253 N254 K257 S261 F262 Y263 T264 D265 A266 L267 L276 V280 D284 I287 T290 D291 Y292 L296 P301 G302

E306 E309 E310 F311 K318 R332

• Molecule 1: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain E:

3%

81% 17%

M1 K2 I3 D4 K12 E13 W14 R20 V27 Q30 H31 H32 S33 K34 G35 E36 L40 K41 D42 G43 K44 V45 F46 E51 W54 M63 D64 Q65 T69 V70 E87 N98 S102 V105 R110 F111 V112 G113 E123 V126 K127 E128 R131

P139 G140 I143 W150 D151 L152 R166 C169 W176 D177 M178 W188 L189 P190 W191 M195 E198 H224 R235 Q249 M253 Y258 S261 D265 H269 L276 G289 T290 D291 Y292 L296 G297 E309 N317 R332

• Molecule 1: 2-amino-3-carboxymuconate-6-semialdehyde decarboxylase

Chain F:

7%

77% 19%

M1 K2 I3 D4 H8 E13 W14 K18 K19 R20 F21 G22 Y23 G24 G25 W26 V27 Q28 H32 S33 K34 G35 E36 A37 L40 K41 D42 G43 K44 V45 F46 A47 V48 V49 R50 E51 N52 C53 W54 I60 R61 E62 M63 D64 Q65 V70 S74 M79 A84 K85

P86 N98 D99 L100 F111 P122 V126 R131 G140 T145 N148 L152 C169 V173 H174 P175 W176 D177 W188 W191 M195 C204 S205 M206 I207 M208 K217 L218 C221 F222 A223 Q249 M253 K256 G260 Y263 A266

L267 L276 K285 V286 I287 T290 D291 Y292 L296 E300 E309 D312 K318 A321 A324 E331 R332

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	89.14Å 101.69Å 232.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.33 27.40 – 2.33	Depositor EDS
% Data completeness (in resolution range)	98.3 (50.00-2.33) 98.4 (27.40-2.33)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.78 (at 2.34Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.208 , 0.276 0.207 , 0.272	Depositor DCC
R_{free} test set	4492 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	29.7	Xtriage
Anisotropy	0.153	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 32.5	EDS
L-test for twinning[2]	$< |L| > = 0.51, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	16601	wwPDB-VP
Average B, all atoms (Å^2)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.74% 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 ⓘ

5.1 Standard geometry ⓘ

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	0.86	5/2700 (0.2%)	0.92	5/3655 (0.1%)
1	B	0.90	6/2700 (0.2%)	0.97	8/3655 (0.2%)
1	C	0.85	4/2700 (0.1%)	0.91	6/3655 (0.2%)
1	D	0.86	5/2700 (0.2%)	0.89	7/3655 (0.2%)
1	E	0.80	5/2700 (0.2%)	0.87	2/3655 (0.1%)
1	F	0.77	6/2700 (0.2%)	0.83	2/3655 (0.1%)
All	All	0.84	31/16200 (0.2%)	0.90	30/21930 (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	C	0	1
1	D	0	1
All	All	0	3

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	54	TRP	CD2-CE2	9.06	1.52	1.41
1	B	14	TRP	CD2-CE2	7.20	1.50	1.41
1	B	54	TRP	CD2-CE2	7.09	1.49	1.41
1	D	54	TRP	CD2-CE2	6.95	1.49	1.41
1	E	54	TRP	CD2-CE2	6.45	1.49	1.41
1	E	191	TRP	CD2-CE2	6.41	1.49	1.41
1	B	191	TRP	CD2-CE2	6.21	1.48	1.41
1	A	150	TRP	CD2-CE2	6.14	1.48	1.41
1	C	14	TRP	CD2-CE2	5.92	1.48	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	26	TRP	CD2-CE2	5.91	1.48	1.41
1	D	26	TRP	CD2-CE2	5.83	1.48	1.41
1	A	191	TRP	CD2-CE2	5.79	1.48	1.41
1	B	150	TRP	CD2-CE2	5.76	1.48	1.41
1	F	26	TRP	CD2-CE2	5.76	1.48	1.41
1	D	83	TRP	CD2-CE2	5.76	1.48	1.41
1	E	150	TRP	CD2-CE2	5.67	1.48	1.41
1	C	83	TRP	CD2-CE2	5.64	1.48	1.41
1	F	54	TRP	CD2-CE2	5.61	1.48	1.41
1	D	150	TRP	CD2-CE2	5.56	1.48	1.41
1	D	188	TRP	CD2-CE2	5.55	1.48	1.41
1	B	176	TRP	CD2-CE2	5.52	1.48	1.41
1	A	188	TRP	CD2-CE2	5.49	1.48	1.41
1	C	176	TRP	CD2-CE2	5.38	1.47	1.41
1	F	188	TRP	CD2-CE2	5.35	1.47	1.41
1	A	176	TRP	CD2-CE2	5.31	1.47	1.41
1	F	14	TRP	CD2-CE2	5.26	1.47	1.41
1	C	54	TRP	CD2-CE2	5.25	1.47	1.41
1	F	176	TRP	CD2-CE2	5.21	1.47	1.41
1	E	14	TRP	CD2-CE2	5.16	1.47	1.41
1	E	188	TRP	CD2-CE2	5.05	1.47	1.41
1	F	191	TRP	CD2-CE2	5.02	1.47	1.41

