



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 23, 2024 – 10:05 AM EDT

PDB ID : 8SMO
Title : Crystal structure of the complex between truncated MLLE domain of PABPC1 and engineered superPAM2 peptide
Authors : Kozlov, G.; Gehring, K.
Deposited on : 2023-04-26
Resolution : 3.00 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 ⓘ 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36.2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

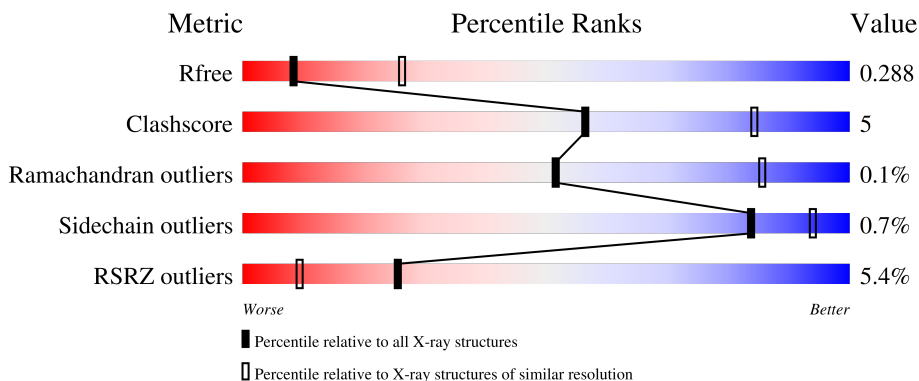
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	76	 86% 12% .
1	C	76	 89% 8% .
1	E	76	 82% 16% .
1	G	76	 84% 13% .
1	I	76	 % 87% 7% 7%

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Mol	Chain	Length	Quality of chain
1	K	76	
1	M	76	
1	O	76	
2	B	22	
2	D	22	
2	F	22	
2	H	22	
2	J	22	
2	L	22	
2	N	22	
2	P	22	

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
3	SO4	E	701	-	-	X	-

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 4911 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 Polyadenylate-binding protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	74	Total 523	C 329	N 92	O 98	S 4	0	0	0
1	C	74	Total 519	C 328	N 89	O 98	S 4	0	0	0
1	E	74	Total 520	C 330	N 89	O 97	S 4	0	0	0
1	G	74	Total 523	C 334	N 90	O 95	S 4	0	0	0
1	I	71	Total 469	C 298	N 83	O 84	S 4	0	0	0
1	K	71	Total 471	C 300	N 81	O 86	S 4	0	0	0
1	M	65	Total 407	C 256	N 76	O 73	S 2	0	0	0
1	O	61	Total 363	C 233	N 64	O 64	S 2	0	0	0

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	551	GLY	-	expression tag	UNP P11940
A	552	PRO	-	expression tag	UNP P11940
A	553	LEU	-	expression tag	UNP P11940
A	554	GLY	-	expression tag	UNP P11940
A	555	SER	-	expression tag	UNP P11940
C	551	GLY	-	expression tag	UNP P11940
C	552	PRO	-	expression tag	UNP P11940
C	553	LEU	-	expression tag	UNP P11940
C	554	GLY	-	expression tag	UNP P11940
C	555	SER	-	expression tag	UNP P11940
E	551	GLY	-	expression tag	UNP P11940
E	552	PRO	-	expression tag	UNP P11940
E	553	LEU	-	expression tag	UNP P11940

