W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

Full wwPDB X-ray Structure Validation Report (i)

Oct 22, 2024 – 06:26 AM JST

PDB ID	:	8YM5
Title	:	Structure of Caspase-8/cFLIP death effector domain assembly
Authors	:	Lin, S.-C.; Yang, C.-Y.
Deposited on	:	2024-03-08
Resolution	:	2.09 Å(reported)

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

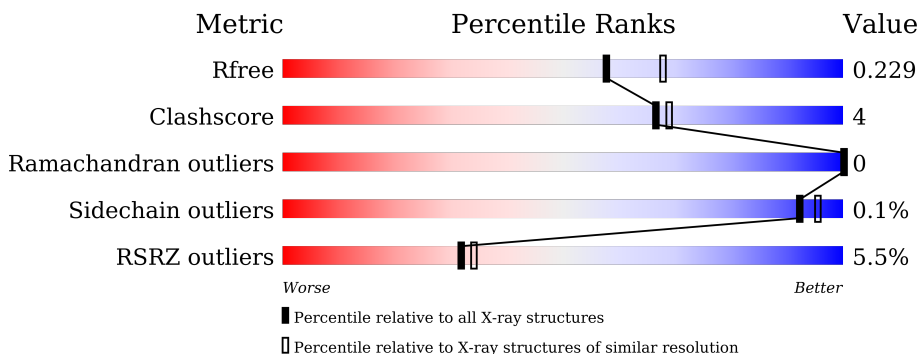|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (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 2.09 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.
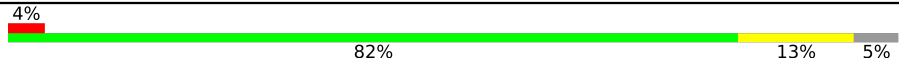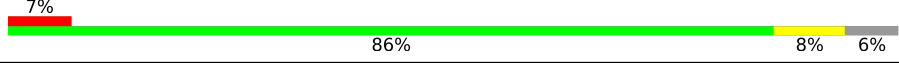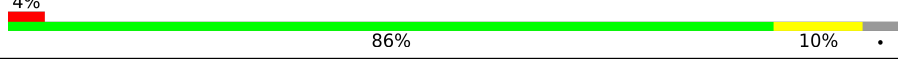
Metric	Percentile Ranks	Value
Rfree		0.229
Clashscore		4
Ramachandran outliers		0
Sidechain outliers		0.1%
RSRZ outliers		5.5%

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	6234 (2.10-2.10)
Clashscore	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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	185	7% / 87% 10% •
1	B	185	4% / 88% 11% •
1	C	185	2% / 93% 6% •
1	D	185	2% / 94% 6% •
2	F	184	8% / 83% 9% 9%
2	G	184	9% / 84% 9% 7%

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Mol	Chain	Length	Quality of chain
2	H	184	4% 82% 13% 5%
2	I	184	4% 85% 6% 9%
2	J	184	7% 86% 8% 6%
2	K	184	4% 86% 10% •

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 14889 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Caspase-8.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	C	184	Total	C	N	O	S	Se	0	0	0
			1528	967	258	294	2	7			
1	B	182	Total	C	N	O	S	Se	0	0	0
			1510	956	255	290	2	7			
1	D	184	Total	C	N	O	S	Se	0	0	0
			1531	968	261	294	2	6			
1	A	179	Total	C	N	O	S	Se	0	0	0
			1485	939	252	286	2	6			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	122	GLY	PHE	engineered mutation	UNP Q14790
C	123	GLY	LEU	engineered mutation	UNP Q14790
B	122	GLY	PHE	engineered mutation	UNP Q14790
B	123	GLY	LEU	engineered mutation	UNP Q14790
D	122	GLY	PHE	engineered mutation	UNP Q14790
D	123	GLY	LEU	engineered mutation	UNP Q14790
A	122	GLY	PHE	engineered mutation	UNP Q14790
A	123	GLY	LEU	engineered mutation	UNP Q14790

