Full wwPDB X-ray Structure Validation Report ⓘ

Nov 2, 2021 – 04:59 PM EDT

PDB ID	:	1WDA
Title	:	Crystal structure of human peptidylarginine deiminase type4 (PAD4) in complex with benzoyl-L-arginine amide
Authors	:	Arita, K.; Hashimoto, H.; Shimizu, T.; Nakashima, K.; Yamada, M.; Sato, M.
Deposited on	:	2004-05-12
Resolution	:	2.30 Å(reported)

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	:	2.23.2
buster-report	:	1.1.7 (2018)
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)	:	2.23.2

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 2.30 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		0.250
Clashscore		8
Ramachandran outliers		0.8%
Sidechain outliers		12.5%
RSRZ outliers		10.2%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
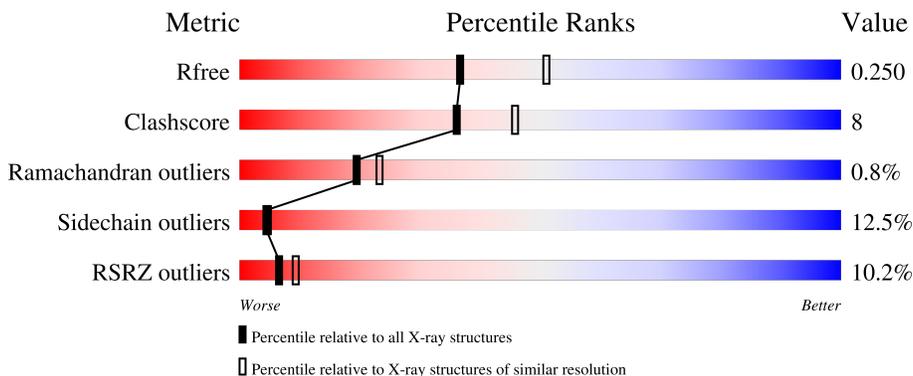
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	670	10% 69% 21% • 6%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 5145 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 Protein-arginine deiminase type IV.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	628	Total	C	N	O	S	26	0	0
			4946	3158	829	925	34			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	GLY	-	expression tag	UNP Q9UM07
A	-5	PRO	-	expression tag	UNP Q9UM07
A	-4	LEU	-	expression tag	UNP Q9UM07
A	-3	GLY	-	expression tag	UNP Q9UM07
A	-2	SER	-	expression tag	UNP Q9UM07
A	-1	PRO	-	expression tag	UNP Q9UM07
A	0	GLN	-	expression tag	UNP Q9UM07
A	645	ALA	CYS	engineered mutation	UNP Q9UM07

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	5	Total	Ca	0	0
			5	5		

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

SO4

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 5	O 4	S 1	0	0
3	A	1	Total 5	O 4	S 1	0	0
3	A	1	Total 5	O 4	S 1	0	0

- Molecule 4 is N-[(E)-2-AMINO-1-(3-{[AMINO(IMINO)METHYL]AMINO}PROPYL)-2-HYDROXYVINYL]BENZAMIDE (three-letter code: BAG) (formula: $C_{13}H_{19}N_5O_2$).

BAG
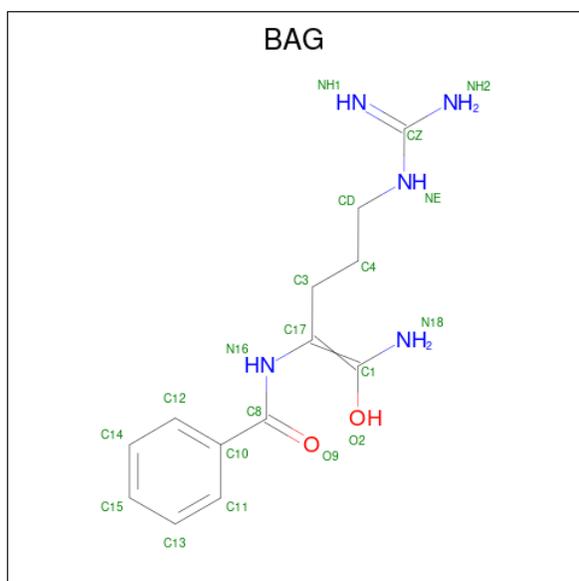
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			20	13	5	2		

• Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	159	Total	O	0	0
			159	159		

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: Protein-arginine deiminase type IV
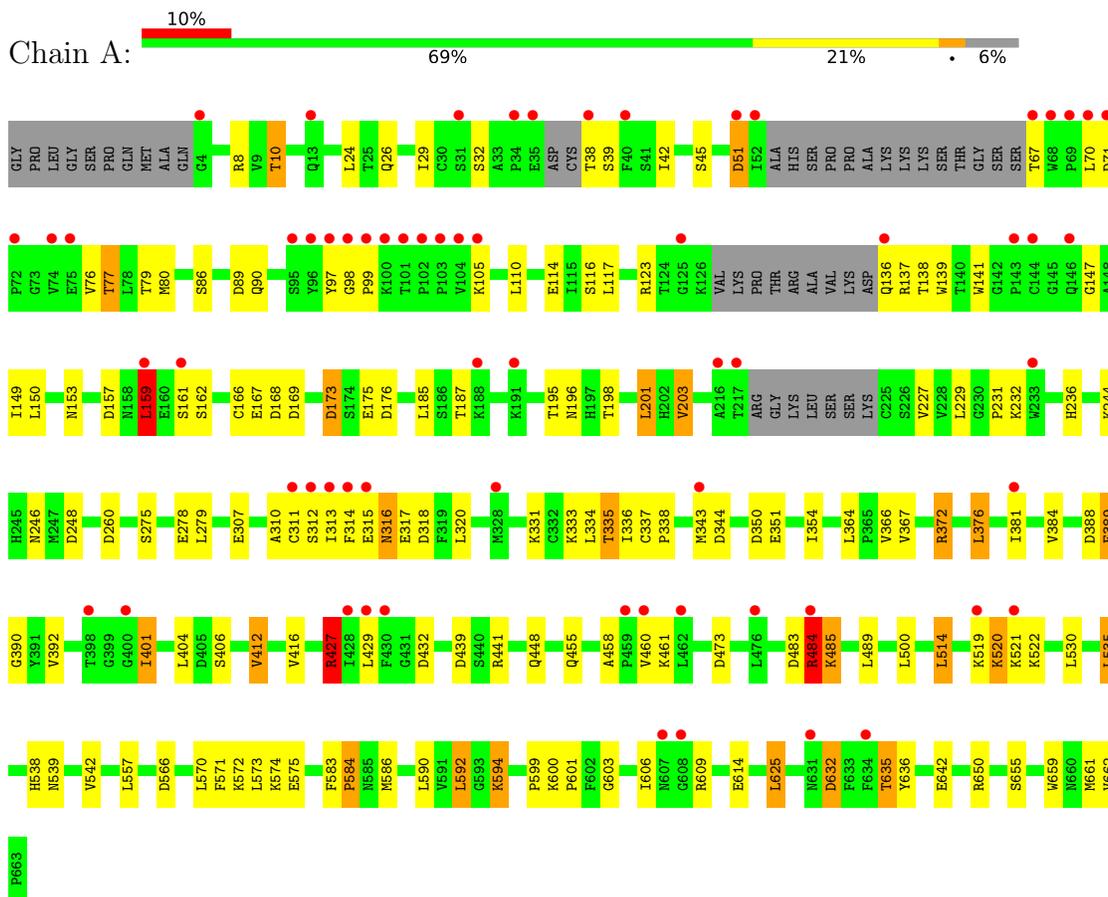
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	146.13Å 60.05Å 115.41Å 90.00° 124.23° 90.00°	Depositor
Resolution (Å)	42.52 – 2.30 42.51 – 2.30	Depositor EDS
% Data completeness (in resolution range)	97.9 (42.52-2.30) 97.9 (42.51-2.30)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	8.79 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.210 , 0.252 0.212 , 0.250	Depositor DCC
R_{free} test set	3661 reflections (10.08%)	wwPDB-VP
Wilson B-factor (Å^2)	46.5	Xtriage
Anisotropy	0.782	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 52.0	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	5145	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.61% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: BAG, CA, 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	0.71	3/5065 (0.1%)	0.90	26/6873 (0.4%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	519	LYS	CB-CG	-18.01	1.03	1.52
1	A	520	LYS	CB-CG	-8.38	1.29	1.52
1	A	521	LYS	CB-CG	5.90	1.68	1.52

