WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Jun 15, 2024 – 09:58 AM EDT

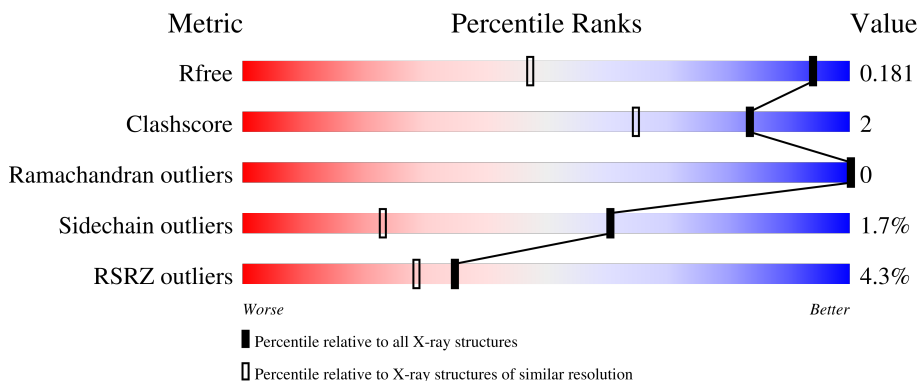|		
PDB ID	:	2COV
Title	:	Crystal structure of CBM31 from beta-1,3-xylanase
Authors	:	Hashimoto, H.; Tamai, Y.; Okazaki, F.; Tamaru, Y.; Shimizu, T.; Araki, T.; Sato, M.
Deposited on	:	2005-05-18
Resolution	:	1.25 Å(reported)

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 1.25 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.
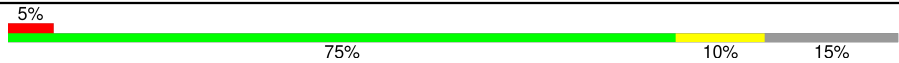
Metric	Percentile Ranks	Value
Rfree		0.181
Clashscore		2
Ramachandran outliers		0
Sidechain outliers		1.7%
RSRZ outliers		4.3%

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	1023 (1.28-1.24)
Clashscore	141614	1060 (1.28-1.24)
Ramachandran outliers	138981	1029 (1.28-1.24)
Sidechain outliers	138945	1028 (1.28-1.24)
RSRZ outliers	127900	1004 (1.28-1.24)

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	D	104	3% / 77% / 9% • 12%
1	E	104	4% / 79% / 8% • 12%
1	F	104	2% / 77% / 7% 16%
1	G	104	4% / 74% / 8% • 15%
1	H	104	5% / 74% / 8% • 16%

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Mol	Chain	Length	Quality of chain
1	I	104	

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 4937 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 beta-1,3-xylanase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	D	92	Total	C	N	O	S	0	0	0
			751	473	127	147	4			
1	E	92	Total	C	N	O	S	1	0	0
			751	473	127	147	4			
1	F	87	Total	C	N	O	S	13	0	0
			712	450	120	138	4			
1	G	88	Total	C	N	O	S	14	0	0
			720	454	122	140	4			
1	H	87	Total	C	N	O	S	13	0	0
			712	450	120	138	4			
1	I	88	Total	C	N	O	S	15	0	0
			720	454	122	140	4			

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
D	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
D	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
D	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
D	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
D	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
D	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
D	476	HIS	-	EXPRESSION TAG	UNP Q8RS40
D	477	HIS	-	EXPRESSION TAG	UNP Q8RS40
E	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
E	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
E	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
E	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
E	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
E	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
E	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
E	476	HIS	-	EXPRESSION TAG	UNP Q8RS40

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Chain	Residue	Modelled	Actual	Comment	Reference
E	477	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
F	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
F	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
F	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	476	HIS	-	EXPRESSION TAG	UNP Q8RS40
F	477	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
G	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
G	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
G	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	476	HIS	-	EXPRESSION TAG	UNP Q8RS40
G	477	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
H	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
H	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
H	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	476	HIS	-	EXPRESSION TAG	UNP Q8RS40
H	477	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	374	MET	-	INITIATING METHIONINE	UNP Q8RS40
I	470	LEU	-	EXPRESSION TAG	UNP Q8RS40
I	471	GLU	-	EXPRESSION TAG	UNP Q8RS40
I	472	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	473	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	474	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	475	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	476	HIS	-	EXPRESSION TAG	UNP Q8RS40
I	477	HIS	-	EXPRESSION TAG	UNP Q8RS40

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	D	115	Total 115	O 115	0	0

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| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	E	110	Total 110	O 110	0	0
2	F	85	Total 85	O 85	0	0
2	G	87	Total 87	O 87	0	0
2	H	89	Total 89	O 89	0	0
2	I	85	Total 85	O 85	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.