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Chain	Residue	Modelled	Actual	Comment	Reference
E	554	GLY	-	expression tag	UNP P11940
E	555	SER	-	expression tag	UNP P11940
G	551	GLY	-	expression tag	UNP P11940
G	552	PRO	-	expression tag	UNP P11940
G	553	LEU	-	expression tag	UNP P11940
G	554	GLY	-	expression tag	UNP P11940
G	555	SER	-	expression tag	UNP P11940
I	551	GLY	-	expression tag	UNP P11940
I	552	PRO	-	expression tag	UNP P11940
I	553	LEU	-	expression tag	UNP P11940
I	554	GLY	-	expression tag	UNP P11940
I	555	SER	-	expression tag	UNP P11940
K	551	GLY	-	expression tag	UNP P11940
K	552	PRO	-	expression tag	UNP P11940
K	553	LEU	-	expression tag	UNP P11940
K	554	GLY	-	expression tag	UNP P11940
K	555	SER	-	expression tag	UNP P11940
M	551	GLY	-	expression tag	UNP P11940
M	552	PRO	-	expression tag	UNP P11940
M	553	LEU	-	expression tag	UNP P11940
M	554	GLY	-	expression tag	UNP P11940
M	555	SER	-	expression tag	UNP P11940
O	551	GLY	-	expression tag	UNP P11940
O	552	PRO	-	expression tag	UNP P11940
O	553	LEU	-	expression tag	UNP P11940
O	554	GLY	-	expression tag	UNP P11940
O	555	SER	-	expression tag	UNP P11940

- Molecule 2 is a protein called superPAM2.

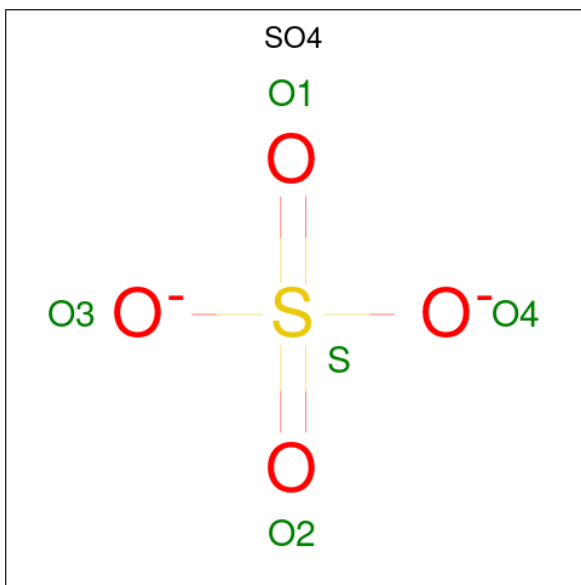
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	20	Total	C	N	O	0	0	0
			152	98	27	27			
2	D	20	Total	C	N	O	0	0	0
			152	98	27	27			
2	F	20	Total	C	N	O	0	0	0
			145	93	26	26			
2	H	19	Total	C	N	O	0	0	0
			139	90	25	24			
2	J	18	Total	C	N	O	0	0	0
			132	86	23	23			
2	L	17	Total	C	N	O	0	0	0
			126	83	22	21			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	N	16	Total	C	N	O	0	0	0
			111	76	19	16			
2	P	16	Total	C	N	O	0	0	0
			111	76	19	16			

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	E	1	Total	O	S	0	0
			5	4	1		
3	G	1	Total	O	S	0	0
			5	4	1		
3	I	1	Total	O	S	0	0
			5	4	1		
3	K	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	O	0	0
			1	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total O 1 1	0	0
4	C	2	Total O 2 2	0	0
4	F	3	Total O 3 3	0	0
4	G	3	Total O 3 3	0	0
4	H	3	Total O 3 3	0	0
4	I	4	Total O 4 4	0	0
4	K	1	Total O 1 1	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: Polyadenylate-binding protein 1

Chain A:  86% 12%




- Molecule 1: Polyadenylate-binding protein 1

Chain C:  89% 8%




- Molecule 1: Polyadenylate-binding protein 1

Chain E:  82% 16%




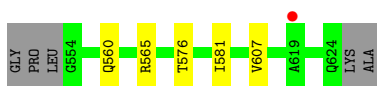
- Molecule 1: Polyadenylate-binding protein 1

Chain G:  84% 13%




- Molecule 1: Polyadenylate-binding protein 1

Chain I:  87% 7% 7%

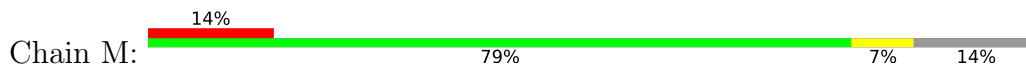


- Molecule 1: Polyadenylate-binding protein 1

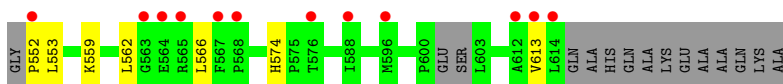
Chain K:  3% 83% 11% 7%



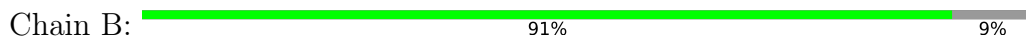
- Molecule 1: Polyadenylate-binding protein 1