- Molecule 2 is a protein called CASP8 and FADD-like apoptosis regulator subunit p43.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	H	175	Total	C	N	O	S	Se	0	0	0
			1418	902	245	263	2	6			
2	G	171	Total	C	N	O	S	Se	0	0	0
			1386	882	240	256	2	6			
2	F	168	Total	C	N	O	S	Se	0	0	0
			1364	867	237	253	2	5			
2	K	176	Total	C	N	O	S	Se	0	0	0
			1428	908	248	264	2	6			

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	I	168	Total 1368	C 869	N 236	O 255	S 2	Se 6	0	0	0
2	J	173	Total 1403	C 893	N 242	O 260	S 2	Se 6	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-2	GLY	-	expression tag	UNP O15519
H	-1	SER	-	expression tag	UNP O15519
H	0	HIS	-	expression tag	UNP O15519
H	7	GLY	HIS	engineered mutation	UNP O15519
G	-2	GLY	-	expression tag	UNP O15519
G	-1	SER	-	expression tag	UNP O15519
G	0	HIS	-	expression tag	UNP O15519
G	7	GLY	HIS	engineered mutation	UNP O15519
F	-2	GLY	-	expression tag	UNP O15519
F	-1	SER	-	expression tag	UNP O15519
F	0	HIS	-	expression tag	UNP O15519
F	7	GLY	HIS	engineered mutation	UNP O15519
K	-2	GLY	-	expression tag	UNP O15519
K	-1	SER	-	expression tag	UNP O15519
K	0	HIS	-	expression tag	UNP O15519
K	7	GLY	HIS	engineered mutation	UNP O15519
I	-2	GLY	-	expression tag	UNP O15519
I	-1	SER	-	expression tag	UNP O15519
I	0	HIS	-	expression tag	UNP O15519
I	7	GLY	HIS	engineered mutation	UNP O15519
J	-2	GLY	-	expression tag	UNP O15519
J	-1	SER	-	expression tag	UNP O15519
J	0	HIS	-	expression tag	UNP O15519
J	7	GLY	HIS	engineered mutation	UNP O15519

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	82	Total 82	O 82	0	0
3	B	59	Total 59	O 59	0	0
3	D	58	Total 58	O 58	0	0

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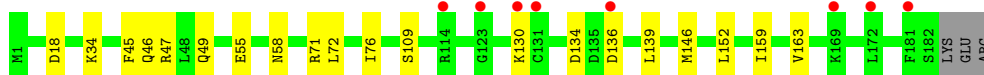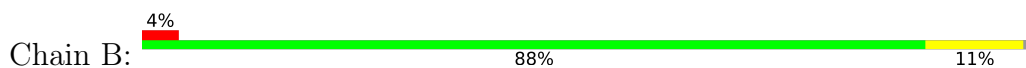| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	H	33	Total 33	O 33	0	0
3	G	25	Total 25	O 25	0	0
3	F	19	Total 19	O 19	0	0
3	K	59	Total 59	O 59	0	0
3	I	39	Total 39	O 39	0	0
3	J	62	Total 62	O 62	0	0
3	A	32	Total 32	O 32	0	0

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: Caspase-8

Chain C:

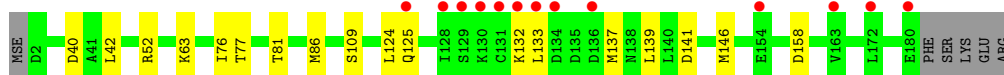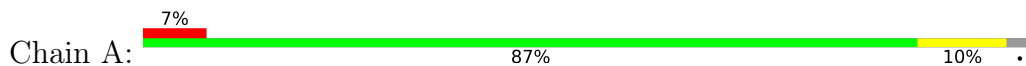- Molecule 1: Caspase-8

Chain B:

- Molecule 1: Caspase-8

Chain D:
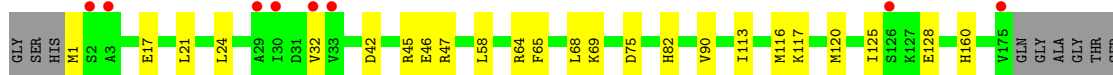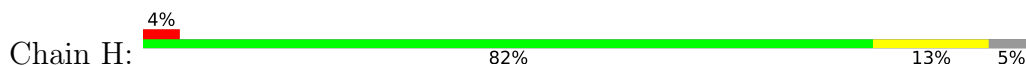

- Molecule 1: Caspase-8

Chain A:

- Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain H:

- Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain G:

9%

84%

9% 7%

GLY SER HIS M1 S2 A3 E4 V5 I6 E10 E11 A29 I30 D31 V32 R38 R45 E46 R47 L50 L55 L68 V79 E102 M116 K117 D118 Y119 M120 G121 R122 G123 K124 ILE SER LYS GLU K129 L134 L138 L151 V175 GLN GLY ALA GLY

THR SER

• Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain F:

8%

83%

9% 9%

GLY SER HIS MSE S2 A3 E4 V5 V28 A29 ILE ASP VAL V33 R47 L84 D103 L112 R122 G123 K124 ILE SER LYS E128 K129 E153 K154 C155 I159 I162 D163 L164 K165 T166 Q169 K170 Q173 S174 V175 GLN GLY ALA GLY THR SER

• Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain K:

4%

86%

10% •

GLY SER H0 M1 E11 D14 L21 R26 D27 V28 D31 V32 V33 K49 V52 L58 D105 D108 M116 M120 G121 R122 I125 E153 N158 K165 V175 GLN GLY ALA GLY THR SER

• Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain I:

4%

85%

6% 9%

GLY S-1 E17 V28 A29 ILE ASP VAL VAL P34 D39 L58 R64 L84 L89 L112 M116 K117 D118 Y119 M120 GLY ARG GLY LYS ILE S126 K127 L141 E153 K165 V175 GLN GLY ALA GLY THR SER

• Molecule 2: CASP8 and FADD-like apoptosis regulator subunit p43

Chain J:

7%

86%

8% 6%

GLY SER HIS M1 E11 M20 L21 L22 F23 L24 I30 D31 V32 V33 L40 L41 D42 R76 L84 A98 D103 L104 D108 L112 M116 K117 G121 R122 I125 SER LYS E128 K167 Q173 S174 V175 GLN GLY ALA GLY THR SER

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	82.15Å 166.22Å 179.41Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	32.88 – 2.09	Depositor
	32.88 – 2.09	EDS
% Data completeness	98.5 (32.88-2.09)	Depositor
(in resolution range)	98.5 (32.88-2.09)	EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.03 (at 2.08Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.194 , 0.231	Depositor
	0.192 , 0.229	DCC
R_{free} test set	7436 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å²)	30.5	Xtriage
Anisotropy	0.771	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.35 , 45.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	14889	wwPDB-VP
Average B, all atoms (Å²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.57% 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	A	0.37	0/1494	0.62	0/1987
1	B	0.42	0/1520	0.59	0/2021
1	C	0.48	0/1538	0.62	0/2044
1	D	0.46	0/1541	0.63	0/2048
2	F	0.33	0/1371	0.56	0/1828
2	G	0.38	0/1394	0.62	0/1861
2	H	0.35	0/1427	0.58	0/1906
2	I	0.38	0/1375	0.61	0/1831
2	J	0.41	0/1411	0.62	0/1884
2	K	0.41	0/1437	0.62	0/1918
All	All	0.40	0/14508	0.61	0/19328

There are no bond length outliers.

There are no bond angle outliers.