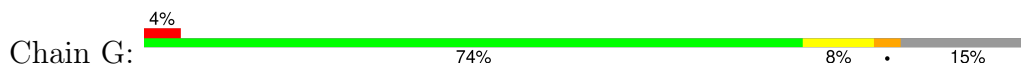- Molecule 1: beta-1,3-xylanase
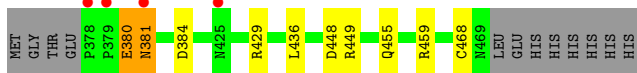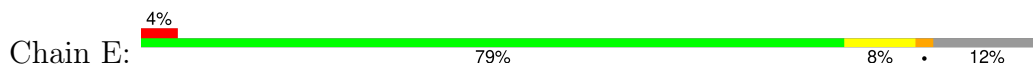
Chain D:

- Molecule 1: beta-1,3-xylanase

Chain E:

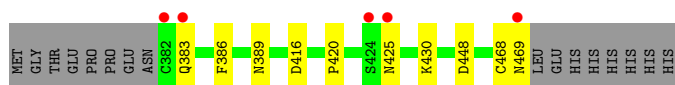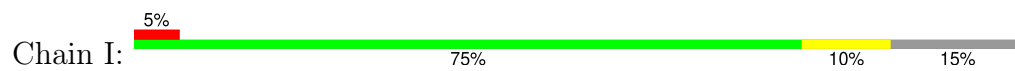- Molecule 1: beta-1,3-xylanase

Chain F:

- Molecule 1: beta-1,3-xylanase

Chain G:

- Molecule 1: beta-1,3-xylanase

Chain H:

- Molecule 1: beta-1,3-xylanase

Chain I:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	66.55Å　　78.29Å　　111.42Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	20.00　–　1.25 19.93　–　1.25	Depositor EDS
% Data completeness (in resolution range)	95.4 (20.00-1.25) 95.4 (19.93-1.25)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.31 (at 1.25Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.149　,　0.175 0.155　,　0.181	Depositor DCC
R_{free} test set	7695 reflections (4.79%)	wwPDB-VP
Wilson B-factor (Å^2)	13.7	Xtriage
Anisotropy	0.230	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 50.1	EDS
L-test for twinning [2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	4937	wwPDB-VP
Average B, all atoms (Å^2)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.21% 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 ⓘ

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	D	1.25	7/770 (0.9%)	1.12	4/1044 (0.4%)
1	E	1.35	5/770 (0.6%)	1.21	8/1044 (0.8%)
1	F	1.15	3/729 (0.4%)	1.24	6/987 (0.6%)
1	G	1.26	8/737 (1.1%)	1.34	9/998 (0.9%)
1	H	1.16	6/729 (0.8%)	1.13	7/987 (0.7%)
1	I	1.02	2/737 (0.3%)	1.05	3/998 (0.3%)
All	All	1.21	31/4472 (0.7%)	1.19	37/6058 (0.6%)

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	E	0	1
1	G	0	1
All	All	0	2

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	380	GLU	CD-OE1	14.96	1.42	1.25
1	G	452	GLN	CD-NE2	11.45	1.61	1.32
1	D	429	ARG	CG-CD	10.88	1.79	1.51
1	G	436	LEU	CG-CD1	8.93	1.84	1.51
1	E	468	CYS	CB-SG	-8.67	1.67	1.82
1	H	422	ASN	CG-OD1	8.19	1.42	1.24
1	G	423	LYS	CG-CD	8.07	1.79	1.52
1	H	422	ASN	CG-ND2	-8.07	1.12	1.32
1	E	384	ASP	CB-CG	-7.98	1.34	1.51
1	H	423	LYS	CE-NZ	7.19	1.67	1.49
1	E	448	ASP	CB-CG	7.07	1.66	1.51
1	H	429	ARG	CG-CD	6.83	1.69	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	450	TYR	CB-CG	-6.73	1.41	1.51
1	D	448	ASP	CB-CG	6.69	1.65	1.51
1	E	449	ARG	CZ-NH2	6.47	1.41	1.33
1	I	425	ASN	CB-CG	6.38	1.65	1.51
1	D	429	ARG	CZ-NH2	6.38	1.41	1.33
1	G	447	GLU	CG-CD	-5.72	1.43	1.51
1	G	429	ARG	CG-CD	5.71	1.66	1.51
1	G	448	ASP	CG-OD2	5.68	1.38	1.25
1	G	430	LYS	CB-CG	-5.67	1.37	1.52
1	G	447	GLU	CD-OE2	5.61	1.31	1.25
1	H	425	ASN	CB-CG	5.46	1.63	1.51
1	F	448	ASP	CG-OD2	5.45	1.37	1.25
1	F	448	ASP	CB-CG	5.33	1.62	1.51
1	I	383	GLN	CB-CG	5.23	1.66	1.52
1	D	448	ASP	CG-OD1	-5.20	1.13	1.25
1	D	450	TYR	CD2-CE2	5.11	1.47	1.39
1	D	449	ARG	CG-CD	-5.10	1.39	1.51
1	H	429	ARG	CB-CG	-5.07	1.38	1.52
1	D	380	GLU	CD-OE1	-5.04	1.20	1.25