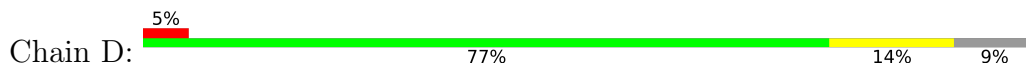
- Molecule 1: Polyadenylate-binding protein 1



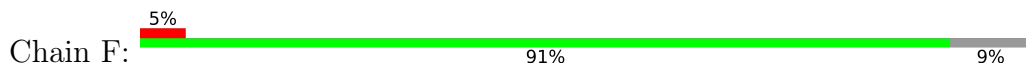
- Molecule 2: superPAM2



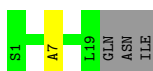
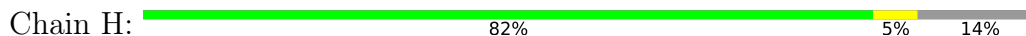
- Molecule 2: superPAM2



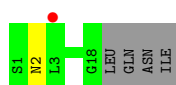
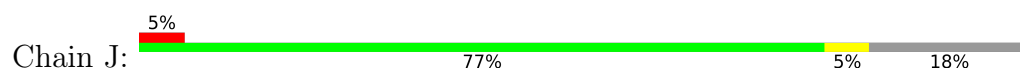
- Molecule 2: superPAM2



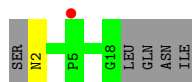
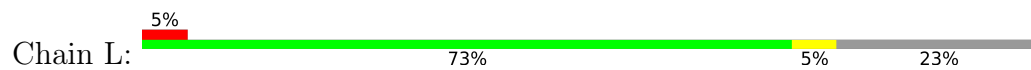
- Molecule 2: superPAM2



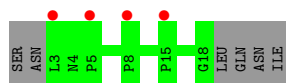
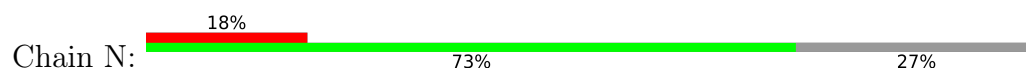
- Molecule 2: superPAM2



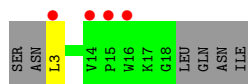
- Molecule 2: superPAM2



- Molecule 2: superPAM2



- Molecule 2: superPAM2



4 Data and refinement statistics

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α , β , γ	108.28Å 108.28Å 75.87Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	32.11 – 3.00 32.11 – 2.87	Depositor EDS
% Data completeness (in resolution range)	69.3 (32.11-3.00) 48.1 (32.11-2.87)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	7.60 (at 2.85Å)	Xtriage
Refinement program	PHENIX 1.19_4092	Depositor
R, R_{free}	0.256 , 0.292 0.257 , 0.288	Depositor DCC
R_{free} test set	1110 reflections (10.01%)	wwPDB-VP
Wilson B-factor (Å ²)	41.7	Xtriage
Anisotropy	0.073	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 44.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.049 for -h,-k,l 0.468 for h,-h-k,-l 0.052 for -k,-h,-l	Xtriage
F_o, F_c correlation	0.85	EDS
Total number of atoms	4911	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.49% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SO4

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	0.22	0/530	0.41	0/720
1	C	0.22	0/526	0.36	0/715
1	E	0.22	0/527	0.37	0/713
1	G	0.22	0/530	0.37	0/716
1	I	0.23	0/474	0.36	0/646
1	K	0.23	0/476	0.37	0/649
1	M	0.22	0/410	0.39	0/561
1	O	0.22	0/367	0.36	0/505
2	B	0.26	0/159	0.43	0/220
2	D	0.26	0/159	0.49	0/220
2	F	0.24	0/152	0.36	0/211
2	H	0.24	0/146	0.38	0/203
2	J	0.25	0/139	0.39	0/193
2	L	0.24	0/133	0.35	0/185
2	N	0.25	0/118	0.32	0/165
2	P	0.24	0/118	0.32	0/165
All	All	0.23	0/4964	0.38	0/6787

