WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Nov 16, 2024 – 07:18 PM EST

PDB ID	:	4FB5
Title	:	Crystal structure of a probable oxidoreduxtase protein
Authors	:	Eswaramoorthy, S.; Almo, S.C.; Swaminathan, S.; New York Structural Genomics Research Consortium (NYSGRC)
Deposited on	:	2012-05-22
Resolution	:	2.61 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.61 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		0.259
Clashscore		18
Ramachandran outliers		1.9%
Sidechain outliers		10.0%
RSRZ outliers		2.4%

Worse ← → *Better*

▮ Percentile relative to all X-ray structures

◫ Percentile relative to X-ray structures of similar resolution
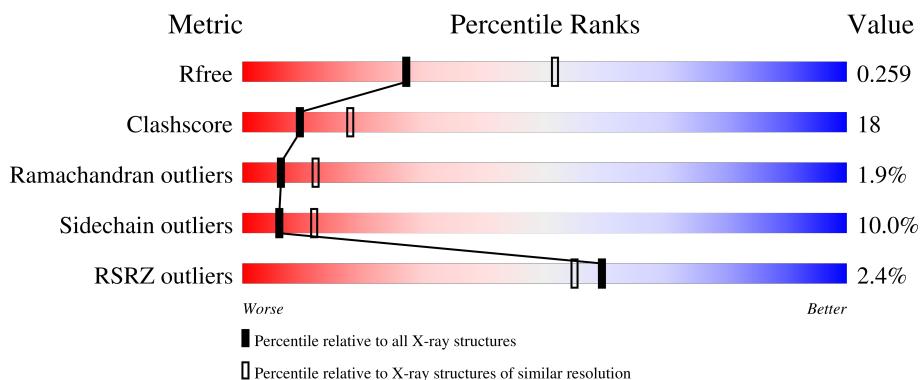
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	164625	4623 (2.64-2.60)
Clashscore	180529	5071 (2.64-2.60)
Ramachandran outliers	177936	5006 (2.64-2.60)
Sidechain outliers	177891	5006 (2.64-2.60)
RSRZ outliers	164620	4622 (2.64-2.60)

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	393	2% / 64% 25% • 7%
1	B	393	2% / 62% 27% 5% 7%
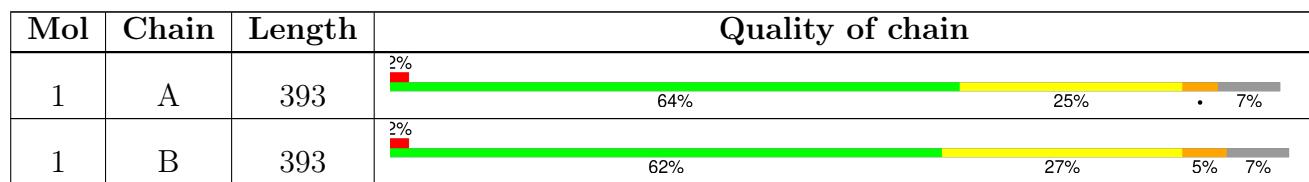
2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 5767 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 Probable oxidoreductase protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	367	Total	C	N	O	S	Se	0	0	0
			2858	1820	510	513	3	12			
1	B	367	Total	C	N	O	S	Se	0	0	0
			2849	1813	507	514	3	12			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MSE	-	expression tag	UNP Q2KAI6
A	-20	HIS	-	expression tag	UNP Q2KAI6
A	-19	HIS	-	expression tag	UNP Q2KAI6
A	-18	HIS	-	expression tag	UNP Q2KAI6
A	-17	HIS	-	expression tag	UNP Q2KAI6
A	-16	HIS	-	expression tag	UNP Q2KAI6
A	-15	HIS	-	expression tag	UNP Q2KAI6
A	-14	SER	-	expression tag	UNP Q2KAI6
A	-13	SER	-	expression tag	UNP Q2KAI6
A	-12	GLY	-	expression tag	UNP Q2KAI6
A	-11	VAL	-	expression tag	UNP Q2KAI6
A	-10	ASP	-	expression tag	UNP Q2KAI6
A	-9	LEU	-	expression tag	UNP Q2KAI6
A	-8	GLY	-	expression tag	UNP Q2KAI6
A	-7	THR	-	expression tag	UNP Q2KAI6
A	-6	GLU	-	expression tag	UNP Q2KAI6
A	-5	ASN	-	expression tag	UNP Q2KAI6
A	-4	LEU	-	expression tag	UNP Q2KAI6
A	-3	TYR	-	expression tag	UNP Q2KAI6
A	-2	PHE	-	expression tag	UNP Q2KAI6
A	-1	GLN	-	expression tag	UNP Q2KAI6
A	0	SER	-	expression tag	UNP Q2KAI6
B	-21	MSE	-	expression tag	UNP Q2KAI6
B	-20	HIS	-	expression tag	UNP Q2KAI6
B	-19	HIS	-	expression tag	UNP Q2KAI6