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	20	ARG	NE-CZ-NH2	-14.09	113.25	120.30
1	A	131	ARG	NE-CZ-NH2	-13.65	113.47	120.30
1	B	20	ARG	NE-CZ-NH1	10.56	125.58	120.30
1	A	131	ARG	NE-CZ-NH1	9.56	125.08	120.30
1	D	42	ASP	CB-CG-OD2	8.60	126.04	118.30
1	C	131	ARG	NE-CZ-NH2	-8.54	116.03	120.30
1	D	131	ARG	NE-CZ-NH2	-7.92	116.34	120.30
1	A	42	ASP	CB-CG-OD2	7.37	124.93	118.30
1	B	131	ARG	NE-CZ-NH2	-7.32	116.64	120.30
1	C	20	ARG	NE-CZ-NH1	7.25	123.93	120.30
1	C	61	ARG	NE-CZ-NH1	6.95	123.78	120.30
1	D	131	ARG	NE-CZ-NH1	6.40	123.50	120.30
1	B	109	ARG	NE-CZ-NH1	6.29	123.45	120.30
1	C	20	ARG	NE-CZ-NH2	-6.27	117.17	120.30
1	A	20	ARG	NE-CZ-NH2	-6.15	117.22	120.30
1	C	131	ARG	NE-CZ-NH1	6.13	123.37	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	39	LEU	CA-CB-CG	5.89	128.86	115.30
1	B	64	ASP	CB-CG-OD2	-5.68	113.19	118.30
1	C	319	LEU	CA-CB-CG	5.59	128.16	115.30
1	B	63	MET	CG-SD-CE	-5.51	91.39	100.20
1	F	131	ARG	NE-CZ-NH2	-5.39	117.61	120.30
1	B	178	MET	CG-SD-CE	5.37	108.78	100.20
1	E	131	ARG	NE-CZ-NH2	-5.28	117.66	120.30
1	B	20	ARG	CD-NE-CZ	5.26	130.97	123.60
1	D	55	ASP	CB-CG-OD1	5.25	123.02	118.30
1	F	60	ILE	CG1-CB-CG2	-5.17	100.03	111.40
1	D	42	ASP	OD1-CG-OD2	-5.13	113.56	123.30
1	E	20	ARG	NE-CZ-NH2	-5.12	117.74	120.30
1	A	63	MET	CG-SD-CE	-5.11	92.02	100.20
1	D	235	ARG	NE-CZ-NH1	5.06	122.83	120.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	41	LYS	Peptide
1	C	1	MET	Peptide
1	D	41	LYS	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	2629	0	2635	66	0
1	B	2629	0	2635	60	0
1	C	2629	0	2635	68	0
1	D	2629	0	2635	61	0
1	E	2629	0	2635	47	0
1	F	2629	0	2635	43	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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	A	142	0	0	11	0
3	B	175	0	0	8	0
3	C	148	0	0	15	0
3	D	145	0	0	8	0
3	E	129	0	0	5	0
3	F	82	0	0	1	0
All	All	16601	0	15810	327	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 10.