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	523	0	497	6	0
1	C	519	0	490	6	0
1	E	520	0	500	10	0
1	G	523	0	516	9	0
1	I	469	0	433	3	0
1	K	471	0	431	4	0
1	M	407	0	333	3	0
1	O	363	0	287	5	0
2	B	152	0	137	0	0
2	D	152	0	137	2	0
2	F	145	0	122	0	0
2	H	139	0	117	1	0
2	J	132	0	114	2	0
2	L	126	0	106	2	0
2	N	111	0	92	0	0
2	P	111	0	92	1	0
3	A	5	0	0	1	0
3	C	5	0	0	1	0
3	E	5	0	0	3	0
3	G	5	0	0	1	0
3	I	5	0	0	1	0
3	K	5	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	2	0	0	0	0
4	F	3	0	0	0	0
4	G	3	0	0	1	0
4	H	3	0	0	0	0
4	I	4	0	0	0	0
4	K	1	0	0	0	0
All	All	4911	0	4404	46	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 5.

All (46) 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:2:ASN:OD1	2:L:2:ASN:N	2.28	0.67
1:I:581:ILE:HG21	1:I:607:VAL:HG13	1.78	0.65
1:C:560:GLN:HE21	2:D:16:TRP:H	1.45	0.64
1:A:577:LEU:HD11	1:A:611:VAL:HG23	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:581:ILE:HG21	1:K:607:VAL:HG13	1.83	0.59
1:K:596:MET:HE3	1:K:603:LEU:HD13	1.86	0.58
1:O:559:LYS:HA	1:O:562:LEU:HD12	1.88	0.55
1:E:576:THR:OG1	3:E:701:SO4:O2	2.26	0.53
1:C:559:LYS:NZ	1:C:590:ASN:OD1	2.40	0.53
1:K:566:LEU:O	1:K:570:ILE:HG13	2.10	0.52
1:E:596:MET:HE3	1:E:603:LEU:HD13	1.93	0.51
1:G:559:LYS:HD3	1:G:590:ASN:HD21	1.75	0.51
1:E:585:LEU:O	1:E:588:ILE:HG12	2.11	0.50
1:E:576:THR:OG1	3:E:701:SO4:O1	2.29	0.50
1:G:576:THR:OG1	3:G:701:SO4:O3	2.26	0.49
1:G:576:THR:HG21	1:O:574:HIS:ND1	2.28	0.48
1:A:596:MET:HG2	1:A:603:LEU:HA	1.93	0.48
1:E:555:SER:HA	1:E:558:GLN:HG2	1.93	0.48
2:J:2:ASN:OD1	2:L:2:ASN:ND2	2.47	0.48
1:A:559:LYS:HE3	1:A:586:LEU:O	2.14	0.47
1:G:559:LYS:NZ	4:G:802:HOH:O	2.40	0.47
1:G:557:GLU:O	1:G:561:MET:HG2	2.15	0.47
1:E:592:GLU:O	1:E:596:MET:HG3	2.16	0.46
1:M:581:ILE:HG21	1:M:607:VAL:HG13	1.96	0.46