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-18	HIS	-	expression tag	UNP Q2KAI6
B	-17	HIS	-	expression tag	UNP Q2KAI6
B	-16	HIS	-	expression tag	UNP Q2KAI6
B	-15	HIS	-	expression tag	UNP Q2KAI6
B	-14	SER	-	expression tag	UNP Q2KAI6
B	-13	SER	-	expression tag	UNP Q2KAI6
B	-12	GLY	-	expression tag	UNP Q2KAI6
B	-11	VAL	-	expression tag	UNP Q2KAI6
B	-10	ASP	-	expression tag	UNP Q2KAI6
B	-9	LEU	-	expression tag	UNP Q2KAI6
B	-8	GLY	-	expression tag	UNP Q2KAI6
B	-7	THR	-	expression tag	UNP Q2KAI6
B	-6	GLU	-	expression tag	UNP Q2KAI6
B	-5	ASN	-	expression tag	UNP Q2KAI6
B	-4	LEU	-	expression tag	UNP Q2KAI6
B	-3	TYR	-	expression tag	UNP Q2KAI6
B	-2	PHE	-	expression tag	UNP Q2KAI6
B	-1	GLN	-	expression tag	UNP Q2KAI6
B	0	SER	-	expression tag	UNP Q2KAI6

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	33	Total O 33 33		0	0
2	B	27	Total O 27 27		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: Probable oxidoreductase protein

- Molecule 1: Probable oxidoreductase protein

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	87.34Å　　179.09Å　　127.82Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	50.00　–　2.61 50.00　–　2.61	Depositor EDS
% Data completeness (in resolution range)	98.8 (50.00-2.61) 98.8 (50.00-2.61)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	6.51 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.5.0110	Depositor
R, R_{free}	0.207　,　0.266 0.207　,　0.259	Depositor DCC
R_{free} test set	1541 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	49.3	Xtriage
Anisotropy	0.697	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 34.9	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	5767	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.52% 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 $< \lvert L \rvert >$, $< L^2 >$ 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 ⓘ

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	0.85	0/2916	0.87	2/3927 (0.1%)
1	B	0.82	0/2906	0.85	1/3914 (0.0%)
All	All	0.84	0/5822	0.86	3/7841 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	256	ARG	NE-CZ-NH1	-5.93	117.34	120.30
1	B	8	LEU	CA-CB-CG	5.24	127.34	115.30
1	A	296	ARG	NE-CZ-NH1	-5.16	117.72	120.30

There are no chirality outliers.

There are no planarity outliers.

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	2858	0	2808	111	0
1	B	2849	0	2794	94	0
2	A	33	0	0	4	0
2	B	27	0	0	0	0
All	All	5767	0	5602	199	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 18.

