Full wwPDB X-ray Structure Validation Report (i)

Aug 6, 2023 – 06:43 AM EDT

PDB ID	:	1KCA
Title	:	Crystal Structure of the lambda Repressor C-terminal Domain Octamer
Authors	:	Bell, C.E.; Lewis, M.
Deposited on	:	2001-11-07
Resolution	:	2.91 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

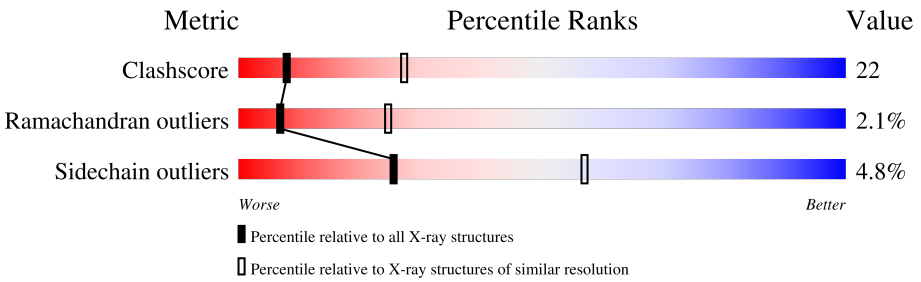
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.91 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	2531 (2.94-2.90)
Ramachandran outliers	138981	2462 (2.94-2.90)
Sidechain outliers	138945	2464 (2.94-2.90)

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%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	109	66% 26% • 7%
1	B	109	51% 36% 5% • 7%
1	C	109	49% 38% 6% 7%
1	D	109	59% 30% • 7%
1	E	109	54% 34% 5% 7%
1	F	109	49% 38% 6% 7%
1	G	109	56% 36% • 7%
1	H	109	65% 25% • 7%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 6160 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 REPRESSOR PROTEIN CI.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	101	770	491	121	152	6	0	0	0
1	B	101	770	491	121	152	6	0	0	0
1	C	101	770	491	121	152	6	0	0	0
1	D	101	770	491	121	152	6	0	0	0
1	E	101	770	491	121	152	6	0	0	0
1	F	101	770	491	121	152	6	0	0	0
1	G	101	770	491	121	152	6	0	0	0
1	H	101	770	491	121	152	6	0	0	0

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	128	GLY	-	SEE REMARK 999	UNP P03034
A	129	SER	-	SEE REMARK 999	UNP P03034
A	130	HIS	-	SEE REMARK 999	UNP P03034
A	131	MET	-	SEE REMARK 999	UNP P03034
B	128	GLY	-	SEE REMARK 999	UNP P03034
B	129	SER	-	SEE REMARK 999	UNP P03034
B	130	HIS	-	SEE REMARK 999	UNP P03034
B	131	MET	-	SEE REMARK 999	UNP P03034
C	128	GLY	-	SEE REMARK 999	UNP P03034
C	129	SER	-	SEE REMARK 999	UNP P03034
C	130	HIS	-	SEE REMARK 999	UNP P03034
C	131	MET	-	SEE REMARK 999	UNP P03034
D	128	GLY	-	SEE REMARK 999	UNP P03034

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Chain	Residue	Modelled	Actual	Comment	Reference
D	129	SER	-	SEE REMARK 999	UNP P03034
D	130	HIS	-	SEE REMARK 999	UNP P03034
D	131	MET	-	SEE REMARK 999	UNP P03034
E	128	GLY	-	SEE REMARK 999	UNP P03034
E	129	SER	-	SEE REMARK 999	UNP P03034
E	130	HIS	-	SEE REMARK 999	UNP P03034
E	131	MET	-	SEE REMARK 999	UNP P03034
F	128	GLY	-	SEE REMARK 999	UNP P03034
F	129	SER	-	SEE REMARK 999	UNP P03034
F	130	HIS	-	SEE REMARK 999	UNP P03034
F	131	MET	-	SEE REMARK 999	UNP P03034
G	128	GLY	-	SEE REMARK 999	UNP P03034
G	129	SER	-	SEE REMARK 999	UNP P03034
G	130	HIS	-	SEE REMARK 999	UNP P03034
G	131	MET	-	SEE REMARK 999	UNP P03034
H	128	GLY	-	SEE REMARK 999	UNP P03034
H	129	SER	-	SEE REMARK 999	UNP P03034
H	130	HIS	-	SEE REMARK 999	UNP P03034
H	131	MET	-	SEE REMARK 999	UNP P03034

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. 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. 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.

