WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Apr 28, 2025 – 07:54 PM EDT

PDB ID	:	3BIM / pdb_00003bim
Title	:	Crystal structure of the BCL6 BTB domain dimer in complex with the BCOR BBD corepressor peptide
Authors	:	Prive, G.G.; Ghetu, A.F.
Deposited on	:	2007-11-30
Resolution	:	2.60 Å(reported)

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

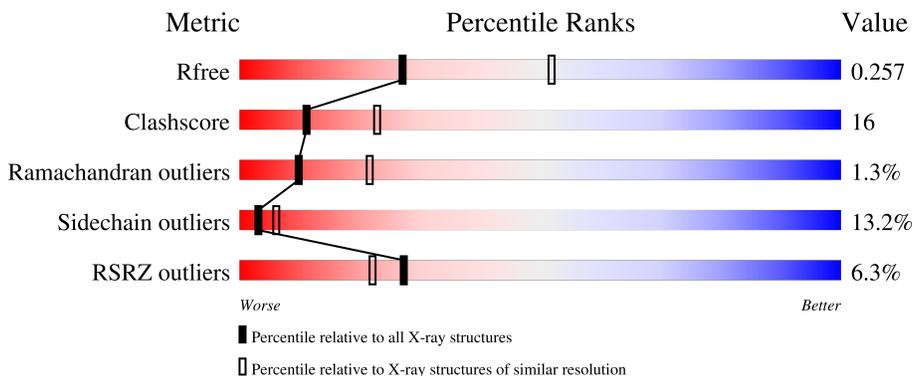|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 2.60 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		0.257
Clashscore		16
Ramachandran outliers		1.3%
Sidechain outliers		13.2%
RSRZ outliers		6.3%

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}	164625	3775 (2.60-2.60)
Clashscore	180529	4181 (2.60-2.60)
Ramachandran outliers	177936	4129 (2.60-2.60)
Sidechain outliers	177891	4129 (2.60-2.60)
RSRZ outliers	164620	3775 (2.60-2.60)

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	127	5% / 58% 32% 7% ··
1	B	127	3% / 69% 20% 6% ··
1	C	127	7% / 58% 31% 7% ··
1	D	127	2% / 70% 21% 5% ··
1	E	127	3% / 64% 29% ··
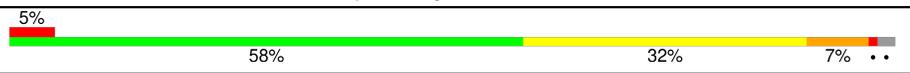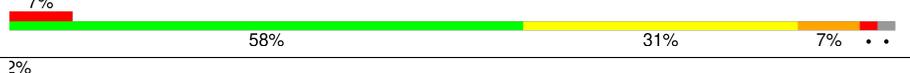
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Mol	Chain	Length	Quality of chain
1	F	127	6% / 58% / 29% / 7%
1	G	127	5% / 67% / 23% / 6%
1	H	127	3% / 62% / 30%
2	I	19	26% / 53% / 37% / 11%
2	J	19	16% / 37% / 42% / 11% / 11%
2	K	19	16% / 47% / 37% / 5% / 11%
2	L	19	21% / 47% / 32% / 5% / 16%
2	M	19	16% / 47% / 37% / 5% / 11%
2	N	19	16% / 58% / 26% / 16%
2	O	19	16% / 53% / 32% / 5% / 11%
2	P	19	21% / 47% / 37% / 5% / 11%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 9091 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 B-cell lymphoma 6 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	125	Total	C	N	O	S	0	0	0
			1008	636	178	186	8			
1	B	124	Total	C	N	O	S	0	0	0
			998	631	177	182	8			
1	C	125	Total	C	N	O	S	0	0	0
			1008	636	178	186	8			
1	D	124	Total	C	N	O	S	0	0	0
			998	631	177	182	8			
1	E	123	Total	C	N	O	S	0	0	0
			993	628	176	181	8			
1	F	122	Total	C	N	O	S	0	0	0
			987	625	175	179	8			
1	G	122	Total	C	N	O	S	0	0	0
			985	624	175	178	8			
1	H	122	Total	C	N	O	S	0	0	0
			987	625	175	179	8			

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	3	GLY	-	expression tag	UNP P41182
A	4	SER	-	expression tag	UNP P41182
A	8	GLN	CYS	engineered mutation	UNP P41182
A	67	ARG	CYS	engineered mutation	UNP P41182
A	84	ASN	CYS	engineered mutation	UNP P41182
B	3	GLY	-	expression tag	UNP P41182
B	4	SER	-	expression tag	UNP P41182
B	8	GLN	CYS	engineered mutation	UNP P41182
B	67	ARG	CYS	engineered mutation	UNP P41182
B	84	ASN	CYS	engineered mutation	UNP P41182
C	3	GLY	-	expression tag	UNP P41182
C	4	SER	-	expression tag	UNP P41182
C	8	GLN	CYS	engineered mutation	UNP P41182

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Chain	Residue	Modelled	Actual	Comment	Reference
C	67	ARG	CYS	engineered mutation	UNP P41182
C	84	ASN	CYS	engineered mutation	UNP P41182
D	3	GLY	-	expression tag	UNP P41182
D	4	SER	-	expression tag	UNP P41182
D	8	GLN	CYS	engineered mutation	UNP P41182
D	67	ARG	CYS	engineered mutation	UNP P41182
D	84	ASN	CYS	engineered mutation	UNP P41182
E	3	GLY	-	expression tag	UNP P41182
E	4	SER	-	expression tag	UNP P41182
E	8	GLN	CYS	engineered mutation	UNP P41182
E	67	ARG	CYS	engineered mutation	UNP P41182
E	84	ASN	CYS	engineered mutation	UNP P41182
F	3	GLY	-	expression tag	UNP P41182
F	4	SER	-	expression tag	UNP P41182
F	8	GLN	CYS	engineered mutation	UNP P41182
F	67	ARG	CYS	engineered mutation	UNP P41182
F	84	ASN	CYS	engineered mutation	UNP P41182
G	3	GLY	-	expression tag	UNP P41182
G	4	SER	-	expression tag	UNP P41182
G	8	GLN	CYS	engineered mutation	UNP P41182
G	67	ARG	CYS	engineered mutation	UNP P41182
G	84	ASN	CYS	engineered mutation	UNP P41182
H	3	GLY	-	expression tag	UNP P41182
H	4	SER	-	expression tag	UNP P41182
H	8	GLN	CYS	engineered mutation	UNP P41182
H	67	ARG	CYS	engineered mutation	UNP P41182
H	84	ASN	CYS	engineered mutation	UNP P41182