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	412	VAL	CB-CA-C	-7.93	96.33	111.40
1	A	632	ASP	CB-CG-OD2	7.46	125.01	118.30
1	A	427	ARG	NE-CZ-NH1	7.16	123.88	120.30
1	A	344	ASP	CB-CG-OD2	6.92	124.52	118.30
1	A	432	ASP	CB-CG-OD2	6.84	124.45	118.30
1	A	455	GLN	CB-CA-C	-6.59	97.22	110.40
1	A	51	ASP	CB-CG-OD2	6.55	124.20	118.30
1	A	137	ARG	CA-CB-CG	6.46	127.62	113.40
1	A	388	ASP	CB-CG-OD2	6.45	124.11	118.30
1	A	439	ASP	CB-CG-OD2	6.39	124.05	118.30
1	A	248	ASP	CB-CG-OD2	6.26	123.93	118.30
1	A	473	ASP	CB-CG-OD2	6.23	123.91	118.30
1	A	483	ASP	CB-CG-OD2	6.16	123.85	118.30
1	A	168	ASP	CB-CG-OD2	5.61	123.35	118.30
1	A	566	ASP	CB-CG-OD2	5.54	123.28	118.30
1	A	372	ARG	NE-CZ-NH1	5.49	123.05	120.30
1	A	89	ASP	CB-CG-OD2	5.48	123.23	118.30
1	A	159	LEU	CA-CB-CG	5.44	127.80	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	157	ASP	CB-CG-OD2	5.42	123.18	118.30
1	A	260	ASP	CB-CG-OD2	5.33	123.09	118.30
1	A	203	VAL	CB-CA-C	-5.26	101.41	111.40
1	A	173	ASP	CB-CG-OD2	5.25	123.02	118.30
1	A	176	ASP	CB-CG-OD2	5.20	122.98	118.30
1	A	392	VAL	CB-CA-C	-5.14	101.64	111.40
1	A	318	ASP	CB-CG-OD2	5.11	122.90	118.30
1	A	455	GLN	CA-CB-CG	5.11	124.64	113.40

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	4946	0	4906	79	0
2	A	5	0	0	0	0
3	A	15	0	0	0	0
4	A	20	0	18	0	0
5	A	159	0	0	6	0
All	All	5145	0	4924	79	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 8.