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	382	CYS	O-C-N	-16.23	96.73	122.70
1	G	448	ASP	CB-CG-OD1	-14.97	104.82	118.30
1	G	448	ASP	CB-CG-OD2	13.09	130.08	118.30
1	G	436	LEU	CB-CG-CD1	-13.04	88.84	111.00
1	F	382	CYS	CA-C-N	11.85	143.26	117.20
1	E	380	GLU	OE1-CD-OE2	-10.89	110.23	123.30
1	H	448	ASP	CB-CG-OD1	-9.77	109.51	118.30
1	E	429	ARG	NE-CZ-NH1	8.72	124.66	120.30
1	D	429	ARG	CG-CD-NE	8.54	129.74	111.80
1	D	459	ARG	NE-CZ-NH1	7.99	124.29	120.30
1	G	452	GLN	OE1-CD-NE2	-7.17	105.41	121.90
1	H	385	ASP	CB-CG-OD2	-7.08	111.93	118.30
1	G	436	LEU	CD1-CG-CD2	-7.03	89.41	110.50
1	G	449	ARG	NE-CZ-NH1	-7.03	116.79	120.30
1	D	449	ARG	CD-NE-CZ	-6.42	114.61	123.60
1	I	386	PHE	CB-CG-CD1	-6.33	116.37	120.80
1	E	459	ARG	NE-CZ-NH1	6.31	123.45	120.30
1	E	449	ARG	NE-CZ-NH1	-6.30	117.15	120.30
1	F	429	ARG	NE-CZ-NH1	6.26	123.43	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	423	LYS	CB-CG-CD	-6.20	95.48	111.60
1	H	422	ASN	CB-CG-OD1	-6.18	109.24	121.60
1	H	423	LYS	CD-CE-NZ	6.07	125.67	111.70
1	E	384	ASP	CB-CG-OD2	-6.04	112.86	118.30
1	H	448	ASP	CB-CG-OD2	5.91	123.62	118.30
1	G	452	GLN	CG-CD-NE2	-5.52	103.45	116.70
1	H	459	ARG	NE-CZ-NH2	-5.46	117.57	120.30
1	F	429	ARG	NE-CZ-NH2	-5.45	117.57	120.30
1	F	448	ASP	CB-CG-OD2	5.39	123.16	118.30
1	D	384	ASP	CB-CG-OD2	5.37	123.13	118.30
1	I	448	ASP	CB-CG-OD2	5.27	123.05	118.30
1	E	449	ARG	CD-NE-CZ	5.18	130.85	123.60
1	E	436	LEU	CB-CG-CD2	5.16	119.77	111.00
1	F	386	PHE	CB-CG-CD1	-5.09	117.24	120.80
1	G	393	ASP	CB-CG-OD2	5.09	122.88	118.30
1	H	394	GLN	CB-CG-CD	5.04	124.71	111.60
1	E	449	ARG	NE-CZ-NH2	5.02	122.81	120.30
1	I	416	ASP	CB-CG-OD2	5.01	122.81	118.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	380	GLU	Sidechain
1	G	452	GLN	Sidechain

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	D	751	0	685	6	0
1	E	751	0	685	3	0
1	F	712	0	652	1	0
1	G	720	0	658	3	0
1	H	712	0	652	3	0
1	I	720	0	658	4	0
2	D	115	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	110	0	0	1	0
2	F	85	0	0	1	0
2	G	87	0	0	3	0
2	H	89	0	0	1	0
2	I	85	0	0	0	0
All	All	4937	0	3990	20	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 2.