All (327) 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:195:MET:HE2	1:E:235:ARG:NH2	1.60	1.16
1:D:42:ASP:HA	3:D:512:HOH:O	1.42	1.15
1:B:32:HIS:HB3	3:B:631:HOH:O	1.44	1.13
1:B:332:ARG:CD	1:B:332:ARG:H	1.62	1.12
1:B:13:GLU:HB2	3:B:519:HOH:O	1.50	1.11
1:A:309:GLU:HB3	3:A:600:HOH:O	1.51	1.09
1:C:175:PRO:HG2	1:C:195:MET:HE3	1.29	1.07
1:C:1:MET:O	1:C:68:VAL:HA	1.61	1.00
1:D:98:ASN:OD1	1:D:131:ARG:NH2	1.92	1.00
1:E:46:PHE:HE2	3:E:614:HOH:O	1.43	0.99
1:C:149:GLU:HB2	3:C:531:HOH:O	1.62	0.97
1:C:1:MET:SD	1:C:2:LYS:NZ	2.38	0.96
1:D:306:GLU:HB3	3:D:521:HOH:O	1.64	0.96
1:D:42:ASP:HB2	3:D:518:HOH:O	1.63	0.95
1:D:195:MET:CE	1:E:235:ARG:NH2	2.32	0.93
1:A:175:PRO:HG2	1:A:195:MET:HE3	1.51	0.93
1:D:195:MET:HE2	1:E:235:ARG:HH21	1.25	0.92
1:B:332:ARG:H	1:B:332:ARG:HD2	1.34	0.92
1:D:63:MET:HE1	1:D:111:PHE:HE1	1.34	0.91
1:A:175:PRO:HG2	1:A:195:MET:CE	2.00	0.91
1:C:63:MET:SD	3:C:524:HOH:O	2.29	0.90
1:A:254:ASN:H	1:A:257:LYS:HZ1	1.15	0.89
1:F:175:PRO:HG2	1:F:195:MET:HE2	1.55	0.89
1:D:4:ASP:OD2	1:D:290:THR:HB	1.75	0.87
1:C:96:LEU:O	1:C:100:LEU:HD13	1.77	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:175:PRO:CG	1:C:195:MET:HE3	2.06	0.84
1:E:3:ILE:HG12	1:E:70:VAL:HG13	1.57	0.84
1:B:12:LYS:H	1:B:12:LYS:HD3	1.41	0.83
1:A:254:ASN:HB3	1:A:257:LYS:HE3	1.61	0.83
1:F:332:ARG:H	1:F:332:ARG:HE	1.27	0.82
1:D:41:LYS:C	1:D:41:LYS:HD2	2.00	0.82
1:B:332:ARG:CD	1:B:332:ARG:N	2.42	0.82
1:F:175:PRO:HG2	1:F:195:MET:CE	2.09	0.81
1:B:332:ARG:H	1:B:332:ARG:HD3	1.41	0.81
1:F:332:ARG:H	1:F:332:ARG:NE	1.78	0.81
1:C:1:MET:SD	1:C:2:LYS:HG2	2.22	0.80
1:D:41:LYS:HD2	1:D:42:ASP:N	1.96	0.80
1:F:98:ASN:OD1	1:F:131:ARG:NH2	2.15	0.78
1:C:15:PRO:HG2	1:C:20:ARG:HH21	1.49	0.78
1:A:254:ASN:H	1:A:257:LYS:NZ	1.81	0.78
1:C:59:ARG:HB3	1:C:63:MET:CE	2.14	0.77
1:C:109:ARG:CD	3:C:624:HOH:O	2.33	0.76
1:B:174:HIS:ND1	1:B:175:PRO:HD2	2.01	0.76
1:B:59:ARG:HB3	1:B:63:MET:CE	2.16	0.75
1:C:195:MET:CE	1:C:224:HIS:NE2	2.50	0.74
1:E:98:ASN:OD1	1:E:131:ARG:NH2	2.21	0.74
1:D:59:ARG:O	1:D:63:MET:HG3	1.88	0.73
1:A:290:THR:HG22	1:A:292:TYR:H	1.52	0.73
1:A:61:ARG:CD	3:A:635:HOH:O	2.37	0.73
1:C:109:ARG:HD3	3:C:624:HOH:O	1.86	0.73
1:A:61:ARG:HD3	3:A:635:HOH:O	1.89	0.72
1:D:63:MET:HE1	1:D:111:PHE:CE1	2.22	0.72
1:E:269:HIS:HD2	3:E:535:HOH:O	1.74	0.71
1:C:59:ARG:HB3	1:C:63:MET:HE3	1.74	0.70
1:B:27:VAL:CG2	1:B:79:MET:SD	2.80	0.69
1:A:50:ARG:CD	3:A:504:HOH:O	2.40	0.68
1:B:12:LYS:H	1:B:12:LYS:CD	2.06	0.68
1:C:332:ARG:HA	3:C:633:HOH:O	1.92	0.68
1:A:50:ARG:HD3	3:A:504:HOH:O	1.92	0.68
1:D:253:MET:HG3	1:D:257:LYS:HD2	1.76	0.67
1:E:195:MET:HE3	1:E:224:HIS:NE2	2.09	0.67
1:C:12:LYS:HD2	3:C:600:HOH:O	1.94	0.66
1:C:306:GLU:HB3	3:C:640:HOH:O	1.96	0.66
1:C:195:MET:HE2	1:C:224:HIS:NE2	2.10	0.66
1:B:2:LYS:HB2	1:B:321:ALA:HB2	1.78	0.65
1:E:35:GLY:HA2	1:E:51:GLU:HG3	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:63:MET:HE1	1:A:111:PHE:HE1	1.60	0.65
1:C:35:GLY:HA3	1:C:51:GLU:HG3	1.79	0.65
1:B:4:ASP:OD2	1:B:290:THR:HB	1.97	0.65
1:C:33:SER:HB3	1:C:36:GLU:HB2	1.79	0.65
1:B:59:ARG:HB3	1:B:63:MET:HE3	1.79	0.64
1:B:332:ARG:HD2	1:B:332:ARG:N	2.08	0.64
1:A:195:MET:HE2	1:A:224:HIS:NE2	2.12	0.64
1:B:27:VAL:HG22	1:B:79:MET:SD	2.39	0.63
1:A:175:PRO:HG2	1:A:195:MET:HE2	1.79	0.63
1:C:100:LEU:HD12	3:C:513:HOH:O	1.99	0.62
1:B:12:LYS:HD3	1:B:12:LYS:N	2.12	0.62
1:E:4:ASP:OD2	1:E:290:THR:HB	1.99	0.62
1:E:12:LYS:H	1:E:12:LYS:HD3	1.62	0.62
1:A:32:HIS:CE1	1:A:36:GLU:HB3	2.35	0.62
1:E:63:MET:HE1	1:E:111:PHE:HE1	1.64	0.62
1:B:32:HIS:CE1	1:B:36:GLU:HB3	2.35	0.61
1:F:122:PRO:O	1:F:126:VAL:HG23	2.00	0.61