All (79) 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:662:VAL:O	1:A:662:VAL:HG23	1.83	0.78
1:A:312:SER:HB2	1:A:316:ASN:HD21	1.54	0.73
1:A:311:CYS:SG	1:A:311:CYS:O	2.47	0.72
1:A:601:PRO:O	5:A:964:HOH:O	2.08	0.71
1:A:367:VAL:HG21	1:A:384:VAL:HG11	1.71	0.70
1:A:441:ARG:HH11	1:A:441:ARG:HG3	1.57	0.70
1:A:312:SER:OG	1:A:320:LEU:HG	1.96	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:367:VAL:HG21	1:A:384:VAL:CG1	2.27	0.64
1:A:484:ARG:O	1:A:485:LYS:HB2	1.99	0.62
1:A:351:GLU:OE2	1:A:372:ARG:HG3	2.00	0.62
1:A:123:ARG:HD3	1:A:659:TRP:CD1	2.36	0.60
1:A:310:ALA:O	1:A:336:ILE:HA	2.01	0.60
1:A:485:LYS:HB2	5:A:952:HOH:O	2.02	0.60
1:A:484:ARG:O	1:A:484:ARG:HG3	2.01	0.59
1:A:311:CYS:HB2	1:A:337:CYS:HB3	1.84	0.59
1:A:354:ILE:CD1	1:A:367:VAL:HG22	2.32	0.59
1:A:354:ILE:HD12	1:A:367:VAL:HG22	1.83	0.58
1:A:662:VAL:O	1:A:662:VAL:CG2	2.52	0.57
1:A:313:ILE:HB	1:A:338:PRO:HA	1.87	0.56
1:A:153:ASN:HB3	1:A:166:CYS:HB3	1.86	0.56
1:A:484:ARG:O	5:A:952:HOH:O	2.18	0.56
1:A:334:LEU:HD11	1:A:336:ILE:HD11	1.86	0.55
1:A:316:ASN:OD1	1:A:317:GLU:N	2.39	0.55
1:A:461:LYS:NZ	5:A:1052:HOH:O	2.40	0.54
1:A:67:THR:N	1:A:97:TYR:HH	2.05	0.53
1:A:586:MET:HA	1:A:599:PRO:HG2	1.90	0.53
1:A:26:GLN:OE1	1:A:77:THR:HB	2.07	0.53
1:A:195:THR:HG22	1:A:196:ASN:ND2	2.22	0.53
1:A:45:SER:OG	1:A:90:GLN:NE2	2.41	0.53
1:A:350:ASP:HB3	1:A:406:SER:HB2	1.92	0.52
1:A:307:GLU:OE2	1:A:335:THR:CG2	2.58	0.51
1:A:278:GLU:O	1:A:279:LEU:HD23	2.11	0.51
1:A:484:ARG:O	1:A:485:LYS:CB	2.59	0.51
1:A:600:LYS:NZ	5:A:995:HOH:O	2.43	0.51
1:A:351:GLU:HG3	1:A:376:LEU:HB3	1.93	0.50
1:A:10:THR:HG23	1:A:32:SER:HB3	1.94	0.50
1:A:594:LYS:HD2	1:A:594:LYS:N	2.27	0.50
1:A:203:VAL:HG23	1:A:229:LEU:HD13	1.94	0.50
1:A:203:VAL:CG2	1:A:229:LEU:HD13	2.41	0.50
1:A:367:VAL:HG23	1:A:389:PHE:CE2	2.48	0.49
1:A:307:GLU:OE2	1:A:335:THR:HG21	2.12	0.49
1:A:366:VAL:HG22	1:A:390:GLY:HA3	1.95	0.48
1:A:535:LEU:HD22	1:A:539:ASN:ND2	2.28	0.48
1:A:201:LEU:HD13	1:A:229:LEU:HD11	1.95	0.48
1:A:10:THR:HG23	1:A:32:SER:CB	2.44	0.48
1:A:514:LEU:HD23	1:A:603:GLY:HA2	1.96	0.47
1:A:311:CYS:CB	1:A:337:CYS:HB3	2.44	0.47
1:A:635:THR:HG23	1:A:636:TYR:HD1	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:427:ARG:HG2	1:A:460:VAL:HG23	1.97	0.46
1:A:313:ILE:CB	1:A:338:PRO:HA	2.46	0.46
1:A:312:SER:O	1:A:320:LEU:HD11	2.16	0.45
1:A:67:THR:N	1:A:97:TYR:OH	2.50	0.45
1:A:307:GLU:OE1	1:A:650:ARG:NH1	2.51	0.44
1:A:594:LYS:HA	1:A:625:LEU:HD12	2.00	0.44
1:A:139:TRP:CD1	1:A:147:GLY:HA3	2.52	0.44
1:A:632:ASP:OD1	1:A:642:GLU:OE2	2.36	0.44
1:A:354:ILE:HG21	1:A:650:ARG:HG3	2.01	0.43
1:A:542:VAL:HG11	1:A:571:PHE:CD1	2.54	0.43
1:A:29:ILE:CD1	1:A:76:VAL:HG21	2.49	0.43
1:A:312:SER:O	1:A:316:ASN:ND2	2.51	0.43
1:A:114:GLU:O	1:A:187:THR:HA	2.18	0.42
1:A:401:ILE:HD12	1:A:401:ILE:HA	1.84	0.42
1:A:29:ILE:HD11	1:A:42:ILE:HD11	2.01	0.42
1:A:316:ASN:OD1	1:A:316:ASN:C	2.57	0.42
1:A:80:MET:CE	1:A:90:GLN:HG3	2.49	0.42
1:A:123:ARG:HG2	1:A:149:ILE:HD13	2.01	0.41
1:A:312:SER:HB2	1:A:320:LEU:CD1	2.50	0.41
1:A:448:GLN:HE22	1:A:461:LYS:HE2	1.84	0.41
1:A:538:HIS:CD2	1:A:573:LEU:H	2.38	0.41
1:A:98:GLY:HA3	1:A:99:PRO:HD2	1.90	0.41
1:A:484:ARG:O	1:A:484:ARG:CG	2.68	0.41
1:A:141:TRP:HB3	1:A:661:MET:O	2.20	0.41
1:A:201:LEU:HD13	1:A:229:LEU:CD1	2.51	0.41
1:A:236:HIS:HE1	5:A:1047:HOH:O	2.03	0.41
1:A:312:SER:HB2	1:A:320:LEU:HD11	2.01	0.41
1:A:231:PRO:O	1:A:232:LYS:HG2	2.21	0.41
1:A:590:LEU:HG	1:A:592:LEU:HD13	2.02	0.41
1:A:583:PHE:HB2	1:A:584:PRO:HD2	2.03	0.40
1:A:441:ARG:HG3	1:A:441:ARG:NH1	2.31	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	618/670 (92%)	584 (94%)	29 (5%)	5 (1%)	19	23

