



wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 22, 2022 – 04:13 pm BST

PDB ID : 7P80
Title : Crystal structure of ClpP from Bacillus subtilis in complex with ADEP2 (compressed state)
Authors : Lee, B.-G.; Kim, L.; Kim, M.K.; Kwon, D.H.; Song, H.K.
Deposited on : 2021-07-21
Resolution : 2.98 Å (reported)

This is a wwPDB X-ray Structure Validation Summary 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.29
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0267
CCP4 : 7.1.010 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.29

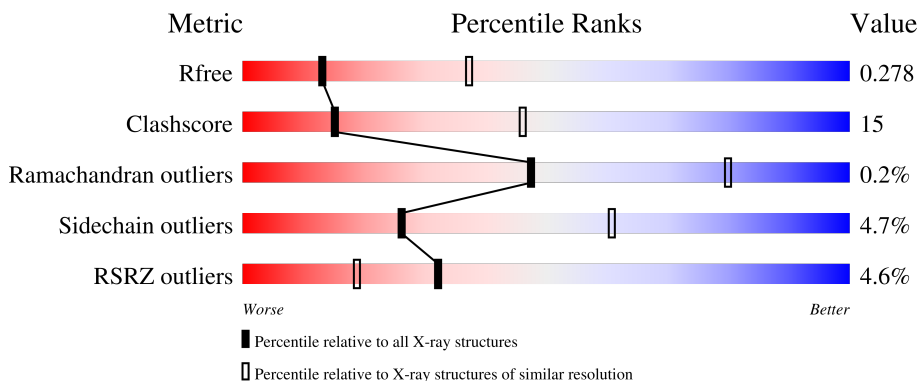
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.98 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))
R_{free}	130704	2754 (3.00-2.96)
Clashscore	141614	3103 (3.00-2.96)
Ramachandran outliers	138981	2993 (3.00-2.96)
Sidechain outliers	138945	2996 (3.00-2.96)
RSRZ outliers	127900	2644 (3.00-2.96)

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 $\leq 5\%$. 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	199	 3% 61% 17% • 20%
1	B	199	 3% 60% 20% • 18%
1	C	199	 2% 57% 23% • 19%
1	D	199	 4% 57% 21% • 20%
1	E	199	 3% 61% 18% •• 19%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	199	
1	G	199	
2	I	7	
2	J	7	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	YCP	J	5	-	-	-	X

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 8780 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 ATP-dependent Clp protease proteolytic subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	160	1228	780	207	234	7	0	0	0
1	B	163	1248	791	212	238	7	0	0	0
1	C	161	1237	786	207	237	7	0	0	0
1	D	159	1223	777	206	233	7	0	0	0
1	E	162	1250	794	211	238	7	0	0	0
1	F	161	1240	788	208	237	7	0	0	0
1	G	160	1233	783	209	234	7	0	0	0

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	192	LEU	-	expression tag	UNP P80244
A	193	GLU	-	expression tag	UNP P80244
A	194	HIS	-	expression tag	UNP P80244
A	195	HIS	-	expression tag	UNP P80244
A	196	HIS	-	expression tag	UNP P80244
A	197	HIS	-	expression tag	UNP P80244
A	198	HIS	-	expression tag	UNP P80244
A	199	HIS	-	expression tag	UNP P80244
B	192	LEU	-	expression tag	UNP P80244
B	193	GLU	-	expression tag	UNP P80244
B	194	HIS	-	expression tag	UNP P80244
B	195	HIS	-	expression tag	UNP P80244
B	196	HIS	-	expression tag	UNP P80244
B	197	HIS	-	expression tag	UNP P80244
B	198	HIS	-	expression tag	UNP P80244