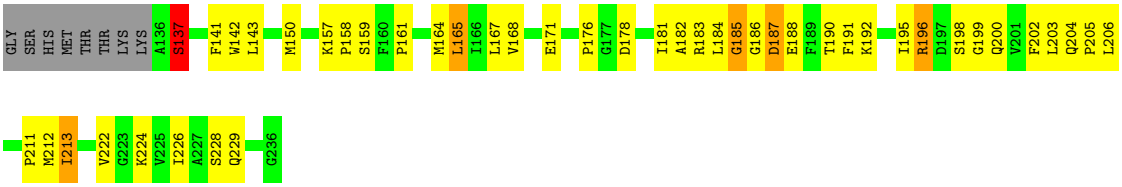
Note EDS was not executed.

• Molecule 1: REPRESSOR PROTEIN CI

Chain A:

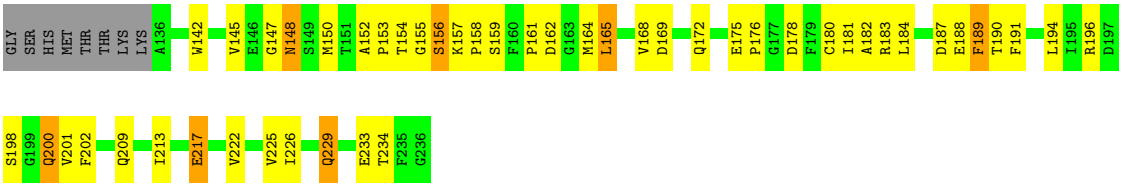
• Molecule 1: REPRESSOR PROTEIN CI

Chain B:



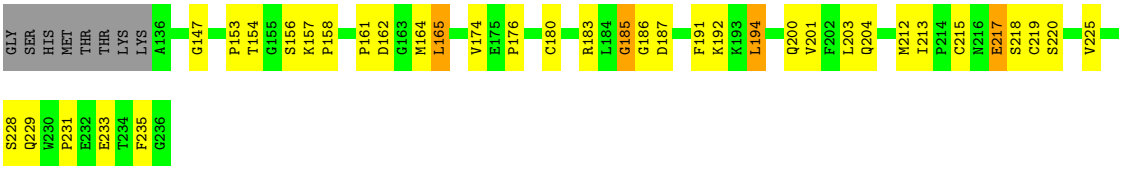
• Molecule 1: REPRESSOR PROTEIN CI

Chain C:



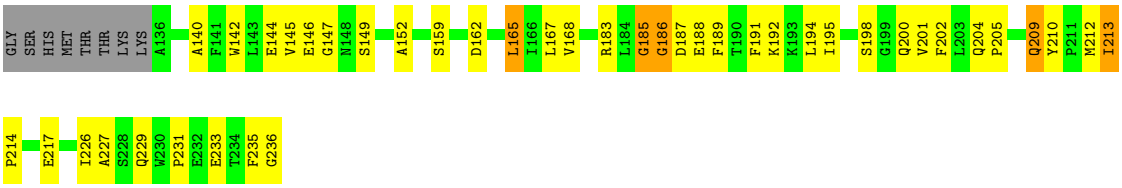
• Molecule 1: REPRESSOR PROTEIN CI

Chain D:



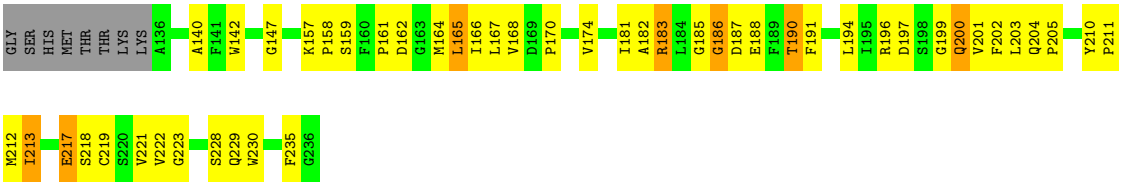
• Molecule 1: REPRESSOR PROTEIN CI

Chain E:



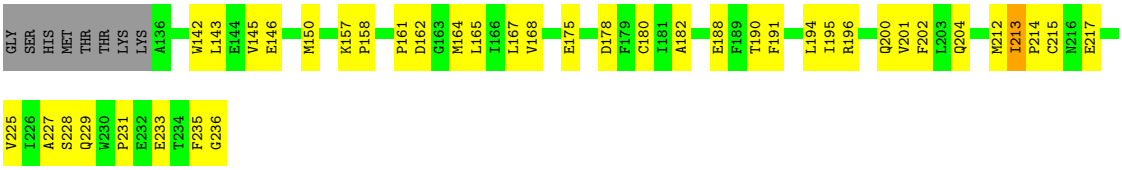
• Molecule 1: REPRESSOR PROTEIN CI

Chain F:



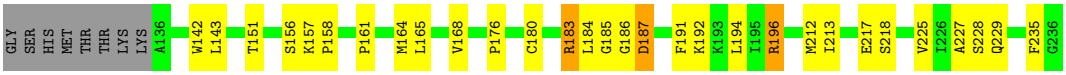
• Molecule 1: REPRESSOR PROTEIN CI

Chain G:



• Molecule 1: REPRESSOR PROTEIN CI

Chain H:



4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	150.09Å 113.72Å 95.73Å 90.00° 110.26° 90.00°	Depositor
Resolution (Å)	23.53 – 2.91	Depositor
% Data completeness (in resolution range)	99.3 (23.53-2.91)	Depositor
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.227 , 0.267	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	6160	wwPDB-VP
Average B, all atoms (Å^2)	46.0	wwPDB-VP

5 Model quality (i)

5.1 Standard geometry (i)

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	0.43	0/791	0.69	0/1075
1	B	0.40	0/791	0.65	0/1075
1	C	0.40	0/791	0.67	0/1075
1	D	0.46	0/791	0.69	0/1075
1	E	0.40	0/791	0.67	0/1075
1	F	0.34	0/791	0.61	0/1075
1	G	0.38	0/791	0.67	0/1075
1	H	0.45	0/791	0.70	0/1075
All	All	0.41	0/6328	0.67	0/8600

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 (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	A	770	0	734	21	0
1	B	770	0	734	39	0
1	C	770	0	734	39	0
1	D	770	0	734	35	0
1	E	770	0	734	39	0
1	F	770	0	734	42	0
1	G	770	0	734	32	0
1	H	770	0	734	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	6160	0	5872	259	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 22.