- Molecule 2 is a protein called BCL-6 corepressor.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	I	17	Total 126	C 80	N 21	O 25	0	0	0
2	J	17	Total 126	C 80	N 21	O 25	0	0	0
2	K	17	Total 126	C 80	N 21	O 25	0	0	0
2	L	16	Total 115	C 74	N 17	O 24	0	0	0
2	M	17	Total 126	C 80	N 21	O 25	0	0	0
2	N	16	Total 115	C 74	N 17	O 24	0	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	O	17	Total 126	C 80	N 21	O 25	0	0	0
2	P	17	Total 126	C 80	N 21	O 25	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	496	GLY	-	expression tag	UNP Q6W2J9
I	497	SER	-	expression tag	UNP Q6W2J9
J	496	GLY	-	expression tag	UNP Q6W2J9
J	497	SER	-	expression tag	UNP Q6W2J9
K	496	GLY	-	expression tag	UNP Q6W2J9
K	497	SER	-	expression tag	UNP Q6W2J9
L	496	GLY	-	expression tag	UNP Q6W2J9
L	497	SER	-	expression tag	UNP Q6W2J9
M	496	GLY	-	expression tag	UNP Q6W2J9
M	497	SER	-	expression tag	UNP Q6W2J9
N	496	GLY	-	expression tag	UNP Q6W2J9
N	497	SER	-	expression tag	UNP Q6W2J9
O	496	GLY	-	expression tag	UNP Q6W2J9
O	497	SER	-	expression tag	UNP Q6W2J9
P	496	GLY	-	expression tag	UNP Q6W2J9
P	497	SER	-	expression tag	UNP Q6W2J9

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	26	Total 26	O 26	0	0
3	I	1	Total 1	O 1	0	0
3	B	23	Total 23	O 23	0	0
3	J	3	Total 3	O 3	0	0
3	C	11	Total 11	O 11	0	0
3	K	1	Total 1	O 1	0	0
3	D	23	Total 23	O 23	0	0

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| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	L	1	Total 1	O 1	0	0
3	E	12	Total 12	O 12	0	0
3	M	1	Total 1	O 1	0	0
3	F	15	Total 15	O 15	0	0
3	N	1	Total 1	O 1	0	0
3	G	15	Total 15	O 15	0	0
3	O	1	Total 1	O 1	0	0
3	H	7	Total 7	O 7	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: B-cell lymphoma 6 protein
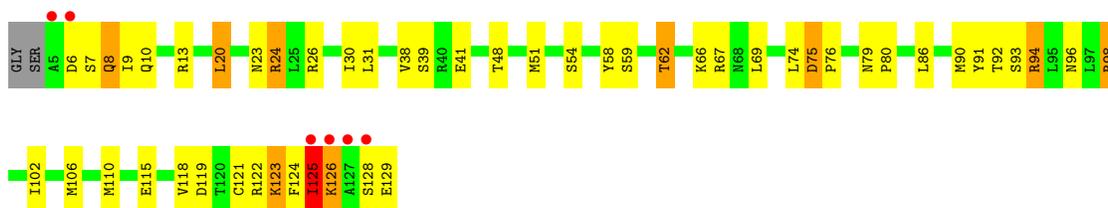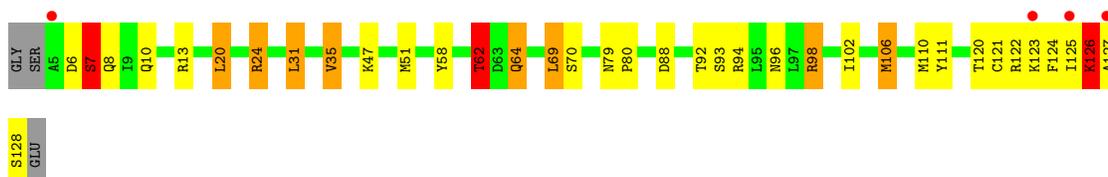
Chain A:

• Molecule 1: B-cell lymphoma 6 protein

Chain B:

• Molecule 1: B-cell lymphoma 6 protein

Chain C:

• Molecule 1: B-cell lymphoma 6 protein

Chain D:

GLU

• Molecule 1: B-cell lymphoma 6 protein

Chain E:

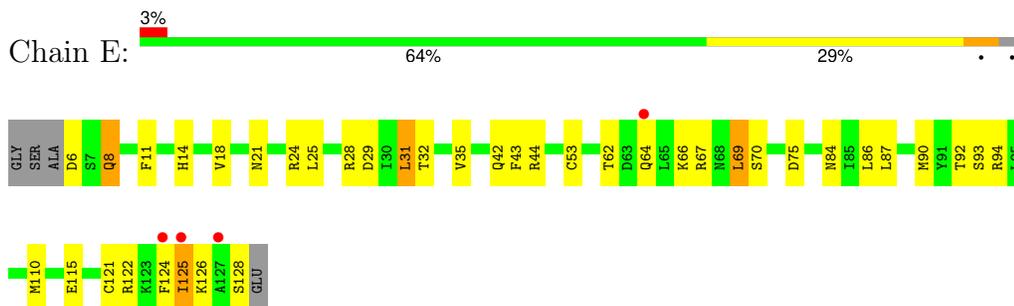• Molecule 1: B-cell lymphoma 6 protein

Chain F:

• Molecule 1: B-cell lymphoma 6 protein

Chain G:

• Molecule 1: B-cell lymphoma 6 protein

Chain H:

• Molecule 2: BCL-6 corepressor

Chain I:

• Molecule 2: BCL-6 corepressor

Chain J:

• Molecule 2: BCL-6 corepressor

Chain K:

• Molecule 2: BCL-6 corepressor

Chain L:

• Molecule 2: BCL-6 corepressor

Chain M:

• Molecule 2: BCL-6 corepressor

Chain N:

• Molecule 2: BCL-6 corepressor

Chain O:

• Molecule 2: BCL-6 corepressor

Chain P:

21%

47%   37%   5%   11%
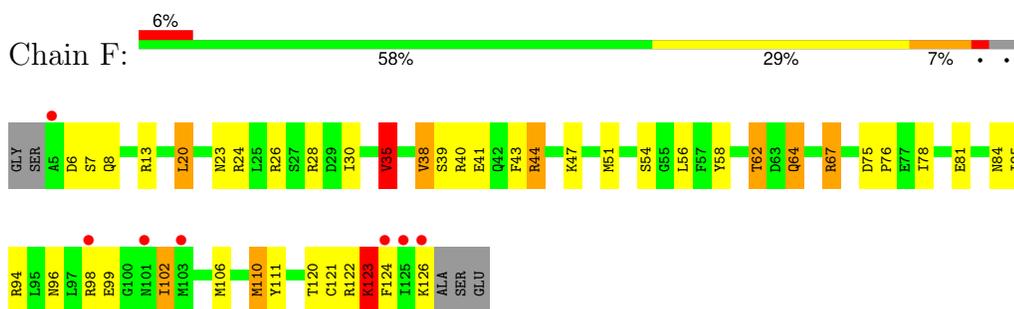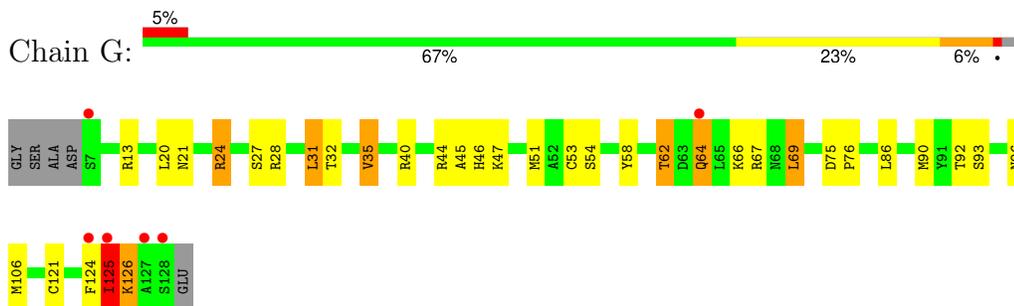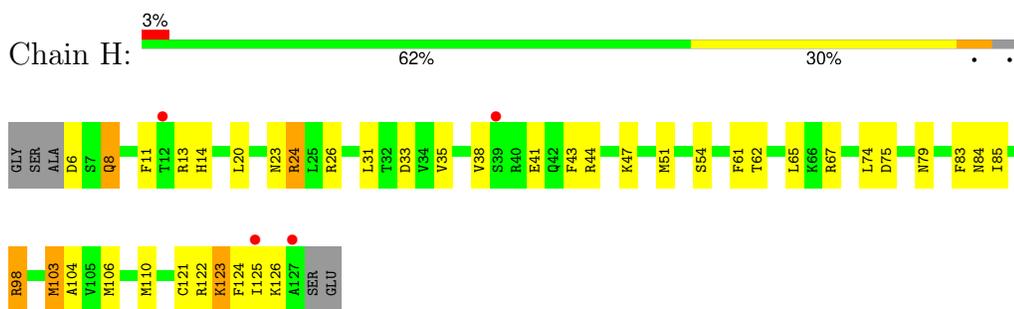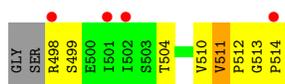
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	150.55Å 150.55Å 312.25Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	48.70 – 2.60 48.70 – 2.60	Depositor EDS
% Data completeness (in resolution range)	97.1 (48.70-2.60) 99.8 (48.70-2.60)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.25 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.219 , 0.260 0.216 , 0.257	Depositor DCC
R_{free} test set	3159 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å^2)	62.7	Xtriage
Anisotropy	0.315	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 51.4	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	9091	wwPDB-VP
Average B, all atoms (Å^2)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.09% 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	1.16	1/1022 (0.1%)	1.24	6/1377 (0.4%)
1	B	1.12	0/1012	1.25	5/1365 (0.4%)
1	C	1.01	1/1022 (0.1%)	1.26	8/1377 (0.6%)
1	D	1.11	0/1012	1.20	6/1365 (0.4%)
1	E	0.92	0/1007	1.11	2/1358 (0.1%)
1	F	1.03	1/1001 (0.1%)	1.26	4/1350 (0.3%)
1	G	0.96	0/999	1.11	1/1347 (0.1%)
1	H	0.93	0/1001	1.13	4/1350 (0.3%)
2	I	1.05	0/130	1.08	0/178
2	J	1.23	1/130 (0.8%)	1.14	0/178
2	K	1.05	0/130	1.07	0/178
2	L	0.97	0/119	1.35	3/164 (1.8%)
2	M	0.87	0/130	1.06	0/178
2	N	1.04	0/119	1.18	0/164
2	O	1.02	0/130	1.21	1/178 (0.6%)
2	P	0.96	0/130	1.27	2/178 (1.1%)
All	All	1.03	4/9094 (0.0%)	1.19	42/12285 (0.3%)

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	B	0	1
1	D	0	1
1	E	0	1
2	I	0	1
2	J	0	1
All	All	0	5

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	510	VAL	C-O	-6.28	1.17	1.24
1	C	36	ILE	CA-CB	5.74	1.60	1.54
1	A	30	ILE	CA-CB	5.21	1.60	1.54
1	F	56	LEU	C-O	5.00	1.29	1.24

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	7	SER	N-CA-C	8.54	121.11	108.14
1	F	99	GLU	N-CA-C	8.19	121.02	111.02
1	A	75	ASP	CA-C-N	8.08	127.80	119.56
1	A	75	ASP	C-N-CA	8.08	127.80	119.56
1	F	7	SER	N-CA-C	7.29	117.64	108.45
1	C	89	PHE	CA-CB-CG	6.83	120.63	113.80
1	C	115	GLU	N-CA-C	6.78	118.67	111.28
1	B	62	THR	N-CA-C	-6.66	104.78	113.17
1	D	125	ILE	CA-C-O	6.55	128.97	120.78
1	B	35	VAL	CB-CA-C	-6.49	101.16	110.83
1	C	41	GLU	N-CA-C	6.47	120.09	110.52
1	F	102	ILE	N-CA-C	6.37	117.12	110.62
1	D	93	SER	CB-CA-C	-6.32	103.57	109.83
1	A	39	SER	CB-CA-C	-6.24	108.74	117.23
1	A	79	ASN	CA-C-N	6.06	125.54	119.24
1	A	79	ASN	C-N-CA	6.06	125.54	119.24
1	B	126	LYS	N-CA-C	-6.00	104.94	112.93
1	H	75	ASP	CA-C-N	5.70	126.08	119.47
1	H	75	ASP	C-N-CA	5.70	126.08	119.47
1	C	62	THR	CB-CA-C	5.63	119.01	109.55
1	E	75	ASP	CA-C-N	5.59	125.26	119.56
1	E	75	ASP	C-N-CA	5.59	125.26	119.56
2	L	511	VAL	CA-C-N	5.58	125.59	119.90
2	L	511	VAL	C-N-CA	5.58	125.59	119.90
2	P	511	VAL	CA-C-N	-5.55	114.07	119.90
2	P	511	VAL	C-N-CA	-5.55	114.07	119.90
1	C	78	ILE	N-CA-C	5.47	116.11	108.89
1	C	62	THR	N-CA-C	-5.44	106.64	113.72
1	F	35	VAL	CB-CA-C	-5.42	102.76	110.83
1	B	70	SER	CA-C-O	5.35	124.79	118.90
1	B	64	GLN	N-CA-C	5.33	117.84	111.71
2	L	504	THR	N-CA-C	-5.33	106.66	114.39
1	H	41	GLU	N-CA-C	5.32	117.59	110.35
1	H	83	PHE	N-CA-C	-5.32	105.39	111.14
1	C	79	ASN	N-CA-C	5.31	116.34	109.65

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	45	ALA	N-CA-C	5.22	115.43	108.38
1	D	12	THR	CA-C-N	-5.19	114.37	122.73
1	D	12	THR	C-N-CA	-5.19	114.37	122.73
2	O	500	GLU	N-CA-C	5.15	117.14	109.25
1	C	119	ASP	N-CA-C	5.08	117.55	111.71
1	D	124	PHE	CA-CB-CG	5.04	118.84	113.80
1	D	62	THR	CB-CA-C	5.04	118.46	109.29

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	31	LEU	Mainchain
1	D	124	PHE	Sidechain
1	E	31	LEU	Mainchain
2	I	513	GLY	Peptide
2	J	513	GLY	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	1008	0	1023	40	0
1	B	998	0	1017	39	0
1	C	1008	0	1023	40	0
1	D	998	0	1017	40	0
1	E	993	0	1012	37	0
1	F	987	0	1007	52	0
1	G	985	0	1008	25	0
1	H	987	0	1007	42	0
2	I	126	0	124	4	0
2	J	126	0	124	5	0
2	K	126	0	124	13	0
2	L	115	0	111	6	0
2	M	126	0	124	7	0
2	N	115	0	111	6	0
2	O	126	0	124	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	P	126	0	124	5	0
3	A	26	0	0	4	0
3	B	23	0	0	2	0
3	C	11	0	0	1	0
3	D	23	0	0	0	0
3	E	12	0	0	2	0
3	F	15	0	0	2	0
3	G	15	0	0	1	0
3	H	7	0	0	3	0
3	I	1	0	0	0	0
3	J	3	0	0	0	0
3	K	1	0	0	0	0
3	L	1	0	0	1	0
3	M	1	0	0	0	0
3	N	1	0	0	0	0
3	O	1	0	0	0	0
All	All	9091	0	9080	291	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 16.