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	1485	0	1525	16	0
1	B	1510	0	1551	11	0
1	C	1528	0	1570	8	0
1	D	1531	0	1571	7	0
2	F	1364	0	1436	9	0
2	G	1386	0	1467	11	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	1418	0	1503	21	0
2	I	1368	0	1438	6	0
2	J	1403	0	1484	10	0
2	K	1428	0	1510	12	0
3	A	32	0	0	1	0
3	B	59	0	0	0	0
3	C	82	0	0	1	0
3	D	58	0	0	0	0
3	F	19	0	0	0	0
3	G	25	0	0	0	0
3	H	33	0	0	2	0
3	I	39	0	0	0	0
3	J	62	0	0	0	0
3	K	59	0	0	2	0
All	All	14889	0	15055	105	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 4.

All (105) 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:J:20:MSE:HE2	2:J:24:LEU:HD11	1.55	0.89
2:G:10:GLU:HG3	2:G:38:ARG:HG3	1.57	0.85
2:G:68:LEU:HD21	2:G:79:VAL:HG21	1.71	0.72
2:H:117:LYS:HE3	2:H:125:ILE:HG23	1.72	0.71
1:A:81:THR:HG21	1:A:86:MSE:HE3	1.72	0.71
2:K:1:MSE:HE1	2:K:52:VAL:HA	1.74	0.68
1:A:109:SER:HA	1:A:139:LEU:HD23	1.74	0.68
2:G:116:MSE:HG3	2:G:134:LEU:HD11	1.78	0.65
1:B:146:MSE:HE2	1:B:152:LEU:HB2	1.80	0.63
2:H:117:LYS:CE	2:H:125:ILE:HG23	2.28	0.63
2:H:117:LYS:HB2	3:H:222:HOH:O	1.98	0.62
2:I:120:MSE:HE3	2:I:141:LEU:HD12	1.80	0.62
2:F:29:ALA:HB3	2:F:47:ARG:HH12	1.64	0.62
1:A:40:ASP:OD2	1:A:42:LEU:HB2	1.99	0.62
2:G:1:MSE:HE1	2:G:55:LEU:HB2	1.82	0.62
2:I:112:LEU:O	2:I:116:MSE:HG3	2.00	0.61
1:C:52:ARG:HD3	3:C:278:HOH:O	2.00	0.60
2:I:153:GLU:HG3	2:I:165:LYS:HG3	1.82	0.60
1:B:18:ASP:OD2	1:B:71:ARG:NH1	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:83:LYS:HE2	1:D:87:GLU:OE2	2.02	0.59
2:H:42:ASP:O	2:H:46:GLU:HG3	2.04	0.58
2:J:31:ASP:OD2	2:J:32:VAL:HG13	2.04	0.57
2:H:69:LYS:HD3	1:A:52:ARG:HH11	1.69	0.57
1:A:81:THR:HG21	1:A:86:MSE:CE	2.33	0.57
1:C:52:ARG:HD2	1:C:55:GLU:OE2	2.07	0.55
2:H:117:LYS:CE	2:H:125:ILE:CG2	2.85	0.55
2:J:103:ASP:OD2	2:J:167:LYS:NZ	2.35	0.54
1:C:55:GLU:HG2	1:C:58:ASN:HB3	1.90	0.54
1:B:159:ILE:O	1:B:163:VAL:HG23	2.08	0.54
2:H:82:HIS:HE1	3:H:210:HOH:O	1.91	0.53
1:A:76:ILE:HG13	1:A:77:THR:N	2.24	0.53
2:H:117:LYS:HE3	2:H:125:ILE:CG2	2.37	0.53
2:J:112:LEU:O	2:J:116:MSE:HG3	2.09	0.53
2:G:31:ASP:OD1	2:G:47:ARG:NH2	2.41	0.53
2:H:21:LEU:HD11	2:H:58:LEU:HB3	1.92	0.52
1:B:45:PHE:O	1:B:49:GLN:HG3	2.10	0.52
1:D:92:THR:OG1	1:D:95:ARG:HG3	2.10	0.52
2:K:153:GLU:HG3	2:K:165:LYS:HG3	1.92	0.51
2:H:69:LYS:HD3	1:A:52:ARG:NH1	2.26	0.51
1:D:127:GLU:HG2	1:D:159:ILE:HD13	1.93	0.50
1:B:46:GLN:HE21	2:J:117:LYS:NZ	2.09	0.50
2:H:128:GLU:OE2	2:H:128:GLU:N	2.32	0.49
2:K:122:ARG:CZ	2:K:125:ILE:HD12	2.43	0.49
2:K:28:VAL:CG1	2:K:49:LYS:HD3	2.43	0.49
2:K:14:ASP:OD1	1:A:132:LYS:NZ	2.45	0.49
2:K:26:ARG:NH1	3:K:203:HOH:O	2.34	0.48
2:F:4:GLU:OE2	2:F:4:GLU:HA	2.13	0.47
2:F:170:LYS:O	2:F:173:GLN:HG3	2.13	0.47
2:H:117:LYS:HE2	2:H:125:ILE:CG2	2.45	0.47
1:D:151:ILE:HB	1:D:159:ILE:HD12	1.97	0.47
1:C:130:LYS:HB2	1:C:130:LYS:HE3	1.50	0.47
2:K:116:MSE:O	2:K:120:MSE:HG3	2.16	0.46
1:A:125:GLN:HG2	1:A:133:LEU:HD12	1.97	0.46
1:B:34:LYS:HD2	1:B:47:ARG:HH21	1.80	0.46
2:H:1:MSE:HG3	2:H:45:ARG:NH1	2.31	0.46
2:F:163:ASP:N	2:F:163:ASP:OD1	2.49	0.46
2:G:1:MSE:HE1	2:G:55:LEU:CB	2.45	0.45
2:K:158:ASN:ND2	3:K:201:HOH:O	2.33	0.45