All (259) 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:C:229:GLN:HB3	1:D:229:GLN:HB3	1.46	0.94
1:C:200:GLN:HE21	1:C:200:GLN:HA	1.33	0.92
1:F:203:LEU:HB2	1:F:213:ILE:HG23	1.49	0.92
1:F:194:LEU:HD11	1:F:201:VAL:HG13	1.54	0.89
1:B:203:LEU:HB2	1:B:213:ILE:HG23	1.58	0.86
1:F:183:ARG:HD2	1:F:187:ASP:HA	1.62	0.82
1:A:229:GLN:HB3	1:B:229:GLN:HB3	1.61	0.81
1:D:204:GLN:HE21	1:D:212:MET:CE	1.93	0.81
1:D:156:SER:HB3	1:H:156:SER:HB3	1.62	0.80
1:E:209:GLN:HA	1:E:209:GLN:HE21	1.47	0.79
1:D:176:PRO:HA	1:D:194:LEU:HD23	1.65	0.78
1:D:203:LEU:HB2	1:D:213:ILE:HG23	1.67	0.77
1:C:148:ASN:N	1:C:148:ASN:HD22	1.82	0.76
1:C:147:GLY:C	1:C:148:ASN:HD22	1.89	0.76
1:F:142:TRP:CE2	1:F:167:LEU:HD13	2.26	0.71
1:C:150:MET:HG3	1:C:191:PHE:CD1	2.26	0.70
1:D:183:ARG:HD3	1:D:187:ASP:OD2	1.90	0.70
1:E:209:GLN:HA	1:E:209:GLN:NE2	2.05	0.70
1:E:194:LEU:HD23	1:E:195:ILE:N	2.07	0.70
1:C:200:GLN:HA	1:C:200:GLN:NE2	2.07	0.69
1:E:191:PHE:O	1:E:192:LYS:HG2	1.91	0.69
1:F:182:ALA:HB3	1:F:190:THR:HG22	1.74	0.68
1:F:211:PRO:HG3	1:G:202:PHE:HZ	1.59	0.68
1:F:196:ARG:NH2	1:F:199:GLY:HA2	2.10	0.67
1:C:148:ASN:N	1:C:148:ASN:ND2	2.42	0.66
1:B:204:GLN:HE21	1:B:212:MET:CE	2.09	0.65
1:A:211:PRO:HB3	1:E:209:GLN:HB3	1.78	0.65
1:G:180:CYS:HA	1:G:225:VAL:HG23	1.77	0.65
1:B:165:LEU:O	1:B:228:SER:HA	1.96	0.65
1:A:165:LEU:HD13	1:A:231:PRO:HD3	1.79	0.65
1:C:157:LYS:HA	1:C:158:PRO:O	1.97	0.64
1:C:191:PHE:HE2	1:C:225:VAL:HG21	1.62	0.64
1:D:157:LYS:HB2	1:D:158:PRO:HA	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:176:PRO:HA	1:H:194:LEU:HD23	1.79	0.64
1:B:157:LYS:HB2	1:B:158:PRO:HA	1.80	0.63
1:D:203:LEU:HB2	1:D:213:ILE:CG2	2.29	0.62
1:E:147:GLY:O	1:E:162:ASP:HB2	1.99	0.62
1:D:201:VAL:HG12	1:D:215:CYS:HB3	1.81	0.62
1:C:196:ARG:HD2	1:C:201:VAL:HG22	1.80	0.62
1:E:204:GLN:HE21	1:E:212:MET:HE1	1.64	0.62
1:G:161:PRO:HD2	1:G:164:MET:SD	2.39	0.61
1:A:233:GLU:H	1:A:233:GLU:CD	2.03	0.61
1:B:161:PRO:HD2	1:B:164:MET:SD	2.41	0.61
1:B:204:GLN:HE21	1:B:212:MET:HE1	1.66	0.61
1:D:204:GLN:HE21	1:D:212:MET:HE1	1.65	0.60
1:H:217:GLU:OE1	1:H:217:GLU:HA	2.01	0.60
1:E:140:ALA:HA	1:E:168:VAL:O	2.01	0.60
1:C:168:VAL:HG21	1:C:181:ILE:HG13	1.84	0.60
1:F:194:LEU:HD11	1:F:201:VAL:CG1	2.28	0.60
1:F:204:GLN:HG3	1:F:212:MET:HE2	1.82	0.60
1:D:161:PRO:HD2	1:D:164:MET:SD	2.41	0.60
1:E:191:PHE:C	1:E:192:LYS:HG2	2.18	0.60
1:H:196:ARG:CG	1:H:196:ARG:HH11	2.16	0.59
1:C:145:VAL:HG12	1:C:162:ASP:HA	1.84	0.58
1:E:210:TYR:CD1	1:E:210:TYR:N	2.70	0.58
1:C:161:PRO:HD2	1:C:164:MET:SD	2.43	0.57
1:F:168:VAL:HG21	1:F:181:ILE:HG13	1.85	0.57
1:E:233:GLU:CD	1:E:233:GLU:H	2.06	0.57
1:D:186:GLY:O	1:D:187:ASP:HB2	2.03	0.57
1:A:181:ILE:HA	1:A:190:THR:O	2.04	0.57
1:E:204:GLN:HG3	1:E:212:MET:HE2	1.87	0.57
1:E:209:GLN:HE21	1:E:209:GLN:CA	2.16	0.57
1:B:191:PHE:O	1:B:192:LYS:HG2	2.05	0.57
1:A:145:VAL:HG12	1:A:162:ASP:HA	1.87	0.56
1:B:195:ILE:CG1	1:B:202:PHE:HB2	2.35	0.56