All (291) 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:8:GLN:HG3	1:B:96:ASN:ND2	1.49	1.25
1:E:8:GLN:HG3	1:F:96:ASN:ND2	1.56	1.19
1:A:24:ARG:NH1	1:A:24:ARG:HG3	1.40	1.15
1:A:24:ARG:HH11	1:A:24:ARG:CG	1.57	1.13
1:B:110:MET:HG2	1:H:110:MET:HE1	1.31	1.11
1:H:43:PHE:HE2	1:H:84:ASN:HD22	0.98	0.94
1:B:110:MET:HG2	1:H:110:MET:CE	1.99	0.93
1:B:69:LEU:HD13	1:D:69:LEU:HD13	1.51	0.91
1:C:62:THR:CG2	1:E:28:ARG:HE	1.85	0.88
1:E:96:ASN:ND2	1:F:8:GLN:HG2	1.90	0.87
1:E:8:GLN:HG3	1:F:96:ASN:HD22	1.36	0.86
1:C:106:MET:HE2	1:C:121:CYS:HB3	1.57	0.86
2:O:510:VAL:CG1	1:H:24:ARG:HH22	1.87	0.86
1:E:8:GLN:HG3	1:F:96:ASN:HD21	1.41	0.85
1:D:58:TYR:O	1:D:62:THR:HB	1.77	0.84
1:D:23:ASN:HD21	1:D:26:ARG:HH21	1.25	0.84
1:A:8:GLN:HG3	1:B:96:ASN:HD21	1.41	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:69:LEU:CD1	1:D:69:LEU:HD13	2.09	0.82
1:A:58:TYR:O	1:A:62:THR:HB	1.79	0.82
1:B:110:MET:CG	1:H:110:MET:HE1	2.08	0.82
1:H:106:MET:HE2	1:H:121:CYS:HB3	1.59	0.81
1:G:96:ASN:ND2	1:H:8:GLN:HG3	1.96	0.81
1:E:106:MET:HE2	1:E:121:CYS:HB3	1.63	0.80
1:F:106:MET:HE2	1:F:121:CYS:CB	2.11	0.80
1:F:106:MET:HE2	1:F:121:CYS:HB3	1.62	0.80
1:D:126:LYS:HE3	1:D:126:LYS:HA	1.64	0.79
1:F:58:TYR:O	1:F:62:THR:HB	1.83	0.79
1:F:92:THR:O	1:F:93:SER:HB2	1.80	0.79
2:P:512:PRO:C	2:P:514:PRO:HD3	2.07	0.79
2:I:498:ARG:HB2	1:B:6:ASP:HB2	1.65	0.77
1:D:35:VAL:HG23	1:D:44:ARG:NH1	2.01	0.76
1:H:43:PHE:HE2	1:H:84:ASN:ND2	1.78	0.76
1:A:106:MET:HE2	1:A:121:CYS:HB3	1.68	0.76
1:C:23:ASN:HD21	1:C:26:ARG:HH21	1.32	0.75
1:A:23:ASN:HD21	1:A:26:ARG:HH21	1.34	0.75
2:J:513:GLY:O	2:J:514:PRO:O	2.05	0.75
1:F:81:GLU:O	1:F:85:ILE:HG13	1.86	0.74
1:G:66:LYS:HA	1:G:69:LEU:HD22	1.68	0.74
1:G:31:LEU:HD12	1:H:51:MET:SD	2.28	0.73
3:G:130:HOH:O	1:H:95:LEU:HB2	1.87	0.73
1:B:122:ARG:NH1	3:B:151:HOH:O	2.22	0.72
1:C:13:ARG:HG2	3:L:74:HOH:O	1.89	0.72
1:A:24:ARG:HG3	1:A:24:ARG:HH11	0.66	0.71
2:K:498:ARG:HB2	1:D:6:ASP:HB3	1.72	0.71
1:C:58:TYR:O	1:C:62:THR:HB	1.91	0.71
1:C:64:GLN:H	1:C:64:GLN:CD	1.99	0.70
1:B:122:ARG:C	1:B:124:PHE:H	1.99	0.69
1:D:23:ASN:ND2	1:D:26:ARG:HH21	1.90	0.69
2:O:510:VAL:CG1	1:H:24:ARG:NH2	2.56	0.69
1:B:92:THR:O	1:B:93:SER:HB2	1.92	0.69
1:D:24:ARG:HG3	1:D:24:ARG:HH11	1.58	0.69
1:G:106:MET:HE2	1:G:121:CYS:HB3	1.76	0.68
1:E:8:GLN:OE1	1:F:94:ARG:NH1	2.26	0.68
1:A:24:ARG:NH1	1:A:24:ARG:CG	2.28	0.68
1:C:97:LEU:HD21	1:C:105:VAL:HG11	1.76	0.68
1:H:43:PHE:CE2	1:H:84:ASN:ND2	2.58	0.68
1:H:98:ARG:HH11	1:H:98:ARG:HB3	1.59	0.67
1:E:94:ARG:HB3	1:F:8:GLN:HE22	1.59	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:35:VAL:CG2	1:D:44:ARG:HH11	2.07	0.67
1:H:61:PHE:O	1:H:67:ARG:HG3	1.95	0.67
1:D:24:ARG:HG3	1:D:24:ARG:NH1	2.09	0.67
2:O:510:VAL:HG13	1:H:24:ARG:HH22	1.60	0.67
1:A:24:ARG:HD3	3:A:140:HOH:O	1.96	0.66
1:G:24:ARG:HG3	2:P:511:VAL:HB	1.76	0.66
2:O:504:THR:HG22	2:O:504:THR:O	1.95	0.66
1:B:20:LEU:O	1:B:24:ARG:HG2	1.95	0.66
1:F:106:MET:CE	1:F:121:CYS:HB3	2.26	0.66
1:C:62:THR:HG23	1:E:28:ARG:NE	2.10	0.65
2:L:512:PRO:C	2:L:514:PRO:HD2	2.21	0.65
1:F:75:ASP:O	1:F:78:ILE:HG12	1.97	0.65
1:B:122:ARG:O	1:B:124:PHE:N	2.29	0.65
1:C:62:THR:CG2	1:E:28:ARG:NE	2.59	0.64
1:F:28:ARG:HB2	1:F:30:ILE:HD12	1.80	0.64
1:B:58:TYR:O	1:B:62:THR:HB	1.97	0.64
1:G:31:LEU:CD1	1:H:51:MET:SD	2.86	0.64
1:C:62:THR:HG23	1:E:28:ARG:HE	1.64	0.63
1:D:35:VAL:CG2	1:D:44:ARG:NH1	2.62	0.63
1:E:44:ARG:NH1	3:E:130:HOH:O	2.32	0.63
1:D:97:LEU:HD13	1:D:102:ILE:CD1	2.28	0.62
2:I:512:PRO:HB2	2:I:514:PRO:HD3	1.80	0.62
1:D:106:MET:HE2	1:D:121:CYS:HB3	1.81	0.62
1:D:23:ASN:HD21	1:D:26:ARG:NH2	1.95	0.62
2:M:498:ARG:HA	1:F:6:ASP:O	1.98	0.62
1:D:75:ASP:OD1	1:D:77:GLU:HB2	1.98	0.62
1:E:96:ASN:HD22	1:F:8:GLN:HG2	1.62	0.62
2:N:513:GLY:O	2:N:514:PRO:C	2.41	0.62
1:G:106:MET:HE1	1:G:125:ILE:HD11	1.81	0.62
1:G:47:LYS:O	1:G:51:MET:HG3	2.00	0.61
1:G:21:ASN:HA	1:G:24:ARG:HG2	1.83	0.61
1:D:66:LYS:HA	1:D:69:LEU:HD22	1.81	0.61
1:D:92:THR:O	1:D:93:SER:HB2	2.00	0.61
1:H:98:ARG:HB3	1:H:98:ARG:NH1	2.15	0.61
1:F:28:ARG:HB2	1:F:30:ILE:CD1	2.29	0.61
1:G:64:GLN:N	1:G:64:GLN:OE1	2.32	0.61
1:H:35:VAL:HB	3:H:137:HOH:O	2.01	0.61
2:K:504:THR:O	2:K:504:THR:HG22	2.01	0.60
2:O:513:GLY:N	2:O:514:PRO:HD3	2.15	0.60
1:D:97:LEU:HD13	1:D:102:ILE:HD12	1.84	0.60
1:D:126:LYS:HA	1:D:126:LYS:CE	2.30	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:40:ARG:NH2	3:F:142:HOH:O	2.22	0.59
1:H:92:THR:O	1:H:93:SER:HB2	2.03	0.59