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	199	HIS	-	expression tag	UNP P80244
C	192	LEU	-	expression tag	UNP P80244
C	193	GLU	-	expression tag	UNP P80244
C	194	HIS	-	expression tag	UNP P80244
C	195	HIS	-	expression tag	UNP P80244
C	196	HIS	-	expression tag	UNP P80244
C	197	HIS	-	expression tag	UNP P80244
C	198	HIS	-	expression tag	UNP P80244
C	199	HIS	-	expression tag	UNP P80244
D	192	LEU	-	expression tag	UNP P80244
D	193	GLU	-	expression tag	UNP P80244
D	194	HIS	-	expression tag	UNP P80244
D	195	HIS	-	expression tag	UNP P80244
D	196	HIS	-	expression tag	UNP P80244
D	197	HIS	-	expression tag	UNP P80244
D	198	HIS	-	expression tag	UNP P80244
D	199	HIS	-	expression tag	UNP P80244
E	192	LEU	-	expression tag	UNP P80244
E	193	GLU	-	expression tag	UNP P80244
E	194	HIS	-	expression tag	UNP P80244
E	195	HIS	-	expression tag	UNP P80244
E	196	HIS	-	expression tag	UNP P80244
E	197	HIS	-	expression tag	UNP P80244
E	198	HIS	-	expression tag	UNP P80244
E	199	HIS	-	expression tag	UNP P80244
F	192	LEU	-	expression tag	UNP P80244
F	193	GLU	-	expression tag	UNP P80244
F	194	HIS	-	expression tag	UNP P80244
F	195	HIS	-	expression tag	UNP P80244
F	196	HIS	-	expression tag	UNP P80244
F	197	HIS	-	expression tag	UNP P80244
F	198	HIS	-	expression tag	UNP P80244
F	199	HIS	-	expression tag	UNP P80244
G	192	LEU	-	expression tag	UNP P80244
G	193	GLU	-	expression tag	UNP P80244
G	194	HIS	-	expression tag	UNP P80244
G	195	HIS	-	expression tag	UNP P80244
G	196	HIS	-	expression tag	UNP P80244
G	197	HIS	-	expression tag	UNP P80244
G	198	HIS	-	expression tag	UNP P80244
G	199	HIS	-	expression tag	UNP P80244

- Molecule 2 is a protein called ADEP2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	I	7	Total	C	F	N	O	0	0	0
			57	41	2	6	8			
2	J	7	Total	C	F	N	O	0	0	0
			57	41	2	6	8			

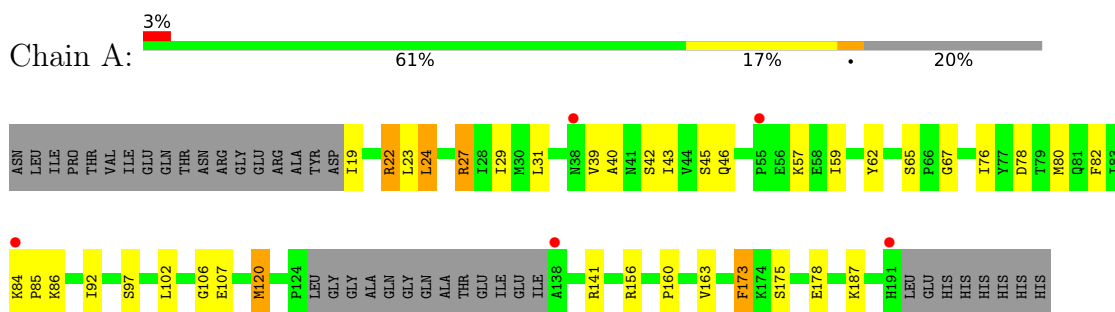
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	O	0	0
			1	1		
3	B	1	Total	O	0	0
			1	1		
3	C	1	Total	O	0	0
			1	1		
3	D	1	Total	O	0	0
			1	1		
3	E	1	Total	O	0	0
			1	1		
3	F	1	Total	O	0	0
			1	1		
3	G	1	Total	O	0	0
			1	1		

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.

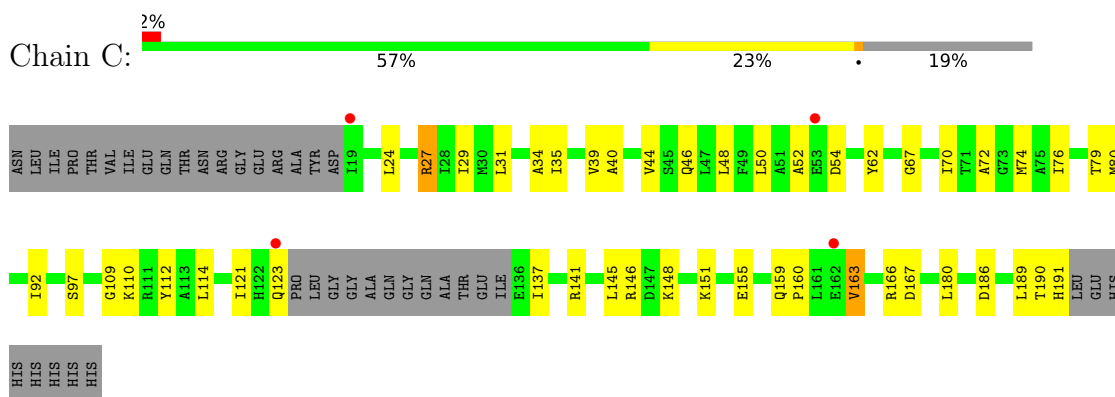
- Molecule 1: ATP-dependent Clp protease proteolytic subunit