1:D:156:SER:CB	1:H:156:SER:HB3	2.32	0.56
1:A:148:ASN:N	1:A:148:ASN:HD22	2.02	0.56
1:E:185:GLY:O	1:E:187:ASP:N	2.38	0.56
1:E:229:GLN:HB3	1:F:229:GLN:HB3	1.87	0.56
1:G:146:GLU:HA	1:G:162:ASP:OD1	2.05	0.56
1:F:161:PRO:HD2	1:F:164:MET:SD	2.45	0.56
1:E:183:ARG:HG3	1:E:189:PHE:CE2	2.41	0.56
1:A:147:GLY:C	1:A:148:ASN:HD22	2.09	0.55
1:B:195:ILE:HG13	1:B:202:PHE:HB2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:174:VAL:HG12	1:D:194:LEU:HD22	1.87	0.55
1:D:180:CYS:HA	1:D:225:VAL:HG23	1.89	0.55
1:E:142:TRP:CE3	1:E:165:LEU:HB3	2.41	0.55
1:B:178:ASP:CG	1:B:224:LYS:HE3	2.27	0.54
1:G:204:GLN:HE21	1:G:212:MET:HE2	1.71	0.54
1:E:210:TYR:N	1:E:210:TYR:HD1	2.05	0.54
1:B:178:ASP:OD2	1:B:224:LYS:HE3	2.08	0.54
1:F:221:VAL:HG12	1:F:223:GLY:H	1.72	0.54
1:F:157:LYS:HB2	1:F:158:PRO:HA	1.90	0.54
1:G:201:VAL:HG12	1:G:215:CYS:HB3	1.90	0.54
1:E:204:GLN:HE21	1:E:212:MET:CE	2.20	0.54
1:G:204:GLN:HE21	1:G:212:MET:CE	2.20	0.54
1:F:142:TRP:CZ3	1:F:167:LEU:HB2	2.43	0.53
1:F:159:SER:O	1:F:161:PRO:HD3	2.09	0.53
1:C:200:GLN:HE21	1:C:200:GLN:CA	2.08	0.53
1:F:183:ARG:CD	1:F:187:ASP:HA	2.37	0.53
1:H:143:LEU:HD12	1:H:168:VAL:HG21	1.90	0.53
1:B:165:LEU:HB2	1:B:229:GLN:O	2.09	0.53
1:C:191:PHE:CE2	1:C:225:VAL:HG21	2.41	0.53
1:F:165:LEU:O	1:F:228:SER:HA	2.09	0.53
1:F:204:GLN:HE21	1:F:212:MET:CE	2.21	0.53
1:H:176:PRO:HA	1:H:194:LEU:CD2	2.39	0.53
1:H:213:ILE:O	1:H:213:ILE:HG13	2.09	0.53
1:F:142:TRP:CD2	1:F:167:LEU:HD13	2.44	0.53
1:H:161:PRO:HD2	1:H:164:MET:SD	2.49	0.53
1:A:150:MET:HG3	1:A:191:PHE:CD1	2.44	0.52
1:G:227:ALA:HA	1:H:235:PHE:CE1	2.44	0.52
1:C:142:TRP:CE3	1:C:165:LEU:HB3	2.44	0.52
1:D:217:GLU:OE1	1:D:217:GLU:HA	2.08	0.52
1:B:183:ARG:HD2	1:B:187:ASP:OD2	2.10	0.52
1:D:231:PRO:HB2	1:D:233:GLU:OE1	2.09	0.52
1:G:200:GLN:HA	1:G:200:GLN:NE2	2.25	0.52
1:H:185:GLY:CA	1:H:218:SER:HB3	2.39	0.52
1:G:231:PRO:HB2	1:G:233:GLU:OE1	2.10	0.52
1:H:185:GLY:HA3	1:H:218:SER:HB3	1.92	0.52
1:A:148:ASN:N	1:A:148:ASN:ND2	2.58	0.52
1:E:146:GLU:HA	1:E:162:ASP:OD1	2.09	0.52
1:F:174:VAL:O	1:F:194:LEU:HD23	2.10	0.51
1:F:140:ALA:HA	1:F:170:PRO:HD3	1.91	0.51
1:B:213:ILE:HD12	1:C:198:SER:HB3	1.92	0.51
1:B:222:VAL:HG12	1:B:222:VAL:O	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:191:PHE:C	1:B:192:LYS:HG2	2.30	0.51
1:C:182:ALA:O	1:C:190:THR:HG22	2.11	0.51
1:E:194:LEU:HD23	1:E:194:LEU:C	2.30	0.51
1:A:194:LEU:C	1:A:194:LEU:HD23	2.30	0.50
1:H:186:GLY:O	1:H:187:ASP:HB2	2.11	0.50
1:A:204:GLN:HE21	1:A:212:MET:HE1	1.77	0.50
1:G:182:ALA:HB3	1:G:190:THR:CG2	2.42	0.50
1:C:153:PRO:O	1:C:154:THR:C	2.50	0.50
1:A:231:PRO:HB2	1:A:233:GLU:OE1	2.11	0.50
1:B:188:GLU:OE2	1:C:196:ARG:NH2	2.45	0.50
1:D:156:SER:HB3	1:H:156:SER:CB	2.37	0.50
1:E:200:GLN:HG3	1:E:202:PHE:CE1	2.47	0.50
1:G:145:VAL:HG12	1:G:162:ASP:HA	1.93	0.50
1:B:143:LEU:HD12	1:B:181:ILE:HG13	1.94	0.50
1:F:196:ARG:CZ	1:F:199:GLY:HA2	2.41	0.50
1:E:194:LEU:HD21	1:E:201:VAL:HG13	1.94	0.49