1:A:276:LEU:HD22	1:F:276:LEU:HD22	1.83	0.61
1:C:210:GLY:O	1:C:214:LYS:HD2	2.01	0.60
1:E:41:LYS:O	1:E:42:ASP:O	2.19	0.60
1:E:258:TYR:O	1:E:261:SER:HB2	2.01	0.60
1:B:1:MET:O	1:B:68:VAL:HA	2.01	0.60
1:A:195:MET:CE	1:A:224:HIS:NE2	2.66	0.59
1:A:87:GLU:HG2	3:A:628:HOH:O	2.03	0.59
1:B:61:ARG:NH1	1:B:65:GLN:HE22	2.00	0.59
1:F:4:ASP:OD2	1:F:290:THR:HB	2.03	0.58
1:B:61:ARG:HH11	1:B:65:GLN:HE22	1.51	0.57
1:A:175:PRO:CG	1:A:195:MET:HE2	2.34	0.57
1:A:224:HIS:HD2	3:A:505:HOH:O	1.85	0.57
1:F:2:LYS:HB3	1:F:321:ALA:HB2	1.86	0.57
1:B:42:ASP:O	1:B:44:LYS:N	2.38	0.57
1:E:30:GLN:HG3	1:E:40:LEU:HD11	1.86	0.56
1:B:3:ILE:HG12	1:B:70:VAL:HG13	1.87	0.56
1:C:12:LYS:HB3	3:C:600:HOH:O	2.04	0.56
1:F:176:TRP:O	1:F:177:ASP:CB	2.54	0.56
1:D:290:THR:HG22	1:D:292:TYR:N	2.21	0.56
1:E:63:MET:HE1	1:E:111:PHE:CE1	2.41	0.56
1:A:32:HIS:HE1	1:A:36:GLU:HB3	1.71	0.56
1:C:100:LEU:CD1	3:C:513:HOH:O	2.54	0.56
1:D:12:LYS:H	1:D:12:LYS:HD3	1.69	0.56
1:B:2:LYS:CB	1:B:321:ALA:HB2	2.35	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:46:PHE:CE2	3:E:614:HOH:O	2.30	0.55
1:F:145:THR:O	1:F:152:LEU:HD13	2.06	0.55
1:F:290:THR:HG22	1:F:292:TYR:H	1.71	0.55
1:D:235:ARG:NH2	1:E:195:MET:HE2	2.21	0.55
1:A:32:HIS:CG	1:A:33:SER:H	2.24	0.55
1:D:195:MET:CE	1:E:235:ARG:HH22	2.18	0.55
1:C:195:MET:HE1	1:C:224:HIS:NE2	2.18	0.55
1:D:63:MET:CE	1:D:111:PHE:HE1	2.14	0.55
1:A:32:HIS:HD2	3:D:638:HOH:O	1.90	0.55
1:C:284:ASP:OD1	1:C:318:LYS:NZ	2.40	0.55
1:A:70:VAL:HA	1:A:110:ARG:O	2.08	0.54
1:C:33:SER:OG	1:C:34:LYS:N	2.40	0.54
1:D:63:MET:CE	1:D:111:PHE:CE1	2.89	0.54
1:C:1:MET:O	1:C:67:GLY:O	2.25	0.54
1:D:276:LEU:HD22	1:E:276:LEU:HD22	1.89	0.54
1:F:63:MET:HE1	1:F:111:PHE:HE1	1.72	0.54
1:D:238:HIS:O	1:D:241:SER:HB2	2.08	0.53
1:C:12:LYS:HD3	1:C:13:GLU:H	1.73	0.53
1:F:253:MET:HE2	1:F:253:MET:H	1.73	0.53
1:E:140:GLY:HA2	1:E:169:CYS:SG	2.47	0.53
1:D:41:LYS:C	1:D:41:LYS:CD	2.76	0.53
1:B:290:THR:HG22	1:B:292:TYR:H	1.74	0.53
1:A:271:PRO:HB2	3:A:634:HOH:O	2.09	0.53
1:C:179:GLN:HG3	3:C:570:HOH:O	2.08	0.52
1:C:3:ILE:HG12	1:C:70:VAL:HG13	1.91	0.52
1:B:258:TYR:O	1:B:261:SER:HB2	2.09	0.52
1:C:54:TRP:O	1:C:56:PRO:HD3	2.10	0.52
1:C:96:LEU:O	1:C:100:LEU:CD1	2.54	0.52
1:C:2:LYS:HB3	1:C:321:ALA:HB2	1.92	0.52
1:F:331:GLU:OE1	1:F:332:ARG:NH2	2.43	0.51
1:A:8:HIS:HA	1:A:74:SER:O	2.10	0.51
1:F:3:ILE:HG23	1:F:70:VAL:HG22	1.93	0.51
1:D:235:ARG:NH2	1:E:195:MET:CE	2.74	0.51
1:C:63:MET:HE1	1:C:71:GLN:OE1	2.10	0.51
1:D:86:PRO:HB3	1:D:121:ALA:HB2	1.93	0.51
1:B:269:HIS:CE1	3:B:673:HOH:O	2.64	0.50
1:A:51:GLU:HA	1:A:54:TRP:CE2	2.47	0.50
1:E:113:GLY:O	1:E:139:PRO:HD2	2.12	0.50
1:E:265:ASP:OD1	1:E:265:ASP:C	2.49	0.50
1:E:35:GLY:CA	1:E:51:GLU:HG3	2.42	0.50
1:B:109:ARG:H	1:B:109:ARG:HH11	1.60	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:74:SER:HB2	1:C:142:GLN:NE2	2.27	0.50
1:D:195:MET:HE3	1:D:224:HIS:NE2	2.27	0.50
1:C:60:ILE:HD12	1:C:107:TYR:CD1	2.47	0.50
1:D:235:ARG:HH22	1:E:195:MET:HE1	1.77	0.50
1:A:32:HIS:CG	1:A:33:SER:N	2.80	0.49
1:A:56:PRO:O	1:A:60:ILE:HD12	2.12	0.49
1:A:63:MET:HE1	1:A:111:PHE:CE1	2.44	0.49
1:D:254:ASN:H	1:D:257:LYS:HZ1	1.59	0.49
1:A:4:ASP:OD2	1:A:290:THR:HB	2.12	0.49
1:D:284:ASP:OD1	1:D:318:LYS:NZ	2.43	0.49
1:A:3:ILE:HG12	1:A:70:VAL:HG13	1.94	0.49
1:B:63:MET:HE1	1:B:71:GLN:OE1	2.13	0.49
1:C:10:LEU:CD1	1:C:39:LEU:HD21	2.43	0.49
1:C:1:MET:CE	1:C:2:LYS:NZ	2.75	0.49
1:D:254:ASN:CB	1:D:257:LYS:HE3	2.43	0.49
1:F:175:PRO:HG2	1:F:195:MET:HE3	1.90	0.49
1:A:294:PHE:HB3	1:A:295:PRO:HD2	1.95	0.49
1:E:189:LEU:N	1:E:190:PRO:CD	2.76	0.49
1:A:8:HIS:CD2	1:A:75:THR:O	2.66	0.49
1:C:4:ASP:OD2	1:C:290:THR:HB	2.13	0.48