1:A:42:LEU:HD23	1:A:42:LEU:HA	1.73	0.45
2:F:162:ILE:O	2:F:166:THR:HG22	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:162:ARG:O	1:C:166:GLN:HG2	2.17	0.45
1:D:92:THR:OG1	1:D:95:ARG:CG	2.65	0.45
2:G:45:ARG:HG3	2:G:50:LEU:HD23	1.99	0.44
1:A:63:LYS:HD3	1:A:86:MSE:CE	2.48	0.44
2:H:116:MSE:HB3	2:H:120:MSE:HE3	1.99	0.44
2:G:116:MSE:HE3	2:G:138:LEU:HD11	1.99	0.44
2:J:104:LEU:HD22	2:J:108:ASP:HB3	1.99	0.44
2:H:32:VAL:HG23	2:H:47:ARG:HH22	1.83	0.44
2:F:128:GLU:HB3	2:F:129:LYS:H	1.52	0.44
2:H:113:ILE:O	2:H:117:LYS:HG2	2.17	0.43
1:A:124:LEU:HA	1:A:124:LEU:HD12	1.66	0.43
1:C:109:SER:HA	1:C:139:LEU:HD23	2.00	0.43
1:B:72:LEU:O	1:B:76:ILE:HG22	2.17	0.43
1:B:130:LYS:HD2	1:B:130:LYS:HA	1.72	0.43
1:A:124:LEU:HD21	1:A:146:MSE:HG3	2.01	0.43
1:A:158:ASP:HB2	3:A:226:HOH:O	2.17	0.43
2:K:31:ASP:O	2:J:11:GLU:HG3	2.18	0.43
2:J:31:ASP:OD1	2:J:31:ASP:N	2.49	0.43
1:A:124:LEU:HD21	1:A:146:MSE:CG	2.49	0.43
1:D:155:GLY:C	1:D:156:LYS:HD2	2.39	0.43
2:I:58:LEU:HD21	2:I:89:LEU:HD23	2.01	0.43
2:H:68:LEU:HD23	2:H:68:LEU:HA	1.87	0.42
2:G:45:ARG:CG	2:G:50:LEU:HD23	2.49	0.42
2:G:3:ALA:HA	2:G:6:ILE:HD13	2.00	0.42
2:J:22:LEU:HD23	2:J:40:LEU:HD22	2.01	0.42
1:B:134:ASP:HB3	1:B:136:ASP:OD1	2.19	0.42
2:F:2:SER:O	2:F:5:VAL:HG22	2.18	0.42
2:H:65:PHE:N	2:H:65:PHE:CD2	2.87	0.42
2:K:105:ASP:N	2:K:105:ASP:OD1	2.39	0.42
2:H:17:GLU:OE1	2:H:64:ARG:HD3	2.19	0.42
2:F:153:GLU:HG2	2:F:165:LYS:HG3	2.02	0.42
2:G:119:TYR:CE2	2:G:151:LEU:HD11	2.55	0.42
2:J:20:MSE:HE3	2:J:98:ALA:CB	2.50	0.42
2:H:160:HIS:HE2	2:K:11:GLU:CD	2.23	0.41
1:A:137:MSE:HE2	1:A:141:ASP:HB3	2.03	0.41
2:I:28:VAL:HG11	2:I:89:LEU:HG	2.02	0.41
1:B:55:GLU:HG2	1:B:58:ASN:HB3	2.03	0.41
1:C:124:LEU:HD13	1:C:128:ILE:HD12	2.02	0.41
1:D:146:MSE:HE2	1:D:152:LEU:HB2	2.03	0.41
2:H:24:LEU:HD22	2:H:90:VAL:HG11	2.02	0.41
2:F:112:LEU:HG	2:F:159:ILE:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:151:ILE:HB	1:C:159:ILE:HD12	2.03	0.41
2:I:17:GLU:OE2	2:I:64:ARG:HD3	2.22	0.40
2:K:21:LEU:HD21	2:K:58:LEU:HB3	2.02	0.40
1:B:109:SER:HA	1:B:139:LEU:HD23	2.03	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	177/185 (96%)	173 (98%)	4 (2%)	0	100	100
1	B	180/185 (97%)	176 (98%)	4 (2%)	0	100	100
1	C	182/185 (98%)	178 (98%)	4 (2%)	0	100	100
1	D	182/185 (98%)	180 (99%)	2 (1%)	0	100	100
2	F	162/184 (88%)	158 (98%)	4 (2%)	0	100	100
2	G	167/184 (91%)	164 (98%)	3 (2%)	0	100	100
2	H	173/184 (94%)	168 (97%)	5 (3%)	0	100	100
2	I	162/184 (88%)	158 (98%)	4 (2%)	0	100	100
2	J	169/184 (92%)	164 (97%)	5 (3%)	0	100	100
2	K	174/184 (95%)	169 (97%)	5 (3%)	0	100	100
All	All	1728/1844 (94%)	1688 (98%)	40 (2%)	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	A	168/167 (101%)	168 (100%)	0	100	100
1	B	171/167 (102%)	171 (100%)	0	100	100
1	C	173/167 (104%)	173 (100%)	0	100	100
1	D	173/167 (104%)	173 (100%)	0	100	100
2	F	155/161 (96%)	155 (100%)	0	100	100
2	G	158/161 (98%)	158 (100%)	0	100	100
2	H	162/161 (101%)	161 (99%)	1 (1%)	84	89
2	I	157/161 (98%)	157 (100%)	0	100	100
2	J	160/161 (99%)	160 (100%)	0	100	100
2	K	163/161 (101%)	163 (100%)	0	100	100
All	All	1640/1634 (100%)	1639 (100%)	1 (0%)	92	95