- Molecule 1: ATP-dependent Clp protease proteolytic subunit

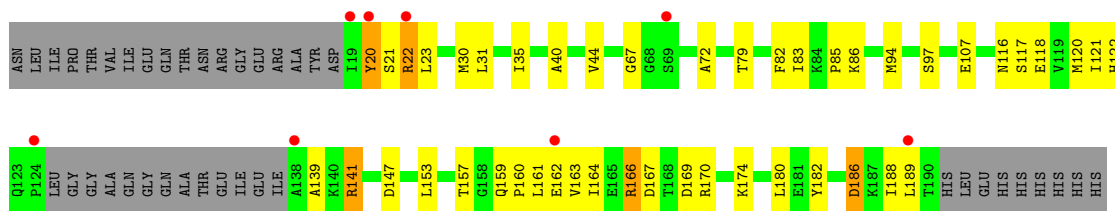


- Molecule 1: ATP-dependent Clp protease proteolytic subunit

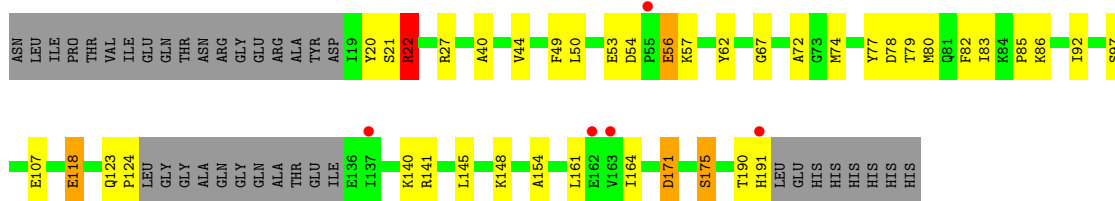


- Molecule 1: ATP-dependent Clp protease proteolytic subunit

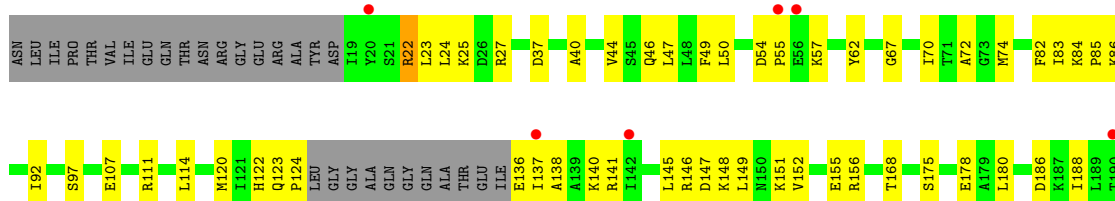




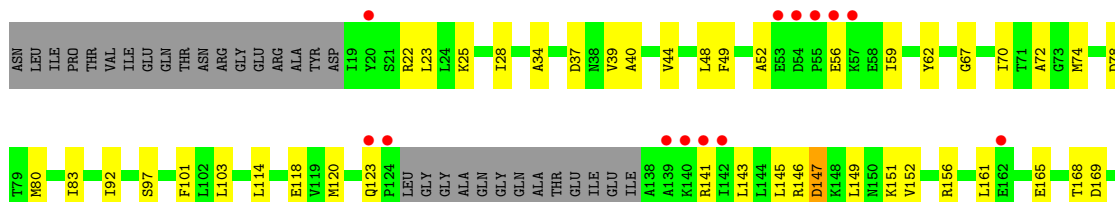
- Molecule 1: ATP-dependent Clp protease proteolytic subunit



- Molecule 1: ATP-dependent Clp protease proteolytic subunit

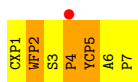


- Molecule 1: ATP-dependent Clp protease proteolytic subunit

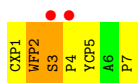
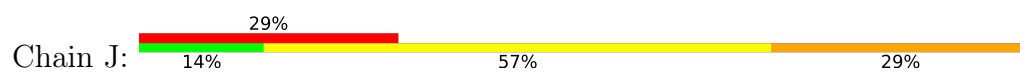