1:G:200:GLN:HA	1:G:200:GLN:HE21	1.77	0.49
1:C:157:LYS:HB2	1:C:158:PRO:HA	1.95	0.49
1:D:165:LEU:O	1:D:228:SER:HA	2.11	0.49
1:B:137:SER:HB2	1:B:171:GLU:CD	2.33	0.49
1:G:142:TRP:CE2	1:G:167:LEU:HD13	2.48	0.49
1:C:155:GLY:O	1:C:156:SER:HB3	2.11	0.49
1:G:204:GLN:HG3	1:G:212:MET:HE2	1.95	0.49
1:C:183:ARG:HA	1:C:188:GLU:O	2.12	0.49
1:F:211:PRO:HG3	1:G:202:PHE:CZ	2.45	0.49
1:A:142:TRP:CE3	1:A:165:LEU:HB3	2.48	0.48
1:F:222:VAL:HG12	1:F:222:VAL:O	2.13	0.48
1:H:183:ARG:NH1	1:H:187:ASP:OD2	2.43	0.48
1:G:175:GLU:O	1:G:178:ASP:HB2	2.13	0.48
1:B:176:PRO:HG3	1:B:196:ARG:HD2	1.95	0.48
1:A:168:VAL:HG21	1:A:181:ILE:HG13	1.96	0.48
1:E:235:PHE:O	1:E:236:GLY:OXT	2.32	0.48
1:C:209:GLN:HB3	1:H:212:MET:HE3	1.96	0.48
1:B:186:GLY:O	1:B:187:ASP:HB2	2.13	0.48
1:B:198:SER:O	1:B:200:GLN:N	2.47	0.48
1:H:186:GLY:O	1:H:187:ASP:CB	2.61	0.48
1:H:191:PHE:CE2	1:H:225:VAL:HG21	2.49	0.48
1:A:189:PHE:N	1:A:189:PHE:HD2	2.12	0.48
1:F:200:GLN:HG2	1:F:202:PHE:CZ	2.49	0.48
1:H:196:ARG:HH11	1:H:196:ARG:HG2	1.79	0.48
1:A:189:PHE:N	1:A:189:PHE:CD2	2.81	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:191:PHE:C	1:D:192:LYS:HG2	2.34	0.47
1:F:197:ASP:O	1:F:200:GLN:HB3	2.14	0.47
1:E:189:PHE:N	1:E:189:PHE:CD2	2.80	0.47
1:G:165:LEU:O	1:G:228:SER:HA	2.15	0.47
1:C:176:PRO:HA	1:C:194:LEU:HD23	1.95	0.47
1:F:183:ARG:HH11	1:F:183:ARG:HB2	1.79	0.47
1:E:198:SER:HA	1:H:184:LEU:HD12	1.97	0.47
1:H:191:PHE:C	1:H:192:LYS:HG2	2.34	0.47
1:B:150:MET:CE	1:B:206:LEU:HG	2.45	0.47
1:B:185:GLY:C	1:B:187:ASP:H	2.17	0.47
1:E:231:PRO:HB2	1:E:233:GLU:OE1	2.14	0.47
1:B:168:VAL:HG21	1:B:181:ILE:HG13	1.97	0.47
1:D:183:ARG:NH1	1:D:187:ASP:OD2	2.46	0.47
1:A:172:GLN:NE2	1:A:226:ILE:HG21	2.30	0.47
1:B:198:SER:C	1:B:200:GLN:H	2.18	0.47
1:G:191:PHE:CE2	1:G:225:VAL:HG21	2.50	0.47
1:G:150:MET:HG3	1:G:191:PHE:CD1	2.50	0.46
1:B:192:LYS:HE3	1:B:205:PRO:HB3	1.97	0.46
1:G:204:GLN:HG3	1:G:212:MET:CE	2.46	0.46
1:B:142:TRP:CZ3	1:B:167:LEU:HB2	2.51	0.46
1:E:149:SER:O	1:E:205:PRO:HB2	2.16	0.46
1:B:204:GLN:HE21	1:B:212:MET:HE2	1.80	0.46
1:E:186:GLY:O	1:E:187:ASP:HB3	2.16	0.46
1:D:204:GLN:HG3	1:D:212:MET:CE	2.46	0.46
1:F:194:LEU:HD12	1:F:202:PHE:O	2.16	0.46
1:G:194:LEU:HD23	1:G:195:ILE:N	2.30	0.46
1:C:152:ALA:HB3	1:C:159:SER:HB2	1.98	0.45
1:F:164:MET:HG2	1:F:230:TRP:CE2	2.51	0.45
1:G:157:LYS:HB2	1:G:158:PRO:HA	1.98	0.45
1:G:143:LEU:HD12	1:G:168:VAL:HG21	1.99	0.45
1:D:176:PRO:CA	1:D:194:LEU:HD23	2.42	0.45
1:D:185:GLY:C	1:D:187:ASP:H	2.19	0.45
1:E:209:GLN:NE2	1:E:209:GLN:CA	2.75	0.45
1:E:189:PHE:N	1:E:189:PHE:HD2	2.15	0.45
1:D:233:GLU:CD	1:D:233:GLU:H	2.20	0.45
1:E:145:VAL:HG12	1:E:162:ASP:HA	1.99	0.45
1:F:140:ALA:HA	1:F:170:PRO:CD	2.47	0.44
1:B:167:LEU:HD23	1:B:226:ILE:HD11	2.00	0.44
1:C:155:GLY:O	1:C:156:SER:CB	2.65	0.44
1:F:166:ILE:HG21	1:F:191:PHE:CE1	2.53	0.44
1:H:142:TRP:CE3	1:H:165:LEU:HB3	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:147:GLY:O	1:D:162:ASP:HB2	2.18	0.44