1:A:98:ARG:HG3	1:B:6:ASP:OD1	2.03	0.59
1:B:124:PHE:C	1:B:126:LYS:H	2.11	0.59
1:C:64:GLN:HE22	2:N:514:PRO:HD2	1.68	0.59
1:G:53:CYS:SG	1:G:90:MET:HG2	2.43	0.58
1:G:51:MET:SD	1:H:31:LEU:HD12	2.44	0.58
1:G:47:LYS:NZ	1:G:67:ARG:O	2.37	0.58
1:C:92:THR:O	1:C:93:SER:HB2	2.04	0.57
1:E:96:ASN:ND2	1:F:8:GLN:HE21	2.02	0.57
1:F:64:GLN:CD	1:F:64:GLN:H	2.12	0.57
1:F:122:ARG:C	1:F:124:PHE:H	2.12	0.57
1:A:41:GLU:HG3	1:A:80:PRO:HB3	1.87	0.57
1:A:62:THR:HG21	3:A:146:HOH:O	2.05	0.57
1:B:6:ASP:O	1:B:7:SER:HB2	2.05	0.56
1:E:92:THR:O	1:E:93:SER:HB2	2.04	0.56
1:B:69:LEU:HD13	1:D:69:LEU:CD1	2.29	0.56
1:C:64:GLN:NE2	2:N:514:PRO:HG2	2.21	0.56
1:A:51:MET:SD	1:B:31:LEU:HD12	2.46	0.56
1:B:110:MET:CB	1:H:110:MET:HE1	2.36	0.56
1:D:127:ALA:O	1:D:128:SER:HB2	2.06	0.56
2:L:513:GLY:N	2:L:514:PRO:HD2	2.21	0.56
1:G:58:TYR:O	1:G:62:THR:HB	2.06	0.56
1:B:126:LYS:HE3	1:B:126:LYS:HA	1.88	0.55
2:O:510:VAL:HG13	1:H:24:ARG:NH2	2.22	0.55
1:H:35:VAL:HG22	1:H:44:ARG:HD2	1.88	0.55
1:C:8:GLN:HB2	1:D:96:ASN:ND2	2.21	0.55
1:H:122:ARG:O	1:H:124:PHE:N	2.40	0.55
1:G:35:VAL:HG22	1:G:44:ARG:HH11	1.70	0.55
1:E:44:ARG:HD2	3:E:130:HOH:O	2.05	0.55
1:C:111:TYR:O	1:F:67:ARG:NH2	2.41	0.54
1:E:94:ARG:HB3	1:F:8:GLN:NE2	2.21	0.54
2:K:498:ARG:CB	1:D:6:ASP:HB3	2.37	0.54
2:K:513:GLY:N	2:K:514:PRO:CD	2.71	0.54
2:P:512:PRO:HB2	2:P:514:PRO:HD3	1.88	0.54
1:A:8:GLN:OE1	1:B:94:ARG:NH1	2.41	0.54
1:E:14:HIS:O	1:E:18:VAL:HG23	2.08	0.54
1:G:32:THR:HA	1:G:46:HIS:CD2	2.43	0.54
1:C:122:ARG:C	1:C:124:PHE:H	2.16	0.54
1:C:64:GLN:HE21	2:N:514:PRO:HG2	1.73	0.53
1:A:92:THR:O	1:A:93:SER:HB2	2.07	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:LEU:O	1:A:90:MET:HG3	2.09	0.53
1:B:126:LYS:C	1:B:128:SER:H	2.17	0.53
1:G:93:SER:HA	1:H:14:HIS:CD2	2.44	0.53
1:E:43:PHE:HE2	1:E:84:ASN:HD22	1.57	0.53
2:M:513:GLY:N	2:M:514:PRO:CD	2.72	0.53
1:C:96:ASN:ND2	1:D:8:GLN:HG3	2.24	0.52
2:J:512:PRO:HB2	2:J:514:PRO:HD3	1.90	0.52
1:F:123:LYS:O	1:F:123:LYS:HG3	2.08	0.52
1:A:66:LYS:HA	1:A:69:LEU:HD23	1.90	0.52
1:A:51:MET:SD	1:B:31:LEU:CD1	2.98	0.52
1:C:97:LEU:CD2	1:C:105:VAL:HG11	2.38	0.52
1:A:62:THR:CG2	3:A:146:HOH:O	2.57	0.52
1:E:8:GLN:CG	1:F:96:ASN:ND2	2.50	0.52
1:F:110:MET:HG2	1:F:111:TYR:N	2.24	0.52
1:C:102:ILE:HG23	1:C:103:MET:HE2	1.91	0.51
1:G:28:ARG:HD2	2:P:513:GLY:HA2	1.92	0.51
1:C:46:HIS:CD2	1:D:48:THR:HG21	2.46	0.51
1:E:110:MET:HE3	1:E:110:MET:O	2.10	0.51
1:B:110:MET:HE1	1:H:122:ARG:NE	2.26	0.51
1:A:125:ILE:HG22	1:A:128:SER:OG	2.11	0.51
1:H:62:THR:O	1:H:62:THR:HG22	2.09	0.51
1:C:124:PHE:C	1:C:126:LYS:H	2.18	0.51
1:E:124:PHE:C	1:E:126:LYS:H	2.19	0.51
1:H:33:ASP:OD2	1:H:33:ASP:N	2.44	0.50
1:B:47:LYS:O	1:B:51:MET:HG3	2.11	0.50
1:E:98:ARG:HG2	1:F:6:ASP:OD1	2.12	0.50
1:B:6:ASP:O	1:B:7:SER:CB	2.59	0.50
2:M:504:THR:O	2:M:504:THR:HG22	2.12	0.50
1:F:35:VAL:HG13	1:F:44:ARG:HG2	1.93	0.49
1:B:106:MET:HE2	1:B:121:CYS:HB3	1.93	0.49
1:D:127:ALA:O	1:D:128:SER:CB	2.60	0.49
1:G:126:LYS:HE3	1:G:126:LYS:HA	1.93	0.49
1:A:20:LEU:O	1:A:24:ARG:HG2	2.13	0.49
2:K:513:GLY:N	2:K:514:PRO:HD3	2.27	0.49
1:C:103:MET:HA	1:C:103:MET:CE	2.42	0.49
1:B:122:ARG:C	1:B:124:PHE:N	2.63	0.49
1:D:92:THR:O	1:D:93:SER:CB	2.61	0.48
1:E:96:ASN:HD21	1:F:8:GLN:HG2	1.72	0.48
2:O:504:THR:O	2:O:504:THR:CG2	2.61	0.48
1:A:96:ASN:ND2	1:B:8:GLN:HG2	2.28	0.48
1:C:103:MET:HE2	1:C:103:MET:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:501:ILE:HG13	2:K:502:ILE:N	2.27	0.48
1:E:125:ILE:HG22	1:E:125:ILE:O	2.13	0.48
1:A:94:ARG:HB3	1:B:8:GLN:NE2	2.28	0.48
2:M:512:PRO:HB2	1:F:28:ARG:HH12	1.78	0.48
1:C:13:ARG:HD3	2:L:504:THR:O	2.13	0.47
1:E:8:GLN:CG	1:F:96:ASN:HD22	2.17	0.47
1:C:8:GLN:CD	1:D:94:ARG:HG2	2.39	0.47
1:D:63:ASP:OD1	1:D:63:ASP:C	2.57	0.47
1:C:64:GLN:HE22	2:N:514:PRO:CD	2.27	0.47
1:C:75:ASP:HB3	1:C:78:ILE:HG12	1.96	0.47
1:E:6:ASP:HA	1:F:98:ARG:HB3	1.95	0.47
1:F:120:THR:O	1:F:124:PHE:HB2	2.15	0.47
1:G:96:ASN:CG	1:H:8:GLN:HG3	2.39	0.47
1:H:122:ARG:C	1:H:124:PHE:N	2.72	0.47
1:E:6:ASP:OD1	1:F:98:ARG:HD3	2.14	0.47
1:F:43:PHE:HE2	1:F:84:ASN:HD22	1.63	0.46
1:H:44:ARG:O	3:H:133:HOH:O	2.20	0.46
1:E:21:ASN:O	1:E:25:LEU:HG	2.16	0.46
2:M:512:PRO:C	2:M:514:PRO:HD2	2.40	0.46
1:C:21:ASN:HA	1:C:24:ARG:HG2	1.96	0.46
1:F:106:MET:HE2	1:F:121:CYS:HB2	1.96	0.46
1:A:38:VAL:HG22	1:A:74:LEU:HD12	1.96	0.46
1:C:35:VAL:HG22	1:C:44:ARG:HD2	1.97	0.46
1:H:122:ARG:O	1:H:123:LYS:C	2.59	0.46
2:K:498:ARG:HA	1:D:6:ASP:C	2.41	0.46