- Molecule 2: ADEP2





● Molecule 2: ADEP2



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	108.62Å 172.09Å 84.14Å 90.00° 118.39° 90.00°	Depositor
Resolution (Å)	29.59 – 2.98 29.59 – 2.98	Depositor EDS
% Data completeness (in resolution range)	94.7 (29.59-2.98) 91.8 (29.59-2.98)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.60 (at 3.00Å)	Xtrriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.229 , 0.279 0.229 , 0.278	Depositor DCC
R_{free} test set	2000 reflections (7.63%)	wwPDB-VP
Wilson B-factor (Å ²)	65.9	Xtrriage
Anisotropy	0.239	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	(Not available) , (Not available)	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.011 for 1/2*h+1/2*k+1,3/2*h-1/2*k+1,-l 0.011 for 1/2*h-1/2*k+1,-3/2*h-1/2*k-1,-l	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	8780	wwPDB-VP
Average B, all atoms (Å ²)	64.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.95% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MP8, CXP, YCP, WFP

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	0.36	0/1242	0.58	0/1672
1	B	0.34	0/1262	0.57	0/1699
1	C	0.34	0/1251	0.57	0/1684
1	D	0.33	0/1237	0.61	0/1665
1	E	0.32	0/1265	0.55	0/1703
1	F	0.32	0/1254	0.59	0/1688
1	G	0.35	0/1248	0.59	0/1680
2	I	4.40	3/17 (17.6%)	1.56	0/21
2	J	4.38	4/17 (23.5%)	1.31	0/21
All	All	0.43	7/8793 (0.1%)	0.59	0/11833

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	A	0	1
1	B	0	1
1	C	0	1
1	D	0	1
1	E	0	2
All	All	0	6

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	4	PRO	N-CD	11.65	1.64	1.47
2	I	4	PRO	N-CD	11.43	1.63	1.47
2	I	4	PRO	N-CA	-8.71	1.32	1.47
2	J	4	PRO	N-CA	-8.53	1.32	1.47

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	3	SER	CB-OG	5.13	1.49	1.42

There are no bond angle outliers.

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	22	ARG	Sidechain
1	B	22	ARG	Sidechain
1	C	166	ARG	Sidechain
1	D	141	ARG	Sidechain
1	E	22	ARG	Sidechain

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	1228	0	1272	32	0
1	B	1248	0	1289	42	0
1	C	1237	0	1276	52	0
1	D	1223	0	1270	36	0
1	E	1250	0	1294	34	0
1	F	1240	0	1287	59	0
1	G	1233	0	1277	40	0
2	I	57	0	55	5	0
2	J	57	0	55	6	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	1	0
All	All	8780	0	9075	268	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 15.

The worst 5 of 268 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:189:LEU:HD13	1:D:82:PHE:CD1	1.95	0.99
1:C:137:ILE:HG13	1:C:141:ARG:NH1	1.81	0.95
1:A:27:ARG:NH2	1:A:57:LYS:O	2.05	0.89
1:A:175:SER:OG	1:A:178:GLU:HG3	1.73	0.89
1:D:167:ASP:OD1	1:D:170:ARG:NH1	2.06	0.87

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	156/199 (78%)	146 (94%)	10 (6%)	0	100	100
1	B	159/199 (80%)	151 (95%)	8 (5%)	0	100	100
1	C	157/199 (79%)	146 (93%)	11 (7%)	0	100	100
1	D	155/199 (78%)	145 (94%)	9 (6%)	1 (1%)	25	61
1	E	158/199 (79%)	148 (94%)	9 (6%)	1 (1%)	25	61
1	F	157/199 (79%)	145 (92%)	12 (8%)	0	100	100
1	G	156/199 (78%)	141 (90%)	15 (10%)	0	100	100
2	I	3/7 (43%)	2 (67%)	1 (33%)	0	100	100
2	J	3/7 (43%)	2 (67%)	1 (33%)	0	100	100
All	All	1104/1407 (78%)	1026 (93%)	76 (7%)	2 (0%)	47	80