1:D:153:PRO:HD2	1:D:156:SER:OG	2.17	0.44
1:H:157:LYS:HB2	1:H:158:PRO:HA	1.99	0.44
1:E:144:GLU:O	1:E:146:GLU:HG3	2.18	0.44
1:C:169:ASP:HB2	1:C:226:ILE:HD13	2.00	0.43
1:C:180:CYS:HA	1:C:225:VAL:HG23	2.00	0.43
1:G:235:PHE:CE1	1:H:227:ALA:HA	2.52	0.43
1:D:183:ARG:N	1:D:220:SER:O	2.45	0.43
1:F:204:GLN:HE21	1:F:212:MET:HE1	1.82	0.43
1:G:157:LYS:HA	1:G:158:PRO:C	2.38	0.43
1:A:180:CYS:HA	1:A:225:VAL:HG23	2.01	0.43
1:C:181:ILE:O	1:C:222:VAL:HB	2.18	0.43
1:F:205:PRO:HG3	1:F:210:TYR:O	2.18	0.43
1:A:167:LEU:HD23	1:A:226:ILE:HG13	1.99	0.43
1:B:159:SER:O	1:B:161:PRO:HD3	2.19	0.43
1:D:203:LEU:HD11	1:D:219:CYS:SG	2.58	0.43
1:H:196:ARG:CG	1:H:196:ARG:NH1	2.76	0.43
1:H:165:LEU:HB2	1:H:229:GLN:O	2.18	0.43
1:B:211:PRO:HG3	1:C:202:PHE:HZ	1.83	0.43
1:E:152:ALA:HB3	1:E:159:SER:HB2	2.00	0.43
1:C:175:GLU:O	1:C:178:ASP:HB2	2.19	0.43
1:D:185:GLY:O	1:D:187:ASP:N	2.52	0.43
1:G:213:ILE:HA	1:G:214:PRO:HD3	1.83	0.43
1:D:235:PHE:CD1	1:D:235:PHE:N	2.87	0.42
1:C:233:GLU:H	1:C:233:GLU:CD	2.23	0.42
1:F:185:GLY:O	1:F:187:ASP:N	2.45	0.42
1:C:189:PHE:HD2	1:C:189:PHE:HA	1.76	0.42
1:B:141:PHE:CD1	1:B:141:PHE:N	2.88	0.42
1:A:206:LEU:HA	1:A:206:LEU:HD23	1.81	0.42
1:F:203:LEU:HD12	1:F:213:ILE:HD13	2.02	0.42
1:B:183:ARG:H	1:B:222:VAL:HG23	1.85	0.42
1:D:200:GLN:NE2	1:D:200:GLN:HA	2.35	0.42
1:F:147:GLY:O	1:F:162:ASP:HB2	2.20	0.42
1:H:165:LEU:O	1:H:228:SER:HA	2.20	0.42
1:F:183:ARG:HA	1:F:183:ARG:HD3	1.83	0.41
1:F:186:GLY:O	1:F:187:ASP:HB2	2.19	0.41
1:C:150:MET:HG3	1:C:191:PHE:CE1	2.55	0.41
1:B:196:ARG:HB3	1:B:196:ARG:HH11	1.85	0.41
1:D:204:GLN:HB2	1:D:212:MET:HE2	2.02	0.41
1:H:180:CYS:O	1:H:191:PHE:HD2	2.03	0.41
1:B:184:LEU:O	1:B:185:GLY:C	2.59	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:184:LEU:O	1:C:188:GLU:HB2	2.21	0.41
1:E:226:ILE:O	1:E:227:ALA:HB2	2.21	0.41
1:F:217:GLU:C	1:F:219:CYS:H	2.24	0.41
1:B:182:ALA:HB3	1:B:190:THR:HG22	2.02	0.41
1:E:227:ALA:HA	1:F:235:PHE:CE1	2.56	0.41
1:G:235:PHE:O	1:G:236:GLY:OXT	2.39	0.41
1:B:191:PHE:O	1:B:192:LYS:CG	2.68	0.41
1:E:213:ILE:HA	1:E:214:PRO:HD3	1.94	0.41
1:G:233:GLU:CD	1:G:233:GLU:H	2.24	0.41
1:C:234:THR:HG22	1:C:234:THR:O	2.21	0.41
1:H:185:GLY:C	1:H:187:ASP:N	2.73	0.41
1:C:157:LYS:HA	1:C:158:PRO:C	2.41	0.40
1:D:204:GLN:CG	1:D:212:MET:HE2	2.51	0.40
1:E:142:TRP:NE1	1:E:167:LEU:HD13	2.35	0.40
1:E:200:GLN:HG3	1:E:202:PHE:CZ	2.56	0.40
1:G:229:GLN:HB3	1:H:229:GLN:HB3	2.04	0.40
1:H:151:THR:OG1	1:H:161:PRO:HA	2.21	0.40
1:F:188:GLU:OE2	1:G:196:ARG:NH2	2.54	0.40
1:C:169:ASP:CG	1:C:172:GLN:HE21	2.24	0.40
1:D:183:ARG:CG	1:D:187:ASP:HA	2.51	0.40
1:G:190:THR:O	1:G:190:THR:HG23	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	99/109 (91%)	92 (93%)	6 (6%)	1 (1%)	15 43
1	B	99/109 (91%)	89 (90%)	7 (7%)	3 (3%)	4 16
1	C	99/109 (91%)	88 (89%)	9 (9%)	2 (2%)	7 26
1	D	99/109 (91%)	91 (92%)	5 (5%)	3 (3%)	4 16