1:B:56:PRO:O	1:B:60:ILE:HG12	2.12	0.48
1:C:332:ARG:CA	3:C:633:HOH:O	2.54	0.48
1:A:207:ILE:HG21	1:A:255:PRO:HA	1.96	0.48
1:D:12:LYS:HG2	1:D:13:GLU:HG2	1.96	0.48
1:A:50:ARG:HD2	3:A:504:HOH:O	2.08	0.48
1:E:4:ASP:OD1	1:E:289:GLY:HA2	2.14	0.48
1:F:41:LYS:HG3	1:F:41:LYS:O	2.13	0.48
1:C:207:ILE:HG21	1:C:255:PRO:HA	1.95	0.48
1:A:155:GLN:O	1:A:158:PHE:HB2	2.14	0.47
1:A:176:TRP:CG	1:A:177:ASP:N	2.81	0.47
1:B:12:LYS:HE2	3:B:520:HOH:O	2.13	0.47
1:F:204:CYS:HB3	1:F:208:MET:CE	2.45	0.47
1:F:290:THR:HG22	1:F:292:TYR:N	2.28	0.47
1:D:20:ARG:NH1	1:D:91:ASN:OD1	2.46	0.47
1:D:66:LYS:HD2	1:D:301:PRO:HD2	1.96	0.47
1:B:269:HIS:HE1	3:B:673:HOH:O	1.96	0.47
1:C:35:GLY:CA	1:C:51:GLU:HG3	2.44	0.47
1:E:70:VAL:HA	1:E:110:ARG:O	2.14	0.47
1:D:176:TRP:CG	1:D:177:ASP:N	2.83	0.47
1:E:44:LYS:HE3	1:E:44:LYS:HA	1.96	0.47
1:C:15:PRO:HG2	1:C:20:ARG:NH2	2.25	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4:ASP:CG	1:A:290:THR:HB	2.35	0.47
1:A:267:LEU:HD21	1:A:291:ASP:HB2	1.96	0.47
1:B:186:LYS:HG2	3:B:628:HOH:O	2.14	0.47
1:C:114:LEU:HA	1:C:140:GLY:O	2.13	0.47
1:D:254:ASN:H	1:D:257:LYS:NZ	2.12	0.47
1:D:254:ASN:HB3	1:D:257:LYS:HE3	1.97	0.47
1:D:290:THR:HG22	1:D:292:TYR:H	1.78	0.47
1:F:41:LYS:O	1:F:42:ASP:HB3	2.14	0.47
1:C:61:ARG:O	1:C:65:GLN:HG3	2.15	0.47
1:D:265:ASP:C	1:D:265:ASP:OD1	2.53	0.47
1:D:224:HIS:HD2	3:D:507:HOH:O	1.98	0.46
1:F:249:GLN:H	1:F:249:GLN:NE2	2.14	0.46
1:A:59:ARG:HB3	1:A:63:MET:CE	2.45	0.46
1:D:296:LEU:HB2	3:D:503:HOH:O	2.16	0.46
1:B:290:THR:HG22	1:B:292:TYR:N	2.31	0.46
1:B:86:PRO:HB3	1:B:121:ALA:HB2	1.98	0.46
1:C:16:ASP:OD1	1:C:16:ASP:C	2.54	0.46
1:B:42:ASP:C	1:B:44:LYS:H	2.19	0.46
1:D:134:LYS:HA	1:D:134:LYS:HD3	1.69	0.46
1:D:32:HIS:CD2	1:D:33:SER:HB2	2.51	0.46
1:F:260:GLY:O	1:F:285:LYS:HE2	2.16	0.46
1:B:32:HIS:HE1	1:B:36:GLU:HB3	1.79	0.46
1:A:102:SER:OG	1:B:102:SER:HB2	2.16	0.46
1:E:63:MET:CE	1:E:111:PHE:CE1	2.99	0.46
1:F:45:VAL:HG12	1:F:45:VAL:O	2.16	0.46
1:A:284:ASP:HB2	3:A:607:HOH:O	2.16	0.45
1:A:299:LEU:O	1:A:301:PRO:HD3	2.16	0.45
1:C:195:MET:HE2	1:C:224:HIS:CD2	2.51	0.45
1:D:235:ARG:HH22	1:E:195:MET:CE	2.30	0.45
1:B:210:GLY:HA3	1:B:214:LYS:NZ	2.32	0.45
1:C:253:MET:HG3	1:C:257:LYS:HD3	1.99	0.45
1:C:295:PRO:HD2	3:C:508:HOH:O	2.16	0.45
1:B:122:PRO:O	1:B:126:VAL:HG23	2.16	0.45
1:D:311:PHE:HA	3:D:589:HOH:O	2.16	0.45
1:C:149:GLU:O	1:C:149:GLU:HG3	2.15	0.45
1:C:12:LYS:HE3	1:C:13:GLU:OE1	2.17	0.45
1:E:12:LYS:HE2	1:E:13:GLU:H	1.81	0.45
1:A:8:HIS:HD2	1:A:75:THR:O	1.98	0.45
1:D:276:LEU:O	1:D:280:VAL:HG23	2.17	0.45
1:D:267:LEU:CD2	1:D:291:ASP:HB2	2.47	0.45
1:C:18:LYS:O	1:C:22:GLY:N	2.40	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:263:TYR:CD1	1:D:287:ILE:HD11	2.52	0.44
1:F:2:LYS:CB	1:F:321:ALA:HB2	2.46	0.44
1:F:8:HIS:HA	1:F:74:SER:O	2.16	0.44
1:B:152:LEU:HD12	1:B:152:LEU:HA	1.73	0.44
1:E:290:THR:HG22	1:E:292:TYR:N	2.31	0.44
1:C:332:ARG:C	3:C:633:HOH:O	2.56	0.44
1:B:5:ILE:HG13	1:B:5:ILE:O	2.17	0.44
1:E:290:THR:O	1:E:297:GLY:HA3	2.18	0.44
1:A:102:SER:CB	1:B:102:SER:HB2	2.48	0.44
1:A:176:TRP:HA	1:A:176:TRP:CE3	2.51	0.44
1:E:12:LYS:H	1:E:12:LYS:CD	2.29	0.44
1:F:332:ARG:HD2	3:F:527:HOH:O	2.17	0.44
1:D:105:VAL:O	1:D:108:PRO:HD3	2.17	0.44
1:F:287:ILE:HG23	1:F:324:ALA:HB2	2.00	0.44
1:F:27:VAL:HG11	1:F:79:MET:SD	2.57	0.44
1:D:12:LYS:HZ3	1:D:13:GLU:H	1.64	0.43
1:D:70:VAL:HA	1:D:110:ARG:O	2.18	0.43
1:E:178:MET:HG3	1:E:198:GLU:HG3	2.00	0.43
1:F:63:MET:HE1	1:F:111:PHE:CE1	2.53	0.43
1:F:332:ARG:NE	1:F:332:ARG:N	2.57	0.43
1:B:265:ASP:C	1:B:265:ASP:OD1	2.57	0.43
1:E:13:GLU:HG3	3:E:519:HOH:O	2.17	0.43
1:B:59:ARG:CB	1:B:63:MET:HE3	2.48	0.43