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	485	LYS
1	A	484	ARG
1	A	159	LEU
1	A	315	GLU
1	A	458	ALA

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	558/592 (94%)	488 (88%)	70 (12%)	4	5

All (70) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	ARG
1	A	10	THR
1	A	24	LEU
1	A	38	THR
1	A	39	SER
1	A	51	ASP
1	A	70	LEU
1	A	71	ASP
1	A	77	THR
1	A	79	THR
1	A	86	SER
1	A	105	LYS
1	A	110	LEU
1	A	116	SER

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Mol	Chain	Res	Type
1	A	117	LEU
1	A	136	GLN
1	A	138	THR
1	A	150	LEU
1	A	159	LEU
1	A	161	SER
1	A	162	SER
1	A	167	GLU
1	A	169	ASP
1	A	173	ASP
1	A	175	GLU
1	A	185	LEU
1	A	198	THR
1	A	201	LEU
1	A	227	VAL
1	A	244	LYS
1	A	246	ASN
1	A	275	SER
1	A	314	PHE
1	A	316	ASN
1	A	331	LYS
1	A	333	LYS
1	A	335	THR
1	A	343	MET
1	A	364	LEU
1	A	376	LEU
1	A	381	ILE
1	A	389	PHE
1	A	401	ILE
1	A	404	LEU
1	A	412	VAL
1	A	416	VAL
1	A	427	ARG
1	A	429	LEU
1	A	484	ARG
1	A	489	LEU
1	A	500	LEU
1	A	514	LEU
1	A	520	LYS
1	A	522	LYS
1	A	530	LEU
1	A	535	LEU

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Mol	Chain	Res	Type
1	A	557	LEU
1	A	570	LEU
1	A	572	LYS
1	A	574	LYS
1	A	575	GLU
1	A	584	PRO
1	A	592	LEU
1	A	594	LYS
1	A	606	ILE
1	A	609	ARG
1	A	614	GLU
1	A	625	LEU
1	A	635	THR
1	A	655	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	90	GLN
1	A	178	GLN
1	A	196	ASN
1	A	246	ASN
1	A	448	GLN
1	A	505	GLN
1	A	509	HIS
1	A	538	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 9 ligands modelled in this entry, 5 are monoatomic - leaving 4 for Mogul analysis.