1:F:20:LEU:O	1:F:24:ARG:HG2	2.16	0.46
1:F:123:LYS:O	1:F:123:LYS:CG	2.64	0.46
1:C:118:VAL:O	1:C:121:CYS:HB2	2.16	0.45
1:D:20:LEU:O	1:D:24:ARG:HG2	2.16	0.45
1:C:86:LEU:HD12	1:C:108:THR:HB	1.99	0.45
1:G:124:PHE:C	1:G:126:LYS:H	2.25	0.45
1:A:23:ASN:ND2	1:A:26:ARG:HE	2.15	0.45
2:I:504:THR:HG22	2:I:504:THR:O	2.16	0.45
1:D:66:LYS:O	1:D:67:ARG:C	2.60	0.45
2:M:501:ILE:HG13	2:M:502:ILE:N	2.31	0.45
1:H:79:ASN:OD1	1:H:104:ALA:HB1	2.17	0.45
1:H:11:PHE:HB2	1:H:14:HIS:HB2	1.99	0.45
1:B:88:ASP:OD2	3:B:141:HOH:O	2.21	0.44
2:K:498:ARG:CA	1:D:6:ASP:HB3	2.47	0.44
1:A:123:LYS:CG	1:A:123:LYS:O	2.64	0.44
2:K:510:VAL:CG1	1:D:24:ARG:HH12	2.30	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:118:VAL:O	1:A:119:ASP:C	2.60	0.44
1:F:67:ARG:NH1	3:F:134:HOH:O	2.49	0.44
1:F:122:ARG:O	1:F:124:PHE:N	2.51	0.44
1:A:6:ASP:OD1	1:B:98:ARG:HD2	2.17	0.44
1:B:124:PHE:C	1:B:126:LYS:N	2.76	0.44
1:H:47:LYS:O	1:H:51:MET:HG3	2.18	0.44
3:C:137:HOH:O	1:F:62:THR:CG2	2.65	0.44
1:H:62:THR:O	1:H:62:THR:CG2	2.65	0.44
1:F:85:ILE:HD13	1:F:96:ASN:O	2.17	0.43
1:A:125:ILE:CG2	1:A:128:SER:OG	2.66	0.43
1:B:111:TYR:HD1	1:H:103:MET:HE3	1.84	0.43
1:B:126:LYS:C	1:B:128:SER:N	2.76	0.43
1:D:24:ARG:HH11	1:D:24:ARG:CG	2.24	0.43
1:E:29:ASP:OD2	1:E:32:THR:OG1	2.30	0.43
1:F:23:ASN:HD21	1:F:26:ARG:HH21	1.66	0.43
2:P:510:VAL:O	2:P:511:VAL:C	2.61	0.43
1:C:96:ASN:HD21	1:D:8:GLN:HG3	1.83	0.43
1:F:28:ARG:CB	1:F:30:ILE:HD12	2.48	0.43
1:G:92:THR:O	1:G:93:SER:CB	2.67	0.43
2:L:513:GLY:N	2:L:514:PRO:CD	2.82	0.43
1:F:106:MET:HE2	1:F:121:CYS:C	2.43	0.43
1:E:122:ARG:C	1:E:124:PHE:H	2.26	0.43
1:A:110:MET:HE3	1:A:110:MET:HB2	1.89	0.43
1:A:122:ARG:C	1:A:124:PHE:N	2.76	0.43
1:E:121:CYS:O	1:E:124:PHE:HB3	2.20	0.42
2:M:512:PRO:CB	2:M:514:PRO:HD2	2.49	0.42
1:F:122:ARG:C	1:F:124:PHE:N	2.75	0.42
2:J:512:PRO:HB2	2:J:514:PRO:CD	2.49	0.42
1:E:53:CYS:SG	1:E:90:MET:HG2	2.59	0.42
1:F:75:ASP:HA	1:F:76:PRO:HD3	1.80	0.42
1:A:126:LYS:HE3	1:A:126:LYS:HA	2.00	0.42
1:B:6:ASP:HB3	1:B:7:SER:H	1.68	0.42
1:H:23:ASN:HD21	1:H:26:ARG:HH21	1.68	0.42
2:K:500:GLU:H	2:K:500:GLU:HG3	1.67	0.42
2:K:513:GLY:HA2	1:D:28:ARG:HD2	2.02	0.42
1:H:35:VAL:CG2	3:H:137:HOH:O	2.68	0.42
1:G:35:VAL:HG22	1:G:44:ARG:NH1	2.34	0.42
1:E:66:LYS:HA	1:E:69:LEU:HD22	2.02	0.42
1:E:87:LEU:HD12	1:E:87:LEU:HA	1.85	0.42
1:G:75:ASP:HA	1:G:76:PRO:HD3	1.79	0.41
2:K:504:THR:O	2:K:504:THR:CG2	2.68	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:9:ILE:HG12	2:J:501:ILE:HG12	2.03	0.41
1:A:23:ASN:HD22	1:A:26:ARG:HE	1.67	0.41
1:A:75:ASP:HA	1:A:76:PRO:HD3	1.84	0.41
1:C:86:LEU:HD13	1:C:112:LEU:HD12	2.03	0.41
1:C:122:ARG:C	1:C:124:PHE:N	2.78	0.41
1:A:26:ARG:HD3	1:A:91:TYR:CE1	2.55	0.41
1:A:122:ARG:C	1:A:124:PHE:H	2.29	0.41
1:C:13:ARG:CD	2:L:504:THR:O	2.69	0.41
1:A:124:PHE:O	1:A:126:LYS:N	2.54	0.41
1:B:110:MET:CE	1:H:122:ARG:NE	2.84	0.41
1:F:28:ARG:CB	1:F:30:ILE:CD1	2.98	0.41
1:B:79:ASN:HA	1:B:80:PRO:HD3	1.98	0.41
1:E:11:PHE:CD1	1:F:89:PHE:HE1	2.38	0.41
1:H:38:VAL:HG22	1:H:74:LEU:HD12	2.02	0.41
2:I:512:PRO:C	2:I:514:PRO:HD3	2.47	0.40
2:J:513:GLY:N	2:J:514:PRO:CD	2.84	0.40
1:C:6:ASP:OD2	1:D:98:ARG:HG3	2.21	0.40
1:F:38:VAL:HG13	1:F:78:ILE:HB	2.02	0.40
1:G:99:GLU:O	1:G:102:ILE:HG22	2.21	0.40
1:H:20:LEU:O	1:H:20:LEU:HG	2.17	0.40
1:A:48:THR:HG23	3:A:153:HOH:O	2.21	0.40
1:C:28:ARG:NH1	2:L:512:PRO:O	2.52	0.40
1:C:55:GLY:HA3	1:E:29:ASP:OD1	2.21	0.40
2:K:498:ARG:HA	1:D:6:ASP:O	2.21	0.40
1:F:47:LYS:O	1:F:51:MET:HG3	2.22	0.40
1:C:98:ARG:O	1:C:102:ILE:HB	2.22	0.40
2:N:513:GLY:N	2:N:514:PRO:HD3	2.37	0.40
1:F:38:VAL:CG1	1:F:78:ILE:HB	2.51	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	123/127 (97%)	111 (90%)	11 (9%)	1 (1%)	16	34
1	B	122/127 (96%)	112 (92%)	6 (5%)	4 (3%)	3	5
1	C	123/127 (97%)	112 (91%)	8 (6%)	3 (2%)	5	9
1	D	122/127 (96%)	109 (89%)	12 (10%)	1 (1%)	16	34
1	E	121/127 (95%)	113 (93%)	7 (6%)	1 (1%)	16	34
1	F	120/127 (94%)	111 (92%)	7 (6%)	2 (2%)	7	16
1	G	120/127 (94%)	110 (92%)	9 (8%)	1 (1%)	16	34
1	H	120/127 (94%)	108 (90%)	11 (9%)	1 (1%)	16	34
2	I	15/19 (79%)	15 (100%)	0	0	100	100
2	J	15/19 (79%)	15 (100%)	0	0	100	100
2	K	15/19 (79%)	14 (93%)	1 (7%)	0	100	100
2	L	14/19 (74%)	14 (100%)	0	0	100	100
2	M	15/19 (79%)	14 (93%)	1 (7%)	0	100	100
2	N	14/19 (74%)	14 (100%)	0	0	100	100
2	O	15/19 (79%)	13 (87%)	2 (13%)	0	100	100
2	P	15/19 (79%)	14 (93%)	1 (7%)	0	100	100
All	All	1089/1168 (93%)	999 (92%)	76 (7%)	14 (1%)	10	21