All (199) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:HIS:ND1	1:A:124:LYS:HB3	1.68	1.08
1:A:337:GLY:HA2	1:A:338:GLU:O	1.57	1.03
1:B:346:LYS:H	1:B:346:LYS:CD	1.73	1.01
1:B:346:LYS:H	1:B:346:LYS:HD3	1.26	1.00
1:A:47:LEU:C	1:A:47:LEU:HD23	1.86	0.96
1:B:133:ILE:HD11	1:B:198:TYR:HB2	1.48	0.92
1:A:165:MSE:HE1	1:A:173:TYR:OH	1.69	0.92
1:B:162:GLU:HG3	1:B:188:PHE:CZ	2.06	0.91
1:A:124:LYS:N	1:A:124:LYS:HD2	1.84	0.89
1:B:90:ILE:HG23	1:B:118:THR:HG21	1.55	0.88
1:A:133:ILE:HD13	1:A:195:LEU:HD23	1.55	0.87
1:A:26:LYS:HE2	1:A:32:VAL:O	1.75	0.85
1:A:210:MSE:HE2	2:A:402:HOH:O	1.81	0.81
1:B:314:PRO:O	1:B:316:HIS:HD2	1.64	0.81
1:A:47:LEU:HD23	1:A:48:ALA:N	1.95	0.81
1:A:164:PHE:HE1	1:A:165:MSE:HE3	1.45	0.81
1:B:346:LYS:CD	1:B:346:LYS:N	2.44	0.80
1:A:133:ILE:CD1	1:A:195:LEU:HD23	2.12	0.79
1:A:337:GLY:CA	1:A:338:GLU:O	2.30	0.78
1:B:210:MSE:HE2	1:B:230:HIS:HB2	1.65	0.78
1:B:93:LEU:HD13	1:B:119:ALA:HB2	1.66	0.78
1:A:337:GLY:CA	1:A:338:GLU:HB2	2.14	0.77
1:A:98:HIS:CE1	1:A:124:LYS:HB3	2.22	0.74
1:B:247:LEU:HD23	1:B:247:LEU:C	2.07	0.74
1:A:188:PHE:O	1:A:192:PRO:HD2	1.87	0.74
1:A:185:LEU:HD22	1:A:210:MSE:CE	2.19	0.73
1:A:184:ALA:HA	1:A:251:ARG:HD2	1.69	0.72
1:B:344:THR:HB	1:B:346:LYS:HD3	1.70	0.72
1:A:98:HIS:ND1	1:A:124:LYS:CB	2.50	0.72
1:A:337:GLY:HA2	1:A:338:GLU:HB2	1.72	0.72
1:B:133:ILE:CD1	1:B:198:TYR:HB2	2.20	0.72
1:A:164:PHE:CD1	1:A:165:MSE:HE2	2.25	0.71
1:A:34:ARG:HG3	1:A:34:ARG:HH11	1.53	0.71
1:A:312:PRO:HG3	1:B:13:TYR:CB	2.21	0.71
1:A:164:PHE:CE1	1:A:165:MSE:HE3	2.26	0.71
1:B:34:ARG:HH11	1:B:34:ARG:CG	2.08	0.67
1:B:164:PHE:CD1	1:B:165:MSE:HE3	2.30	0.67
1:A:314:PRO:O	1:A:316:HIS:HD2	1.78	0.66
1:A:97:LYS:CA	1:A:124:LYS:HG3	2.26	0.65
1:B:279:ASN:HD21	1:B:318:LEU:H	1.44	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:331:LEU:HA	1:B:342:ILE:CD1	2.27	0.64
1:B:162:GLU:HG3	1:B:188:PHE:CE2	2.32	0.64
1:B:163:ASP:HB3	1:B:253:ALA:O	1.98	0.64
1:B:164:PHE:HD1	1:B:165:MSE:CE	2.12	0.63
1:B:206:VAL:O	1:B:367:TRP:CE3	2.52	0.62
1:A:164:PHE:CE1	1:A:165:MSE:CE	2.81	0.62
1:A:337:GLY:HA2	1:A:338:GLU:CB	2.28	0.61
1:B:279:ASN:ND2	1:B:318:LEU:H	1.96	0.61
1:B:80:THR:HB	1:B:81:PRO:HD2	1.82	0.61
1:A:97:LYS:C	1:A:124:LYS:HG3	2.21	0.61
1:B:93:LEU:CD1	1:B:119:ALA:HB2	2.29	0.60
1:B:333:ARG:O	1:B:337:GLY:N	2.31	0.60
1:A:336:THR:O	1:A:337:GLY:C	2.39	0.60
1:B:68:ILE:HD11	1:B:92:ALA:HB2	1.84	0.60
1:A:185:LEU:HD22	1:A:210:MSE:HE3	1.83	0.60
1:A:164:PHE:HD1	1:A:165:MSE:HE2	1.63	0.59
1:A:158:VAL:CG1	1:A:192:PRO:HB3	2.33	0.59
1:A:184:ALA:CA	1:A:251:ARG:HD2	2.32	0.59
1:A:235:VAL:HG12	1:A:237:MSE:HG2	1.85	0.59
1:B:106:ALA:HB1	1:B:107:PRO:CD	2.32	0.59
1:B:364:GLU:HG2	1:B:366:ARG:HE	1.66	0.59
1:A:185:LEU:HD22	1:A:210:MSE:HE1	1.84	0.58
1:B:142:ARG:NH1	1:B:198:TYR:O	2.37	0.58
1:B:211:VAL:HB	1:B:232:ALA:HB3	1.85	0.58
1:B:34:ARG:HH11	1:B:34:ARG:HG3	1.68	0.58
1:A:158:VAL:HG11	1:A:192:PRO:HB3	1.84	0.58
1:A:13:TYR:HB2	1:B:312:PRO:HG3	1.84	0.58