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	905	-	4,4,4	0.16	0	6,6,6	0.25	0
4	BAG	A	801	-	19,20,20	4.74	13 (68%)	18,25,25	1.90	5 (27%)
3	SO4	A	907	-	4,4,4	0.18	0	6,6,6	0.23	0
3	SO4	A	906	-	4,4,4	0.09	0	6,6,6	0.29	0

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
4	BAG	A	801	-	-	1/15/19/19	0/1/1/1

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	801	BAG	C11-C10	8.26	1.53	1.39
4	A	801	BAG	C12-C10	7.78	1.52	1.39
4	A	801	BAG	C17-N16	7.28	1.47	1.35
4	A	801	BAG	O2-C1	-7.24	1.21	1.30
4	A	801	BAG	C13-C11	6.68	1.53	1.38
4	A	801	BAG	C14-C12	6.53	1.52	1.38
4	A	801	BAG	C15-C13	5.62	1.52	1.38
4	A	801	BAG	C14-C15	5.21	1.51	1.38
4	A	801	BAG	CZ-NE	4.30	1.41	1.33
4	A	801	BAG	CZ-NH1	3.28	1.45	1.32
4	A	801	BAG	C3-C17	2.30	1.52	1.50
4	A	801	BAG	C8-N16	-2.19	1.34	1.37
4	A	801	BAG	CZ-NH2	2.13	1.43	1.34

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	801	BAG	C10-C8-N16	4.91	123.58	116.24
4	A	801	BAG	O2-C1-N18	3.73	123.11	117.69
4	A	801	BAG	O9-C8-C10	-2.50	116.48	120.94
4	A	801	BAG	C4-C3-C17	-2.22	110.44	113.49
4	A	801	BAG	C11-C10-C8	-2.00	114.14	120.62

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	801	BAG	C1-C17-N16-C8

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand BAG A 801

Bond lengths · Bond angles · Torsions · Rings
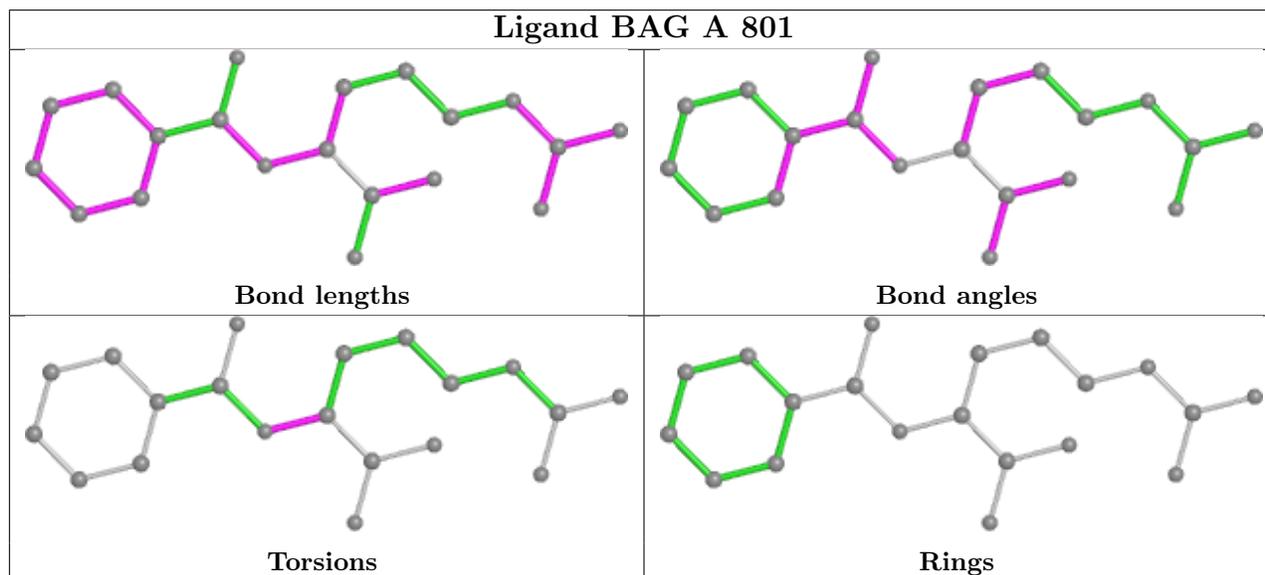
5.7 Other polymers ⓘ