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	7	SER
1	B	123	LYS
1	A	125	ILE
1	C	123	LYS
1	C	125	ILE
1	F	123	LYS
1	G	125	ILE
1	D	126	LYS
1	E	125	ILE
1	H	123	LYS
1	B	125	ILE
1	B	127	ALA
1	F	39	SER
1	C	102	ILE

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	114/115 (99%)	96 (84%)	18 (16%)	2	3
1	B	113/115 (98%)	99 (88%)	14 (12%)	4	7
1	C	114/115 (99%)	96 (84%)	18 (16%)	2	3
1	D	113/115 (98%)	105 (93%)	8 (7%)	12	26
1	E	113/115 (98%)	99 (88%)	14 (12%)	4	7
1	F	112/115 (97%)	97 (87%)	15 (13%)	3	6
1	G	112/115 (97%)	98 (88%)	14 (12%)	3	7
1	H	112/115 (97%)	101 (90%)	11 (10%)	6	13
2	I	15/16 (94%)	13 (87%)	2 (13%)	3	6
2	J	15/16 (94%)	9 (60%)	6 (40%)	0	0
2	K	15/16 (94%)	14 (93%)	1 (7%)	13	29
2	L	14/16 (88%)	11 (79%)	3 (21%)	1	1
2	M	15/16 (94%)	13 (87%)	2 (13%)	3	6
2	N	14/16 (88%)	11 (79%)	3 (21%)	1	1
2	O	15/16 (94%)	12 (80%)	3 (20%)	1	2
2	P	15/16 (94%)	12 (80%)	3 (20%)	1	2
All	All	1021/1048 (97%)	886 (87%)	135 (13%)	3	6