1:A:290:THR:HG22	1:A:292:TYR:N	2.26	0.43
1:B:287:ILE:HG23	1:B:324:ALA:HB2	2.00	0.43
1:C:59:ARG:CB	1:C:63:MET:HE3	2.47	0.43
1:D:195:MET:HE1	1:E:235:ARG:HH22	1.82	0.43
1:A:34:LYS:HD3	1:A:35:GLY:H	1.83	0.43
1:A:146:HIS:HE1	1:A:177:ASP:O	2.02	0.43
1:D:55:ASP:HA	1:D:56:PRO:HD3	1.96	0.43
1:D:130:GLU:HG3	1:D:167:LEU:HD11	2.00	0.43
1:A:253:MET:HA	1:A:257:LYS:HZ2	1.83	0.43
1:C:27:VAL:HA	1:C:40:LEU:O	2.19	0.43
1:A:38:LYS:HB3	1:A:45:VAL:HG13	2.01	0.42
1:A:61:ARG:HD2	3:A:635:HOH:O	2.13	0.42
1:C:251:ASN:HA	1:C:252:PRO:HD2	1.89	0.42
1:B:270:ASP:OD2	1:C:256:LYS:NZ	2.43	0.42
1:F:266:ALA:HB2	1:F:286:VAL:HG12	2.01	0.42
1:A:32:HIS:ND1	1:A:32:HIS:N	2.65	0.42
1:A:41:LYS:O	1:A:42:ASP:C	2.58	0.42
1:A:142:GLN:HA	1:A:172:PHE:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:332:ARG:N	1:B:332:ARG:HD3	2.17	0.42
1:C:332:ARG:HH11	1:C:332:ARG:HB3	1.84	0.42
1:E:3:ILE:CG1	1:E:70:VAL:HG13	2.39	0.42
1:A:256:LYS:HG3	1:A:259:LEU:HD12	2.01	0.42
1:B:27:VAL:HG21	1:B:79:MET:SD	2.59	0.42
1:B:55:ASP:HA	1:B:56:PRO:HD3	1.94	0.42
1:A:63:MET:HE1	1:A:71:GLN:OE1	2.20	0.42
1:C:166:ARG:HH11	1:C:166:ARG:HG3	1.84	0.42
1:A:128:GLU:OE1	1:A:131:ARG:HD3	2.20	0.42
1:A:156:GLU:O	1:A:159:PRO:HD2	2.19	0.42
1:A:219:LYS:HE2	1:A:219:LYS:HB3	1.90	0.42
1:D:302:GLY:HA2	3:D:510:HOH:O	2.20	0.42
1:F:28:GLN:HB2	1:F:40:LEU:HD12	2.01	0.41
1:B:42:ASP:HB2	3:B:616:HOH:O	2.19	0.41
1:B:51:GLU:HA	1:B:54:TRP:CE2	2.56	0.41
1:D:3:ILE:HG12	1:D:70:VAL:HG13	2.01	0.41
1:D:254:ASN:H	1:D:257:LYS:CE	2.33	0.41
1:F:41:LYS:HB3	1:F:44:LYS:H	1.85	0.41
1:C:196:PRO:HB3	1:C:227:GLY:HA2	2.01	0.41
1:F:140:GLY:HA2	1:F:169:CYS:SG	2.61	0.41
1:F:175:PRO:HD3	1:F:223:ALA:HB3	2.03	0.41
1:F:218:LEU:HD12	1:F:218:LEU:HA	1.86	0.41
1:A:149:GLU:O	1:A:149:GLU:HG3	2.21	0.41
1:B:35:GLY:HA2	1:B:51:GLU:HG3	2.03	0.41
1:C:265:ASP:OD1	1:C:265:ASP:C	2.59	0.41
1:F:52:ASN:HB2	1:F:292:TYR:OH	2.20	0.41
1:F:249:GLN:H	1:F:249:GLN:HE21	1.68	0.41
1:B:206:MET:CE	1:B:211:VAL:HG11	2.50	0.41
1:D:189:LEU:N	1:D:190:PRO:CD	2.84	0.41
1:C:326:ALA:HB2	3:C:558:HOH:O	2.21	0.41
1:D:195:MET:CE	1:D:224:HIS:NE2	2.84	0.41
1:E:176:TRP:CG	1:E:177:ASP:N	2.89	0.41
1:E:195:MET:CE	1:E:224:HIS:NE2	2.80	0.41
1:B:288:LEU:HD12	1:B:289:GLY:N	2.34	0.41
1:C:290:THR:HG22	1:C:292:TYR:H	1.86	0.41
1:D:296:LEU:HD13	1:E:235:ARG:NH2	2.36	0.41
1:D:332:ARG:HE	1:D:332:ARG:N	2.18	0.41
1:F:152:LEU:HD23	1:F:206:MET:SD	2.60	0.41
1:F:188:TRP:CH2	1:F:296:LEU:HG	2.56	0.41
1:A:151:ASP:C	1:A:153:ASN:H	2.24	0.41
1:C:290:THR:O	1:C:297:GLY:HA3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:142:GLN:HB3	3:B:668:HOH:O	2.21	0.40
1:B:239:GLY:HA3	1:C:192:LEU:HD21	2.03	0.40
1:C:294:PHE:HA	1:C:295:PRO:HD3	1.96	0.40
1:A:189:LEU:N	1:A:190:PRO:CD	2.85	0.40
1:E:102:SER:O	1:E:105:VAL:HG12	2.21	0.40
1:E:290:THR:HG22	1:E:292:TYR:H	1.86	0.40
1:F:332:ARG:HE	1:F:332:ARG:N	2.05	0.40
1:A:93:CYS:SG	1:A:116:THR:HG23	2.61	0.40
1:A:102:SER:HB3	1:B:102:SER:HB2	2.03	0.40
1:D:41:LYS:HD2	1:D:42:ASP:H	1.80	0.40
1:E:128:GLU:OE2	1:E:131:ARG:NH1	2.54	0.40
1:B:145:THR:CG2	1:B:175:PRO:HA	2.52	0.40
1:B:187:TYR:HB3	1:C:208:MET:SD	2.61	0.40
1:F:221:CYS:HA	1:F:263:TYR:O	2.22	0.40
1:E:126:VAL:HG11	3:E:518:HOH:O	2.20	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	330/332 (99%)	315 (96%)	14 (4%)	1 (0%)	41	50
1	B	330/332 (99%)	315 (96%)	13 (4%)	2 (1%)	25	30
1	C	330/332 (99%)	311 (94%)	18 (6%)	1 (0%)	41	50
1	D	330/332 (99%)	316 (96%)	13 (4%)	1 (0%)	41	50
1	E	330/332 (99%)	308 (93%)	21 (6%)	1 (0%)	41	50
1	F	330/332 (99%)	303 (92%)	20 (6%)	7 (2%)	7	5
All	All	1980/1992 (99%)	1868 (94%)	99 (5%)	13 (1%)	22	26