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	H	75	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	46	GLN
1	B	125	GLN
2	G	158	ASN
2	G	169	GLN
1	A	32	GLN
1	A	46	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 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	173/185 (93%)	0.52	13 (7%)	22	23	27, 49, 94, 112	0
1	B	175/185 (94%)	0.21	8 (4%)	38	40	20, 40, 80, 106	0
1	C	177/185 (95%)	-0.14	4 (2%)	61	63	19, 31, 59, 93	0
1	D	178/185 (96%)	0.10	4 (2%)	62	64	23, 37, 67, 85	0
2	F	163/184 (88%)	0.62	15 (9%)	16	17	31, 51, 82, 100	0
2	G	165/184 (89%)	0.47	16 (9%)	15	15	29, 44, 82, 104	0
2	H	169/184 (91%)	0.39	8 (4%)	37	39	31, 47, 81, 93	0
2	I	162/184 (88%)	0.31	7 (4%)	40	42	30, 44, 80, 100	0
2	J	167/184 (90%)	0.22	12 (7%)	23	25	21, 39, 71, 93	0
2	K	170/184 (92%)	0.04	7 (4%)	42	44	24, 36, 59, 84	0
All	All	1699/1844 (92%)	0.27	94 (5%)	32	34	19, 42, 80, 112	0