All (135) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	GLN
1	A	10	GLN
1	A	13	ARG
1	A	20	LEU
1	A	24	ARG
1	A	31	LEU
1	A	54	SER
1	A	59	SER

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Mol	Chain	Res	Type
1	A	62	THR
1	A	67	ARG
1	A	94	ARG
1	A	98	ARG
1	A	102	ILE
1	A	115	GLU
1	A	123	LYS
1	A	125	ILE
1	A	126	LYS
1	A	129	GLU
2	I	500	GLU
2	I	502	ILE
1	B	7	SER
1	B	10	GLN
1	B	13	ARG
1	B	20	LEU
1	B	24	ARG
1	B	35	VAL
1	B	62	THR
1	B	64	GLN
1	B	69	LEU
1	B	98	ARG
1	B	102	ILE
1	B	106	MET
1	B	120	THR
1	B	126	LYS
2	J	498	ARG
2	J	499	SER
2	J	500	GLU
2	J	501	ILE
2	J	502	ILE
2	J	504	THR
1	C	23	ASN
1	C	31	LEU
1	C	40	ARG
1	C	54	SER
1	C	62	THR
1	C	64	GLN
1	C	65	LEU
1	C	69	LEU
1	C	94	ARG
1	C	98	ARG

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Mol	Chain	Res	Type
1	C	102	ILE
1	C	103	MET
1	C	106	MET
1	C	110	MET
1	C	115	GLU
1	C	119	ASP
1	C	123	LYS
1	C	129	GLU
2	K	500	GLU
1	D	8	GLN
1	D	31	LEU
1	D	62	THR
1	D	64	GLN
1	D	69	LEU
1	D	77	GLU
1	D	102	ILE
1	D	126	LYS
2	L	499	SER
2	L	500	GLU
2	L	504	THR
1	E	8	GLN
1	E	24	ARG
1	E	31	LEU
1	E	35	VAL
1	E	42	GLN
1	E	62	THR
1	E	64	GLN
1	E	67	ARG
1	E	69	LEU
1	E	70	SER
1	E	86	LEU
1	E	106	MET
1	E	115	GLU
1	E	128	SER
2	M	500	GLU
2	M	502	ILE
1	F	13	ARG
1	F	20	LEU
1	F	35	VAL
1	F	38	VAL
1	F	41	GLU
1	F	44	ARG

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Mol	Chain	Res	Type
1	F	54	SER
1	F	62	THR
1	F	64	GLN
1	F	67	ARG
1	F	93	SER
1	F	102	ILE
1	F	110	MET
1	F	123	LYS
1	F	126	LYS
2	N	499	SER
2	N	502	ILE
2	N	504	THR
1	G	13	ARG
1	G	20	LEU
1	G	24	ARG
1	G	27	SER
1	G	31	LEU
1	G	35	VAL
1	G	40	ARG
1	G	54	SER
1	G	62	THR
1	G	64	GLN
1	G	69	LEU
1	G	86	LEU
1	G	125	ILE
1	G	126	LYS
2	O	498	ARG
2	O	500	GLU
2	O	501	ILE
1	H	6	ASP
1	H	8	GLN
1	H	13	ARG
1	H	24	ARG
1	H	54	SER
1	H	65	LEU
1	H	85	ILE
1	H	98	ARG
1	H	103	MET
1	H	125	ILE
1	H	126	LYS
2	P	498	ARG
2	P	499	SER

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Mol	Chain	Res	Type
2	P	504	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	ASN
1	A	96	ASN
1	B	8	GLN
1	B	10	GLN
1	B	23	ASN
1	B	64	GLN
1	B	68	ASN
1	C	8	GLN
1	C	10	GLN
1	C	23	ASN
1	C	64	GLN
1	C	96	ASN
1	D	23	ASN
1	D	96	ASN
1	D	113	GLN
1	E	23	ASN
1	E	79	ASN
1	E	84	ASN
1	E	96	ASN
1	F	8	GLN
1	F	23	ASN
1	F	79	ASN
1	F	84	ASN
1	F	96	ASN
1	F	101	ASN
1	G	8	GLN
1	G	14	HIS
1	G	23	ASN
1	G	68	ASN
1	G	84	ASN
1	G	96	ASN
1	H	23	ASN
1	H	42	GLN
1	H	96	ASN

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	125/127 (98%)	0.08	6 (4%)	36	31	40, 58, 98, 124	0
1	B	124/127 (97%)	-0.01	4 (3%)	50	45	41, 56, 95, 116	0
1	C	125/127 (98%)	0.41	9 (7%)	23	18	46, 70, 112, 134	0
1	D	124/127 (97%)	-0.12	3 (2%)	59	54	43, 55, 98, 114	0
1	E	123/127 (96%)	0.18	4 (3%)	49	43	48, 67, 97, 125	0
1	F	122/127 (96%)	0.32	7 (5%)	30	25	50, 67, 100, 115	0
1	G	122/127 (96%)	0.25	6 (4%)	36	30	50, 72, 103, 125	0
1	H	122/127 (96%)	0.43	4 (3%)	49	43	55, 75, 107, 117	0
2	I	17/19 (89%)	1.12	5 (29%)	1	1	59, 70, 109, 116	0
2	J	17/19 (89%)	0.56	3 (17%)	4	3	49, 58, 105, 113	0
2	K	17/19 (89%)	1.06	3 (17%)	4	3	61, 81, 119, 122	0
2	L	16/19 (84%)	0.97	4 (25%)	2	2	64, 77, 104, 104	0
2	M	17/19 (89%)	0.80	3 (17%)	4	3	68, 82, 115, 122	0
2	N	16/19 (84%)	1.16	3 (18%)	4	3	61, 78, 107, 107	0
2	O	17/19 (89%)	0.96	3 (17%)	4	3	68, 93, 123, 126	0
2	P	17/19 (89%)	1.44	4 (23%)	2	2	79, 97, 122, 127	0
All	All	1121/1168 (95%)	0.29	71 (6%)	27	22	40, 68, 109, 134	0

All (71) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	127	ALA	6.0
2	P	514	PRO	5.4
2	K	514	PRO	5.3
1	F	125	ILE	5.3
1	A	5	ALA	4.9

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Mol	Chain	Res	Type	RSRZ
1	B	5	ALA	4.6
1	A	127	ALA	4.2
1	D	125	ILE	4.2
1	F	126	LYS	4.1
2	I	514	PRO	4.1
1	B	127	ALA	4.0
1	D	127	ALA	4.0
2	I	499	SER	3.9
2	L	514	PRO	3.8
1	C	125	ILE	3.8
1	G	127	ALA	3.8
1	F	5	ALA	3.8
1	C	5	ALA	3.7
1	E	127	ALA	3.6
1	G	125	ILE	3.6
1	H	125	ILE	3.5
1	E	124	PHE	3.4
2	M	514	PRO	3.4
2	N	514	PRO	3.4
1	D	5	ALA	3.3
2	L	501	ILE	3.3
2	P	501	ILE	3.3
2	I	513	GLY	3.2
2	K	513	GLY	3.2
2	I	501	ILE	3.2
2	O	502	ILE	3.2
2	J	514	PRO	3.1
1	C	97	LEU	3.1
1	B	125	ILE	3.0
2	N	501	ILE	3.0
2	J	498	ARG	3.0
1	C	40	ARG	2.9
2	N	499	SER	2.9
1	F	101	ASN	2.8
2	P	502	ILE	2.8
1	C	64	GLN	2.8
2	M	501	ILE	2.8
2	O	514	PRO	2.8
2	O	501	ILE	2.7
2	L	513	GLY	2.7
1	A	125	ILE	2.7
1	C	103	MET	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	127	ALA	2.6
2	J	499	SER	2.5
2	P	498	ARG	2.5
1	F	124	PHE	2.5
1	B	123	LYS	2.5
1	A	126	LYS	2.5
2	M	513	GLY	2.5
1	G	7	SER	2.4
1	C	98	ARG	2.4
1	A	128	SER	2.4
2	K	499	SER	2.4
1	A	6	ASP	2.4
1	E	125	ILE	2.3
2	I	500	GLU	2.3
1	H	39	SER	2.3
1	G	64	GLN	2.2
2	L	499	SER	2.2
1	H	12	THR	2.2
1	G	128	SER	2.1
1	C	106	MET	2.1
1	F	103	MET	2.0
1	E	64	GLN	2.0
1	G	124	PHE	2.0
1	F	98	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 ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.