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	42	ASP
1	B	42	ASP
1	B	43	GLY
1	C	42	ASP
1	F	34	LYS
1	F	148	ASN
1	F	309	GLU
1	D	42	ASP
1	A	42	ASP
1	F	2	LYS
1	F	43	GLY
1	F	47	ALA
1	F	86	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	284/284 (100%)	261 (92%)	23 (8%)	11	14
1	B	284/284 (100%)	265 (93%)	19 (7%)	16	21
1	C	284/284 (100%)	265 (93%)	19 (7%)	16	21
1	D	284/284 (100%)	264 (93%)	20 (7%)	15	19
1	E	284/284 (100%)	265 (93%)	19 (7%)	16	21
1	F	284/284 (100%)	263 (93%)	21 (7%)	13	17
All	All	1704/1704 (100%)	1583 (93%)	121 (7%)	14	19

All (121) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	27	VAL
1	A	32	HIS
1	A	34	LYS
1	A	40	LEU
1	A	54	TRP

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Mol	Chain	Res	Type
1	A	70	VAL
1	A	105	VAL
1	A	123	GLU
1	A	127	LYS
1	A	145	THR
1	A	151	ASP
1	A	152	LEU
1	A	214	LYS
1	A	219	LYS
1	A	241	SER
1	A	249	GLN
1	A	256	LYS
1	A	290	THR
1	A	291	ASP
1	A	296	LEU
1	A	310	GLU
1	A	314	GLU
1	B	12	LYS
1	B	33	SER
1	B	42	ASP
1	B	57	GLU
1	B	61	ARG
1	B	70	VAL
1	B	100	LEU
1	B	109	ARG
1	B	123	GLU
1	B	152	LEU
1	B	178	MET
1	B	214	LYS
1	B	217	LYS
1	B	237	SER
1	B	261	SER
1	B	291	ASP
1	B	296	LEU
1	B	319	LEU
1	B	332	ARG
1	C	12	LYS
1	C	13	GLU
1	C	16	ASP
1	C	42	ASP
1	C	70	VAL
1	C	123	GLU