All (94) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	128	ILE	6.1
1	A	131	CYS	5.6
2	F	175	VAL	5.2
2	I	29	ALA	5.2
2	I	126	SER	4.8
2	H	30	ILE	4.7
1	A	180	GLU	4.6
1	B	181	PHE	4.1
2	G	30	ILE	4.1
1	A	133	LEU	4.1
2	H	175	VAL	4.0
2	J	32	VAL	4.0
2	I	127	LYS	4.0

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Mol	Chain	Res	Type	RSRZ
2	F	2	SER	3.9
2	H	2	SER	3.8
2	I	175	VAL	3.8
2	F	33	VAL	3.7
1	B	172	LEU	3.4
2	H	29	ALA	3.4
2	J	76	ARG	3.4
2	G	6	ILE	3.4
2	I	84	LEU	3.4
1	A	130	LYS	3.3
2	G	32	VAL	3.3
2	J	125	ILE	3.3
2	K	0	HIS	3.3
1	D	138	ASN	3.2
2	K	31	ASP	3.2
2	G	29	ALA	3.2
2	G	38	ARG	3.2
1	A	125	GLN	3.2
2	G	123	GLY	3.2
2	F	29	ALA	3.2
2	G	117	LYS	3.2
2	F	5	VAL	3.1
2	F	162	ILE	3.1
1	B	169	LYS	3.1
2	J	121	GLY	3.0
2	F	28	VAL	3.0
2	H	3	ALA	3.0
2	F	3	ALA	3.0
2	J	30	ILE	3.0
2	F	103	ASP	2.8
2	K	108	ASP	2.8
2	J	175	VAL	2.8
2	H	33	VAL	2.8
2	J	122	ARG	2.7
2	K	33	VAL	2.7
1	C	135	ASP	2.7
2	J	173	GLN	2.7
2	G	102	GLU	2.7
2	F	155	CYS	2.6
1	A	172	LEU	2.6
2	F	84	LEU	2.6
2	F	169	GLN	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	130	LYS	2.6
2	F	166	THR	2.6
2	G	124	LYS	2.5
2	J	33	VAL	2.5
2	G	11	GLU	2.5
2	H	32	VAL	2.5
2	G	5	VAL	2.5
1	B	123	GLY	2.5
1	D	93	PRO	2.5
2	G	3	ALA	2.5
2	H	126	SER	2.4
1	C	131	CYS	2.4
1	C	181	PHE	2.4
1	B	131	CYS	2.3
2	G	2	SER	2.3
1	A	154	GLU	2.3
1	A	129	SER	2.3
2	J	31	ASP	2.3
1	B	136	ASP	2.3
2	G	31	ASP	2.2
2	K	32	VAL	2.2
2	K	175	VAL	2.2
1	A	163	VAL	2.2
1	A	134	ASP	2.1
2	J	42	ASP	2.1
2	G	45	ARG	2.1
1	D	131	CYS	2.1
2	K	125	ILE	2.1
2	J	84	LEU	2.1
1	D	92	THR	2.1
2	F	122	ARG	2.1
1	B	114	ARG	2.1
1	A	136	ASP	2.1
2	I	118	ASP	2.1
2	I	39	ASP	2.0
2	F	173	GLN	2.0
2	G	121	GLY	2.0
1	A	132	LYS	2.0
1	C	136	ASP	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.