1:A:165:MSE:CE	1:A:173:TYR:OH	2.49	0.58
1:B:175:LYS:O	1:B:229:ASN:ND2	2.37	0.58
1:B:314:PRO:O	1:B:316:HIS:CD2	2.53	0.58
1:A:125:VAL:CG1	1:A:126:ALA:N	2.68	0.57
1:B:191:HIS:HB2	1:B:192:PRO:HD3	1.85	0.57
1:A:204:GLU:OE2	1:A:240:ASP:HA	2.04	0.57
1:B:39:HIS:HD2	1:B:67:LEU:HA	1.70	0.57
1:A:105:MSE:HE3	1:A:345:PHE:CG	2.40	0.57
1:A:305:ARG:HH11	1:A:305:ARG:CB	2.17	0.57
1:A:84:PHE:HB3	1:A:88:MSE:HE3	1.88	0.56
1:A:337:GLY:HA2	1:A:338:GLU:C	2.12	0.56
1:A:133:ILE:HD13	1:A:195:LEU:CD2	2.31	0.56
1:B:346:LYS:N	1:B:346:LYS:HD2	2.19	0.56
1:B:84:PHE:N	1:B:84:PHE:CD2	2.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:84:PHE:N	1:B:84:PHE:HD2	2.04	0.55
1:A:164:PHE:HE1	1:A:165:MSE:CE	2.17	0.55
1:A:47:LEU:C	1:A:47:LEU:CD2	2.60	0.55
1:A:337:GLY:N	1:A:338:GLU:HB2	2.21	0.55
1:B:159:GLU:OE1	1:B:259:ARG:NH2	2.39	0.55
1:B:225:ARG:HG2	1:B:226:ALA:O	2.07	0.55
1:A:136:PRO:HG3	1:A:306:PRO:HD2	1.89	0.54
1:A:207:ILE:HA	1:A:361:SER:OG	2.07	0.54
1:B:101:CYS:O	1:B:128:LEU:HA	2.08	0.53
1:B:34:ARG:HG3	1:B:34:ARG:NH1	2.22	0.53
1:B:8:LEU:HD23	1:B:77:SER:HB3	1.90	0.53
1:B:133:ILE:HD13	1:B:198:TYR:CD1	2.43	0.53
1:A:158:VAL:HG21	1:A:196:LEU:HD21	1.90	0.53
1:A:210:MSE:CE	2:A:402:HOH:O	2.48	0.53
1:A:365:ARG:NH1	2:A:408:HOH:O	2.27	0.53
1:A:212:LYS:HE2	1:A:229:ASN:O	2.09	0.52
1:A:123:GLY:C	1:A:124:LYS:HD2	2.30	0.52
1:A:193:LEU:HD21	1:A:358:MSE:HE1	1.91	0.52
1:A:275:GLN:NE2	1:A:278:MSE:HG3	2.25	0.52
1:B:34:ARG:CG	1:B:34:ARG:NH1	2.73	0.52
1:B:190:VAL:HA	1:B:193:LEU:HD12	1.91	0.52
1:A:158:VAL:HG22	1:A:262:LEU:HD13	1.91	0.52
1:B:260:ILE:HB	1:B:275:GLN:HB2	1.92	0.52
1:A:13:TYR:OH	1:A:321:ASN:OD1	2.29	0.51
1:A:185:LEU:HD13	1:A:210:MSE:HE3	1.92	0.51
1:B:158:VAL:HG11	1:B:192:PRO:HB3	1.92	0.51
1:B:39:HIS:ND1	1:B:59:LYS:HB2	2.26	0.50
1:A:13:TYR:CG	1:B:312:PRO:HD3	2.46	0.50
1:B:159:GLU:HG2	1:B:248:MSE:HE3	1.94	0.50
1:A:165:MSE:HE1	1:A:173:TYR:CZ	2.46	0.50
1:A:334:ALA:O	1:A:337:GLY:N	2.38	0.50
1:B:124:LYS:N	1:B:124:LYS:HD2	2.25	0.49
1:A:191:HIS:HB2	1:A:192:PRO:CD	2.42	0.49
1:A:211:VAL:HB	1:A:232:ALA:HB3	1.93	0.49
1:B:133:ILE:HD13	1:B:198:TYR:CG	2.46	0.49
1:B:328:CYS:O	1:B:332:ILE:HG13	2.11	0.49
1:A:73:VAL:O	1:A:97:LYS:NZ	2.28	0.49
1:B:39:HIS:CD2	1:B:67:LEU:HA	2.47	0.49
1:A:158:VAL:HG22	1:A:262:LEU:CD1	2.43	0.49
1:A:196:LEU:CD1	1:A:237:MSE:HE1	2.42	0.49
1:B:337:GLY:HA2	1:B:338:GLU:O	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:80:THR:HB	1:B:81:PRO:CD	2.43	0.49
1:A:80:THR:HB	1:A:81:PRO:CD	2.42	0.49
1:B:90:ILE:HG23	1:B:118:THR:CG2	2.36	0.49
1:A:279:ASN:ND2	1:A:318:LEU:H	2.11	0.48
1:B:290:GLY:HA2	1:B:293:GLN:HG3	1.95	0.48
1:B:55:PHE:CD2	1:B:55:PHE:N	2.80	0.48
1:B:106:ALA:HB1	1:B:107:PRO:HD2	1.93	0.48
1:A:97:LYS:C	1:A:124:LYS:CG	2.81	0.48
1:A:189:ALA:O	1:A:193:LEU:HG	2.13	0.48
1:B:90:ILE:HD13	1:B:118:THR:OG1	2.13	0.48
1:B:162:GLU:HG3	1:B:188:PHE:HZ	1.69	0.48
1:A:260:ILE:HB	1:A:275:GLN:HB2	1.95	0.48