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	139	ALA
1	E	21	SER

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	132/165 (80%)	127 (96%)	5 (4%)	33	67
1	B	134/165 (81%)	124 (92%)	10 (8%)	13	41
1	C	133/165 (81%)	130 (98%)	3 (2%)	50	79
1	D	132/165 (80%)	124 (94%)	8 (6%)	18	51
1	E	135/165 (82%)	129 (96%)	6 (4%)	28	63
1	F	134/165 (81%)	128 (96%)	6 (4%)	27	62
1	G	133/165 (81%)	128 (96%)	5 (4%)	33	67
2	I	2/2 (100%)	1 (50%)	1 (50%)	0	0
2	J	2/2 (100%)	2 (100%)	0	100	100
All	All	937/1159 (81%)	893 (95%)	44 (5%)	26	61

5 of 44 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	118	GLU
1	F	82	PHE
1	E	140	LYS
1	F	22	ARG
1	F	140	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

6 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	WFP	J	2	2	12,13,14	0.79	0	14,17,19	1.60	3 (21%)
2	YCP	I	5	2	6,8,9	1.66	1 (16%)	5,9,11	0.89	0
2	YCP	J	5	2	6,8,9	1.64	1 (16%)	5,9,11	1.36	1 (20%)
2	MP8	I	7	2	5,8,9	5.98	3 (60%)	3,10,12	1.53	0
2	WFP	I	2	2	12,13,14	0.85	0	14,17,19	1.64	4 (28%)
2	MP8	J	7	2	5,8,9	6.08	3 (60%)	3,10,12	1.51	1 (33%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	WFP	J	2	2	-	1/5/6/8	0/1/1/1
2	YCP	I	5	2	-	0/1/10/12	0/1/1/1
2	YCP	J	5	2	-	0/1/10/12	1/1/1/1
2	MP8	I	7	2	-	0/0/11/13	0/1/1/1
2	WFP	I	2	2	-	1/5/6/8	0/1/1/1
2	MP8	J	7	2	-	0/0/11/13	0/1/1/1

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	7	MP8	CB-CA	-11.11	1.30	1.54
2	I	7	MP8	CB-CA	-10.96	1.30	1.54
2	J	7	MP8	O-C	5.92	1.43	1.19
2	I	7	MP8	O-C	5.84	1.43	1.19
2	J	7	MP8	CD-N	-4.86	1.30	1.47

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	2	WFP	CG-CB-CA	-3.02	107.99	114.10

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	J	2	WFP	CD1-CE1-CZ	-2.90	119.85	123.52
2	J	2	WFP	CG-CB-CA	-2.80	108.44	114.10
2	J	2	WFP	CG-CD1-CE1	2.70	121.27	118.81
2	I	2	WFP	CD2-CE2-CZ	-2.70	120.11	123.52

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	I	2	WFP	C-CA-CB-CG
2	J	2	WFP	C-CA-CB-CG

All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	J	5	YCP	CA-CB-CD-CE-CG-N

3 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	J	2	WFP	3	0
2	I	5	YCP	1	0
2	I	2	WFP	2	0

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](#)

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	160/199 (80%)	0.16	5 (3%) 49 30	36, 55, 84, 113	0
1	B	163/199 (81%)	0.23	6 (3%) 41 25	38, 55, 84, 111	0
1	C	161/199 (80%)	0.15	4 (2%) 57 38	39, 60, 91, 114	0
1	D	159/199 (79%)	0.26	8 (5%) 28 17	46, 70, 91, 107	0
1	E	162/199 (81%)	0.19	5 (3%) 49 30	37, 57, 84, 108	0
1	F	161/199 (80%)	0.31	6 (3%) 41 25	38, 59, 88, 114	0
1	G	160/199 (80%)	0.61	15 (9%) 8 4	45, 69, 97, 109	0
2	I	3/7 (42%)	1.18	1 (33%) 0 0	72, 72, 78, 80	0
2	J	3/7 (42%)	3.04	2 (66%) 0 0	82, 82, 85, 89	0
All	All	1132/1407 (80%)	0.28	52 (4%) 32 19	36, 61, 92, 114	0

The worst 5 of 52 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	124	PRO	4.5
1	E	137	ILE	4.4
2	J	4	PRO	4.3
1	G	123	GLN	4.1
1	A	138	ALA	4.1

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q < 0.9’ lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	YCP	J	5	8/9	0.78	0.51	74,79,91,94	0
2	WFP	J	2	13/14	0.79	0.29	68,77,85,90	0
2	MP8	J	7	8/9	0.87	0.43	69,79,92,98	0
2	MP8	I	7	8/9	0.93	0.24	54,64,73,73	0
2	YCP	I	5	8/9	0.95	0.39	59,71,76,78	0
2	WFP	I	2	13/14	0.97	0.22	51,61,71,71	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.