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Mol	Chain	Res	Type
1	C	130	GLU
1	C	141	VAL
1	C	145	THR
1	C	152	LEU
1	C	155	GLN
1	C	178	MET
1	C	214	LYS
1	C	249	GLN
1	C	256	LYS
1	C	291	ASP
1	C	296	LEU
1	C	306	GLU
1	C	319	LEU
1	D	2	LYS
1	D	12	LYS
1	D	20	ARG
1	D	27	VAL
1	D	30	GLN
1	D	33	SER
1	D	39	LEU
1	D	41	LYS
1	D	50	ARG
1	D	70	VAL
1	D	100	LEU
1	D	127	LYS
1	D	131	ARG
1	D	149	GLU
1	D	178	MET
1	D	249	GLN
1	D	261	SER
1	D	291	ASP
1	D	296	LEU
1	D	332	ARG
1	E	12	LYS
1	E	27	VAL
1	E	36	GLU
1	E	41	LYS
1	E	44	LYS
1	E	65	GLN
1	E	69	THR
1	E	70	VAL
1	E	87	GLU

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Mol	Chain	Res	Type
1	E	105	VAL
1	E	123	GLU
1	E	127	LYS
1	E	152	LEU
1	E	166	ARG
1	E	178	MET
1	E	249	GLN
1	E	253	MET
1	E	296	LEU
1	E	309	GLU
1	F	13	GLU
1	F	20	ARG
1	F	27	VAL
1	F	40	LEU
1	F	46	PHE
1	F	49	VAL
1	F	60	ILE
1	F	65	GLN
1	F	100	LEU
1	F	131	ARG
1	F	177	ASP
1	F	217	LYS
1	F	249	GLN
1	F	253	MET
1	F	256	LYS
1	F	267	LEU
1	F	296	LEU
1	F	300	GLU
1	F	312	ASP
1	F	318	LYS
1	F	332	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	8	HIS
1	A	142	GLN
1	A	269	HIS
1	B	32	HIS
1	B	65	GLN
1	B	94	GLN
1	B	224	HIS

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Mol	Chain	Res	Type
1	B	269	HIS
1	C	249	GLN
1	D	8	HIS
1	D	142	GLN
1	E	148	ASN
1	E	238	HIS
1	E	249	GLN
1	E	269	HIS
1	F	249	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 6 ligands modelled in this entry, 6 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 (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	332/332 (100%)	-0.08	3 (0%)	84	88	14, 26, 45, 67	0
1	B	332/332 (100%)	-0.25	5 (1%)	73	79	13, 22, 41, 72	0
1	C	332/332 (100%)	-0.08	9 (2%)	54	62	14, 26, 49, 86	0
1	D	332/332 (100%)	-0.16	5 (1%)	73	79	15, 25, 42, 70	0
1	E	332/332 (100%)	-0.05	9 (2%)	54	62	18, 30, 52, 90	0
1	F	332/332 (100%)	0.31	23 (6%)	16	22	19, 34, 69, 103	0
All	All	1992/1992 (100%)	-0.05	54 (2%)	54	62	13, 26, 52, 103	0

All (54) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	1	MET	9.6
1	D	1	MET	9.1
1	E	1	MET	7.7
1	A	1	MET	7.0
1	F	32	HIS	5.4
1	C	1	MET	5.1
1	B	1	MET	4.9
1	F	34	LYS	4.8
1	E	32	HIS	4.2
1	A	32	HIS	4.1
1	F	35	GLY	3.9
1	F	33	SER	3.7
1	F	36	GLU	3.7
1	E	317	ASN	3.6
1	B	35	GLY	3.5
1	F	45	VAL	3.5
1	E	30	GLN	3.3
1	C	22	GLY	3.2
1	F	18	LYS	3.2

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Mol	Chain	Res	Type	RSRZ
1	C	30	GLN	3.1
1	C	32	HIS	3.0
1	E	42	ASP	3.0
1	F	22	GLY	2.9
1	F	25	GLY	2.9
1	B	173	VAL	2.9
1	E	34	LYS	2.8
1	F	19	LYS	2.8
1	C	35	GLY	2.7
1	D	143	ILE	2.6
1	F	249	GLN	2.5
1	B	332	ARG	2.5
1	F	43	GLY	2.5
1	F	21	PHE	2.5
1	F	37	ALA	2.4
1	E	43	GLY	2.4
1	C	173	VAL	2.4
1	F	46	PHE	2.4
1	D	309	GLU	2.4
1	F	48	VAL	2.4
1	C	143	ILE	2.3
1	F	24	GLY	2.3
1	F	84	ALA	2.3
1	F	50	ARG	2.2
1	A	173	VAL	2.2
1	F	173	VAL	2.2
1	E	33	SER	2.2
1	C	34	LYS	2.1
1	D	249	GLN	2.1
1	B	143	ILE	2.0
1	F	332	ARG	2.0
1	E	143	ILE	2.0
1	D	32	HIS	2.0
1	C	172	PHE	2.0
1	F	61	ARG	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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	ZN	F	401	1/1	0.99	0.08	29,29,29,29	0
2	ZN	B	401	1/1	1.00	0.11	19,19,19,19	0
2	ZN	C	401	1/1	1.00	0.08	22,22,22,22	0
2	ZN	D	401	1/1	1.00	0.09	25,25,25,25	0
2	ZN	E	401	1/1	1.00	0.08	26,26,26,26	0
2	ZN	A	401	1/1	1.00	0.10	19,19,19,19	0

6.5 Other polymers ⓘ

There are no such residues in this entry.