1:E:576:THR:OG1	3:E:701:SO4:S	2.69	0.46
1:G:585:LEU:O	1:G:588:ILE:HG12	2.18	0.44
1:O:613:VAL:HG21	2:P:3:LEU:HB2	2.00	0.44
1:E:576:THR:HG21	1:M:574:HIS:ND1	2.33	0.44
1:M:563:GLY:HA2	1:M:586:LEU:HD21	2.00	0.43
1:E:569:LEU:O	1:E:573:MET:HG3	2.18	0.43
1:C:559:LYS:HD2	1:C:590:ASN:HD21	1.84	0.43
1:C:560:GLN:NE2	2:D:15:PRO:HA	2.33	0.43
1:O:552:PRO:HB2	1:O:553:LEU:H	1.68	0.43
1:G:596:MET:HE3	1:G:603:LEU:HD13	2.01	0.43
1:A:577:LEU:H	1:A:577:LEU:HD23	1.82	0.42
1:I:576:THR:OG1	3:I:701:SO4:O1	2.30	0.42
1:K:610:ALA:O	1:K:614:LEU:HD12	2.19	0.42
1:A:589:ASP:OD1	1:A:592:GLU:HG3	2.19	0.42
1:C:576:THR:OG1	3:C:701:SO4:S	2.72	0.42
1:I:581:ILE:HD13	1:I:607:VAL:HG13	2.01	0.42
1:G:559:LYS:HD3	1:G:590:ASN:ND2	2.35	0.42
1:A:576:THR:OG1	3:A:701:SO4:O4	2.36	0.41
1:O:566:LEU:HD23	1:O:566:LEU:HA	1.90	0.41
1:C:585:LEU:O	1:C:588:ILE:HG12	2.20	0.41
1:E:557:GLU:HG3	1:E:558:GLN:N	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:580:LYS:NZ	2:H:7:ALA:O	2.38	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	72/76 (95%)	69 (96%)	3 (4%)	0	100	100
1	C	72/76 (95%)	70 (97%)	2 (3%)	0	100	100
1	E	72/76 (95%)	71 (99%)	1 (1%)	0	100	100
1	G	72/76 (95%)	70 (97%)	2 (3%)	0	100	100
1	I	69/76 (91%)	67 (97%)	2 (3%)	0	100	100
1	K	69/76 (91%)	67 (97%)	2 (3%)	0	100	100
1	M	61/76 (80%)	60 (98%)	1 (2%)	0	100	100
1	O	57/76 (75%)	56 (98%)	1 (2%)	0	100	100
2	B	18/22 (82%)	16 (89%)	2 (11%)	0	100	100
2	D	18/22 (82%)	16 (89%)	1 (6%)	1 (6%)	2	10
2	F	18/22 (82%)	18 (100%)	0	0	100	100
2	H	17/22 (77%)	17 (100%)	0	0	100	100
2	J	16/22 (73%)	15 (94%)	1 (6%)	0	100	100
2	L	15/22 (68%)	14 (93%)	1 (7%)	0	100	100
2	N	14/22 (64%)	13 (93%)	1 (7%)	0	100	100
2	P	14/22 (64%)	13 (93%)	1 (7%)	0	100	100
All	All	674/784 (86%)	652 (97%)	21 (3%)	1 (0%)	51	85