1:B:231:ASP:HA	1:B:251:ARG:HD2	1.95	0.48
1:A:97:LYS:HA	1:A:124:LYS:HG3	1.94	0.48
1:B:332:ILE:O	1:B:336:THR:HG23	2.13	0.48
1:A:45:ALA:C	1:A:47:LEU:H	2.17	0.47
1:A:34:ARG:HG3	1:A:34:ARG:NH1	2.26	0.47
1:B:263:GLN:NE2	1:B:265:TYR:OH	2.46	0.47
1:B:247:LEU:C	1:B:247:LEU:CD2	2.81	0.47
1:B:334:ALA:O	1:B:337:GLY:HA3	2.15	0.47
1:A:13:TYR:CD1	1:B:312:PRO:HD3	2.49	0.47
1:A:105:MSE:HE3	1:A:345:PHE:CD1	2.50	0.46
1:A:334:ALA:O	1:A:336:THR:N	2.48	0.46
1:A:284:TYR:C	1:A:284:TYR:CD2	2.89	0.46
1:A:40:LEU:HD23	1:A:41:ALA:N	2.31	0.46
1:A:182:TYR:CD2	1:A:186:ASP:OD2	2.68	0.46
1:A:333:ARG:O	1:A:337:GLY:N	2.49	0.46
1:B:164:PHE:O	1:B:165:MSE:HE2	2.15	0.46
1:B:305:ARG:HG3	1:B:308:ASP:OD1	2.15	0.46
1:B:369:GLU:C	1:B:370:ILE:HG13	2.35	0.46
1:A:124:LYS:N	1:A:124:LYS:CD	2.59	0.45
1:A:125:VAL:HG13	1:A:126:ALA:N	2.30	0.45
1:A:156:VAL:O	1:A:245:ALA:HA	2.17	0.45
1:B:337:GLY:HA2	1:B:338:GLU:HB3	1.99	0.45
1:A:218:PRO:HD3	1:A:224:ARG:NH2	2.32	0.45
1:B:151:GLY:CA	1:B:268:LYS:HG3	2.47	0.45
1:A:341:SER:O	1:A:341:SER:OG	2.34	0.45
1:A:26:LYS:HG3	1:A:32:VAL:O	2.17	0.44
1:B:65:ARG:HH11	1:B:65:ARG:HG3	1.83	0.44
1:A:134:GLN:HB3	1:A:326:ILE:CG2	2.48	0.44
1:A:216:ASP:C	1:A:217:ARG:HG2	2.38	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:257:LYS:HB2	1:B:315:GLY:HA3	2.00	0.43
1:A:279:ASN:HD21	1:A:318:LEU:H	1.65	0.43
1:B:40:LEU:HD12	1:B:52:ALA:HA	2.00	0.43
1:B:68:ILE:HG12	1:B:92:ALA:HA	2.00	0.43
1:A:182:TYR:N	1:A:186:ASP:OD2	2.29	0.43
1:A:213:PRO:HD2	2:A:401:HOH:O	2.18	0.43
1:B:131:ASN:HD22	1:B:131:ASN:N	2.15	0.43
1:A:7:GLY:HA3	1:A:67:LEU:HD21	2.00	0.43
1:B:110:ALA:HA	1:B:113:GLU:HB2	2.01	0.43
1:B:164:PHE:HD1	1:B:165:MSE:HE2	1.83	0.43
1:A:167:ASP:OD1	1:A:167:ASP:C	2.57	0.43
1:A:80:THR:HB	1:A:81:PRO:HD2	2.01	0.42
1:A:358:MSE:O	1:A:361:SER:HB3	2.19	0.42
1:B:247:LEU:HD23	1:B:247:LEU:O	2.19	0.42
1:B:216:ASP:OD2	1:B:224:ARG:HD3	2.18	0.42
1:A:94:GLU:C	1:A:96:GLY:H	2.23	0.42
1:A:98:HIS:CG	1:A:124:LYS:HB3	2.47	0.42
1:A:45:ALA:O	1:A:47:LEU:N	2.42	0.42
1:A:86:ALA:HA	1:A:115:MSE:SE	2.69	0.42
1:A:257:LYS:HG2	1:B:299:LEU:HD12	2.01	0.42
1:B:131:ASN:ND2	1:B:131:ASN:H	2.18	0.42
1:B:69:ALA:O	1:B:70:ASP:C	2.58	0.42
1:B:97:LYS:C	1:B:124:LYS:HG2	2.41	0.41
1:B:153:VAL:HG11	1:B:200:PHE:CZ	2.55	0.41
1:B:311:ILE:HG22	1:B:313:ALA:H	1.85	0.41
1:A:121:ARG:O	1:A:122:SER:O	2.38	0.41
1:B:86:ALA:O	1:B:87:GLU:C	2.59	0.41
1:A:196:LEU:HD12	1:A:237:MSE:HE1	2.02	0.41
1:A:159:GLU:O	1:A:260:ILE:HA	2.20	0.41
1:B:324:LYS:HA	1:B:324:LYS:HD2	1.80	0.41
1:B:178:LEU:H	1:B:228:GLU:HB2	1.85	0.41
1:A:40:LEU:HD23	1:A:40:LEU:C	2.41	0.41
1:A:277:ARG:HG3	1:A:277:ARG:HH11	1.86	0.41
1:A:331:LEU:HD12	1:A:331:LEU:O	2.20	0.40
1:A:336:THR:OG1	1:A:338:GLU:HG3	2.21	0.40
1:B:183:GLY:O	1:B:187:ASP:HB2	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	363/393 (92%)	332 (92%)	25 (7%)	6 (2%)	7	14
1	B	363/393 (92%)	320 (88%)	35 (10%)	8 (2%)	5	9
All	All	726/786 (92%)	652 (90%)	60 (8%)	14 (2%)	6	12