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	628/670 (93%)	0.59	64 (10%)	6	9	33, 46, 71, 83	6 (0%)

All (64) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	98	GLY	7.0
1	A	312	SER	6.8
1	A	103	PRO	5.9
1	A	104	VAL	5.7
1	A	99	PRO	5.5
1	A	74	VAL	5.5
1	A	217	THR	5.4
1	A	70	LEU	4.9
1	A	314	PHE	4.9
1	A	68	TRP	4.6
1	A	38	THR	4.6
1	A	96	TYR	4.4
1	A	67	THR	4.2
1	A	69	PRO	4.0
1	A	159	LEU	3.7
1	A	97	TYR	3.7
1	A	102	PRO	3.6
1	A	144	CYS	3.6
1	A	34	PRO	3.6
1	A	313	ILE	3.5
1	A	521	LYS	3.4
1	A	40	PHE	3.3
1	A	100	LYS	3.2
1	A	476	LEU	3.2
1	A	381	ILE	3.1
1	A	35	GLU	3.1
1	A	462	LEU	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	136	GLN	3.0
1	A	484	ARG	2.9
1	A	311	CYS	2.9
1	A	101	THR	2.9
1	A	161	SER	2.9
1	A	52	ILE	2.8
1	A	216	ALA	2.8
1	A	51	ASP	2.7
1	A	428	ILE	2.6
1	A	634	PHE	2.6
1	A	400	GLY	2.6
1	A	429	LEU	2.6
1	A	72	PRO	2.5
1	A	631	ASN	2.5
1	A	315	GLU	2.5
1	A	460	VAL	2.5
1	A	191	LYS	2.4
1	A	146	GLN	2.3
1	A	398	THR	2.3
1	A	343	MET	2.3
1	A	71	ASP	2.2
1	A	233	TRP	2.2
1	A	519	LYS	2.2
1	A	608	GLY	2.2
1	A	105	LYS	2.2
1	A	4	GLY	2.2
1	A	31	SER	2.1
1	A	75	GLU	2.1
1	A	95	SER	2.1
1	A	13	GLN	2.1
1	A	459	PRO	2.1
1	A	125	GLY	2.1
1	A	328	MET	2.0
1	A	430	PHE	2.0
1	A	143	PRO	2.0
1	A	188	LYS	2.0
1	A	607	ASN	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 ⓘ

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
4	BAG	A	801	20/20	0.89	0.21	40,44,57,57	0
3	SO4	A	906	5/5	0.93	0.22	69,70,72,72	0
3	SO4	A	907	5/5	0.93	0.20	72,73,73,73	0
2	CA	A	904	1/1	0.93	0.07	47,47,47,47	0
2	CA	A	902	1/1	0.95	0.04	51,51,51,51	0
3	SO4	A	905	5/5	0.96	0.09	69,71,71,73	0
2	CA	A	903	1/1	0.96	0.06	50,50,50,50	0
2	CA	A	901	1/1	0.99	0.05	41,41,41,41	0
2	CA	A	900	1/1	1.00	0.11	35,35,35,35	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around BAG A 801:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

6.5 Other polymers ⓘ

There are no such residues in this entry.