All (20) 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:429:ARG:CG	1:D:429:ARG:CD	1.79	1.59
1:D:429:ARG:CD	1:D:429:ARG:CB	2.65	0.74
1:I:389:ASN:HD21	1:I:469:ASN:H	1.37	0.73
1:I:389:ASN:ND2	1:I:468:CYS:H	1.92	0.67
1:I:389:ASN:HD22	1:I:468:CYS:H	1.50	0.59
1:D:387:ASN:HD22	1:D:388:PHE:H	1.53	0.55
1:E:381:ASN:HD22	1:E:381:ASN:H	1.53	0.55
1:G:448:ASP:HB3	2:G:495:HOH:O	2.07	0.54
1:E:381:ASN:H	1:E:381:ASN:ND2	2.11	0.49
1:D:429:ARG:HH21	1:D:429:ARG:HD3	1.58	0.47
1:G:456:ILE:HD12	2:G:520:HOH:O	2.14	0.47
1:H:456:ILE:HD12	2:H:536:HOH:O	2.16	0.46
1:D:469:ASN:C	1:D:469:ASN:HD22	2.19	0.45
1:H:423:LYS:CE	1:H:428:PHE:CZ	3.01	0.44
1:H:423:LYS:HE2	1:H:428:PHE:CZ	2.53	0.43
1:D:387:ASN:HD21	1:D:466:GLN:HE22	1.68	0.42
1:I:420:PRO:O	1:I:430:LYS:HE3	2.19	0.42
1:G:448:ASP:CB	2:G:495:HOH:O	2.66	0.42
1:F:455:GLN:HG3	2:F:540:HOH:O	2.20	0.41
1:E:455:GLN:NE2	2:E:545:HOH:O	2.47	0.41

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	D	90/104 (86%)	90 (100%)	0	0	100	100
1	E	90/104 (86%)	90 (100%)	0	0	100	100
1	F	85/104 (82%)	85 (100%)	0	0	100	100
1	G	86/104 (83%)	85 (99%)	1 (1%)	0	100	100
1	H	85/104 (82%)	85 (100%)	0	0	100	100
1	I	86/104 (83%)	86 (100%)	0	0	100	100
All	All	522/624 (84%)	521 (100%)	1 (0%)	0	100	100

There are no Ramachandran outliers to report.

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	D	82/93 (88%)	79 (96%)	3 (4%)	34	4
1	E	82/93 (88%)	81 (99%)	1 (1%)	71	35
1	F	77/93 (83%)	76 (99%)	1 (1%)	69	32
1	G	78/93 (84%)	76 (97%)	2 (3%)	46	8
1	H	77/93 (83%)	76 (99%)	1 (1%)	69	32
1	I	78/93 (84%)	78 (100%)	0	100	100
All	All	474/558 (85%)	466 (98%)	8 (2%)	60	23

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	387	ASN
1	D	394	GLN
1	D	469	ASN
1	E	381	ASN
1	F	466	GLN
1	G	383	GLN
1	G	429	ARG
1	H	429	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	387	ASN
1	D	469	ASN
1	E	381	ASN
1	E	422	ASN
1	E	438	GLN
1	E	460	ASN
1	F	438	GLN
1	F	454	GLN
1	G	438	GLN
1	H	438	GLN
1	I	389	ASN
1	I	454	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 ⓘ

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(Å²)	Q<0.9
1	D	92/104 (88%)	0.28	3 (3%)	46	38	11, 15, 27, 37	0
1	E	92/104 (88%)	0.26	4 (4%)	35	28	11, 16, 26, 35	1 (1%)
1	F	86/104 (82%)	0.16	2 (2%)	60	50	13, 18, 26, 36	1 (1%)
1	G	88/104 (84%)	0.44	4 (4%)	33	27	13, 19, 27, 31	6 (6%)
1	H	87/104 (83%)	0.24	5 (5%)	23	18	12, 18, 27, 37	5 (5%)
1	I	88/104 (84%)	0.26	5 (5%)	23	18	14, 19, 28, 36	6 (6%)
All	All	533/624 (85%)	0.27	23 (4%)	35	28	11, 18, 28, 37	19 (3%)

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	382	CYS	5.5
1	D	378	PRO	5.0
1	E	378	PRO	4.7
1	I	382	CYS	4.6
1	G	382	CYS	4.1
1	I	383	GLN	3.9
1	H	468	CYS	3.3
1	G	465	THR	3.2
1	H	383	GLN	3.2
1	G	381	ASN	3.0
1	F	468	CYS	2.8
1	D	379	PRO	2.7
1	E	381	ASN	2.7
1	I	424	SER	2.6
1	G	394	GLN	2.5
1	E	379	PRO	2.4
1	E	425	ASN	2.4
1	D	381	ASN	2.3
1	I	425	ASN	2.3

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Mol	Chain	Res	Type	RSRZ
1	H	424	SER	2.2
1	F	398	VAL	2.2
1	H	467	VAL	2.1
1	I	469	ASN	2.1

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.