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	122	SER
1	B	337	GLY
1	A	278	MSE
1	A	337	GLY
1	B	14	MSE
1	B	48	ALA
1	B	207	ILE
1	B	240	ASP
1	A	46	GLY
1	A	338	GLU
1	B	338	GLU
1	B	86	ALA
1	A	335	ILE
1	B	146	GLY

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	285/295 (97%)	259 (91%)	26 (9%)	7	15
1	B	284/295 (96%)	253 (89%)	31 (11%)	5	9
All	All	569/590 (96%)	512 (90%)	57 (10%)	6	12

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	LEU
1	A	25	VAL
1	A	32	VAL
1	A	34	ARG
1	A	39	HIS
1	A	47	LEU
1	A	49	GLU
1	A	61	THR
1	A	77	SER
1	A	103	LYS
1	A	124	LYS
1	A	131	ASN
1	A	139	ARG
1	A	185	LEU
1	A	186	ASP
1	A	217	ARG
1	A	224	ARG
1	A	225	ARG
1	A	236	LEU
1	A	240	ASP
1	A	244	SER
1	A	287	GLU
1	A	305	ARG
1	A	342	ILE
1	A	354	SER
1	A	368	ILE
1	B	8	LEU
1	B	17	CYS
1	B	25	VAL
1	B	34	ARG
1	B	40	LEU
1	B	42	GLU
1	B	63	ASP
1	B	67	LEU
1	B	68	ILE