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	99/109 (91%)	89 (90%)	7 (7%)	3 (3%)	4	16
1	F	99/109 (91%)	91 (92%)	5 (5%)	3 (3%)	4	16
1	G	99/109 (91%)	92 (93%)	6 (6%)	1 (1%)	15	43
1	H	99/109 (91%)	94 (95%)	4 (4%)	1 (1%)	15	43
All	All	792/872 (91%)	726 (92%)	49 (6%)	17 (2%)	7	24

All (17) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	137	SER
1	C	156	SER
1	B	185	GLY
1	B	199	GLY
1	D	185	GLY
1	E	186	GLY
1	E	217	GLU
1	F	217	GLU
1	F	218	SER
1	F	186	GLY
1	G	217	GLU
1	C	217	GLU
1	D	217	GLU
1	H	187	ASP
1	A	217	GLU
1	D	218	SER
1	E	185	GLY

5.3.2 Protein sidechains (i)

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	86/93 (92%)	82 (95%)	4 (5%)	26	58
1	B	86/93 (92%)	81 (94%)	5 (6%)	20	48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	86/93 (92%)	78 (91%)	8 (9%)	9	25
1	D	86/93 (92%)	83 (96%)	3 (4%)	36	68
1	E	86/93 (92%)	82 (95%)	4 (5%)	26	58
1	F	86/93 (92%)	81 (94%)	5 (6%)	20	48
1	G	86/93 (92%)	84 (98%)	2 (2%)	50	79
1	H	86/93 (92%)	84 (98%)	2 (2%)	50	79
All	All	688/744 (92%)	655 (95%)	33 (5%)	25	57

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	138	ASP
1	A	149	SER
1	A	175	GLU
1	A	189	PHE
1	B	137	SER
1	B	165	LEU
1	B	187	ASP
1	B	196	ARG
1	B	213	ILE
1	C	148	ASN
1	C	165	LEU
1	C	187	ASP
1	C	189	PHE
1	C	200	GLN
1	C	213	ILE
1	C	217	GLU
1	C	229	GLN
1	D	154	THR
1	D	165	LEU
1	D	194	LEU
1	E	165	LEU
1	E	188	GLU
1	E	209	GLN
1	E	213	ILE
1	F	165	LEU
1	F	183	ARG
1	F	190	THR
1	F	200	GLN
1	F	213	ILE

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Mol	Chain	Res	Type
1	G	188	GLU
1	G	213	ILE
1	H	183	ARG
1	H	196	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	148	ASN
1	A	204	GLN
1	A	209	GLN
1	B	148	ASN
1	B	204	GLN
1	C	148	ASN
1	C	172	GLN
1	C	200	GLN
1	C	204	GLN
1	D	148	ASN
1	D	200	GLN
1	D	204	GLN
1	E	148	ASN
1	E	172	GLN
1	E	204	GLN
1	E	209	GLN
1	F	148	ASN
1	F	172	GLN
1	F	200	GLN
1	F	204	GLN
1	G	172	GLN
1	G	200	GLN
1	G	204	GLN
1	H	148	ASN
1	H	200	GLN
1	H	204	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates (i)

EDS was not executed - this section is therefore empty.

6.4 Ligands (i)

EDS was not executed - this section is therefore empty.

6.5 Other polymers (i)

EDS was not executed - this section is therefore empty.