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	18	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	49/62 (79%)	49 (100%)	0	100	100
1	C	48/62 (77%)	48 (100%)	0	100	100
1	E	48/62 (77%)	47 (98%)	1 (2%)	53	82
1	G	49/62 (79%)	49 (100%)	0	100	100
1	I	38/62 (61%)	36 (95%)	2 (5%)	22	58
1	K	38/62 (61%)	38 (100%)	0	100	100
1	M	26/62 (42%)	26 (100%)	0	100	100
1	O	21/62 (34%)	21 (100%)	0	100	100
2	B	16/19 (84%)	16 (100%)	0	100	100
2	D	16/19 (84%)	16 (100%)	0	100	100
2	F	14/19 (74%)	14 (100%)	0	100	100
2	H	13/19 (68%)	13 (100%)	0	100	100
2	J	13/19 (68%)	13 (100%)	0	100	100
2	L	12/19 (63%)	12 (100%)	0	100	100
2	N	9/19 (47%)	9 (100%)	0	100	100
2	P	9/19 (47%)	9 (100%)	0	100	100
All	All	419/648 (65%)	416 (99%)	3 (1%)	84	94

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	565	ARG
1	I	560	GLN
1	I	565	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	560	GLN
2	L	2	ASN

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](#)

6 ligands 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	$\# Z > 2$
3	SO4	A	701	-	4,4,4	0.14	0	6,6,6	0.05	0
3	SO4	C	701	-	4,4,4	0.14	0	6,6,6	0.06	0
3	SO4	E	701	-	4,4,4	0.14	0	6,6,6	0.04	0
3	SO4	G	701	-	4,4,4	0.14	0	6,6,6	0.06	0
3	SO4	I	701	-	4,4,4	0.14	0	6,6,6	0.05	0
3	SO4	K	701	-	4,4,4	0.14	0	6,6,6	0.05	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	701	SO4	1	0
3	C	701	SO4	1	0
3	E	701	SO4	3	0
3	G	701	SO4	1	0
3	I	701	SO4	1	0

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	74/76 (97%)	-0.23	0 100 100	12, 38, 69, 81	0
1	C	74/76 (97%)	-0.21	0 100 100	16, 34, 68, 78	0
1	E	74/76 (97%)	-0.36	0 100 100	19, 29, 74, 101	0
1	G	74/76 (97%)	-0.28	0 100 100	17, 29, 70, 96	0
1	I	71/76 (93%)	0.02	1 (1%) 75 49	39, 75, 102, 110	0
1	K	71/76 (93%)	0.01	2 (2%) 53 25	48, 79, 110, 122	0
1	M	65/76 (85%)	0.92	11 (16%) 1 0	84, 104, 124, 132	0
1	O	61/76 (80%)	0.84	12 (19%) 1 0	87, 105, 119, 125	0
2	B	20/22 (90%)	-0.28	0 100 100	20, 38, 88, 94	0
2	D	20/22 (90%)	-0.17	1 (5%) 28 10	21, 41, 81, 81	0
2	F	20/22 (90%)	0.14	1 (5%) 28 10	31, 63, 111, 121	0
2	H	19/22 (86%)	0.07	0 100 100	29, 46, 107, 129	0
2	J	18/22 (81%)	0.07	1 (5%) 24 8	67, 83, 100, 109	0
2	L	17/22 (77%)	0.48	1 (5%) 22 7	64, 81, 95, 106	0
2	N	16/22 (72%)	1.10	4 (25%) 0 0	94, 112, 134, 135	0
2	P	16/22 (72%)	1.24	4 (25%) 0 0	92, 107, 133, 138	0
All	All	710/784 (90%)	0.11	38 (5%) 25 9	12, 64, 118, 138	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	M	576	THR	7.0
1	M	603	LEU	5.1
1	O	564	GLU	5.0
2	N	3	LEU	4.8
2	P	16	TRP	4.8

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Mol	Chain	Res	Type	RSRZ
1	O	563	GLY	4.7
1	M	591	SER	4.4
1	M	597	LEU	4.1
1	O	576	THR	4.0
1	O	568	PRO	3.9
2	P	15	PRO	3.1
1	O	565	ARG	3.1
2	P	3	LEU	3.1
1	M	586	LEU	3.0
1	M	587	GLU	3.0
2	N	5	PRO	2.7
2	N	15	PRO	2.7
1	M	556	GLN	2.7
1	I	619	ALA	2.7
1	K	619	ALA	2.6
1	M	581	ILE	2.6
1	O	614	LEU	2.6
2	P	14	VAL	2.5
1	M	557	GLU	2.5
1	M	558	GLN	2.5
2	L	5	PRO	2.5
2	F	20	GLN	2.4
2	N	8	PRO	2.4
1	M	561	MET	2.3
1	O	612	ALA	2.3
1	O	567	PHE	2.3
2	D	20	GLN	2.3
1	O	588	ILE	2.1
1	O	552	PRO	2.1
1	K	617	HIS	2.1
1	O	613	VAL	2.1
1	O	596	MET	2.1
2	J	3	LEU	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [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(Å ²)	Q<0.9
3	SO4	K	701	5/5	0.81	0.29	85,102,117,128	0
3	SO4	I	701	5/5	0.88	0.24	101,102,113,131	0
3	SO4	E	701	5/5	0.89	0.27	29,70,91,119	0
3	SO4	G	701	5/5	0.90	0.26	43,91,111,123	0
3	SO4	C	701	5/5	0.97	0.17	28,30,35,43	0
3	SO4	A	701	5/5	0.99	0.14	28,29,33,40	0

6.5 Other polymers [i](#)

There are no such residues in this entry.