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Mol	Chain	Res	Type
1	B	84	PHE
1	B	103	LYS
1	B	124	LYS
1	B	131	ASN
1	B	133	ILE
1	B	152	ARG
1	B	154	ASN
1	B	176	SER
1	B	185	LEU
1	B	204	GLU
1	B	225	ARG
1	B	236	LEU
1	B	251	ARG
1	B	268	LYS
1	B	287	GLU
1	B	305	ARG
1	B	336	THR
1	B	346	LYS
1	B	358	MSE
1	B	364	GLU
1	B	366	ARG
1	B	368	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	134	GLN
1	A	263	GLN
1	A	279	ASN
1	A	316	HIS
1	B	131	ASN
1	B	134	GLN
1	B	154	ASN
1	B	263	GLN
1	B	279	ASN
1	B	316	HIS
1	B	360	GLN

5.3.3 RNA (i)

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

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 ⓘ

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	355/393 (90%)	-0.21	8 (2%) 61	56	20, 43, 74, 79	0
1	B	355/393 (90%)	0.14	9 (2%) 58	54	25, 56, 84, 89	0
All	All	710/786 (90%)	-0.04	17 (2%) 59	55	20, 49, 79, 89	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	337	GLY	6.0
1	B	45	ALA	5.5
1	B	46	GLY	3.6
1	A	45	ALA	3.5
1	A	336	THR	3.4
1	A	123	GLY	3.1
1	A	46	GLY	3.0
1	A	125	VAL	2.8
1	B	47	LEU	2.6
1	B	83	GLN	2.4
1	A	42	GLU	2.3
1	A	2	LYS	2.3
1	B	176	SER	2.3
1	B	63	ASP	2.2
1	B	48	ALA	2.1
1	B	76	VAL	2.1
1	B	13	TYR	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 ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.